

6. PAST FINANCIAL PERFORMANCE IN WATER SUPPLY AND SANITATION

6.2 Past Public Investment

6.2.1 Sources of Local Fund

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999

Municipality/City	1995	1996	1997	1998	1999
1. Bago City					
Receipts					
Tax Revenue					
- Real Property Tax	13,738,826.45	13,166,815.03	12,723,564.57	14,222,131.19	
- Business Tax	2,055,441.31	3,579,626.94	3,156,566.43	3,480,574.21	
- Others	374,006.20	320,350.09	357,010.63	378,577.34	
IRA	155,441,881.00	166,865,798.00	185,571,375.87	199,067,518.00	
Others	11,261,987.12	13,888,637.26	14,295,665.82	13,757,439.45	
Sub-total	182,872,142.08	197,822,227.32	216,104,183.32	230,906,240.19	0.00
Expenditures					
Personal Services	65,155,191.69	88,875,734.81	124,395,248.91	140,339,675.99	
MOOE	46,333,755.94	49,447,967.23	73,946,834.83	61,685,390.76	
Others					
Sub-total	111,488,947.63	138,323,702.04	198,342,083.74	202,025,066.75	0.00
Net Operating Income	71,383,194.45	59,498,525.28	17,762,099.58	28,881,173.44	0.00
Add: Borrowing	24,057,237.53	5,942,762.47			
Surplus (Income from prior years)	34,239,054.01	42,880,299.90	63,794,780.06	29,642,529.36	
Less: Capital Outlays	62,882,753.80	47,670,173.09	51,518,451.84	17,162,571.42	
Net Income	66,796,732.19	60,651,414.56	30,038,427.80	41,361,131.38	0.00
2. Binalbagan					(Estimated)
Receipts					
Tax Revenue					
- Real Property Tax	1,410,212.26	1,513,403.96	1,638,177.61	1,875,260.15	2,500,000.00
- Business Tax	740,866.61	1,263,093.05	1,132,795.23	1,508,723.90	1,300,000.00
- Others					
IRA	15,741,554.00	17,078,335.58	20,982,355.33	22,883,848.00	24,500,000.00
Others	1,310,273.71	2,224,998.41	2,639,552.08	3,537,539.07	3,181,998.94
Sub-total	19,202,906.58	22,079,831.00	26,392,880.25	29,805,371.12	31,481,998.94
Expenditures					
Personal Services	11,518,665.73	14,028,423.48	18,750,117.23	20,337,541.29	18,873,091.68
MOOE	4,663,966.81	5,791,810.92	7,280,487.66	8,094,809.33	9,648,907.26
Others					
Sub-total	16,182,632.54	19,820,234.40	26,030,604.89	28,432,350.62	28,522,000.00
Net Operating Income	3,020,274.04	2,259,596.60	(3,359,122.71)	958,203.49	2,960,000.00
Add: Borrowing			3,721,398.07	414,817.01	
Surplus (Income from prior years)	4,550,656.77	4,574,206.71	2,594,989.74	1,570,410.24	
Less: Capital Outlays	2,260,190.87	1,632,038.95	1,157,767.56	2,432,723.08	2,440,000.00
Net Income	5,310,739.94	5,201,764.36	1,799,497.54	510,707.66	520,000.00
3. Cadiz City					(Estimated)
Receipts					
Tax Revenue					
- Real Property Tax	10,380,265.06	10,138,769.20	11,918,388.62	16,236,476.29	16,500,000.00
- Business Tax	10,259,028.84	13,462,335.78	13,134,704.28	9,665,278.08	11,393,500.00
- Others	947,844.02	942,175.76	1,031,093.51	1,033,249.80	985,500.00
IRA	172,429,543.00	184,991,342.00	195,423,335.49	209,318,035.00	245,000,000.00
Others	364,977.28	443,597.70	480,369.00	2,885,669.75	206,694.25
Sub-total	194,381,658.20	209,978,220.44	221,987,890.90	239,138,708.92	274,085,694.25
Expenditures					
Personal Services	91,245,563.34	111,439,245.73	136,269,002.59	135,986,542.03	134,574,952.00
MOOE	46,625,334.04	50,323,489.71	60,048,517.12	63,235,898.23	98,016,042.25
Others	0.00	0.00	0.00	0.00	0.00
Sub-total	137,870,897.38	161,762,735.44	196,317,519.71	199,222,440.26	232,590,994.25
Net Operating Income	56,510,760.82	48,215,485.00	25,670,371.19	39,916,268.66	41,494,700.00
Add: Borrowing	9,844,935.28				
Surplus (Income from prior years)	27,678,627.22	22,305,496.73	14,493,743.07	11,419,882.96	11,419,882.96
Less: Capital Outlays	52,299,269.62	16,518,412.21	35,467,771.43	41,751,971.64	46,178,500.00
Net Income	41,735,053.70	54,002,569.52	4,696,342.83	9,584,179.98	6,736,082.96

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
4. Calatrava					
Receipts					
Tax Revenue					
- Real Property Tax	423,495.90	450,623.28	597,316.70	729,962.94	
- Business Tax	202,226.01	404,250.63	410,344.46	466,360.45	
- Others	211,349.71	171,646.49	236,885.41	201,994.16	
IRA	21,640,998.00	23,333,929.00	29,912,858.95	32,000,000.00	
Others	961,399.16	1,613,411.01	2,186,620.18	2,509,140.32	
Sub-total	23,439,468.78	25,973,860.41	33,344,025.70	35,907,457.87	0.00
Expenditures					
Personal Services	12,252,282.06	14,908,623.31	21,547,190.47	23,008,166.99	
MOOE	5,540,316.13	6,201,782.84	6,162,369.54	8,321,145.73	
Others	3,900,156.44	3,561,329.20	4,850,160.83	15,149,434.45	
Sub-total	21,692,754.63	24,671,735.35	32,559,720.84	46,478,747.17	0.00
Net Operating Income	1,746,714.15	1,302,125.06	784,304.86	(10,571,289.30)	0.00
Add: Borrowing				14,700,000.00	
Surplus (Income from prior years)	6,653,758.56	7,416,306.01	8,734,522.02	7,886,652.69	
Less: Capital Outlays	3,287,248.58	2,423,732.28	4,717,279.17	6,633,417.41	
Net Income	5,113,224.13	6,294,698.79	4,801,547.71	5,381,945.98	0.00
5. Candoni					(As of March)
Receipts					
Tax Revenue					
- Real Property Tax	65,005.58	82,002.02	78,955.05	68,823.53	22,555.95
- Business Tax	115,071.50	132,014.99	116,658.25	89,433.00	47,639.00
- Others	106,641.71	134,238.22	142,556.54	124,834.07	58,856.04
IRA	9,032,552.50	9,718,817.00	12,053,937.48	13,192,505.57	3,204,141.00
Others	1,091,777.81	1,329,791.08	236,680.48	245,608.15	158,810.50
Sub-total	10,411,049.10	11,396,863.31	12,628,787.80	13,721,204.32	3,492,002.49
Expenditures					
Personal Services	5,901,501.01	7,259,055.07	7,359,618.00	8,830,364.92	1,980,641.38
MOOE	4,017,357.39	3,720,410.00	3,378,821.73	4,349,653.68	2,034,984.45
Others	271,629.80	567,759.13	211,000.00	110,848.00	146,137.85
Sub-total	10,190,488.20	11,547,224.20	10,949,439.73	13,290,866.60	4,161,763.68
Net Operating Income	220,560.90	(150,360.89)	1,679,348.07	430,337.72	(669,761.19)
Add: Borrowing		8,014.94			
Surplus (Income from prior years)		(302,825.80)	(42,967.20)	1,268,088.73	
Less: Capital Outlays		345,793.00	258,177.90	508,698.86	
Net Income	220,560.90	(790,964.75)	1,378,202.97	1,189,727.59	(669,761.19)
6. Cauayan					
Receipts					
Tax Revenue					
- Real Property Tax	360,516.57	1,070,994.75	1,011,195.58	398,327.84	3,100,000.00
- Business Tax	257,103.13	242,394.03	226,088.49	250,033.11	425,000.00
- Others	171,409.06	234,232.90	303,781.27	211,150.85	2,140,000.00
IRA	25,589,850.00	27,673,930.00	33,309,429.40	36,723,390.00	44,981,595.00
Others	1,110,982.49	1,586,414.82	2,563,486.02	2,197,884.21	
Sub-total	27,489,861.25	30,807,966.55	37,413,980.76	39,780,786.01	50,646,595.00
Expenditures					
Personal Services	13,563,005.22	14,960,905.71	23,619,575.92	27,660,988.61	29,348,859.50
MOOE	6,008,005.12	5,560,436.28	8,374,164.36	8,856,856.55	8,174,817.00
Others					10,799,404.25
Sub-total	19,571,010.34	20,521,341.99	31,993,740.28	36,517,845.16	48,323,080.75
Net Operating Income	7,918,850.91	10,286,624.56	5,420,240.48	3,262,940.85	2,323,514.25
Add: Borrowing					
Surplus (Income from prior years)	9,944,764.40	11,444,388.96	8,850,499.81	5,255,842.55	5,215,842.15
Less: Capital Outlays	2,222,912.56	6,877,745.23	4,786,444.21	4,385,564.88	7,243,000.00
Net Income	15,640,702.75	14,853,268.29	9,484,296.08	4,133,218.52	296,356.40

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
7. Enrique B. Magalona					
Receipts					
Tax Revenue					
- Real Property Tax	1,162,246.23	1,202,103.59	1,107,373.99	1,333,317.00	910,753.48
- Business Tax	306,979.83	386,698.38	503,654.55	590,007.01	476,520.47
- Others	1,550,589.78	1,599,353.00	1,685,300.73	2,149,398.42	1,558,357.99
IRA	14,092,182.00	15,315,482.00	19,512,147.23	21,212,628.00	12,997,848.00
Others	511,913.00	3,027,668.76	1,125,218.36	1,000,193.38	838,090.00
Sub-total	17,623,910.84	21,531,305.73	23,933,694.86	26,285,543.81	16,781,569.94
Expenditures					
Personal Services	10,818,975.00	13,360,354.00	15,668,015.44	19,294,101.51	10,180,736.52
MOOE	4,380,330.00	4,588,442.70	5,107,940.55	5,212,250.07	2,414,698.14
Others	1,839,906.08	2,403,505.83	1,587,613.16	955,287.20	671,491.72
Sub-total	17,039,211.08	20,352,302.53	22,363,569.15	25,461,638.78	13,266,926.38
Net Operating Income	584,699.76	1,179,003.20	1,570,125.71	823,905.03	3,514,643.56
Add: Borrowing			2,248,000.00	252,000.00	
Surplus (Income from prior years)		6,534.38	5,432.85	198,291.67	
Less: Capital Outlays					
Net Income	584,699.76	1,185,537.58	3,823,558.56	1,274,196.70	3,514,643.56
8. Escalante					
Receipts					
Tax Revenue					
- Real Property Tax	857,197.00	858,371.00	1,007,516.00	1,213,562.00	839,432.00
- Business Tax	904,989.00	1,061,025.00	1,196,293.00	1,102,026.00	1,047,857.00
- Others	2,372,666.00	2,987,368.00	3,105,611.00	3,127,681.00	2,093,161.00
IRA	18,704,849.00	21,342,910.00	26,767,393.00	29,053,840.00	17,960,670.00
Others	1,746,411.00	2,403,750.00	1,145,800.00	1,390,103.00	244,715.00
Sub-total	24,586,112.00	28,653,424.00	33,222,613.00	35,887,212.00	22,185,835.00
Expenditures					
Personal Services	14,848,179.00	17,147,126.00	21,230,256.00	23,176,430.00	10,906,959.00
MOOE	5,416,275.00	7,831,111.00	8,101,070.00	11,544,247.00	8,656,568.00
Others					
Sub-total	20,264,454.00	24,978,237.00	29,331,326.00	34,720,677.00	19,563,527.00
Net Operating Income	4,321,658.00	3,675,187.00	3,891,287.00	1,166,535.00	2,622,308.00
Add: Borrowing			5,596,896.00	510,406.00	
Surplus (Income from prior years)	1,926,880.00	2,910,786.00	896,365.00	337,785.00	446,640.00
Less: Capital Outlays	3,337,752.00	5,689,608.00	10,046,763.00	1,568,086.00	915,301.00
Net Income	2,910,786.00	896,365.00	337,785.00	446,640.00	2,153,647.00
9. Himamaylan					
Receipts					
Tax Revenue	29,044,269.06				
- Real Property Tax		1,137,491.91	1,080,654.06	960,500.00	980,500.00
- Business Tax		1,016,448.29	865,908.54	1,000,000.00	1,150,000.00
- Others		120,787.65	98,350.98	120,500.00	138,000.00
IRA		31,068,672.58	31,971,444.00	38,166,206.00	41,360,489.00
Others		1,169,298.20	4,559,140.23	3,781,928.00	1,294,500.00
Sub-total	29,044,269.06	34,512,698.63	38,575,497.81	44,029,134.00	44,923,489.00
Expenditures					
Personal Services	11,443,548.00	15,437,319.00	17,632,984.00	24,027,393.00	
MOOE	4,407,228.00	4,579,599.00	5,927,060.00	4,922,197.00	
Others	9,210,623.00	9,388,284.42	10,020,493.00	8,469,164.00	
Sub-total	25,061,399.00	29,405,202.42	33,580,537.00	37,418,754.00	0.00
Net Operating Income	3,982,870.06	5,107,496.21	4,994,960.81	6,610,380.00	44,923,489.00
Add: Borrowing					
Surplus (Income from prior years)					
Less: Capital Outlays	1,199,987.96	599,787.68	1,459,327.02	1,757,054.90	
Net Income	2,782,882.10	4,507,708.53	3,535,633.79	4,853,325.10	44,923,489.00

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
10. Hinigaran					
Receipts					
Tax Revenue					
- Real Property Tax					
- Business Tax					
- Others	408,279.24	420,906.43	433,924.15	1,632,659.99	
IRA		20,062,166.00	24,328,483.00	25,004,161.00	32,417,929.00
Others					
Sub-total	408,279.24	20,483,072.43	24,762,407.15	26,636,820.99	32,417,929.00
Expenditures					
Personal Services	204,279.98	204,279.98	204,279.98	294,899.25	
MOOE	430,121.10	452,759.05	503,065.61	929,861.96	
Others	19,595.16	20,626.48	21,712.08	21,711.48	
Sub-total	653,996.24	677,665.51	729,057.67	1,246,472.69	0.00
Net Operating Income	(245,717.00)	19,805,406.92	24,033,349.48	25,390,348.30	32,417,929.00
Add: Borrowing					
Surplus (Income from prior years)					
Less: Capital Outlays					
Net Income	(245,717.00)	19,805,406.92	24,033,349.48	25,390,348.30	32,417,929.00
11. Hinoba-an (Asia)					
Receipts					
Tax Revenue					
- Real Property Tax	256,745.31	215,805.31	380,345.94	334,890.17	
- Business Tax	148,765.58	301,637.71	310,561.83	336,545.62	
- Others	127,912.28	472,929.22	204,913.47	75,010.32	
IRA	16,502,062.00	17,779,636.00	21,230,442.03	20,509,935.90	
Others	809,791.98	832,727.75	1,081,964.08	188,173.90	
Sub-total	17,845,277.15	19,602,735.99	23,208,227.35	21,444,555.91	0.00
Expenditures					
Personal Services	8,451,083.52	10,844,421.13	11,927,426.34	14,938,256.91	
MOOE	3,551,407.04	3,519,590.64	301,778.17	2,191,115.66	
Others	6,755,196.31	5,204,042.52	6,050,374.30	4,939,194.42	
Sub-total	18,757,686.87	19,568,054.29	18,279,578.81	22,068,566.99	0.00
Net Operating Income	(912,409.72)	34,681.70	4,928,648.54	(624,011.08)	0.00
Add: Borrowing		1,000,000.00			
Surplus (Income from prior years)					
Less: Capital Outlays					
Net Income	(912,409.72)	1,034,681.70	4,928,648.54	(624,011.08)	0.00
12. Ilog					
Receipts					
Tax Revenue					
- Real Property Tax	632,428.89	622,846.85	660,927.45	552,747.30	544,218.32
- Business Tax	228,413.27	252,047.67	244,315.13	277,603.83	273,817.48
- Others					
IRA	16,067,393.00	17,362,038.00	20,320,929.87	22,231,939.00	11,265,825.00
Others	773,956.19	720,064.61	811,500.56	699,383.18	300,565.49
Sub-total	17,702,191.35	18,956,997.13	22,037,673.01	23,761,673.31	12,384,426.29
Expenditures					
Personal Services	10,440,581.34	11,932,432.24	13,837,662.14	15,764,081.02	7,858,762.59
MOOE	5,467,820.32	5,388,805.87	6,690,280.60	5,998,547.24	2,571,760.65
Others					
Sub-total	15,908,401.66	17,321,238.11	20,527,942.74	21,762,628.26	10,430,523.24
Net Operating Income	1,793,789.69	1,635,759.02	1,509,730.27	1,999,045.05	1,953,903.05
Add: Surplus Adjustment	1,142,678.55	108,902.79	229,926.11	19,715.80	20,616.00
Surplus (Income from prior years)	1,720,080.76	2,158,174.61	1,714,413.86	1,813,489.91	2,108,765.94
Less: Capital Outlays	2,263,480.95	1,484,056.73	1,538,526.00	1,398,937.65	700,649.91
Net Income	2,393,068.05	2,418,779.69	1,915,544.24	2,433,313.11	3,382,635.08

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
13. Isabela					
Receipts					
Tax Revenue					
- Real Property Tax	1,091,942.35	776,549.27	844,044.38	1,000,432.25	
- Business Tax	121,039.92	226,028.09	246,394.88	268,286.31	
- Others	101,751.41	161,729.38	174,530.69	160,023.01	
IRA	14,618,663.00	15,850,966.00	19,383,559.56	20,638,607.00	
Others					
Sub-total	15,933,396.68	17,015,272.74	20,648,529.51	22,067,348.57	0.00
Expenditures					
Personal Services	9,506,919.53	9,833,914.74	13,762,744.44	14,693,782.29	
MOOE	1,841,181.58	2,716,346.51	2,769,969.35	2,602,323.57	
Others					
Sub-total	11,348,101.11	12,550,261.25	16,532,713.79	17,296,105.86	0.00
Net Operating Income	4,585,295.57	4,465,011.49	4,115,815.72	4,771,242.71	0.00
Add: Borrowing					
Surplus (Income from prior years)					
Less: Capital Outlays	3,437,984.91	1,988,397.21	3,375,438.67	1,879,894.42	
Net Income	1,147,310.66	2,476,614.28	740,377.05	2,891,348.29	0.00
14. Kabankalan City					
Receipts					
Tax Revenue					
- Real Property Tax	1,448,408.03	1,956,942.37	3,105,697.48	3,423,688.07	2,833,054.50
- Business Tax	2,475,576.04	2,983,913.84	3,384,943.67	3,771,267.41	2,751,629.05
- Others	457,685.93	587,521.37	582,883.76	683,243.20	605,009.89
IRA	36,911,324.00	39,973,136.00	48,836,856.88	260,883,126.54	147,186,886.00
Others	7,820,402.42	12,161,855.76	3,553,695.73	29,900,150.78	2,964,836.43
Sub-total	49,113,396.42	57,663,369.34	59,464,077.52	298,661,476.00	156,341,415.87
Expenditures					
Personal Services	23,978,097.68	28,998,873.53	34,868,149.55	49,060,477.52	23,689,128.93
MOOE	14,071,851.98	10,732,231.07	9,755,517.24	75,303,477.92	7,637,735.95
Others	12,696,111.22	14,748,587.41	18,032,370.04	120,473,628.63	5,598,729.64
Sub-total	50,746,060.88	54,479,692.01	62,656,036.83	244,837,584.07	36,925,594.52
Net Operating Income	(1,632,664.46)	3,183,677.33	(3,191,959.31)	53,823,891.93	119,415,821.35
Add: Borrowing					
Surplus (Income from prior years)	1,883,522.22	250,857.76	3,434,535.09	242,575.78	54,066,467.71
Less: Capital Outlays					16,889,590.39
Net Income	250,857.76	3,434,535.09	242,575.78	54,066,467.71	156,592,698.67
15. La Carlota City					
Receipts					
Tax Revenue	16,547,525.49	24,204,859.16			
- Real Property Tax			11,609,552.89	12,094,860.03	
- Business Tax			3,827,814.96	4,018,561.73	
- Others			563,752.07	505,209.82	
IRA	88,030,557.00	94,643,719.00	104,964,608.51	111,911,873.16	
Others	3,160,858.18	4,725,207.45	4,486,658.18	5,241,297.77	
Sub-total	107,738,940.67	123,573,785.61	125,452,386.61	133,771,802.51	0.00
Expenditures					
Personal Services	43,476,318.68	51,522,162.57	68,872,425.64	76,896,797.70	
MOOE	33,792,991.92	36,365,892.40	47,162,341.85	42,886,121.35	
Others	6,413,169.02		11,148,603.47	6,598,888.20	
Sub-total	83,682,479.62	87,888,054.97	127,183,370.96	126,381,807.25	0.00
Net Operating Income	24,056,461.05	35,685,730.64	(1,730,984.35)	7,389,995.26	0.00
Add: Borrowing					
Surplus (Income from prior years)		2,394,040.10	23,599,844.08	21,868,859.73	
Less: Capital Outlays	21,662,420.95	14,479,926.66			
Net Income	2,394,040.10	23,599,844.08	21,868,859.73	29,258,854.99	0.00

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
16. La Castellana					
Receipts					
Tax Revenue					
- Real Property Tax	788,415.15	1,083,298.93	1,056,856.58	1,330,000.00	1,150,000.00
- Business Tax	568,700.43	668,072.53	687,843.66	1,200,000.00	1,200,000.00
- Others	115,374.58	192,172.81	198,474.22	450,000.00	183,500.00
IRA	16,648,251.60	18,041,214.00	22,743,369.58	25,844,918.00	30,000,000.00
Others	873,813.74	1,252,842.62	1,311,546.87	1,510,700.00	1,341,000.00
Sub-total	18,994,554.90	21,237,600.89	25,998,090.91	30,335,618.00	33,874,500.00
Expenditures					
Personal Services	11,228,049.78	12,965,790.74	16,754,356.88	19,886,712.78	21,702,537.48
MOOE	3,321,251.98	3,861,294.53	3,783,099.93	3,350,000.00	3,734,223.32
Others	3,142,924.66	3,517,886.00	4,812,026.78	7,093,364.50	8,258,325.00
Sub-total	17,692,226.42	20,344,971.27	25,349,483.59	30,330,077.28	33,695,085.80
Net Operating Income	1,302,328.48	892,629.62	648,607.32	5,540.72	179,414.20
Add: Borrowing		1,800,000.00			
Surplus (Income from prior years)		300,000.00			
Less: Capital Outlays	280,889.20	2,735,090.73	583,035.00		175,000.00
Net Income	1,021,439.28	257,619.89	65,572.32	5,540.72	4,414.20
17. Manapla					
Receipts					
Tax Revenue					
- Real Property Tax	1,177,065.82	918,054.96	1,276,460.77	920,197.51	
- Business Tax	691,273.81	1,010,905.48	956,180.63	772,243.69	
- Others	81,381.74	187,690.07	200,183.84	151,746.23	
IRA	12,439,420.20	13,507,150.00	17,157,210.31	18,588,443.00	
Others	848,235.93	1,031,294.79	1,231,976.55	1,542,564.51	
Sub-total	15,237,377.50	16,655,095.30	20,822,012.10	21,975,194.94	0.00
Expenditures					
Personal Services	11,665,443.02	11,649,270.45	13,965,847.33	16,309,384.00	
MOOE	2,189,539.60	1,822,001.82	2,025,387.51	1,999,518.38	
Others	2,725,519.10	2,573,972.39	3,002,358.47	2,949,553.41	
Sub-total	16,580,501.72	16,045,244.66	18,993,593.31	21,258,455.79	0.00
Net Operating Income	(1,343,124.22)	609,850.64	1,828,418.79	716,739.15	0.00
Add: Borrowing					
Surplus (Income from prior years)	4,757,481.46	2,983,768.42	1,883,403.28	2,368,739.75	
Less: Capital Outlays	121,926.75	10,080.00	122,203.75		
Net Income	3,292,430.49	3,583,539.06	3,589,618.32	3,085,478.90	0.00
18. Moises Padilla					
Receipts					(As of June 30, '99)
Tax Revenue					
- Real Property Tax	500,083.00	541,942.38	733,971.75	665,501.45	350,945.90
- Business Tax	69,368.00	175,873.55	171,192.78	231,908.47	211,529.00
- Others	126,715.10	205,566.78	222,679.08	285,021.10	243,064.00
IRA	11,071,441.00	11,983,879.00	14,851,604.07	15,816,124.33	9,718,284.00
Others	1,769,091.22	1,161,046.27	1,004,488.74	1,529,944.11	1,031,394.94
Sub-total	13,536,698.32	14,068,307.98	16,983,936.42	18,528,499.46	11,555,217.84
Expenditures					
Personal Services	8,786,817.02	9,798,336.25	11,384,583.15	13,546,610.69	6,758,681.39
MOOE	3,230,441.60	2,087,081.12	2,860,165.48	2,301,145.73	1,126,459.38
Others					
Sub-total	12,017,258.62	11,885,417.37	14,244,748.63	15,847,756.42	7,885,140.77
Net Operating Income	1,519,439.70	2,182,890.61	2,739,187.79	2,680,743.04	3,670,077.07
Add: Borrowing					
Surplus (Income from prior years)	900,000.00		5,653,202.59		
Less: Capital Outlays	1,173,318.60	526,034.89	6,667,019.27	2,537,208.35	258,853.04
Net Income	1,246,121.10	1,656,855.72	1,725,371.11	143,534.69	3,411,224.03

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
19. Murcia					
Receipts					
Tax Revenue		1,885,608.00	1,846,486.00	2,166,699.00	
- Real Property Tax	1,213,230.48				
- Business Tax	249,044.62				
- Others	220,872.76				
IRA	17,623,512.00	22,066,254.00	30,094,359.00	29,611,897.00	
Others	11,016.30	1,613,473.00		1,157,850.00	
Sub-total	19,317,676.16	25,565,335.00	31,940,845.00	32,936,446.00	0.00
Expenditures					
Personal Services	11,402,162.93	16,447,316.00	22,176,572.00	24,027,972.00	22,967,668.35
MOOE	1,876,000.00	7,431,175.00	7,624,129.00	9,337,565.00	2,340,412.60
Others					
Sub-total	13,278,162.93	23,878,491.00	29,800,701.00	33,365,537.00	25,308,080.95
Net Operating Income	6,039,513.23	1,686,844.00	2,140,144.00	(429,091.00)	(25,308,080.95)
Add: Borrowing			5,811,270.00	179,730.00	
Surplus (Income from prior years)		3,475,261.00	5,528,199.00	4,015,172.00	
Less: Capital Outlays		2,001,094.00	7,298,677.00	814,200.00	
Net Income	6,039,513.23	3,161,011.00	6,180,936.00	2,951,611.00	(25,308,080.95)
20. Pontevedra					
Receipts					
Tax Revenue					
- Real Property Tax	1,018,016.79	913,326.75	839,770.27	1,030,668.85	530,286.77
- Business Tax	273,929.69	323,403.81	439,646.12	787,369.80	420,392.22
- Others	127,285.20	127,656.39	233,596.85	309,760.65	136,490.04
IRA	12,395,077.00	13,457,528.00	16,692,243.00	18,089,853.81	9,233,045.00
Others	1,110,508.82	1,546,725.19	1,658,613.77	1,940,238.35	781,392.73
Sub-total	14,924,817.50	16,368,640.14	19,863,870.01	22,157,891.46	11,101,606.76
Expenditures					
Personal Services	8,508,860.83	9,076,996.14	10,465,103.31	13,180,417.21	5,569,196.12
MOOE	3,476,307.88	4,630,195.03	5,463,286.36	4,578,093.24	1,890,622.07
Others					
Sub-total	11,985,168.71	13,707,191.17	15,928,389.67	17,758,510.45	7,459,818.19
Net Operating Income	2,939,648.79	2,661,448.97	3,935,480.34	4,399,381.01	3,641,788.57
Add: Borrowing			1,070,000.00		
Surplus (Income from prior years)	2,939,648.79	2,661,448.97	5,005,480.34	4,399,381.01	3,641,788.57
Less: Capital Outlays	2,189,990.08	1,922,475.75	9,134,072.96	3,957,556.45	523,897.41
Net Income	749,658.71	738,973.22	(4,128,592.62)	441,824.56	3,117,891.16
21. Pulupandan					
Receipts					
Tax Revenue					
- Real Property Tax	1,079,056.70	1,100,763.97	1,083,981.23	1,056,690.24	1,087,585.15
- Business Tax	1,163,524.03	1,033,092.11	1,533,760.89	1,331,383.86	809,807.97
- Others	177,993.29	917,492.52	1,228,288.68	1,891,037.60	154,258.32
IRA	8,108,451.00	8,798,256.00	11,328,607.88	12,185,855.00	7,384,596.00
Others	1,774,701.52	1,608,091.03	1,201,508.77	1,085,902.49	650,563.07
Sub-total	12,303,726.54	13,457,695.63	16,376,147.45	17,550,869.19	10,086,810.51
Expenditures					
Personal Services	7,186,105.40	8,147,535.86	10,207,957.08	10,770,033.05	5,828,182.74
MOOE	4,574,149.04	4,815,129.43	5,639,045.99	6,441,030.78	3,136,680.42
Others	52,300.00	34,256.00	277,144.00	51,000.00	196,315.00
Sub-total	11,812,554.44	12,996,921.34	16,124,147.07	17,262,063.83	9,161,178.16
Net Operating Income	491,172.10	460,774.29	252,000.38	288,805.36	925,632.35
Add: Borrowing					
Surplus (Income from prior years)	569,651.55	583,623.66	785,008.39	766,442.41	
Less: Capital Outlays					
Net Income	1,060,823.65	1,044,397.95	1,037,008.77	1,055,247.77	925,632.35

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
22. Sagay City					
Receipts					
Tax Revenue					
- Real Property Tax	3,028,487.47	4,238,082.14	5,945,088.53	6,530,621.63	
- Business Tax	2,383,135.41	2,556,468.91	3,059,701.87	3,603,248.68	
- Others	481,917.97	565,755.47	608,306.10	687,944.40	
IRA	30,027,463.00	32,602,381.00	168,577,754.60	175,966,010.00	
Others	8,422,339.19	13,473,877.59	17,749,631.67	22,257,348.58	
Sub-total	44,343,343.04	53,436,565.11	195,940,482.77	209,045,173.29	0.00
Expenditures					
Personal Services	20,545,953.00	17,476,156.00	70,611,771.44	90,518,987.57	
MOOE	14,191,734.96	9,775,252.22	53,218,951.04	61,916,163.75	
Others	2,392,283.00	1,916,147.00			
Sub-total	37,129,970.96	29,167,555.22	123,830,722.48	152,435,151.32	0.00
Net Operating Income	7,213,372.08	24,269,009.89	72,109,760.29	56,610,021.97	0.00
Add: Borrowing					
Surplus (Income from prior years)				22,000,000.00	
Less: Capital Outlays	6,346,354.49	6,071,891.08	53,511,664.33	59,649,919.66	
Net Income	867,017.59	18,197,118.81	18,598,095.96	18,960,102.31	0.00
23. Salvador Benedicto					
Receipts					
Tax Revenue					
- Real Property Tax	50,261.33		76,511.67	131,585.12	85,090.13
- Business Tax	52,369.23		84,110.24	73,612.00	37,858.49
- Others	177,081.10		161,898.17	301,781.89	199,998.36
IRA	8,012,737.00		11,469,551.98	12,546,245.00	8,287,691.00
Others	791,004.11		150,000.00	1,000,000.00	
Sub-total	9,083,452.77	0.00	11,942,072.06	14,053,224.01	8,610,637.98
Expenditures					6,708,400.35
Personal Services	5,108,634.18		5,657,452.00	8,402,980.00	
MOOE	3,757,961.16		4,319,257.10	2,336,592.27	
Others					
Sub-total	8,866,595.34	0.00	9,976,709.10	10,739,572.27	6,708,400.35
Net Operating Income	216,857.43	0.00	1,965,362.96	3,313,651.74	1,902,237.63
Add: Borrowing					
Surplus (Income from prior years)	595,011.61		811,699.58	1,937,062.54	
Less: Capital Outlays	1,335,412.86		840,000.00		
Net Income	(523,543.82)	0.00	1,937,062.54	5,250,714.28	1,902,237.63
24. San Carlos City					
Receipts					
Tax Revenue					
- Real Property Tax	7,235,936.22	6,908,130.89	7,711,970.19	5,255,913.17	
- Business Tax	3,663,819.81	4,668,919.99	4,892,102.70	5,428,160.55	
- Others	802,658.08	982,543.31	1,190,757.27	1,242,701.36	
IRA	157,653,510.00	169,098,560.00	184,090,282.93	185,308,007.47	
Others	15,272,536.36	20,509,943.99	30,720,212.45	33,245,243.69	
Sub-total	184,628,460.47	202,168,098.18	228,605,325.54	230,480,026.24	0.00
Expenditures					
Personal Services	56,473,489.78	72,019,458.43	96,225,536.21	89,866,741.09	
MOOE	32,346,243.68	38,433,434.77	49,040,151.01	62,781,578.31	
Others	67,371,071.66	31,569,768.79	70,053,555.45	39,380,979.49	
Sub-total	156,190,805.12	142,022,661.99	215,319,242.67	192,029,298.89	0.00
Net Operating Income	28,437,655.35	60,145,436.19	13,286,082.87	38,450,727.35	0.00
Add: Borrowing					
Surplus (Income from prior years)	52,342,095.88	43,105,501.92	72,038,089.26	57,100,868.66	
Less: Capital Outlays	49,466,107.79	42,019,452.47	31,709,076.56	30,349,207.46	
Net Income	31,313,643.44	61,231,485.64	53,615,095.57	65,202,388.55	0.00

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
25. San Enrique					
Receipts					
Tax Revenue					
- Real Property Tax	273,659.05	294,175.60	278,457.38	412,904.65	400,000.00
- Business Tax	127,051.61	185,489.72	170,842.15	166,428.81	174,000.00
- Others	64,320.96	82,878.77	117,031.25	110,075.81	99,500.00
IRA	7,389,576.00	8,009,911.00	10,347,909.11	11,082,022.60	13,717,226.00
Others	342,920.11	322,877.45	351,977.99	438,568.46	244,400.00
Sub-total	8,197,527.73	8,895,332.54	11,266,217.88	12,210,000.33	14,635,126.00
Expenditures					
Personal Services	5,933,965.67	6,489,647.99	7,820,944.04	9,197,912.78	10,311,964.21
MOOE	1,730,485.61	1,585,705.12	2,949,783.93	2,463,115.67	4,322,361.00
Others	134,886.00	455,716.20	7,000.00	0.00	0.00
Sub-total	7,799,337.28	8,531,069.31	10,777,727.97	11,661,028.45	14,634,325.21
Net Operating Income	398,190.45	364,263.23	488,489.91	548,971.88	800.79
Add: Borrowing	19,989.52	7,047.24	16,022.29	927,558.94	0.00
Surplus (Income from prior years)	857,883.40	626,378.64	863,405.28	12,346.41	799,151.48
Less: Capital Outlays	649,684.72	134,285.80	440,358.54	689,725.75	0.00
Net Income	626,378.65	863,403.31	927,558.94	799,151.48	799,952.27
26. Silay City					
Receipts					
Tax Revenue					
- Real Property Tax	5,505,000.00	6,155,000.00	8,255,000.00	10,305,000.00	11,305,000.00
- Business Tax	2,783,000.00	3,819,100.00	5,401,000.00	6,583,000.00	7,583,000.00
- Others	11,211,600.00	6,984,500.00	17,549,700.00	8,951,000.00	13,646,000.00
IRA	120,000,000.00	126,491,811.00	150,000,000.00	165,000,000.00	165,000,000.00
Others					
Sub-total	139,499,600.00	143,450,411.00	181,205,700.00	190,839,000.00	197,534,000.00
Expenditures					
Personal Services	45,236,362.25	56,934,860.36	68,250,312.96	89,759,479.49	94,554,280.34
MOOE	28,096,488.32	26,801,175.77	35,711,742.22	39,386,460.67	41,915,901.50
Others	49,024,314.00	58,057,576.29	74,671,167.36	60,967,281.88	61,060,789.35
Sub-total	122,357,164.57	141,793,612.42	178,633,222.54	190,113,222.04	197,530,971.19
Net Operating Income	17,142,435.43	1,656,798.58	2,572,477.46	725,777.96	3,028.81
Add: Borrowing		10,000,000.00			
Surplus (Income from prior years)					
Less: Capital Outlays					
Net Income	17,142,435.43	11,656,798.58	2,572,477.46	725,777.96	3,028.81
27. Sipalay					
Receipts					
Tax Revenue					
- Real Property Tax	2,004,368.00	2,313,919.00	2,343,411.00	1,683,026.00	
- Business Tax	415,911.00	764,259.00	901,941.00	960,889.00	
- Others	364,432.00	544,231.00	3,759,267.00	3,540,176.00	
IRA	20,655,857.00	22,337,809.00	26,725,138.00	29,533,349.00	
Others	1,436,629.00	2,019,968.00	1,337,772.00	1,685,826.00	
Sub-total	24,877,197.00	27,980,186.00	35,067,529.00	37,403,266.00	0.00
Expenditures					
Personal Services	11,562,341.00	12,933,008.00	20,502,418.00	19,375,902.00	
MOOE	7,380,381.00	8,746,140.00	8,879,461.00	12,708,244.00	
Others					
Sub-total	18,942,722.00	21,679,148.00	29,381,879.00	32,084,146.00	0.00
Net Operating Income	5,934,475.00	6,301,038.00	5,685,650.00	5,319,120.00	0.00
Add: Borrowing		50,000.00	3,270,000.00		
Surplus (Income from prior years)	5,934,475.00	6,351,038.00	8,955,650.00	5,319,120.00	
Less: Capital Outlays	5,744,070.00	1,988,089.00	7,386,894.00	4,141,928.00	
Net Income	6,124,880.00	10,713,987.00	10,524,406.00	6,496,312.00	0.00

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
28. Talisay City					
Receipts					
Tax Revenue					
- Real Property Tax	2,723,727.78	2,589,735.80	3,325,637.82	7,579,276.32	2,985,463.57
- Business Tax	1,924,987.66	2,420,289.16	2,629,274.88	3,152,692.97	3,132,616.38
- Others	348,364.28	396,821.45	462,651.90	547,420.21	578,084.01
IRA	17,711,009.00	19,237,606.00	24,493,892.42	26,710,110.00	56,443,445.00
Others	2,083,972.80	2,712,467.80	3,726,788.19	3,485,184.55	1,628,028.46
Sub-total	24,792,061.52	27,356,920.21	34,638,245.21	41,474,684.05	64,767,637.42
Expenditures					
Personal Services	15,292,190.54	17,477,462.68	21,606,156.37	27,714,034.06	13,300,247.24
MOOE	8,942,429.17	8,791,914.13	18,981,185.94	17,621,231.59	8,133,543.81
Others					
Sub-total	24,234,619.71	26,269,376.81	40,587,342.31	45,335,265.65	21,433,791.05
Net Operating Income	557,441.81	1,087,543.40	(5,949,097.10)	(3,860,581.60)	43,333,846.37
Add: Borrowing		8,500,000.00	7,200,000.00		
Surplus (Income from prior years)	557,441.81	9,587,543.40	1,250,000.00	(3,860,581.60)	43,333,846.37
Less: Capital Outlays	7,584,113.16	14,086,247.78	4,770,252.86	318,287.67	260,321.30
Net Income	(6,469,229.54)	5,088,839.02	(2,269,349.96)	(8,039,450.87)	86,407,371.44
29. Toboso					
Receipts					
Tax Revenue					
- Real Property Tax	630,412.18	613,668.23	789,741.68	728,942.68	811,857.00
- Business Tax	596,727.90	571,673.64	558,998.81	481,614.20	614,482.00
- Others	99,448.86	137,373.70	159,982.40	147,542.97	195,398.00
IRA	11,669,946.00	12,472,483.00	16,239,569.78	17,638,689.00	18,567,041.00
Others	888,949.14	779,454.72	975,660.33	1,003,453.03	459,837.00
Sub-total	13,885,484.08	14,574,653.29	18,723,953.00	20,000,241.88	20,648,615.00
Expenditures					
Personal Services	8,223,378.15	9,357,232.95	12,185,421.14	13,684,511.83	14,177,658.65
MOOE	3,342,332.16	2,223,803.59	3,956,678.85	3,352,726.96	3,976,956.35
Others	753,859.52	888,624.84	1,610,632.70	960,439.91	2,494,000.00
Sub-total	12,319,569.83	12,469,661.38	17,752,732.69	17,997,678.70	20,648,615.00
Net Operating Income	1,565,914.25	2,104,991.91	971,220.31	2,002,563.18	0.00
Add: Borrowing					
Surplus (Income from prior years)					
Less: Capital Outlays					
Net Income	1,565,914.25	2,104,991.91	971,220.31	2,002,563.18	0.00
30. Valladolid					
Receipts					
Tax Revenue					
- Real Property Tax	220,699.72	230,967.10	316,646.69	331,729.93	253,099.31
- Business Tax	252,138.78	282,174.56	261,108.70	337,399.39	220,699.00
- Others					
IRA	9,720,480.00	10,550,552.00	13,294,689.78	14,334,090.85	9,373,156.00
Others					
Sub-total	10,193,318.50	11,063,693.66	13,872,445.17	15,003,220.17	9,846,954.31
Expenditures					
Personal Services	5,745,826.62	6,667,796.56	8,473,505.00	11,075,564.76	4,883,561.63
MOOE	3,113,833.01	4,452,983.63	5,361,687.30	5,163,872.91	1,992,068.57
Others					
Sub-total	8,859,659.63	11,120,780.19	13,835,192.30	16,239,437.67	6,875,630.20
Net Operating Income	1,333,658.87	(57,086.53)	37,252.87	(1,236,217.50)	2,971,324.11
Add: Borrowing					
Surplus (Income from prior years)					
Less: Capital Outlays	220,543.04	408,243.38	642,015.47	154,472.50	
Net Income	1,113,115.83	(465,329.91)	(604,762.60)	(1,390,690.00)	2,971,324.11

Table 6.2.1 Income and Expenditures of Municipalities, 1995 - 1999 (cont'd)

Municipality/City	1995	1996	1997	1998	1999
31. Victorias City					
Receipts					
Tax Revenue					
- Real Property Tax	4,039,408.90	5,537,567.68	2,808,233.31	4,076,610.30	3,419,611.08
- Business Tax	10,794,873.66	9,753,348.48	8,592,382.20	5,672,235.66	3,351,335.80
- Others	560,776.31	689,602.37	737,476.32	955,686.16	528,593.85
IRA	18,332,452.00	19,954,080.00	25,398,343.07	27,666,787.00	52,883,065.00
Others	3,497,771.57	6,346,998.99	10,526,337.25	9,180,409.28	2,225,321.43
Sub-total	37,225,282.44	42,281,597.52	48,062,772.15	47,551,728.40	62,407,927.16
Expenditures					
Personal Services	21,731,427.94	24,916,821.04	27,718,156.50	34,167,202.17	17,583,006.67
MOOE	15,166,728.35	14,471,203.16	18,420,964.33	20,783,148.51	9,150,463.65
Others					2,192,040.47
Sub-total	36,898,156.29	39,388,024.20	46,139,120.83	54,950,350.68	28,925,510.79
Net Operating Income	327,126.15	2,893,573.32	1,923,651.32	(7,398,622.28)	33,482,416.37
Add: Borrowing		1,000,000.00		12,862,500.00	5,925,000.00
Surplus (Income from prior years)	5,607,738.55	2,666,900.03	2,993,487.20	214,936.00	(7,317,676.48)
Less: Capital Outlays	3,369,677.86	3,904,915.97	2,886,866.93	11,252,197.83	7,033,244.75
Net Income	2,565,186.84	2,655,557.38	2,030,271.59	(5,573,384.11)	25,056,495.14

6.2.2 Availability of Funds

Table 6.2.2 Past Internal Revenue Allotment to Municipalities from Central Government

	1995	1996	1997	1998	1999
1. IRA to all municipalities (National total)	18,768,952,000	19,607,715,553	24,849,000,000	28,245,815,434	32,905,200,000
2. IRA to municipalities in Negros Occidental					
<i>Total</i>	<i>1,084,262,590</i>	<i>1,212,042,707</i>	<i>1,528,036,588</i>	<i>1,759,996,477</i>	<i>2,216,678,391</i>
Bago City	155,441,881	166,866,798	185,599,254	188,590,280	205,487,650
Binalbagan	15,741,554	17,071,749	20,990,938	21,679,435	27,977,055
Cadiz City	172,429,543	184,991,339	195,469,530	198,301,296	215,958,372
Calatrava	21,640,998	23,333,925	29,924,727	31,255,840	40,302,239
Candoni	9,032,552	9,719,381	12,043,011	12,498,173	15,927,185
Cauayan	25,589,850	27,673,927	33,310,990	34,790,580	44,981,595
Enrique B. Magalona	14,092,182	15,315,479	19,509,057	20,096,174	25,995,693
Escalante	18,704,849	21,342,914	26,777,354	27,682,895	35,921,345
Himamaylan	0	25,860,255	31,068,042	31,971,444	41,360,489
Hinigaran	0	20,062,166	24,328,483	25,004,161	32,417,929
Hinoba-an (Asia)	16,502,062	17,779,638	21,236,372	19,416,224	28,595,228
Ilog	16,067,393	17,362,038	20,310,415	21,061,837	27,037,983
Isabela	14,618,663	15,850,971	19,417,345	19,552,363	25,911,548
Kabankalan City	36,911,324	39,973,136	48,837,139	247,371,306	269,532,729
La Carlota City	88,030,557	94,643,719	104,972,943	106,932,331	115,520,947
La Castellana	16,648,251	18,041,216	22,734,993	23,504,707	29,594,971
Manapla	12,439,420	13,507,155	17,169,033	17,680,010	22,808,280
Moises Padilla	11,071,441	11,983,876	14,664,073	15,133,827	19,436,569
Murcia	17,623,512	19,026,110	23,845,840	23,899,403	30,739,706
Pontevedra	12,395,077	13,457,527	16,677,555	17,179,772	22,159,309
Pulupandan	8,108,451	8,798,257	11,343,654	11,544,494	14,769,194
Sagay City	30,027,463	32,602,381	168,328,082	175,966,010	191,756,514
Salvador Benedicto	8,012,737	8,628,713	11,455,199	11,917,246	15,251,244
San Carlos City	157,653,510	169,098,561	184,132,306	186,452,400	202,728,951
San Enrique	7,389,576	8,009,912	10,334,407	10,498,753	13,389,126
Silay City	120,000,000	126,489,035	147,391,667	150,231,596	163,643,070
Sipalay	20,655,857	22,337,811	26,715,694	27,978,962	36,186,725
Talisay City	17,711,009	19,237,607	24,493,946	25,304,315	35,464,263
Toboso	11,669,946	12,472,480	16,244,841	16,710,337	21,480,104
Valladolid	9,720,480	10,550,548	13,292,978	13,579,665	17,423,026
Victorias City	18,332,452	19,954,083	25,416,720	26,210,641	32,919,352
3. Share (%) in the total by municipality					
<i>Total</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
Bago City	14.34	13.77	12.15	10.72	9.27
Binalbagan	1.45	1.41	1.37	1.23	1.26
Cadiz City	15.90	15.26	12.79	11.27	9.74
Calatrava	2.00	1.93	1.96	1.78	1.82
Candoni	0.83	0.80	0.79	0.71	0.72
Cauayan	2.36	2.28	2.18	1.98	2.03
Enrique B. Magalona	1.30	1.26	1.28	1.14	1.17
Escalante	1.73	1.76	1.75	1.57	1.62
Himamaylan	0.00	2.13	2.03	1.82	1.87
Hinigaran	0.00	1.66	1.59	1.42	1.46
Hinoba-an (Asia)	1.52	1.47	1.39	1.10	1.29
Ilog	1.48	1.43	1.33	1.20	1.22
Isabela	1.35	1.31	1.27	1.11	1.17
Kabankalan City	3.40	3.30	3.20	14.06	12.16
La Carlota City	8.12	7.81	6.87	6.08	5.21
La Castellana	1.54	1.49	1.49	1.34	1.34
Manapla	1.15	1.11	1.12	1.00	1.03
Moises Padilla	1.02	0.99	0.96	0.86	0.88
Murcia	1.63	1.57	1.56	1.36	1.39
Pontevedra	1.14	1.11	1.09	0.98	1.00
Pulupandan	0.75	0.73	0.74	0.66	0.67
Sagay City	2.77	2.69	11.02	10.00	8.65
Salvador Benedicto	0.74	0.71	0.75	0.68	0.69
San Carlos City	14.54	13.95	12.05	10.59	9.15
San Enrique	0.68	0.66	0.68	0.60	0.60
Silay City	11.07	10.44	9.65	8.54	7.38
Sipalay	1.91	1.84	1.75	1.59	1.63
Talisay City	1.63	1.59	1.60	1.44	1.61
Toboso	1.08	1.03	1.06	0.95	0.97
Valladolid	0.90	0.87	0.87	0.77	0.79
Victorias City	1.69	1.65	1.66	1.49	5.73

Sources: (1) Department of Budget and Management and (2) Bureau of Local Government Finance.

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
1. Municipal Development Finance (MDF)	<p>Multilateral lending sources for LGU projects have principally come from three main sources, the World Bank (WB), the Asian Development Bank (ADB), and the Overseas Economic Cooperation Fund of Japan (OECF). The funds have been channeled through the MDF, a revolving fund created by a Presidential Decree in March 1984 to consolidate the fragmented and uncoordinated borrowing and grant system to the LGUs. The MDF is administered by the Bureau of Local Government Finance (BLGF) under the DOF. Before the creation of the MDF, the donor agencies required a central agency for monitoring the foreign loans and grants. With the establishment of the MDF, a separate monitoring agency was no longer needed, and thus, the MDF became the conduit for foreign loans and grants. The MDF also played the role of a monitoring unit and project accounting support for foreign funds directed to the LGUs.</p>	<p>The MDF operates under the direction of a Policy Governing Board chaired by the DOF with three other Government agencies as members, i.e. the Economic and Development Authority (NEDA), the Department of Interior and Local Government (DILG) and the Department of Budget and Management (DBM). The MDF consists of two major units, the Financial Unit, headed by the Executive Director of the BLGF and the Central Projects Office (CPO). The project implementation unit for each project located in participating agencies in the MDF also provides technical assistance to LGUs for project identification and feasibility studies and for other projects such as the Real Property Tax Administration Project, which assisted more than 800 LGUs in improving their real property tax collection.</p>	<p>The MDF was created as a revolving fund and made available to LGUs in undertaking their socio-economic development programs. It was active in providing loans to LGUs in the 1980s when the GIFs stopped lending to the LGUs on account of mounting uncollectible accounts. During this time, the MDF channeled some \$7.9 billion of long-term finance to LGUs. LGU projects that have been benefited from assistance from the MDF include:</p> <ul style="list-style-type: none"> • public markets • heavy equipment and machinery • bus terminals • slaughterhouses • drainage and waterworks • roads • solid waste • telephone systems • health centers <p>At present, nine loans have been provided by the World Bank, ADB, OECF and Eximbank of Korea through the MDF.</p> <p>Total loans extended under the nine projects for all regions amounts to \$290 million (P10.7 billion at current exchange rates). The greater access by higher income LGUs to the MDF credit facility can be attributed to the requirement of financial capacity and the ability of the LGU to repay the loans. Other criteria also favor the higher income LGUs, such as urban population minimum requirements, and annual population growth rates, annual income and equity requirements and commitment to establish a separate project office with full time staff. Considering that the higher income LGUs have access to</p>	<p>Terms of Credit. The MDF is, at present, the only source of credit finance that is offering long-term financing with a maturity period of 15-25 years. The interest rate is currently set at 2 percent above the weighted average interest rate of 61-90 day domestic time deposits. No collateral is required since the IRA intercept mechanism guarantees the loan repayment. Aside from providing loans, the MDF can also provide a package of a loan and a grant, which effectively lowers the LGU's borrowing costs. The loan component carries the terms and conditions set by the lender through the MDF. Because of the liberal terms of the MDF, particularly the long-term principal repayment feature, the MDF has been extremely attractive to LGUs.</p> <p>Funding Limitation. At the moment, MDF funding to the LGUs is experiencing constraints for several reasons:</p> <ul style="list-style-type: none"> • the increased demand for MDF credits by other developing countries; • funding limitations of the multilateral institutions that support the MDF; • constraints imposed by the government budgetary process and • increasingly limited eligibility for MDF assistance to the Philippines due to the increased economic development of the country. <p>First, the worldwide demand for MDF assistance and the increase in requirements by other less-developed countries in the world has constrained the availability of funds to meet the increased demand for MDF funds from the Philippines. The multilateral agencies, in the pursuit of poverty alleviation objectives, are shifting attention to poorer regions of the world such as Africa. Second, the multilateral institutions that support the MDF are experiencing funding limitations themselves and are encouraging LGUs to tap private sources of financing for development assistance worldwide. Third, the MDF's present lending capacity is constrained by the budgetary process of the Government. Each department of the national government observes a budgetary ceiling imposed by Congress and the Development Budget Coordinating Committee. In practice, the budget submission of the National Government departments, which include budgetary requests for MDF counterpart funds, are subject to the ceiling. Finally, as the Philippine economy progresses, its eligibility for increased MDF assistance is adversely affected, as one of the principal criteria for MDF assistance is the economic standing of the recipient country.</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
MDF (contd)			other sources of funding, the Government, in implementing its new vision for LGU financing, is discussing with the multilateral financing agencies, re-focusing MDF assistance toward less creditworthy LGUs.	<p>Assessment</p> <p>The MDF continues to be a major source of concessional credit finance for LGUs. Since its first loan (Municipal Development Project I of the World Bank), the MDF has been actively contributing to the economic development of LGUs by providing long-term financing for LGU projects. It is the long-term feature of MDF loans and the concessional rate that has attracted the LGUs. Lately, however, some LGUs have voiced concern regarding the long processing time of MDF loans. Therefore, steps need to be taken to streamline the approval process. At the same time, consistent with the new vision of the Government for LGU financing, the MDF is being re-oriented to be a more effective instrument in lending to lower class municipalities, which have limited access to private sources of capital. Reform of the MDF is being undertaken with World Bank assistance. Because of the favorable terms of MDF lending, the MDF is expected to continue to be attractive to LGUs for financing basic services.</p>
2. Local Water Utilities Administration (LWUA)	<p>In order to promote, develop and finance local water utilities, optimize public service water operations, and facilitate the improvement of local water services, the Local Water Utilities Administration (LWUA) was created in September 1972 under the Provincial Water Utilities Act. The LWUA is a specialized lending institution, which provides financing to water districts for water supply development, expansion and improvement. LWUA has evolved to be primarily a financing agency with the following functions.</p> <ul style="list-style-type: none"> • provide loans to qualified local water utilities for their capital expenditure programs; • establish standards for local water utilities such as water quality, design and construction of new or additional facilities for water supply, treatment, transmission and distribution, and for wastewater collection, treatment and disposal. 			

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
LWUA (contd)	<ul style="list-style-type: none"> • furnish technical assistance and personnel training programs for local water utilities; • effect systems integration, joint investments, water district annexation and de-annexation. <p>LWUA has, over the years, on-lent funds from ODA sources at concessionary rates. LWUA has extended loans to rural waterworks and sanitation associations, which are non-stock, non-profit cooperative associations, and franchised to operate rural water supply systems in remote areas where access to a water district is difficult. Many water districts have benefited from low-interest, long-term loans of up to 25 years with ample grace periods. However, because of funding source constraints from its donor agencies, LWUA has not been able to accommodate funding requests from all the water districts. As a result, some water districts (Bulacan, Metro Cebu, Puerto Princesa and Batanes have turned to alternative sources of financing such as BOT schemes and joint ventures).</p>			
3. DBP	Provide loans to qualified LGUs for projects which will enhance and facilitate the delivery of basic services to their constituents and at the same time, capture sizeable deposits from LGUs.	<p>To qualify under the Program, the province, municipality or city shall:</p> <ol style="list-style-type: none"> 1. have beneficiary population of at least 10,000; 2. perform important local, commercial, transportation, industrial, educational or similar activities; 3. have gross annual average revenues of at least ₱3.0 million over the last three years; 4. have balanced or surplus prospective income streams for the next three years (computation to be validated by the concerned RMT/Branch); 5. have no adverse findings from banks and major suppliers both for the LGU and the current Chief Executive and Treasurer; and 	<ol style="list-style-type: none"> 1. Revenue-generating projects include, but not limited to public markets, slaughter-houses, transport terminals, municipal water systems, storage/refrigeration facilities, and hospital/health facilities which are self-liquidating; 2. Projects under the PCCD-CEP are primarily designed for income generation by barangay residents who will be organized into 4 to 6 member groups which will be funded by the LGUs out of the loan proceeds from GFIs like DBM. Initially, the pilot operation will cover 40 pre-identified barangays located at the 20 priority provinces. 	<p>DBP Environmental Credit Facilities</p> <p>Environmental projects are actually eligible under all of DBP's credit facilities. Two of these facilities are dedicated to environmental credit funding. These are the Environmental Infrastructure Support Credit Program (or EISCP), and the Industrial Pollution Control Loan Project (or IPCLP). Both are policy-based lending programs to support investment projects of industrial enterprises in promoting the protection and enhancement of the quality of the environment.</p> <p>Environmental Infrastructure Support Credit Program</p> <p>EISCP is by far the most successful of all DBP's environmental credit facility. The project is actually just on its 1 and 1/2-year pilot stage with 5 Billion Yen (equivalent to about 1.4 Billion Pesos) funding from the OECF. Total loan approvals has reached ₱1.3 Billion, almost exhausting the total fund.</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
3. DBP		6. have shown efficiency in the collection of real estate and other local taxes based on the steady growth rates over the last three (3) years	<p>For the expanded operation, 4,000 out of 42,000 barangays will be targeted annually.</p> <p>3. Non-revenue generating projects include but are not limited to construction of roads and bridges, and acquisition of heavy equipment which are not intended to generate revenues but to enhance efficiency in the provision of services to their constituents</p> <p>4. The project to be financed shall have passed the first and second screening following the Simplified Screening Criteria of World Bank (available with DBP);</p> <p>5. The project to be financed shall be included in the approval of local development plan and public investment program (Local Government Code Section 296);</p> <p>6. The project shall be duly endorsed by the local council as evidenced by the relevant enabling resolution</p>	<p>With the success of EISCP, DBP is working with Japan's OECF to continue to extend a second tranche of the credit facility on a larger scale.</p> <p>Industrial Pollution Control Loan Project</p> <p>IPCLP is a DM 10 million credit facility entrusted to DBP by the KfW of Germany. Although smaller in amount, the IPCLP also offers concessional rates to industries, particularly the small to medium scale industries, who are intending to invest in environmental projects.</p> <p>More or less, both EISCP and IPCLP carry the same features, terms and conditions</p> <p>Comparative Features of Environmental Infrastructure Support Credit Program and Industrial Pollution Control Loan Project</p> <p><i>Amount:</i> Yen 5.158 Billion (United Facility) DM 10 Million (United Facility)</p> <p><i>Loan Denomination:</i> Pesos</p> <p><i>Purpose:</i> To provide financial assistance to environmental investment projects for pollution abatement and promotion of industrial efficiency. To support investment projects of new and existing industrial firms for the reduction of pollution and reduction of utilization of natural resources</p> <p><i>Eligible Borrowers:</i> Filipino citizens or corporations organized under the laws of the Philippines at least 70% of whose capital is owned by citizens of the Philippines. Existing and new SMEs with pre-funding asset size of P60 million or less.</p> <p><i>Interest Rate to End-Users:</i> 11% fixed p.a.</p> <p><i>Tenor:</i> 3 to 15 years with a maximum grace period of 5 years. Up to 10 years with a maximum grace period of two (2) years.</p> <p><i>Loan Size:</i> 80% of total project cost Maximum of 70% of the total investment cost or P24 million whichever is lower.</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
DBP (contd)				<p><i>Eligible Projects</i></p> <p>Four basic types of pollution control projects:</p> <ul style="list-style-type: none"> • Pollution treatment • Pollution minimization / clean technology • Toxic and hazardous waste substance management • Solid waste management <p>Investment in pollution reduction including improvement of occupational situation and/or the reduction of raw material inputs to cover waste minimization technology in industrial processes.</p> <p>THE CREDIT LOAN PROCESS</p> <p>All loan applications are accepted through the Lending Units at the Head Office and DBP Branches. The staff of these lending units have undergone training and are now familiar with the common environmental terms and practices. Lending Units advise applicants of the types of projects that are eligible for financing and conduct initial review of loan documents. All loan applications go through the usual credit evaluation at this stage.</p> <p>The Lending Units then request the Environmental Management Unit (EMU) for technical appraisal and evaluation of proposed projects. Sometimes, credit evaluation and technical appraisal are done simultaneously. EMU not only conducts paper review of the project but also site visits and inspection of the proposed project. The new thing here in this process, is that from mere evaluation of credit worthiness, EMU's endorsement and findings are now integrated into the CA submitted to proper authorities for credit approval. The project's impact and benefits are thus clearly presented. Along with the Account Officers, EMU also monitors progress of the project.</p> <p>a. Amount of Loan:</p> <p>a. <u>Window III Loans</u></p> <ol style="list-style-type: none"> 1. Revenue-Generating Projects - The minimum-maximum loan limits shall be ₱1 million and ₱50 million, respectively, subject to periodic review by WINCOM, and with a minimum equity participation of at least 15% of the total project cost. 2. PCCD-CEP Projects - ₱1.5 million per Barangay Business Center

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
DBP (cont'd)				<p>b. <u>Loans Secured by Deposits</u> - Total project cost but not to exceed 50% of the ADB deposits of the past six-month period reckoned from the preceding month which shall be maintained during the term of the loan and covered by a "Hold Out Agreement"</p> <p>b. Terms of Payment:</p> <p>a. <u>Window III Loans</u></p> <p>1. <u>Revenue-Generating Projects</u> - The term of the loan shall be kept within project requirements and projected cashflows. Maximum term of the loan is 12 years inclusive of a maximum grace period of 2 years. The loan shall be payable monthly, quarterly or semi-annually depending on the cash generation of the project.</p> <p>2. <u>PCCD-CEP Projects</u> - Maximum of 5 years inclusive of up to one year grace period payable quarterly. The on-lending terms from Barangay Business Centers to their respective group members is maximum of 2 years inclusive of up to 6 months grace period payable monthly.</p> <p>b. <u>Loans Secured by Deposits</u> - Maximum of five (5) years payable monthly</p> <p>c. Interest Rate:</p> <p>a. <u>Window III Loans</u> - Variable and reviewable every January 1 and July 1 based on prevailing 91-day T-Bill rate plus two (2%) provided that the rate is not higher than "AAAA".</p> <p><u>PCCDP-CEP</u> - The LGU shall be charged 12% p.a. to be passed on to the BBC without spread. The on-lending rate by BBC is 14% p.a.</p> <p>b. <u>Loans Secured by Deposits</u> - Based on the formula prescribed in ALMA Circular No. 01-95 covering the Revised Guidelines from Loans Secured by Deposits.</p> <p>d. Drawdown: Drawdown shall be on one time or in multiple basis. The loan proceeds shall be credited to a special project account to be opened by the LGU with DBP, withdrawals of which shall be subject to approved operating guidelines of the loan.</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
DBP (cont'd)				<p>e. Collateral Requirements:</p> <p><u>For Window III Loans:</u></p> <p>Loans with maturities beyond 5 years shall be secured by:</p> <ol style="list-style-type: none"> Registered first real estate mortgage and/or registered first chattel mortgage in favor of DBP, with loan values based on existing DBP policy, subject to final verification by DBP; Such other collateral or security arrangements as may be acceptable to DBP. <p>Loans with maturities of up to 5 years shall be on best effort basis. In addition, the following shall be obtained:</p> <ol style="list-style-type: none"> Assignment of specified portion/amount of the LGU's Internal Revenue Allotment (IRA) in favor of DBP in an amount at least equivalent to one (1) amortization payment which shall be maintained while the loan is outstanding. For PCCD-CEP Projects, this would be sufficient; Assignment of profits or income from the project to be financed until the loan is fully paid; Endorsement in favor of DBP of insurance policies on mortgaged properties. The insurance shall be placed, based on sound value, by DBP, through its appointed insurance broker. <p><u>For Loans Secured by Deposits:</u></p> <p>Project assets and deposit agreement with a minimum balance of 200% of the outstanding balance of the loan and shall automatically be applied to the loan in the event of default.</p> <p>f. Other Conditions</p> <ol style="list-style-type: none"> The LGU shall include appropriation for debt amortizations in its annual budget in accordance with the LGC until the loan shall have been fully paid. The LGU shall maintain Special Depository Account under the General Fund, where repayment of obligations to DBP shall take precedence after operating expenses of the project. Only when the debt amortizations have been satisfied will excess from part of the General Fund.

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
DBP (contd)				<p>c. The LGU shall open a CASA account for the assigned IRA with the understanding that DBP shall automatically offset the amortization for the period against this deposit account. A minimum balance equivalent to one amortization payment shall be imposed.</p> <p>d. The LGU shall execute a Deed or Undertaking making DBP its main depository bank.</p> <p>e. The LGU shall maintain a debt service cover of at least 1.2 times. Debt service coverage is defined as yearly revenue from all sources less operating costs and maintenance expenditures, divided by yearly debt service to all creditors.</p> <p>f. The LGU shall maintain constitute a Local Prequalification, Bids and Awards Committee (PBAC), which shall primarily be responsible for the conduct and prequalification of contractors, bidding, evaluation of bids and recommendation of awards concerning the Project, with at least one (1) DBP representative as an observer.</p> <p>g. The LGU shall constitute a Local Technical Committee, which shall primarily be concerned with providing technical assistance to the local PBAC, with at least one (1) DBP representative.</p> <p>h. The LGU shall commit to establish a project office with full-time staff and operating budget for project preparation/implementation.</p> <p>i. The LGU shall constitute and commission a competent consultancy firm to be tasked with validating and certifying the acceptability and compliance with the approved specifications of all acquired materials and supplies.</p> <p>j. The LGU shall only engage the professional services of such parties and commission such works as are customary for industrial development operations and projects similar to the financed project, which services must be reasonably priced, considering the quality and competence of the parties rendering them and in case of works, the technical quality and competitive costs of the same, if approved in writing by the DBP.</p> <p>k. The LGU shall submit resolution passed by the appropriate Sanggunian Board (Panlalawigan, Panlungsod or Pambayan), expressly authorizing the following</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
DBP (contd)				<p>1. The loan being contracted by the local Chief Executive;</p> <p>1. The Authority of the Local Chief Executive (Governor or Mayor) to negotiate and enter into the contract of the loan applied for and to mortgage or assign or otherwise into a collateral agreement to secure the payment of the loan applied for;</p> <p>2. The continuing assignment of the LGU's applicable portion of its IRA, realty taxes and all other revenues to DBP until the loan is fully paid;</p> <p>3. The continuing assignment of profits or income from the project/economic undertaking to be financed until the loan is fully paid;</p> <p>4. Authorization to the DBM for it to remit the IRA for deposit to the account of the LGU with DBP duly acknowledged/received by DBM, Manila;</p> <p>5. The authority for the Mayor and/or Treasurer to open and maintain deposit account with DBP where its IRA and revenues shall be deposited during the term of the loan; and</p> <p>6. Authority for DBP to debit the LGU's deposit account to cover payments of its loan obligation with the Bank.</p>
4. Philippine National Bank (PNB)	<p>Purpose of the Loan:</p> <p>1. To finance the establishment, development, or expansion of income generating projects such as:</p> <p>a) Revenue-Generating/Cost Savings</p> <ul style="list-style-type: none"> • Public Market • Trading Center/ Terminal • Water System (Construction/Expansion) • Asphalt Plant • Heavy Equipment • Telephone System • Commercial System • Slaughterhouse • Grains Procurement/ Trading • Post-Harvest Facilities 	<p>Prospects for Commercial Bank Lending to LGUs. Recently, commercial banks' attitude toward LGU financing has undergone a transformation. Some commercial banks now recognize that LGUs represent a potential market for credit lending because of the large financing requirements of LGUs associated with the devolution of basic services and infrastructure requirements. Other reasons for the attractiveness of LGUs as a growing market for commercial lending are:</p> <ul style="list-style-type: none"> • the increase in LGUs' share of the national wealth; • presence of a legal framework for LGU financing; • flexibility and expanded borrowing powers of LGUs under the LGC; 		<p>Eligible Borrowers:</p> <ul style="list-style-type: none"> • Municipality • City • Province <p>Amount of the Loan The amount of the loan is equivalent to the project's requirement (100%) but not to exceed the aggregate of five time (5x) the sum of the 20% portion of the Annual regular income and the Annual Internal Revenue Allotment (IRA) share of the LGU.</p> <p>Term of Loan Maximum of seven (7) years provided that amortization shall be payable on a monthly or quarterly basis. A longer term may be considered by PNB Board of Directors, if justified.</p> <p>Interest Rate Interest rates shall be prime rate based subject to periodic interest resetting.</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
PNB (contd)	<p>b) Others</p> <ul style="list-style-type: none"> • Irrigation • Renovation/Const. Of City/ Capital Town's Municipal Hall • Purchase of lots • Reclamation • Sports Complex • Diagnostic Equipment/Building • Road Construction/ Repair • Hospital Building with Pay Wards • School Building <p>2) To finance acquisition of property, plant, machinery, equipment, and necessary accessories for the implementation of the items enumerated in the preceding section</p> <p>Note: Combination of revenue & non-revenue generating project in one loan package.</p> <p>Philippine National Bank (PNB). Consistent with its mission of achieving an "enduring involvement in socio-civic endeavors that uplift the quality of life", the PNB is among the largest, most active institutions lending to LGUs. Until recently a GFI, PNB, which was privatized in May 1996, has total resources amounting to \$197 billion as of the end of 1996. Its loans to LGUs have reached \$11.4 billion as of end-March 1997 for 225 different projects.</p>	<ul style="list-style-type: none"> • increasing financial sophistication of some LGUs (some provinces are exploring private foreign financial instruments), and • the growing market opportunity in financing LGU infrastructure requirements (some \$20 billion are in the project pipeline of LGU BOT Projects). <p>Commercial lending to LGUs will also get a boost from the establishment of the LGU Guarantee Corporation, which will guarantee commercial loans to LGUs. In the past, the lack of a guarantee facility was a major factor that inhibited commercial lending to LGUs as commercial banks were concerned with the certainty of repayment. As the guarantee facility will provide the repayment "comfort" to commercial banks, it is expected that private commercial lending to LGUs will finally develop.</p>		<p>Collaterals</p> <ul style="list-style-type: none"> • Assignment of applicable regular income of the LGU, Internal Revenue Allotment share of LGU and Net Revenue generated by the project financed. • Chattel Mortgage of Equipment Financed by the Loan. • Real Estate of Local Government Units. <p>Standard Conditions</p> <p>a. Common Condition</p> <ol style="list-style-type: none"> 1. Submission of a Resolution of the Sangguniang Bayan/Panlungsod authorizing the loan and designating the Local Chief Executive (LCE) as the authorized signatory. The resolution should also contain the following: <ol style="list-style-type: none"> a) The continuing assignment to PNB of the project revenue if applicable, LGU's applicable portions of the Internal Revenue Allotment (IRA), realty taxes and all other revenues until the loan is fully paid; b) The authorization of the LGU to the Department of Budget and Management (DBM) for the remittance of all its IRA thru PNB for deposit to the LGU's account maintained with PNB; c) The duly notarized undertaking of the LCE and/or Treasurer to remit to PNB applicable portion of the LGU's realty taxes and other revenues on a monthly basis as payment of the amortizations on the loan; d) The authority for the LCE and/or Treasurer to maintain the LGU's deposit account with PNB wherein the project's revenues, the LGU's IRA, and other revenues shall be deposited until the loan is fully paid and the PNB to debit the LGU deposit accounts to cover payment of its obligations; e) The duly notarized undertaking of the LGU to include in its annual budget its loan obligations with PNB. 2. Submission of the LGU's letter-authorization to the DBM for the latter to remit all IRA directly to PNB for deposit to the LGU's account with PNB until the loan is fully paid, duly acknowledged /received for DBM, Manila.

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
PNB (cont'd)	<p>The types of projects that were lent to LGUs include income-generating and cost-saving projects such as commercial centers, public markets, transport terminals, slaughterhouses, power generators, water systems, construction projects and acquisition of heavy equipment. Other projects supported by PNB lending include: telecommunications facilities, grains procurement, and post-harvest facilities. Lending to the NCR accounted for 56% of the total amount (P6.3 billion).</p> <p>Luzon projects accounted for 26% (P3.0 billion), Visayas, 10% (P1.1 billion), and the rest was for Mindanao, 8% (P0.8 billion). On a per project basis, Luzon Projects averaged P31.0 million per project; Mindanao, P22.2 million and the Visayas at P20.6 million per project.</p> <p>Majority of the loans lent to LGUs were for heavy equipment, infrastructure and public markets</p>			<p>2. Submission of a duly notarized certification by LGU that:</p> <ol style="list-style-type: none"> the 20% limit provided under the law in the servicing of loan obligations have not been exceeded; Legible copies of the Loan Agreement and Security Agreement have been posted at the conspicuous place in the Municipality/City Hall/ Provincial Capitol; The proposed sources of repayment of the loan are available and not restricted by law. <p>3. PNB shall continue to be the LGU's principle depository Bank until such time the loan is fully paid.</p> <p>4. Approval and confirmation by the Sangguniang Bayan/Panlungsod of the terms of the covering Credit Agreement and all other documents executed by the LCE in the implementation of the loan.</p> <p>5. Undertaking by the LGU that they will not incur additional obligations/ indebtedness without the written consent of PNB which consent will not be unreasonably withheld.</p> <p>6. Any amount in excess of the approved amount of loan shall be shouldered by the LGU.</p> <p>7. Subject to SEL Cir. 4-315/94 of May 17, 1994 on Interest Rate Setting and Adjustments.</p> <p>8. All insurable improvements financed by the loan shall be insured up to the full insurable value and policy endorsed in favor of the Bank.</p> <p>9. All applicable provisions of PNB's standard loan conditions and such other conditions our Legal Department may impose to protect the interest of the Bank.</p> <p>b. Loans for Machinery/Equipment/Vehicle</p> <ol style="list-style-type: none"> Loan proceeds shall be paid directly to the supplier/seller of the equipment/ vehicle in an amount equal to the selling price or amount of the approved loan whichever is lower. If to be imported, the letter of credit shall be opened at the Bank and the loan proceeds be equivalent to the <ol style="list-style-type: none"> corresponding import bill upon negotiation computed at the prevailing selling rate at the time of negotiation.

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
PNB (contd)				<p>b) amount of the LC in case of cash LC computed at the prevailing selling rate on the LC opening date.</p> <ol style="list-style-type: none"> 1) LGU to execute a chattel mortgage on the equipment within 60 days upon acquisition. 2) Submission of a duly notarized certification that all government policies rules and regulations in the award of the contract to the local supplier have been complied with. <p>For Construction/Development Loans</p> <ol style="list-style-type: none"> 1) Releases shall be staggered basis which are to be made only upon presentation of progress report and billing certified by the project engineer and the Municipal/City/Provincial Engineer and approved by the project owner and to be validated by the Bank appraisers. 2) Where the contract calls for a mobilization outlay, such amount for initial release shall not exceed 15% of the approved loan. 3) Submission of a duly notarized certification that all government policies, rules and regulations in the award of the project to the contractor have been complied with. 4) PNB shall have the option to buy or lease space of its choice for a branch site within the project to be financed. <p>Terms of Credit. Eligible loans for PNB financing under its LGU financing program include those, which finance the establishment, development or expansion of income-generating projects. Other projects that qualify include irrigation, construction of municipal halls, sports complex, medical diagnostic equipment, road construction, hospitals and school buildings.</p> <p>The maximum loanable amount can be as much as 100% of the project requirements but will not exceed the aggregate of five times the sum of the 20% portion of the annual regular income and the IRA share of the LGU. The term of the loan is generally</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
PNB (contd)				up to 7 years, but the Board of Directors may consider a longer term if justified. The interest rate is prime rate-based subject to periodic interest resetting. Collateral requirements can include the assignment of applicable regular income of the LGU, IRA share and the revenues generated by the project financed. Other collateral include the chattel mortgage of equipment financed by the loan and real estate mortgage on patrimonial property of LGUs.
5. Land Bank of the Philippines (LBP)	<p>Created in 1963, the Land Bank of the Philippines (LBP), one of the top five universal banks in the country with total resources of some P134 billion, has been lending actively to LGUs over the years. It has a social mission of promoting countryside development and has been a major contributor to rural credit delivery in the Philippines. Though LBP's main portfolio of loans is in the agrarian sector, it has a very active LGU financing program consistent with its mission. Foremost in LBP's LGU financing program is its "Total Development Options - Unified Land Bank Approach to Development or TODO-UNLAD program." The program offers a comprehensive package of loans that links farmers' cooperatives, private companies, rural banks, non-governmental institutions and LGUs around an income generating project in a specific area.</p> <p>The Land Bank's LGU program has financed projects in various sectors amounting to over P11.6 billion as of March 1997, primarily in infrastructure, bus terminals, public markets, telecommunications, housing, water systems, road construction and traffic systems.</p>	<p>Pre-Release Requirements</p> <p>Loans to the LGU's shall be covered by the regular documentary requirements for regular loan accounts. In addition, the following documents shall be required:</p> <ol style="list-style-type: none"> Borrowing Resolution. Passed by the Sangguniang Panglungsod and expressly: <ul style="list-style-type: none"> Confirming, approving and ratifying all previous representations and warranties and all the terms and conditions of the loan, and authorizing the Local Chief Executive to sign all documents pertaining to the loan; Designating the person authorized to negotiate and sign all documents pertaining to the loan; Authorizing the mortgage/assignment for certain personal and/or real properties and declaring that the properties offered as collateral are patrimonial and not actually devoted to public use and prohibiting the conversion of said properties to public use or service; Committing not to contract other loans/credits with other creditors/banks are to impair the LGU's paying capacity for the duration of the loan; Directing the LGU Treasurer and the accountant to enter the loan in the appropriate books of the LGU; 		<p>Terms of Credit. As mentioned in the previous paragraph, Land Bank lends to provinces, cities and municipalities that are rated medium-grade or higher. Using this criterion, some 960 LGUs are eligible for Land Bank assistance. Eligible loans finance local infrastructure and other socio-economic development projects under LGUs' local development plans. The maximum loan amount is based on the requirement of the project but does not exceed the "Net Borrowing Capacity" calculated for LGUs as defined in the Local Government Code. LGUs typically will contribute 25% of the total project cost; the terms of the loan will not exceed 5 years and the maximum grace period on principal is two years. Interest rate charged is the prevailing market rate. Collateral requirements can include a holdout on LGU deposits; real estate property, machinery and equipment and a deed of assignment on IRA, regular taxes or net income. The LGU lending program requirements and procedures of Land Bank are reproduced in Annex 4.</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
LBP (cont'd)	<p>Majority of Land Bank lending to LGUs has been directed to infrastructure financing (61%). These projects included integrated development projects in Metro Manila and Metro Cebu consisting of roads, reclamation, ports, schools, municipal and commercial buildings, etc. The next major exposure of Land Bank was in heavy machinery (15%), which are used by LGUs in carrying out their development and infrastructure projects. Lending to construction projects amounted to 7% and the rest were for sport complexes, public markets, bus terminals and others. To assist Land Bank in making their investment decisions, it has developed a creditworthiness ranking system for LGUs. This system classifies LGUs into four credit categories</p> <p>Land Bank utilizes a set of criteria for its LGU credit rating system, including financial capability, socioeconomic profile, political stability and the technical, economic and financial viability of the proposed project. About 17% of LGUs are classified by the LBP as prime clients and high grade, while 40% are classified as medium grade. Land Bank's lending policy is limited to LGUs with a medium-grade or higher classification</p>	<ul style="list-style-type: none"> Designating LBP as the LGU's major depository bank for IRA and for its other deposits which designation shall be revoked while the loan obligations remains outstanding and directing the LGU Secretary to provide a copy of this Resolution to DBM or other IRA-administering office; Appropriating the amount for loan repayment on the LGU's annual budget until the loan, interest and other charges are fully paid; Undertaking by the LGU to secure from DBM a written certification of its commitment to withhold the LGU's IRA in favor of LBP in the event of payment default; Authorizing LBP to deduct for set-off and/or deduct amounts from any deposits or funds of the LGU with LBP and apply the same to the payment of the loan or any portion thereof, or interest and penalties thereon as may be deemed necessary to LBP. <p>Processing Requirements</p> <ol style="list-style-type: none"> Sangguniang Resolution authorizing the Local Chief Executive to negotiate a loan with LBP Budget for the Current Year COA Audited Financial Statements for the past 3 years List of Elected Officials and Key officers Schedule of LGU's IRA for the past 2 years Feasibility Study Regular Documentary Requirements pertaining to offered collaterals For Projects involving Construction <ul style="list-style-type: none"> Cost estimates Plans and specifications 		

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
LBP		<ul style="list-style-type: none"> • Bill of materials • Work program /schedule duly approved by the Local Chief Executive and the City/District Engineer i. For Acquisition of Machinery and Equipment <ul style="list-style-type: none"> • List of Machinery and Equipment, its Description & Estimated Cost based on Firm Quotation • Guarantee from the Dealers/ Suppliers as the Availability of Spare parts in the Local Market 		
6. Municipal Bond Flotation (MBF)	Municipal bond flotation is another private source of debt financing that is generating a lot of interest from LGUs. Municipal bonds represent an additional source of financing for LGUs, which hitherto had not been tapped. To date, six LGU bond flotations have been successfully floated, the first one in infrastructure development (Cebu equity bonds), and the rest in housing	<p>Legal Framework for Bond Flotations. The 1991 Local Government Code allows, subject to the rules and regulations of the Bangko Sentral ng Pilipinas (BSP) and the Securities and Exchange Commission (SEC), to "issue bonds, debentures, securities, collateral, notes and other obligations to finance self-liquidating, income-producing development or livelihood projects pursuant to the priorities established in the approved local development plan or the public investment Provinces, cities and municipalities are authorized under the LGC to issue municipal bonds under two conditions: (i) the obligation should finance self-liquidating, income producing development or livelihood projects; and (ii) the projects to be financed must be in accordance with priorities established in the approved local development plan or the public investment program. Thus, at the moment, LGUs cannot utilize a bond flotation for recurrent obligations or general obligations of LGUs and other non-revenue earning expenditures such as the construction of a city or municipal hall or payment of staff salaries.</p>		<p>Bond Flotations Issued. The Province of Cebu pioneered LGU bond flotations in the country when they floated the first bond issue in July 1990 (Cebu Equity Bond Unit). The P300 million issue had a term of three years, tax free interest income at 16 percent and called for principal repayments in five (5) equal semi-annual installments in the form of class "A" shares of Cebu Property Ventures and Development Corporation (CPVDC), a joint venture of Cebu Province and Ayala Land, Inc. (ALI). Cebu had contributed land and ALI contributed cash for their shares in CPVDC. With the tax-free feature, the investors effectively earned 20% on their investment plus the capital appreciation prospects of the CPVDC shares.</p> <p>Since the Cebu bond flotation, there have been five more issues (all in the housing sector):</p> <ul style="list-style-type: none"> • Victorias Pabahay Bonds - Negros Occidental (P8.0 million) • Legazpi Suerte Bonds - Albay (P26.0 million) • Claveria Housing Bonds - Misamis Oriental (P20.0 million) • Sto. Domingo Housing Bonds - Nueva Ecija (P10.0 million) • Puerto Princesa Housing Bond Palawan (P20.0 million)

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
BOT (contd)	to solicit investor interest in the project and undergo the processing procedures prescribed under the BOT Law and the LGC.	<p>Thus far, BOT schemes are being planned for infrastructure requirements in the LGUs such as water supply and sewerage, solid waste management, commercial centers, public markets, slaughterhouses, and telecommunications. One example of a successful LGU project implemented under a BOT scheme is the Mandaluyong Public Market.</p> <p>Concerning countrywide LGU BOT projects, there are a number of projects in an advanced development stage. These projects are in the following areas: bulk water supply, solid waste management, public markets, slaughterhouse, integrated bus terminals, and commercial complexes. The largest projects are the Batangas Water Supply Project which is at the conceptual stage (\$275 million), the Metro Manila Solid Waste Management Project under negotiation (US\$270 million), the Metro Cebu Water Supply Project (\$110 million) and the Bulacan Bulk Water Supply Project (\$50 million). There are eight projects in an advanced stage of development with a project cost of US\$188 million or about \$7 billion, consisting of commercial centers, public markets, a waste recycling plant, slaughterhouse, solid waste management and a combined power and water supply project. In addition, there are 21 other short listed projects amounting to \$690 million or about \$27.6 billion, which are in various stages of processing.</p>		
8. LGU Guarantee Corporation (LGUGC)	Aware of the funding problems besetting the LGUs, particularly their limited access to commercial finance, the Development Bank of the Philippines (DBP) and the Bankers Association of the Philippines (BAP) took the initiative in establishing the LGU Guarantee Corporation (LGUGC).	The establishment of the LGUGC was necessitated by the inability of LGUs to access private sector funding chiefly because of the perception of lack of creditworthiness and political succession risk. To mitigate these "perceived" risks, the DBP and the BAP, composed of some 53 different universal and commercial banks operating in the country,	<p>Joint Ventures</p> <p>Many LGUs also contemplate on entering into joint venture partnerships with the private sector. Indeed, what is required in a joint venture undertaking is the consummation of the legal agreements</p>	<p>Others Forms of Private Sector Participation in LGU Infrastructure Projects</p> <p>Aside from BOT schemes and the innovative provincial equity funds, there are other forms of private sector participation in LGU infrastructure projects (mostly in the water sector) which have improved service delivery and facilitated increased access to finance for new investments. It shows how responsibility for</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
LGUGC (cont'd)	<p>The LGUGC is expected to enhance the flow of commercial funds to the LGUs, and play a "catalytic" role by providing a guarantee on loans and credits granted to LGUs from commercial funding sources, and to municipal bond flotations.</p> <p>Ultimately, the LGUGC will enable LGUs to expand their borrowing capacity, develop their ability to issue a variety of credit instruments, reduce their financing costs and improve their operating flexibility. The LGUGC's implementing rules and regulations, guidelines and by-laws are being drafted, and formal incorporation was completed in March 1998. It is expected that the guarantee facility will begin operations by the mid-part of 1998.</p>	<p>established the LGU Guaranty Corporation to guarantee loans and credits granted by participating member commercial banks for various capital investment projects of LGUs. The joint venture partnership between DBP and the BAP is geared towards accelerating the competitive access of LGUs to financial markets, especially private sector credit. So far, twenty local banks and three foreign banks have signed up as participating investing banks. The specific objectives of the LGUGC are as follows:</p> <ul style="list-style-type: none"> • expand the LGUs' borrowing capacity and credit availability; • reduce the LGUs' financing costs; • improve the operating and financial flexibility of the LGUs; • reduce the credit and other perceived risks (e.g. political risk) of lenders; and • contribute to the development of the local capital market by creating a market for a variety of credit instruments. <p>The corporation is capitalized at ₱500 million with paid up capital of ₱250 million. As a first step, the LGUGC will set-up an LGU credit database, and develop internal LGU credit rating system. Next, the LGUGC will accredit financial institutions which have expressed interest in participating in the guarantee program as investing banks. Finally, the LGUGC will receive and process the guarantee applications from the appropriate bank under the BAP, which will provide financing for the LGU project. In case of default by the LGU on the loan, the guarantee can be called or a restructuring exercise undertaken by the leading financial institution. The guarantee facility will have a gearing ratio of 10 times its paid-in capital; therefore, it can provide guarantees of up to ₱2.5 billion. Initially, the LGUGC can provide a credit guarantee of up to 85% of the LGU loan until a credit rating mechanism is put in place. Based on recent discussions, LGUs are excited about the prospects of obtaining a guarantee facility for its loans to finance its various projects.</p>	<p>and once the financing and the contractors are in place, the project can commence. However, joint ventures do not have any specific legal framework at the moment such as the one for BOTs, which makes the arrangement subject to potential legal difficulties. In comparison, BOT schemes have the legal framework with its own specific law and implementing rules and regulations, mitigating the likelihood of a protracted legal challenge if legal issues arise</p>	<p>certain functions are allocated, such as asset ownership and how these different schemes impact on certain parameters such as level of investments by LGUs and consumer tariffs. These schemes vary in the type of private sector participation:</p> <ul style="list-style-type: none"> • Service contracts are short-duration engagements for specific tasks to be undertaken by the private sector participant. The purpose is to utilize certain expertise considered to be more cost-effectively undertaken by the private sector. Overall coordination remains to be the function of the utility. • Management contracts have a longer term duration giving the private sector a larger operational role in the utility. Similar to the purposes of service contracts but in more expanded form, management contracts allow the private sector to introduce efficiency in operations (usually through performance objectives) for a management fee. Responsibility for investments remain with the Government. • Leases or affermage contracts allow the private sector to lease the assets of a utility and takes on the responsibility for operating and maintaining them. The contractor (lessor) makes lease payments to the utility in exchange for the operation of the assets and the revenue collections from operations. Similar to management contracts, responsibility for investments remain with the Government. Commercial risk is borne by the contractor. • Concessions give the private sector the right to operate and maintain the assets of the utility and to make necessary investments in exchange for fixed concession payments paid to the utility or the Government. • BOT contracts give the private sector the right to build, operate and transfer the facility to the utility or the Government after a fixed period of time (see section on BOT schemes). • Divestiture involves the outright sale of a utility's assets to the private sector. <p>It is important that the LGUs truly understand the different forms of private sector participation and evaluate which of these schemes is most suitable and cost-effective for achieving their objective of improving the delivery of basic services.</p>

Financing Source	Objectives	Prerequisite	Eligible Projects	Loan Features
BOT (contd)	to solicit investor interest in the project and undergo the processing procedures prescribed under the BOT Law and the LGC.	<p>Thus far, BOT schemes are being planned for infrastructure requirements in the LGUs such as water supply and sewerage, solid waste management, commercial centers, public markets, slaughterhouses, and telecommunications. One example of a successful LGU project implemented under a BOT scheme is the Mandaluyong Public Market.</p> <p>Concerning countrywide LGU BOT projects, there are a number of projects in an advanced development stage. These projects are in the following areas: bulk water supply, solid waste management, public markets, slaughterhouse, integrated bus terminals, and commercial complexes. The largest projects are the Batangas Water Supply Project which is at the conceptual stage (\$275 million), the Metro Manila Solid Waste Management Project under negotiation (US\$270 million); the Metro Cebu Water Supply Project (\$110 million) and the Bulacan Bulk Water Supply Project (\$50 million). There are eight projects in an advanced stage of development with a project cost of US\$188 million or about ₱7 billion, consisting of commercial centers, public markets, a waste recycling plant, slaughterhouse, solid waste management and a combined power and water supply project. In addition, there are 21 other short listed projects amounting to \$690 million or about ₱27.6 billion, which are in various stages of processing.</p>		
8. LGU Guarantee Corporation (LGUGC)	Aware of the funding problems besetting the LGUs, particularly their limited access to commercial finance, the Development Bank of the Philippines (DBP) and the Bankers Association of the Philippines (BAP) took the initiative in establishing the LGU Guarantee Corporation (LGUGC).	The establishment of the LGUGC was necessitated by the inability of LGUs to access private sector funding chiefly because of the perception of lack of creditworthiness and political succession risk. To mitigate these "perceived" risks, the DBP and the BAP, composed of some 53 different universal and commercial banks operating in the country.	<p>Joint Ventures</p> <p>Many LGUs also contemplate on entering into joint venture partnerships with the private sector. Indeed, what is required in a joint venture undertaking is the consummation of the legal agreements</p>	<p>Others Forms of Private Sector Participation in LGU Infrastructure Projects</p> <p>Aside from BOT schemes and the innovative provincial equity funds, there are other forms of private sector participation in LGU infrastructure projects (mostly in the water sector) which have improved service delivery and facilitated increased access to finance for new investments. It shows how responsibility for</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
LGUGC (cont'd)	<p>The LGUGC is expected to enhance the flow of commercial funds to the LGUs, and play a "catalytic" role by providing a guarantee on loans and credits granted to LGUs from commercial funding sources, and to municipal bond flotations.</p> <p>Ultimately, the LGUGC will enable LGUs to expand their borrowing capacity, develop their ability to issue a variety of credit instruments, reduce their financing costs and improve their operating flexibility. The LGUGC's implementing rules and regulations, guidelines and by-laws are being drafted, and formal incorporation was completed in March 1998. It is expected that the guarantee facility will begin operations by the mid-part of 1998.</p>	<p>established the LGU Guaranty Corporation to guarantee loans and credits granted by participating member commercial banks for various capital investment projects of LGUs. The joint venture partnership between DBP and the BAP is geared towards accelerating the competitive access of LGU's to financial markets, especially private sector credit. So far, twenty local banks and three foreign banks have signed up as participating investing banks. The specific objectives of the LGUGC are as follows:</p> <ul style="list-style-type: none"> • expand the LGUs' borrowing capacity and credit availability; • reduce the LGUs' financing costs; • improve the operating and financial flexibility of the LGUs; • reduce the credit and other perceived risks (e.g. political risk) of lenders; and • contribute to the development of the local capital market by creating a market for a variety of credit instruments. <p>The corporation is capitalized at \$500 million with paid up capital of \$250 million. As a first step, the LGUGC will set-up an LGU database, and develop internal LGU credit rating system. Next, the LGUGC will accredit financial institutions which have expressed interest in participating in the guarantee program as investing banks. Finally, the LGUGC will receive and process the guarantee applications from the appropriate bank under the BAP, which will provide financing for the LGU project. In case of default by the LGU on the loan, the guarantee can be called or a restructuring exercise undertaken by the leading financial institution. The guarantee facility will have a gearing ratio of 10 times its paid-in capital; therefore, it can provide guarantees of up to \$2.5 billion. Initially, the LGUGC can provide a credit guarantee of up to 85% of the LGU loan until a credit rating mechanism is put in place. Based on recent discussions, LGUs are excited about the prospects of obtaining a guarantee facility for its loans to finance its various projects.</p>	<p>and once the financing and the contractors are in place, the project can commence. However, joint ventures do not have any specific legal framework at the moment such as the one for BOTs, which makes the arrangement subject to potential legal difficulties. In comparison, BOT schemes have the legal framework with its own specific law and implementing rules and regulations, mitigating the likelihood of a protracted legal challenge if legal issues arise</p>	<p>certain functions are allocated, such as asset ownership and how these different schemes impact on certain parameters such as level of investments by LGUs and consumer tariffs. These schemes vary in the type of private sector participation:</p> <ul style="list-style-type: none"> • Service contracts are short-duration engagements for specific tasks to be undertaken by the private sector participant. The purpose is to utilize certain expertise considered to be more cost-effectively undertaken by the private sector. Overall coordination remains to be the function of the utility. • Management contracts have a longer term duration giving the private sector a larger operational role in the utility. Similar to the purposes of service contracts but in more expanded form, management contracts allow the private sector to introduce efficiency in operations (usually through performance objectives) for a management fee. Responsibility for investments remain with the Government. • Leases or affermage contracts allow the private sector to lease the assets of a utility and takes on the responsibility for operating and maintaining them. The contractor (lessor) makes lease payments to the utility in exchange for the operation of the assets and the revenue collections from operations. Similar to management contracts, responsibility for investments remain with the Government. Commercial risk is borne by the contractor. • Concessions give the private sector the right to operate and maintain the assets of the utility and to make necessary investments in exchange for fixed concession payments paid to the utility or the Government. • BOT contracts give the private sector the right to build, operate and transfer the facility to the utility or the Government after a fixed period of time (see section on BOT schemes). • Divestiture involves the outright sale of a utility's assets to the private sector. <p>It is important that the LGUs truly understand the different forms of private sector participation and evaluate which of these schemes is most suitable and cost-effective for achieving their objective of improving the delivery of basic services.</p>

Financing Source	Objectives	Prequalification	Eligible Projects	Loan Features
9. NDC - Agri-Agra Erap Bonds	Auction Date: April 15, 1999 Issue Size: ₱5.0 billion Interest Rate: 7.875% Reception : Oversubscribed amount tendered is five times the ₱5.0 billion bonds available, with significant participation by the foreign banks.		<p>Project Selection/Evaluation Criteria NDC is open to partnership with the private sector. The projects should conform with the following set of guidelines:</p> <ol style="list-style-type: none"> 1. The project should be for agri-agra development. 2. It should be in accordance with any or in support of development framework such as the Development Plans of the NEDA, DRIVE and Regional Growth Areas Development of DTI, Investment Priorities Program of BOI, Priority Investment Program of DA, DAR and NDC, or the Sectoral Development Plans mandated by law. 3. It should be larger than those classified under the Small and Medium Enterprises with a project cost greater than ₱60 million. 4. It should be ready for implementation with identified specific site, with definite proponent and is accessible to major infrastructure. 5. The project selection shall ensure diversity of products, sectors, and geographical location. 6. Preference will be given to project that utilize proven modern technology and have proven modern technology and have program for technology transfer to the farmers and/or project beneficiaries. 7. The project should directly or indirectly benefit farmers and marginalized communities in line with the "ERAP Para sa Mahirap thrust. 8. It should have an IRR of at least 18% with reasonably short payback period and an economic rate of 15% based on NEDA's Economic Evaluation Procedure. 9. The proponents should be able to show its financial capability and ability to access market of product. 10. The project should have a clear exit mechanism for NDC. 11. It should be environment-friendly and have necessary environmental controls. 	

7. WATER SOURCE DEVELOPMENT

7.3 Groundwater Sources

7.3.2 Groundwater Availability in the Province

(1) Major Information and References

The Groundwater Availability Map was prepared using the following information and reference (detailed list of reference is presented in Table 7.1.2, Data Report):

- Administrative and Topographical Maps of the Province published by NAMRIA with scales of 1:250,000 and 1:50,000, respectively.
- Geological Map of the Philippines published by BMGS with a scale of 1:1,000,000.
- Water Resource Investigation conducted by NWRB, 1986.
- Well Inventory Database prepared by NWRB, LWUA and DPWH.
- Well Inventory Database in the province.
- General information on groundwater condition by DPWH-DEO and PPDO.
- Well Log Data by DPWH-DEO and PEO.
- Water source information by Water Districts.

(2) Approach and Methodology

The procedure in preparing the Groundwater Availability Map is explained below with workflow depicted in Figure 7.3.1.

- 1) Prepare a base map with an approximate scale of 1:950,000 (fit to the A4 map size).
The topographical map of NAMRIA (1:250,000) was used as a reference map. Basic information including rivers and provincial and municipal boundaries are indicated in the prepared base map.
- 2) The groundwater potential areas, based on the geology of the province, are delineated on the base map. The Recent alluvial and/or beach deposits, Pliocene-Quaternary sedimentary formation (clay, silt, sand and gravel) and Pliocene-Quaternary volcanic rock units (pyroclastics, debris flow and tuff) are regarded as possible aquifers considering their high porosity and permeability.

Boundaries between groundwater development potential area and difficult area were defined and delineated as presented in Figure 7.3.1, Main Report.

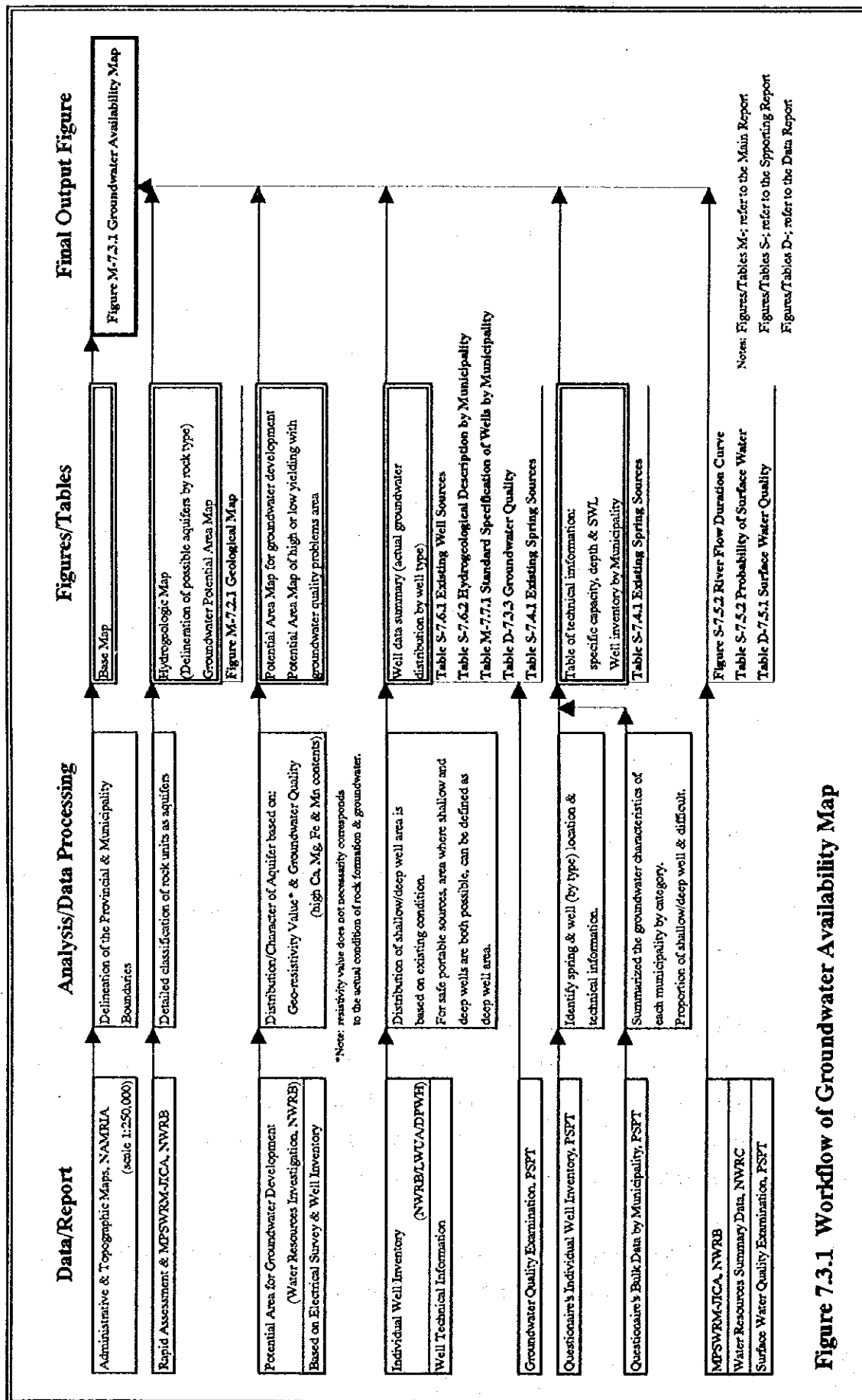


Figure 7.3.1 Workflow of Groundwater Availability Map

- 3) Areas with potential high yielding aquifer in the Water Resources Investigation of NWRB, are reflected in the defined groundwater potential areas.

Based on the results of electric resistivity survey of the above investigation, resistivity values from 20 to 210 ohm-meter indicate a potential high yielding formation. Values less than 10 ohm-meter suggest clayey layer. Figure 7.3.1, Main Report, shows the boundaries of areas with high and low yielding aquifers.

- 4) Delineate shallow and deep well areas based on well database of NWRB and DPWH central office, well inventory of DPWH-DEO and rock distribution. Figure 7.3.2 presents the categorization in terms of groundwater utilization.

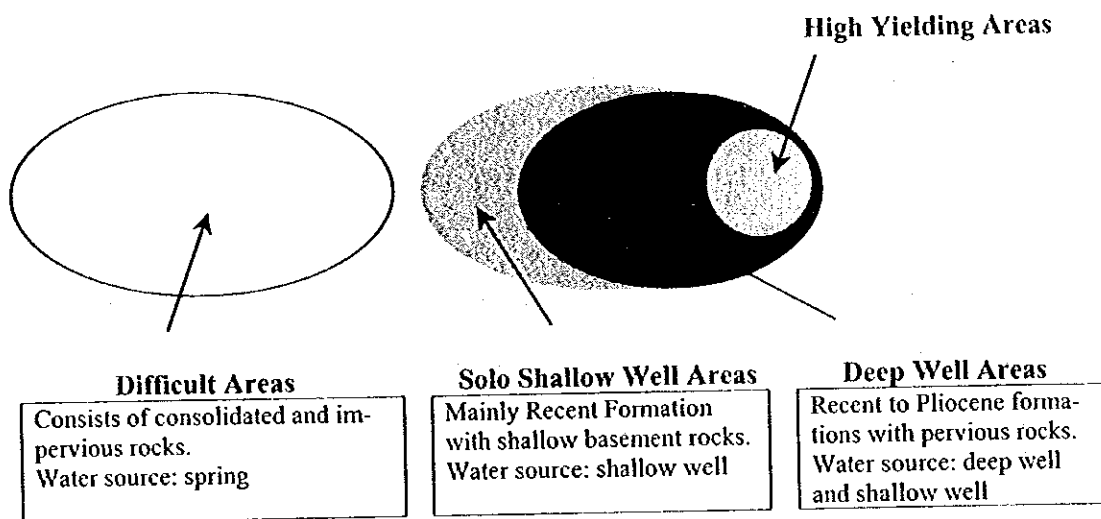


Figure 7.3.2 Area Category by Groundwater Utilization

Solo shallow well areas are defined on the following basis:

- Predominance of serviceable shallow wells and presence of deep wells with water quality problem and/or low yielding aquifers.
- Occurrence of impervious rocks beneath the Recent formation at shallow depth.

- 5) Based on the information provided by NWRB's well inventory and the data obtained through the questionnaires, well specification for each municipality is established as shown in the map. These specifications are used as references in evaluating the groundwater availability in each locality. Individual well locations with technical information are presented in Figure 7.6.1, Data Report.

(3) Future Updating and Utilization of the Map

For future updating of the map, the following procedure shall be employed.

- 1) Referring to the results of any supplementary water sources investigation by various agencies, re-define the potential area for groundwater development by applying the aforementioned procedures.
- 2) Update the provincial database using the questionnaire made for the study to make necessary revision of the delineated boundaries of groundwater categories.

7.4 Spring Sources

The numbers and discharge of developed and untapped springs by municipality are shown in Table 7.4.1. It is noted in the column of untapped spring that only range of discharge rates is shown, due to limited data available. The data are derived from the questionnaires and Table 7.1.1 Water Source Information, Data Report.

Table 7.4.1 Existing Spring Sources

Municipality/City	No. of Developed Spring			Untapped Spring			
	Q: NA	Data Available		Q: NA	Data Available		
		Q<2 lps	Q>2 lps		No.	Range lps	
Bago City	28	5	0	0	3	0.5	~ 0.5
Binalbagan	2	0	0	0	0	-	~ -
Cadiz City	1	3	0	0	4	0.5	~ 2.5
Calatrava	130	8	1	3	2	0.1	~ 63.1
Candoni	12	6	0	0	0	-	~ -
Cauayan	15	12	4	0	4	18.9	~ 71.9
Enrique B. Magalona	2	0	0	0	0	-	~ -
Escalante	59	0	0	0	0	-	~ -
Himamaylan	5	0	0	0	0	-	~ -
Hinigaran	1	0	0	0	0	-	~ -
Hinoba-an	19	5	0	0	0	-	~ -
Ilog	6	0	0	0	0	-	~ -
Isabela	37	0	0	0	0	-	~ -
Kabankalan City	155	11	0	0	0	-	~ -
La Carlota City	21	0	0	0	0	-	~ -
La Castellana	40	1	0	0	0	-	~ -
Manapla	0	0	0	0	2	113.6	~ 189.3

Table 7.4.1 Existing Spring Sources

(cont'd)

Municipality/City	No. of Developed Spring			Untapped Spring		
	Q: NA	Data Available		Q: NA	Data Available	
		Q<2 lps	Q>2 lps		No.	Range lps
Moises Padilla	10	0	0	0	0	- ~ -
Murcia	40	0	0	0	0	- ~ -
Pontevedra	23	0	0	0	0	- ~ -
Pulupandan	0	0	0	0	0	- ~ -
Sagay City	16	0	0	0	7	1.7 ~ 80.0
Salvador Benedicto	75	0	0	0	0	- ~ -
San Carlos City	75	0	0	0	0	- ~ -
San Enrique	0	0	0	0	0	- ~ -
Silay City	27	0	0	0	0	- ~ -
Sipalay	48	8	0	0	0	- ~ -
Talisay City	3	0	0	0	0	- ~ -
Toboso	84	1	0	0	0	- ~ -
Valladolid	0	0	0	0	0	- ~ -
Victorias City	1	0	0	0	0	- ~ -

Note: Q: NA; number of springs with no discharge rate data available at present,
lps; liter/second, Range; minimum and maximum discharge rates among springs with available data

7.5 Surface Water Sources

The major rivers in the province were selected to evaluate their potential as water supply sources to meet the future water needs of the province. The following criteria were adopted for the selection:

- rivers currently utilized for domestic water supply,
- rivers which have gauging stations and
- rivers with watershed of 100 km² or more.

Based on the above criteria, the selected major rivers are Himoga-an, Sicaba, Malogo, Napilas, Bago, Binalbagan, Ilog and Sipalay Rivers. Hitabangan River is tributary of Ilog River as shown in Figure 7.5.1 River Network Map.

The gauging stations in the province are located at Malogo, Napilas, Bago, Binalbagan and Ilog Rivers, which are shown in Figure 7.5.1. The runoff records are obtained from the "Philippine Water Resources Summary Data" prepared by the NWRC in 1980. The information on the gauging stations and the present uses (water rights) of the major rivers in the province is summarized in Table 7.5.1.

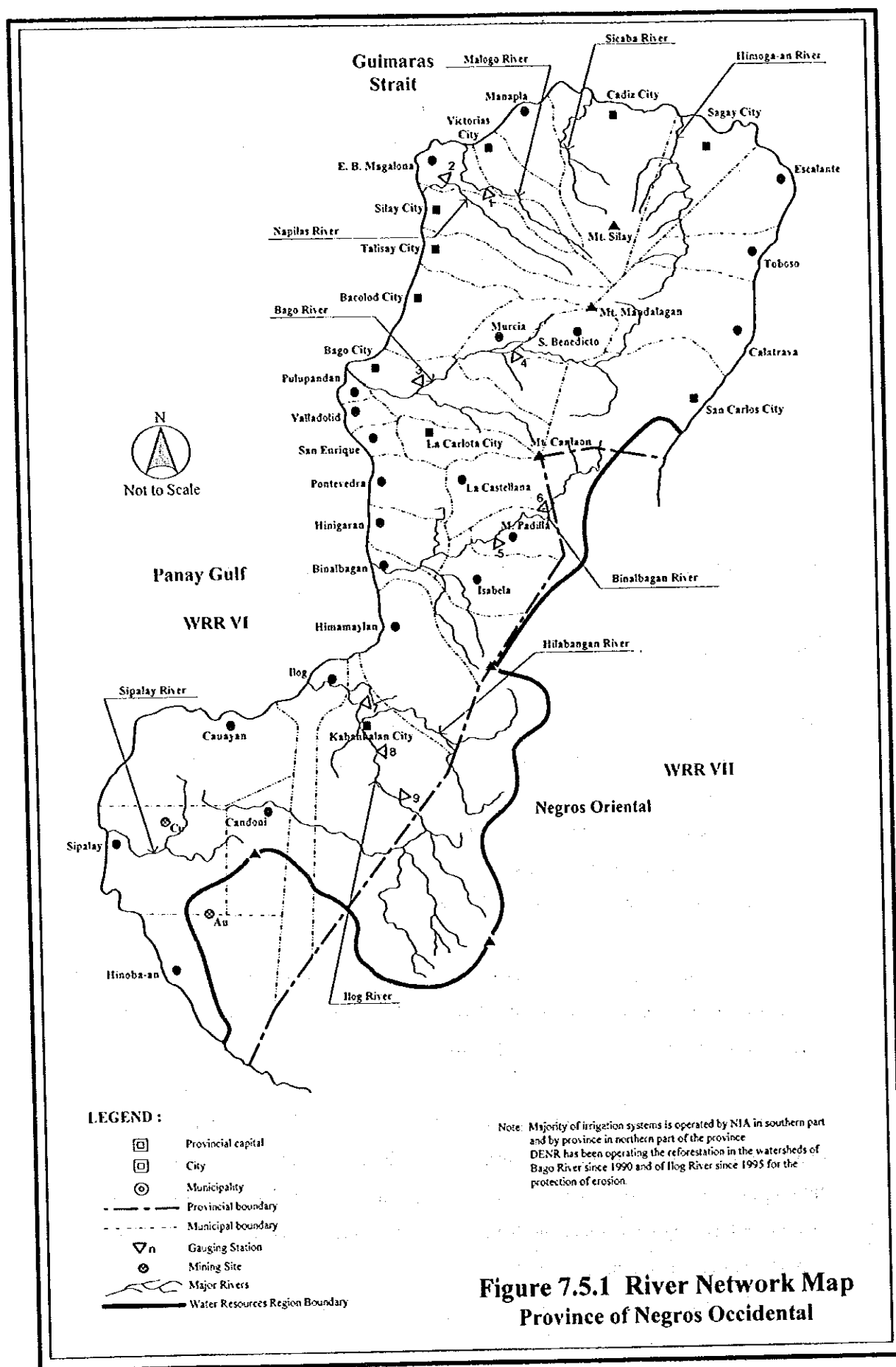


Table 7.5.1 Gauging Station & River Water Use by Major River Basins

Table 1/5.1 Gauging Station & River Water Use by Major River Basins												
River Basin			Information from Gauging Station				Surface Water Use (Water Rights) in Watershed					
Major River	Tributary Systems	Drainage ¹ sq. km	Location No. in Figure 7.5.1	Peak Qp	Max. Qm	Mini. Qm	Data Period	Municipality in watershed	Domestic cum/sec	Industrial cum/sec	Irrigation cum/sec	Others ³ cum/sec
Himog-an	Tributary-A							Cadiz City	-	-	2.11	0.15
	Main							Sagay City	-	-	-	-
								Calatrava	-	-	-	-
Sicbo Malogo								Toboso	-	-	-	-
	Main							Escalante	-	0.25	0.70	0.13
								Sagay City	-	-	0.11	-
Napilas								Cadiz City	-	-	-	-
	Main							Victoria City	-	-	0.78	-
								E. M. Magallana	NR ⁴	NR ⁴	NR ⁴	NR ⁴
Bago								Talasea City	-	-	-	-
	Main							Silay City	-	-	-	-
								E. M. Magallana	NR ⁴	NR ⁴	NR ⁴	NR ⁴
Binalbagan								Silay City	0.00	0.45	1.22	0.15
	Main							La Carlota City	-	2.30	0.90	0.00
								Bago City	-	-	-	-
								Calatrava	-	-	-	-
	Main							San Carlos City	-	-	-	-
								S. Benedicto	NR ⁴	NR ⁴	NR ⁴	NR ⁴
								Murcia	-	-	1.42	-
	Main							Bago City	-	1.00	2.17	0.00
								Ponveda	-	-	-	-
								Hinigaran	-	-	-	-
	Main							Binalbagan	-	-	-	-
								Isabela	-	-	-	-
								Hinigaran	-	-	-	-
	Main							San Carlos City	-	-	-	-
								Negros Oriental ⁵	NR ⁴	NR ⁴	NR ⁴	NR ⁴
								La Castellana	-	-	1.93	-
	Main							M. Padilla	-	-	13.40	-
								Isabela	-	-	2.20	-
								Hinigaran	-	-	0.79	0.04
	Main							Binalbagan	-	-	0.58	-
								Cauayan	-	-	-	-
								Sinalay	-	-	-	-
	Main							Candon	-	-	0.01	-
								Ilog	-	-	-	-
								Kabankalan City	-	-	-	-
	Main							Negros Oriental ⁵	NR ⁴	NR ⁴	NR ⁴	NR ⁴
								Kabankalan City	-	-	-	-
								Negros Oriental ⁵	NR ⁴	NR ⁴	NR ⁴	NR ⁴
	Main							Himamulan	-	-	0.81	-
								Kabankalan City	-	-	0.58	-
								Ilog	-	-	0.38	-
	Main							Cauayan	-	-	-	-
								Sinalay	-	-	-	-
								Candon	-	-	-	-
	Main							Sinalay	-	-	-	-
								Sinalay	-	-	-	1.75

Source: Philippine Water Resources Summary Data, established January 1960 by NWRRC

Notes:

- Drainage¹: Watershed Area at Gauging Station
- NA²: Recorded River Gauge Height only
- Others³: Including Livestock, Recreation & Fisheries
- NR⁴: Surface water utilization was not registered in NWRB Database, as of March 1997.
- (Province)⁵: Out of Applicable Area

Op : Peak Discharge of Daily Maximum Discharge
Qm : Maximum Daily Discharge of Weighted Daily Discharge
Qm : Minimum Daily Discharge of Weighted Daily Discharge

(1) Surface Water Utilization/Water Rights

As seen in Table 7.5.1, the present water uses in the watershed of the major rivers total to 59.5 m³/sec. The diversions for major flume, which are operated by the province and NIA, are located at Moises Padilla, the Binalbagan River; at Murcia, the Bago River; at Sipalay, the Sipalay River; and at Victorias City, the Malogo River, respectively. Mining sites are located in the mountainous area. Most of them are located in Sipalay as shown in the Figure 7.5.1.

(2) River Flow Analysis

The flow duration curves, derived from the available runoff records, are shown in Figure 7.5.2. The river flow, maintenance flow, diversion flow and return flow are usually used to estimate the exploitable surface water potential. In this study, the river flow was considered as the flow potential for domestic use and the diversion flow value was treated as the equivalent to the discharge of water rights registration in surface water use. No detailed study on the return flow has been performed yet due to the difficulties in investigating the irrigation, evapotranspiration and recharge value to groundwater, etc. within the entire watersheds in the province. Therefore, the return flow was not considered for the estimation of exploitable potential.

It is generally accepted that to secure the required volume for water supply, each water use sector adopts the different return periods. Usually, the dependability of domestic water supply is taken to be 90% or higher (10-year or longer return-period) of the whole hydrological period.

In determining the river maintenance flow, such factors as runoff characteristics, navigation, fishing, picturesque scenery, salt water intrusion, clogging of river mouth, riparian structures, groundwater table, flora and fauna, and river water quality shall be considered to maintain the normal function of the river. In the Philippines, 10% of the dependable flow of the river is required as minimum maintenance flow. Therefore, the maintenance flow was calculated as the dependable flow for irrigation, which equals to 80% (5-year return-period) of the whole hydrological period.

Finally, the exploitable potential of surface water in the province was studied in the case of inflow to and outflow from the respective municipalities. The results are summarized in Table 7.5.2.

Percent of Time (%) (No. in Figure 7.5.1)	Specific Discharge (cum/sec/100sq.km)								
	Malog 1	Napilas 2	Bago 3	Bago 4	Binalbagan 5	Binalbagan 6	Hilabagan 7	Ilog 8	Ilog 9
10%	23.35	15.00	12.97	4.47	9.13	24.08	8.75	12.59	6.62
20%	19.17	10.62	9.51	3.35	7.15	13.00	6.95	8.86	5.97
30%	15.25	8.97	7.66	3.19	5.73	8.17	6.08	6.85	5.56
40%	11.58	7.79	6.23	3.15	4.33	6.92	4.58	5.17	4.36
50%	9.60	6.97	5.03	3.07	3.85	4.92	3.41	3.91	2.98
60%	8.58	6.17	4.15	3.03	3.35	3.83	2.46	2.45	2.28
70%	7.68	5.48	3.44	2.93	2.84	3.50	2.07	1.70	1.99
80%	6.38	4.69	2.81	2.75	2.06	3.42	1.63	1.08	1.52
90%	5.43	3.91	2.24	2.32	1.66	2.58	1.19	0.73	1.06
100%	3.44	1.82	0.93	1.94	1.02	2.33	0.17	0.41	0.41
Data Period	1960-'70	1950-'70	1949-'70	1967-'70	1959-'70	1965-'70	1965-'69	1956-'70	1964-'70

Source: Philippine Water Resources Summary Data, as of Jan. 1980 by NWRC

Interim Report, Master Plan Study on Water Resources Management, as of Oct. 1997 by NWRB

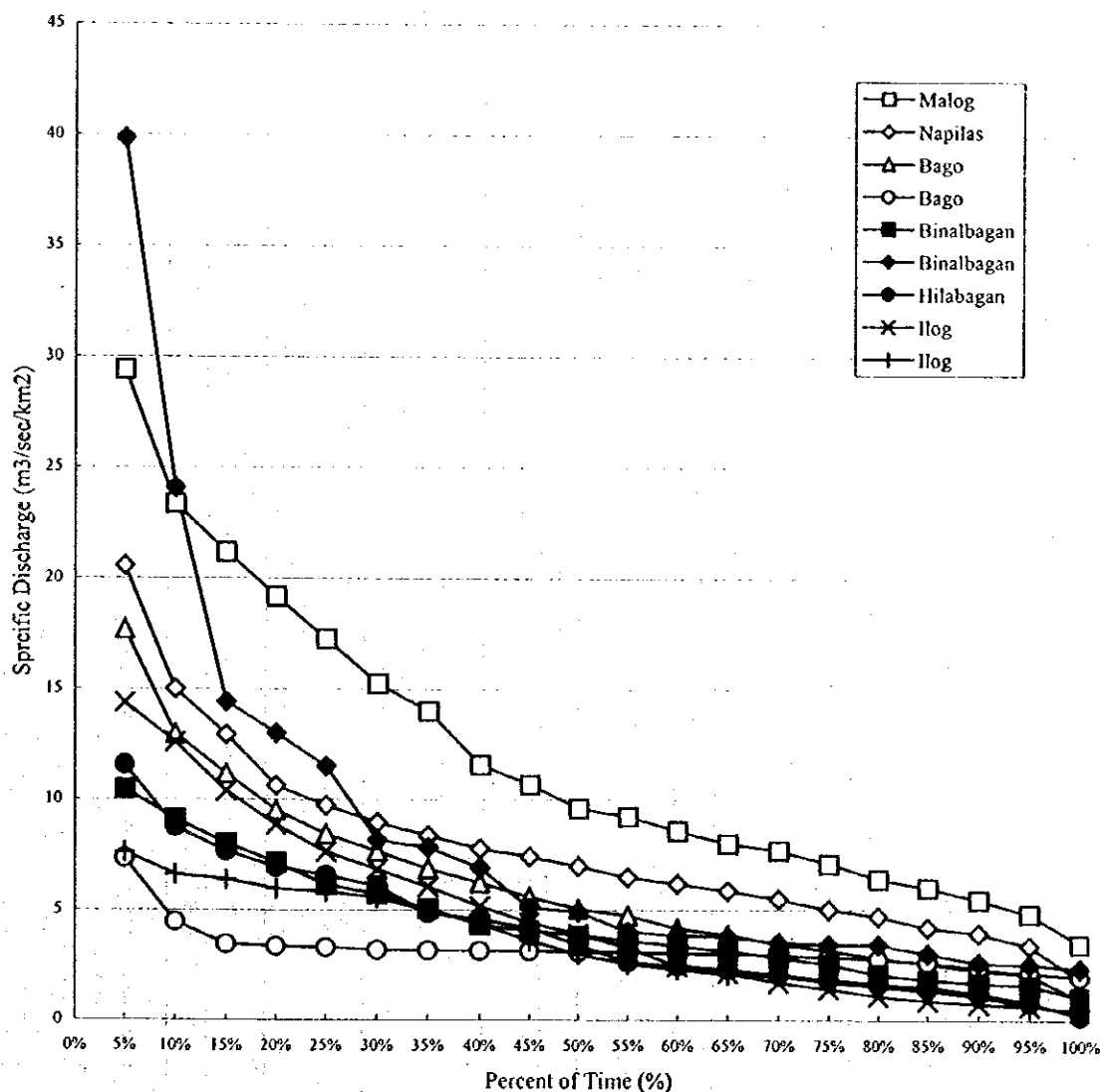


Figure 7.5.2 River Flow Duration Curve

Table 7.5.2 Probability of Surface Water

Surface Water Sources		Related Data										Probability of Surface Water (10-year return-period)									
Major River Water	System & Main	Location Municipality & other Province	River Connection	Watershed Area in Location		Sp. D (return-period)				Inlet Flow to Municipality				Outlet Flow from Municipality							
				Upstream	Downstream	10-year	5-year	S/Flow (5)	M/Flow (6)	Use (7)	Potential (8)	S/Flow (9)	M/Flow (10)	Use (11)	Potential (12)						
				sq. km	sq. km	(1)	(2)	(3)	(4)	cu m/sec	cu m/sec	cu m/sec	cu m/sec	cu m/sec	cu m/sec	cu m/sec	cu m/sec				
Himoxan	Tributary-A	Calicut City	to Main	126.13	0.00	5.43	6.38			0.00	0.00	0.00	0.00	6.85	0.81	2.24	3.81				
	Main	Sagay City		58.44	126.13	5.43	6.38			6.85	10.03	2.24	3.81	10.03	1.18	2.24	6.61				
		Calatava		100.90	0.00	5.43	6.38			0.00	0.00	0.00	0.00	5.48	0.64	0.00	4.84				
		Toboso		67.87	100.90	5.43	6.38			5.48	9.17	0.64	4.84	9.17	1.08	0.00	8.09				
		Escalante		50.00	168.77	5.43	6.38			9.17	11.88	0.00	8.09	11.88	1.40	0.00	10.49				
Siciba		Sagay City	from A	233.76	403.74	5.43	6.38			21.91	2.57	2.24	17.10	34.61	4.07	3.32	27.22				
		Calicut City		154.95	0.00	5.43	6.38			0.00	0.00	0.00	0.00	8.42	0.99	0.31	7.12				
		Calicut City		51.65	0.00	5.43	6.38			0.00	0.00	0.00	0.00	2.81	0.33	0.00	2.48				
		Victoria City		66.95	51.65	5.43	6.38			2.81	6.44	0.76	4.91	6.44	0.76	0.78	4.91				
		E. M. Magalona		73.65	118.60	5.43	6.38			6.44	10.44	0.78	4.91	10.44	1.23	0.78	8.44				
Napilas		Talagay City		8.67	0.00	3.91	4.69			0.00	0.00	0.00	0.00	0.34	0.04	0.00	0.30				
		Silay City		171.84	8.67	3.91	4.69			0.34	0.04	0.00	0.30	7.06	0.85	0.00	6.21				
		E. M. Magalona		11.38	180.51	3.91	4.69			7.06	0.85	0.00	6.21	7.50	0.90	0.00	6.60				
		Silay City		10.74	191.89	3.91	4.69			7.50	0.90	0.00	6.60	7.92	0.95	2.02	4.94				
		La Carlota City		82.38	0.00	2.32	2.75			1.91	0.23	0.00	0.00	1.91	0.23	0.90	0.78				
Bago	Tributary-B	Bago City	to Main	201.05	82.38	2.32	2.75			1.91	0.23	0.00	0.78	6.58	0.78	0.90	4.90				
	Main	Calatava		126.13	0.00	2.32	2.75			0.00	0.00	0.00	0.00	2.93	0.35	0.00	2.58				
		San Carlos City		225.65	126.13	2.32	2.75			2.93	0.35	0.00	2.58	8.16	0.97	0.00	7.19				
		S. Benedicto		57.40	351.78	2.32	2.75			8.16	1.12	0.00	7.19	9.49	1.12	0.00	8.37				
		Murcia		274.47	409.18	2.32	2.75			9.49	1.12	0.00	8.37	15.86	1.88	1.42	12.56				
Binalbagan	Tributary-C	Bago City	from B	160.84	967.08	2.32	2.75			22.44	2.66	2.32	17.46	26.17	3.10	5.59	17.48				
		Ponveda		16.88	0.00	2.58	3.42			0.00	0.00	0.00	0.00	0.44	0.06	0.00	0.38				
		Hinigaran	to Main	32.16	16.88	2.58	3.42			0.44	0.06	0.00	0.38	1.27	0.17	0.00	1.10				
	Tributary-D	Binalbagan		101.97	0.00	2.58	3.42			0.00	0.00	0.00	0.00	2.63	0.35	0.00	2.29				
		Isabela		79.83	101.97	2.58	3.42			2.63	0.35	0.00	2.29	4.70	0.62	0.00	4.08				
Main		Hinigaran	to Main	48.24	181.80	2.58	3.42			4.70	0.62	0.00	4.08	5.94	0.79	0.00	5.16				
		San Carlos City		22.57	0.00	2.58	3.42			0.00	0.00	0.00	0.00	0.58	0.08	0.00	0.51				
		La Carlota City		216.50	203.09	2.58	3.42			5.25	0.69	0.00	4.55	10.84	1.43	1.93	7.48				
		M. Padilla		143.70	419.59	2.58	3.42			10.84	1.43	1.93	7.48	14.55	1.92	8.68	3.95				
		Isabela		97.57	563.29	2.58	3.42			14.55	1.92	8.68	3.95	17.07	2.26	10.88	3.94				
Hilabangan	Ilog	Hinigaran	from C & D	8.04	939.94	2.58	3.42			24.28	3.21	10.88	10.20	24.49	3.24	11.71	9.55				
		Binalbagan		55.62	947.98	2.58	3.42			24.49	3.24	11.71	9.55	25.93	3.43	12.29	10.21				
		Chauvan		46.26	0.00	1.19	1.63			0.00	0.00	0.00	0.00	0.55	0.08	0.00	0.48				
		Sipalay		22.14	46.26	1.19	1.63			0.55	0.08	0.00	0.48	0.82	0.11	0.00	0.71				
		Candoni		55.02	68.40	1.19	1.63			0.82	0.11	0.00	0.71	1.47	0.20	0.01	1.26				
Main		Ilog		112.68	123.42	1.19	1.63			1.47	0.20	0.01	1.26	2.82	0.38	0.01	2.42				
		Kabankalan City	to Main	617.44	667.11	1.19	1.63			7.96	1.08	0.01	6.87	15.34	2.09	0.01	13.24				
		Himayalan		192.10	268.94	1.19	1.63			3.21	0.44	0.00	2.77	5.50	0.75	0.81	3.94				
		Kabankalan City	from Ilog	72.64	1,745.59	1.19	1.63			20.84	2.84	0.82	17.18	21.71	2.96	1.40	17.35				
		Ilog		126.77	1,818.73	1.19	1.63			21.71	2.96	1.40	17.35	23.22	3.16	1.78	18.28				
Sipalay	Tributary-E	Chauvan		92.52	0.00	1.19	1.63			0.00	0.00	0.00	0.00	1.10	0.15	0.00	0.95				
		Sipalay	to Main	154.95	92.52	1.19	1.63			1.10	0.15	0.00	0.95	2.95	0.40	0.00	2.55				
	Main	Candoni		38.34	247.47	1.19	1.63			2.95	0.40	0.00	2.55	3.41	0.46	0.00	2.95				
		Sipalay	from E	172.08	533.78	1.19	1.63			6.37	0.82	0.03	5.50	8.48	1.15	1.75	5.58				

Notes: Sp. D (Specific Discharge) was analyzed by monthly mean flow records from gauging station.

S/Flow (Stream Flow) was estimated specific discharge (10-year return-period) multiplied by upstream area.

M/Flow (Maintenance Flow) was estimated 10% of river flow in case of 5-year return-period.

Sp. D (10-year or 5-year return-period) without gauging station was adopted by the other analysis result from near gauging station.

Inlet & outlet "Use" (Water Rights) are summed up by NWRB Database, as of March 1997

Unit Q for Specific Discharge is cu m/sec/100 sq. km.

S/Flow, M/Flow & Use in final outlet flow of each stream system was added to respective inlet flows of main system

(3) Surface Water Quality

Mining sites are located in upstream area of the Sipalay River and in watershed of Pagalban River flowing to the Tolog Bay of Negros Oriental that belongs to the Water Resource Region VII, of which their location are shown in Figure 7.5.1. Major mining products are copper in the Sipalay river basin and gold in the Pagalban river basin. Generally, in the copper and gold ore deposits, iron and cadmium sulphide, and/or tungstite are well known as the common properties. During the processing of these minerals, the wastewater including hydrochloric acid (HCl) and hydrogen sulfide (H₂S) might have discharged to the surface soil and water in the vicinity of these mining sites.

The results of water quality analysis are summarized in Table 7.5.1, Data Report. The sampling locations were selected upstream of the respective municipalities. In the said table, Class AA and Class A of the DENR "Water Quality Criteria for Fresh Water" are shown as reference for raw water evaluation. The PNSDW-1994 is also used to evaluate water quality with reference to turbidity and trace elements. The water quality of the selected rivers falls on Class "B" standard, although the parameters tested are limited. According to the river water classification conducted by the Regional DENR in 1995, Bago River was classified as Class "C".

7.6 Future Development Potential of Water Sources

(1) Groundwater

A well inventory covering all the municipalities shows that there are 19,286 existing wells in the province, while 724 wells are recorded in the inventory prepared by PSPT (See Table 7.1.1 and 7.3.1, Data Report). Despite the smaller number of wells included in the PSPT data, these were used in the analysis in provision of technical information. Of the total 724 wells, 690 wells have complete information: depth, static water level and specific capacity. Data are summarized in Table 7.6.1 Existing Well Sources.

Table 7.6.1 Existing Well Sources

Municipality/ City	Type	No.	Depth (m)		SWL (mbgs)		Sp. Cap. (lpsm)	
			Ave	Range	Ave	Range	Ave	Range
Bacolod City	DW	24	59.9	30.2 - 80.0	16.3	2.6 - 44.9	6.02	3.41 - 9.66
	SW	0	-	-	-	-	-	-
Bago City	DW	21	23.7	20.4 - 24.0	3.3	3.0 - 6.0	0.35	0.20 - 1.83
	SW	1	11.0	11.0 - 11.0	3.0	3.0 - 3.0	0.20	0.20 - 0.20

Table 7.6.1 Existing Well Sources

(cont'd)

Municipality/ City	Type	No.	Depth (m)		SWL (mbgs)		Sp. Cap. (lpsm)	
			Ave	Range	Ave	Range	Ave	Range
Binalbagan	DW	10	21.1	20.0 - 28.0	3.2	3.0 - 5.2	0.24	0.20 - 0.58
	SW	4	8.8	4.0 - 19.0	3.0	3.0 - 3.0	0.20	0.20 - 0.20
Cadiz City	DW	4	30.0	21.3 - 40.0	5.7	5.0 - 6.0	0.74	0.20 - 2.01
	SW	41	16.5	1.6 - 18.3	5.8	0.6 - 6.0	0.43	0.20 - 0.53
Calatrava	DW	1	21.3	21.3 - 21.3	6.0	6.0 - 6.0	0.20	0.20 - 0.20
	SW	11	8.3	5.0 - 15.0	5.5	3.0 - 11.0	0.29	0.20 - 1.20
Candoni	DW	0	-	-	-	-	-	-
	SW	6	5.3	1.8 - 6.0	2.6	0.5 - 3.0	0.57	0.20 - 2.40
Cauayan	DW	0	-	-	-	-	-	-
	SW	33	5.7	1.8 - 6.0	2.9	1.0 - 3.0	0.27	0.20 - 2.53
E. B. Magalona	DW	2	24.4	24.4 - 24.4	15.0	15.0 - 15.0	2.19	1.46 - 2.92
	SW	31	9.3	7.3 - 12.8	6.0	6.0 - 6.0	0.20	0.20 - 0.20
Escalante	DW	1	40.0	40.0 - 40.0	5.0	5.0 - 5.0	1.94	1.94 - 1.94
	SW	22	7.6	4.3 - 16.0	5.8	2.0 - 6.0	0.31	0.20 - 2.40
Himamaylan	DW	0	-	-	-	-	-	-
	SW	19	7.8	3.0 - 18.3	3.2	2.0 - 6.0	0.54	0.20 - 5.00
Hinigaran	DW	10	29.2	20.0 - 60.0	3.0	3.0 - 3.0	1.20	0.20 - 6.40
	SW	17	10.4	5.0 - 18.3	3.9	3.0 - 6.0	0.29	0.20 - 1.81
Hinoba-an	DW	0	-	-	-	-	-	-
	SW	23	6.2	5.7 - 11.3	3.0	3.0 - 3.0	0.20	0.20 - 0.20
Ilog	DW	0	-	-	-	-	-	-
	SW	31	6.5	5.7 - 14.0	3.1	3.0 - 6.0	0.47	0.20 - 4.78
Isabela	DW	2	22.2	20.0 - 24.4	6.5	3.0 - 10.0	3.57	0.20 - 6.94
	SW	16	12.4	6.7 - 18.0	3.2	3.0 - 6.0	0.20	0.20 - 0.20
Kabankalan City	DW	3	28.3	24.4 - 30.5	21.0	21.0 - 6.0	2.38	0.09 - 5.50
	SW	50	6.8	5.7 - 14.0	3.3	3.0 - 21.0	0.26	0.20 - 3.36
La Carlota City	DW	10	23.8	20.0 - 54.9	3.9	3.0 - 7.7	1.16	0.20 - 6.67
	SW	6	12.8	11.0 - 18.0	5.5	3.0 - 6.0	0.20	0.20 - 0.20
La Castellana	DW	0	-	-	-	-	-	-
	SW	6	12.2	7.3 - 18.0	4.5	3.0 - 6.0	0.20	0.20 - 0.20
Manapla	DW	1	60.0	60.0 - 60.0	5.0	5.0 - 5.0	1.80	1.80 - 1.80
	SW	25	15.7	7.3 - 18.0	3.7	3.0 - 6.0	2.63	0.20 - 6.00
Moises Padilla	DW	0	-	-	-	-	-	-
	SW	5	12.5	9.1 - 18.0	4.8	3.0 - 6.0	0.20	0.20 - 0.20

Table 7.6.1 Existing Well Sources

(cont'd)

Municipality/ City	Type	No.	Depth (m)		SWL (mbgs)		Sp. Cap. (lpsm)	
			Ave	Range	Ave	Range	Ave	Range
Murcia	DW	0	-	-	-	-	-	-
	SW	11	12.1	7.3 - 18.0	4.6	3.0 - 6.0	0.20	0.20 - 0.20
Pontevedra	DW	6	20.0	20.0 - 20.0	3.0	3.0 - 3.0	0.20	0.20 - 0.20
	SW	14	7.7	5.0 - 18.0	4.5	3.0 - 6.0	0.20	0.20 - 0.20
Pulupandan	DW	12	30.0	20.0 - 80.0	3.0	3.0 - 3.0	0.78	0.20 - 5.68
	SW	10	5.9	5.0 - 13.7	3.3	3.0 - 6.0	0.20	0.20 - 0.20
Sagay City	DW	7	39.7	29.7 - 45.7	3.0	3.0 - 3.0	2.89	0.85 - 4.74
	SW	52	9.9	6.1 - 18.2	3.5	3.0 - 6.0	0.31	0.15 - 1.74
S. Benedicto	DW	0	-	-	-	-	-	-
	SW	7	3.0	3.0 - 3.0	2.0	2.0 - 2.0	0.20	0.20 - 0.20
San Carlos City	DW	1	40.0	40.0 - 40.0	5.0	5.0 - 5.0	0.61	0.61 - 0.61
	SW	0	-	-	-	-	-	-
San Enrique	DW	0	-	-	-	-	-	-
	SW	10	10.3	9.1 - 12.8	3.0	3.0 - 3.0	0.38	0.20 - 2.00
Silay City	DW	0	-	-	-	-	-	-
	SW	1	5.8	3.0 - 7.3	3.3	2.4 - 6.0	0.28	0.20 - 1.50
Sipalay	DW	0	-	-	-	-	-	-
	SW	3	5.9	5.7 - 6.0	3.0	3.0 - 3.0	0.20	0.20 - 0.20
Talisay City	DW	5	53.2	48.8 - 61.0	23.6	20.0 - 25.0	7.50	6.25 - 8.33
	SW	47	11.0	11.0 - 11.0	6.0	6.0 - 6.0	0.20	0.20 - 0.20
Toboso	DW	0	-	-	-	-	-	-
	SW	9	5.6	4.0 - 10.2	4.1	3.0 - 6.0	0.22	0.20 - 0.38
Valladolid	DW	4	22.0	20.0 - 27.9	6.0	3.0 - 15.0	0.20	0.20 - 0.20
	SW	13	14.7	10.0 - 18.0	3.0	3.0 - 3.0	0.20	0.20 - 0.20
Victorias City	DW	4	97.9	45.7 - 150.0	11.8	10.0 - 15.0	7.00	5.73 - 9.17
	SW	19	12.1	7.6 - 18.0	4.4	3.0 - 6.0	0.20	0.20 - 0.20

Notes: The values of "Ave. depth, SWL and Sp.Cap." by municipality are estimated using the weighted average based on 1995 census population in respective barangays at well location.

SWL=static water level, Sp.Cap.=specific capacity, Ave.=average, SW=shallow well and DW=deep well

Considering the well information, the most productive wells are those with the depth ranging from 12m to 18m and from 30m to 150m. The good yielding wells have static water level varying from about 3m to 45mbgs and specific capacity of about 2 lpsm to 10 lpsm.

Based on the hydrogeologic characteristics and location of wells in Negros Occidental, aquifers are widely distributed in the surroundings of volcanoes and the western coastal plains. Solo shallow well areas are distributed only in the southern coastal areas in Sipalay and Hi-

noba-an facing Sulu Sea. The Recent Volcanic, and Miocene and older rock units are widely distributed in both northern and southern mountain portions of the province that are classified as difficult area for groundwater development.

As indicated in Figure 7.3.1 Main Report, the piedmont areas of volcanoes and the alluvial plains are high yielding potential areas covering the northwest and north coastal parts of the province. Water levels in unconfined aquifers are shallow in these areas, while the static water levels of confined aquifers in the volcanic fan have various ranges from 3.0 mbgs to 45 mbgs or deeper probably depending on the distance from the fan edge. There is no low yielding area in the province. However, in the southern rolling mountains and the eastern mountain system, deep well capacity have various ranges of production amount from low to high yields.

Existence of high iron contents in groundwater is confirmed in the piedmont areas of volcanoes and the northern slop area of southern rolling mountains. Saline water intrusion is reported along the coastal areas in most of the northern half part of the province. According to the water quality examination results, groundwater in the vicinity of volcanoes shows slightly low pH value (acidic groundwater) ranging from 6.8 to 6.9.

As an alternative water source, the untapped spring can be developed for future use. This is the most reliable source for rural water supply in the province because groundwater quality has a serious problem in terms of ironic groundwater and saline water intrusion. Existing spring sources (997 springs) are utilized for water supply and most of them originate from the northern volcanoes and the southern rolling mountains of the province. The untapped springs (25 springs) are proposed as future water sources in the subject areas.

The detailed hydrogeological characteristics of each municipality are summarized in Table 7.6.2, while individual well locations with technical information are shown in Figure 7.6.1 Individual Well Location and Specification Map, Data Report.

Additional wells shall be designed employing "gravel packed well" with a gravel thickness of about 50mm or more depending on the grain sizes of aquifers and pumping capacity. While, natural gravel packed well may be adopted within the areas where well-sorted natural gravel formation is distributed at the expected aquifer. Such areas are usually the upstream areas of alluvial fans or plains in the province. The application of such method for Level-I well is also justifiable, since inflow velocity of groundwater through the screen is very low because of minimal pumping rate by means of hand-pump operation.

Table 7.6.2 Hydrogeological Descriptions by Municipality

Municipality	Ground Information					Well Information					Groundwater Information								
	Topography		Geology			Depth		SWL			Sp.Cap. L-III	Availability		Potential	Quality				
	Area Proportion (%)		Lithofacies (Major Aquifers)	Stratigraphy		min.	max.	min.	max.	ave.		Area Proportion (%)	Comparative		Area Feature				
	Plain-Plateau	Hilly-Piedmont		Mountain	Q						Tertiary								
											Neo.			Paleo.		C			
Bacolod City	51%	33%	16%	pyroclastics & recent deposits	x	x	x	30.2	80.0	2.6	44.9	6.0	19	0%	84%	16%	good	rich	ironic & saline
Bago City	54%	14%	32%	recent deposits	x	x	x	11.0	24.0	3.0	6.0	0.3	2	0%	54%	46%	good	few	saline
Binalbagan	42%	58%	0%	limestone & recent deposits	x	x		4.0	28.0	3.0	5.2	0.2	2	0%	100%	0%	good	poor	saline
Cadiz City	18%	37%	45%	pyroclastics & recent deposits	x	x	x	1.6	40.0	0.6	6.0	0.5	4	0%	55%	45%	good	rich	ironic & saline
Calatrava	7%	78%	15%	limestone & recent deposits	x	x	x	5.0	21.3	3.0	11.0	0.3	0	0%	85%	15%	fair	rich	ironic & saline
Candoni	8%	92%	0%	limestone		x	x	1.8	6.0	0.5	3.0	0.6	0	0%	56%	44%	fair	few	
Cauyan	12%	88%	0%	limestone & recent deposits	x	x	x	1.8	6.0	1.0	3.0	0.3	0	0%	29%	71%	fair	few	ironic & saline
E. B. Magalona	44%	43%	13%	pyroclastics & recent deposits	x	x	x	7.3	24.4	6.0	15.0	0.3	2	0%	87%	13%	good	few	ironic & saline
Escalante	34%	66%	0%	limestone & recent deposits	x	x	x	4.3	40.0	2.0	6.0	0.4	1	0%	84%	16%	fair	few	
Himamaylan	22%	78%	0%	limestone & recent deposits	x	x		3.0	18.3	2.0	6.0	0.5	4	0%	100%	0%	good	poor	saline
Hinigaran	31%	69%	0%	limestone & recent deposits	x	x		5.0	60.0	3.0	6.0	0.6	2	0%	100%	0%	good	poor	saline
Hinoba-an	6%	94%	0%	limestone & recent deposits	x	x	x	5.7	11.3	3.0	3.0	0.2	0	3%	8%	89%	risky	few	
Ilog	19%	81%	0%	limestone & recent deposits	x	x	x	5.7	14.0	3.0	6.0	0.5	0	0%	56%	44%	good	few	saline
Isabela	39%	61%	0%	limestone & recent deposits	x	x		6.7	24.4	3.0	10.0	0.6	0	0%	100%	0%	fair	few	ironic
Kabankalan City	8%	92%	0%	limestone & recent deposits	x	x	x	5.7	30.5	3.0	21.0	0.4	3	0%	92%	8%	fair	few	ironic
La Carlota City	3%	48%	49%	pyroclastics & recent deposits	x	x	x	11.0	54.9	3.0	7.7	0.8	1	0%	51%	49%	good	rich	

Legend: Geological Age, Q=Quaternary, Neo.=Neogene, Paleo.=Paleogene, C=Cretaceous
Well Information, SWL=static water level, Sp.Cap.=specific capacity, L-III=wells operated for L-III service
Groundwater Information, SW=solo shallow well area, DW=deep well area, Diff.=difficult area

Table 7.6.2 Hydrogeological Descriptions by Municipality

Municipality	Ground Information										Well Information						Groundwater Information					
	Topography			Geology			Depth		SWL		Sp.Cap.		Availability		Potential		Quality					
	Area Proportion (%)			Stratigraphy			m		mbgs		lpsm		Area Proportion (%)		Comparative		Area Feature					
	Plain-Plateau	Hilly-Piedmont	Mountain	Lithofacies (Major Aquifers)	Q	Tertiary	Neoc. Paleo.	mini.	max.	mini.	max.	ave.	well	SW	DW	Diff.	Wells	Springs	Problem	Pollutants		
La Castellana	3%	39%	58%	pyroclastics & recent deposits	x	x	x	7.3	18.0	3.0	6.0	0.2	0	0%	42%	58%	risky	rich	ironic			
Manapla	26%	74%	0%	pyroclastics & recent deposits	x	x	x	7.3	60.0	3.0	6.0	0.7	1	0%	56%	44%	good	rich	ironic & saline			
Moises Padilla	7%	70%	23%	pyroclastics & recent deposits	x	x	x	9.1	18.0	3.0	6.0	0.2	0	0%	77%	23%	fair	rich	ironic			
Murcia	2%	35%	63%	pyroclastics & recent deposits	x	x	x	7.3	18.0	3.0	6.0	0.2	2	0%	37%	63%	good	rich				
Pontevedra	3%	97%	0%	limestone		x		5.0	20.0	3.0	6.0	0.2	0	0%	100%	0%	good	few	saline			
Pulupandan	100%	0%	0%	recent deposits	x			5.0	80.0	3.0	6.0	0.5	0	0%	100%	0%	good	poor				
Sagay City	12%	88%	0%	pyroclastics & recent deposits	x	x	x	6.1	45.7	3.0	6.0	0.6	10	0%	92%	8%	good	rich	ironic			
S. Benedicto	0%	14%	86%	agglomerate	x			3.0	3.0	2.0	2.0	0.2	0	0%	0%	100%	risky	rich				
San Carlos City	3%	71%	26%	limestone & recent deposits	x	x	x	40.0	40.0	5.0	5.0	0.6	3	0%	74%	26%	fair	few				
San Enrique	45%	55%	0%	pyroclastics & recent deposits	x	x		9.1	12.8	3.0	3.0	0.4	0	0%	100%	0%	good	few	saline			
Silay City	11%	44%	45%	pyroclastics & recent deposits	x	x	x	3.0	7.3	2.4	6.0	0.3	0	0%	55%	45%	good	rich	ironic & saline			
Sipalay	2%	98%	0%	limestone & recent deposits	x	x	x	5.7	6.0	3.0	3.0	0.2	0	5%	47%	48%	fair	few	Cu Mining			
Talisay City	26%	29%	45%	pyroclastics & recent deposits	x	x		11.0	61.0	6.0	25.0	0.9	3	0%	55%	45%	good	rich	ironic			
Toboso	12%	88%	0%	limestone & recent deposits	x	x	x	4.0	10.2	3.0	6.0	0.2	0	0%	97%	3%	fair	few	ironic & saline			
Valladolid	100%	0%	0%	recent deposits	x			10.0	27.9	3.0	15.0	0.2	2	0%	100%	0%	good	poor	saline			
Victorias City	16%	49%	35%	pyroclastics & recent deposits	x	x	x	7.6	150.0	3.0	15.0	1.1	3	0%	65%	35%	good	rich	ironic & saline			

Legend: Geological Age, Q=Quaternary, Neo.=Neogene, Paleo.=Paleogene, C=Cretaceous

Well Information, SWL=static water level, Sp.Cap.=specific capacity, L-III=wells operated for L-III service

Groundwater Information, SW=solo shallow well area, DW=deep well area, Diff.=difficult area

Generally, shallower well has a higher possibility to be constructed applying the natural gravel packed method than the deeper one in areas formed by recent deposits. This is because the layers at different depths of alluvial plain or fan deposits had been formed by different situations of transportation and sedimentation between varied grain sizes. The adaptability of the natural gravel packed well in entire municipality/city is experimentally assumed referring to the limited information such as topography, geology, static water levels, etc., as shown in Table 7.6.3. It is noted that the percentage of the natural gravel packed shallow well in Cauayan and Hinoba-an is high with 60%, because the subject area for well development (resided area, not covering total area of the municipality) is limited and existence of favorable soil conditions in the area is confirmed.

Table 7.6.3 Proportion of Gravel Packed and Natural Gravel Packed Wells

City/Municipality (only potential area)	Proposed Well Depth	Proportion (%) of Level-I Deep/Shallow Wells	
		Gravel Packed	Natural Gravel Packed
Bago City	40 m	90 %	10 %
La Castellana	80 m	80 %	20 %
Moises Padilla	80 m	80 %	20 %
Isabela	80 m	70 %	30 %
Cauayan (deep well)	40 m	80 %	20 %
Cauayan (shallow well)	18 m	40 %	60 %
Hinoba-an (shallow well)	18 m	40 %	60 %

Note: City/Municipalities except for Cauayan and Hinoba-an refer to deep wells.

Examination on the effective grain sizes and uniformity coefficient by sieve analysis at the influential aquifers (composed of coarse sand and/or fine gravel) should be conducted during the implementation period. Such analysis and actual well construction results are very helpful in application of the natural gravel packed method in future planning.

It is reported by DPWH/DEO that numerous deep wells present high Fe contents (PNSDW; $Fe < 1.0 \text{ ppm}$) in the municipality of Calatrava to Bago City in the counterclockwise order, the municipalities of La Castellana, Moises Padilla, Isabela and Cauayan, and Kabankalan City. The results of groundwater quality examination, conducted by the PSPT, show their characteristics with slightly higher Fe and acidic water. Ionic water pumped from deep wells is caused by groundwater itself, well materials eluded in acid water, or combination of groundwater and well materials. There are four cases on water quality problem in terms of Fe and pH value as shown below.

- (1) Iron concentration is less than the PNSDW (1 ppm) and the pH value of groundwater indicates neutral or alkaline. There is a low possibility of iron contamination through the future.
- (2) Although iron concentration is within the PNSDW, groundwater shows an acid pH value. There is a possibility of iron contamination from steel materials.
- (3) Iron concentration exceeds the PNSDW and the groundwater shows neutral or alkaline. There is iron contamination caused by groundwater itself.
- (4) Iron concentration exceeds the PNSDW and groundwater shows acid pH side. There is a possibility of iron contamination caused by groundwater and/or well materials.

Where groundwater has high Fe contents, the Iron Removal Facility shall be additionally installed. Such countermeasures are recommended especially for the cities/municipalities of Calatrava, Toboso, Escalante, Sagay, Cadiz, Bago, La Castellana, Moises Padilla, Isabela, Kabankalan and Cauayan. The ratio of deep wells equipped with Iron Removal Facility to the total requirements of the province is assumed at about 20%.

Where the parameter of groundwater indicates acid pH side, the well casing pipe and screen shall be designed to use anti-corrosive materials, such as anti-metallic (polyvinyl chloride; PVC) or anti-corrosive metal (stainless steel; SUS) materials. Generally, shallower well presents water quality with alkalinity parameter. This is because the shallow wells are usually constructed in alluvial plain or fan deposits. The well materials of the said anti-corrosive shall be used for deep wells.

Based on the results of groundwater examination conducted by the PSPT during this study, slightly acidic pH values were tested at few deep wells in the northern piedmont area. However, the area where the deep well construction using PVC and SUS materials is applicable for the future plan could not be identified due to insufficient information at present. Nevertheless, the expected municipality areas, in which there is a possibility to encounter low pH value (acidic) in groundwater, are projected as shown in Table 7.6.4 for the future study.

Water quality examination on Fe and pH parameters should be conducted during the implementation period. Such groundwater quality analysis is very helpful to design well materials in future planning.

Table 7.6.4 Proposed Location of Additional Water Quality Examination for PVC Wells

Municipality (only potential area)	Proposed Well Depth	Proposed Study Field	
		Area	Topographic Feature
Calatrava	40 m	Rural	Limestone & Volcanic Hills
Toboso	40 m	Rural	Limestone Hills
Sagay City	40 m	Urban & Rural	Volcanic Fan
Cadiz City	40 m	Urban & Rural	Volcanic Fan
La Carlota City	80 m	Urban	Pyroclastic Plateau
La Castellana	80 m	Urban	Pyroclastic Plateau
Moises Padilla	80 m	Urban	Pyroclastic Plateau
Isabela	80 m	Urban & Rural	Alluvial Fan & Limestone Hills
Kabankalan City	40 m	Urban & Rural	Alluvial Fan & Limestone Hills
Cauayan	40 m	Rural	Coastal Plain

(2) Spring

Untapped spring sources identified are shown in Table 7.6.5. These data were collected and tabulated using the questionnaire sheet-untapped spring information format, Data Report. Data also include the parameters of barangay name, owner, discharge, transmission pipeline length and relative elevation.

Table 7.6.5 Untapped Spring Sources Identified

Location		Untapped Spring			
Municipality/City	Barangay	Owner	Discharge (lps)	T.L.L.* (km)	Relative Elevation (m)
Bago City	Bacong	Private	0.5	3.0	10
	Bacong-Montilla	Private	0.5	3.0	30
	Binubuhan	Private	0.5	3.5	40
Cadiz City	Jerusalem	Private	2.5	1.2	NA
	Luna	Private	2.0	1.0	NA
	Mabini	Private	0.5	0.5	NA
	V. F. Gustilo	Public	0.6	1.1	NA
Calatrava	Hinab-Ongan	Private	0.1	0.4	1
	Laga-an	Private	NA	0.8	18
	Minapasuk	Public	63.1	1.0	5
	Paghumayan	Private	NA	0.8	2
	Pantao	Private	NA	1.5	5
Cauayan	Caliling	Public	56.8	2.0	NA

Table 7.6.5 Untapped Spring Sources Identified

(cont'd)

Location		Untapped Spring			
Municipality/City	Barangay	Owner	Discharge (lps)	T.L.L.* (km)	Relative Elevation (m)
Cauayan	Camindangan	Public	71.9	0.2	NA
	Camindangan	Public	68.1	3.0	NA
	Tuyom	Public	18.9	3.0	NA
Manapla	San Pablo	Private	189.3	0.3	1
	San Pablo	Private	113.6	0.1	3
Sagay City	Campo Himoga-an	UK	80.0	0.5	2
	General Luna	Public	40.0	0.1	6
	Himoga-an Baybay	Private	32.0	8.0	NA
	Lopez Jaena	UK	80.0	0.5	2
	Makiling	Private	10.7	2.0	-25
	Paraiso	UK	1.7	6.0	NA
	Sewahon I	Private	80.0	0.8	3

Notes: T.L.L.; Transmission line length, NA; Data not available and UK; Unknown Data

7.7 Water Source Development for Medium-Term Development Plan

7.7.1 Detailed Groundwater Investigation Required

(1) Groundwater assessment required in the western coastal plain

The Bacolod City Level-III water supply is the largest groundwater fed system, the water sources of which are nineteen (19) production deep wells and two (2) groups of spring eyes. These springs are located in the spring fields on the eastern slope side of Mt. Mandalagan. The total intake amount in 1998 was 47,000 m³/day in average according to Bacolod City Water District (BACIWA). The deep wells contribute to the majority of the amount with 44,300 m³/day.

The expansion project of BACIWA (Provincial City Water Supply Project-IV; PCWSP-IV) assisted by LWUA through the JBIC (ex-OECF) funds is now under construction. Additional groundwater amount of 27,000 m³/day will be ensured developing 13 deep wells with the depth of about 150m. Major aquifer is made up of several volcanic sediments such as pyroclastics and volcanic ash/lava/eruptions.

As the result of preliminary estimation, the groundwater development potential is as equivalent as inflow value using the Darcy's law. The following conditions are adopted based on the feasibility study report of the BACIWA (pumping test data obtained from production deep well No.18 with depth of 54m and No.20 with depth of 76m, and hy-

drogeological characteristics).

$$T = 160 \text{ m}^3/\text{day}/\text{m}$$

$$K = T/H_1 = 6.2 \times 10^{-3} \text{ cm}/\text{sec}$$

$$V = K \times (dh/dl) = 0.19 \text{ m}/\text{day}$$

Where T: Transmissivity Value (from the Feasibility Study Report)

K: Permeability Coefficient

H₁: Thickness of Aquifer (thickness of 30m)

V: Bulk Velocity in Aquifer

(dh/dl): Hydraulic Gradient (0.035 by the piezometric)

$$Q_f = V \times W \times H_2 \times \text{Sp.y} = 55,000 \text{ m}^3/\text{day}$$

Where Q_f: Specific Flux (Inflow Value)

V: Bulk Velocity in Aquifer (0.19 m/day)

W: Width of Well Field (14,500 m)

H₂: Thickness of Aquifer (thickness of 136m; as well depth of 150m)

Sp.y: Specific Yield (0.15 as fine to medium sand with porosity of 0.45)

The preliminary exploitable groundwater value of aquifer in the well field is roughly estimated at about 55,000 m³/day. In consideration of some other factors that affect available amount of water (decline or seasonal variation of water level, none uniform permeability and hydraulic gradient, efflux or influx movement between neighboring aquifers, etc), the planned amount of 71,300 m³/day by the WD through PCWSP-IV project may be the ceiling figure.

Groundwater development is usually advantageous for water supply in terms of water quality, and cost saving in construction of the transmission pipeline and other required facilities comparing with other source development. However, attention shall be paid to over exploitation, which may affect the groundwater balance in the well field including vicinity municipalities.

To make a remedy to the shortage of groundwater available as mentioned above, there are three options; (1) to expand the well field (plane expansion), (2) to tap the deeper aquifer (solid expansion) and (3) combination of the above two alternatives.

In general, groundwater assessment shall be conducted to ensure water sources in entire provincial area. The study shall entail a material balance of the aquifer system consid-

ering water recharge, storage, inflow, leakage, etc. Aside from this, since groundwater in the entire Bacolod Fan and Bago Plain areas contains slightly higher iron and manganese, the following are required as the future investigation of water development.

1) Preparation of Groundwater Database

a) Study Area

Three (3) cities to cover Talisay, Bacolod and Bago.

b) Database Parameters

well location, geologic log, well structures, static groundwater level, production (periodic monitoring) and water quality (especially from privately owned deep wells)

2) Physical Prospecting

a) Field

same area in item 1)

b) Method

Type of Prospecting; electric resistivity

Alignment; Schlumberger or Wenner

Sounding depth; 200m

Sounding points; 30 points (interval distance between neighboring sounding points will be about 1 km)

c) Study

Hydrogeologic section with information of quality and permeability shall be analyzed for the test well construction.

3) Test Deep Wells

a) Construction Site

Sites shall be pointed out after the study on groundwater database and geologic survey.

b) Specification of Test Deep Well

Number; at least 3 test wells

Well design; well depth of 150m to 200m or 300m (depending on the results of prospecting and groundwater development decision) with well diameter of 300mm and well screen (SUS) length of 45m

c) Installed Tests

Geophysical Logging; Resistivity (short & long) and Spontaneous Potential

Pumping Test; Time draw-down by maximum discharge of 2,500 m³/day with 24

hours and Recovery test

Water Quality Examination; to include Fe, Mn, Cl, pH, Color, Turbidity, etc.

Monthly monitoring; static water level

(2) Alternative water sources in the southwestern wide-level land

Water sources in the difficult area are mainly replenished by way of the secondary permeability of various rocks. This means that groundwater movement occurs only through fissures, cracks and crevices, which predominantly exist in places where there are faults and other geologic disconnection.

In this regard, the development of groundwater through deep well construction is very risky in the southern mountain area. Spring inventories prepared by the PSPT for this study and those by the DPWH indicate that there are few untapped spring sources in this area.

Presently, many rural people are using unsafe surface water or rainwater collector. The favorable way to provide rural people in this mountain area with safe water is to develop new untapped springs and/or to improve the facility of rainwater collector. If aquifers with potable groundwater can not be found, the improved rainwater collector shall be promoted with due consideration on roof materials, reservoir with sand filtration and chlorination system.

7.7.2 Spacing Allocation for Level II and III Wells

The pumping rates required for Level I facilities are fairly lower than that for Level II and III systems. The well interference in Level I facilities need not to be studied in terms of spacing of wells and production rate, since most formations in shallow and deep well areas generally have enough groundwater development potential. As Level II and III wells are usually expected to produce larger discharge to meet the water demand, the spacing of wells to avoid well interference has to be considered. Spacing allocation for Level II and III wells was examined considering specific capacity, pumping rate, and assumed drawdown of 1cm at the interference radius for a pumping duration of 16 hours.

(1) Specific Capacity

According to the existing well source information, specific capacity was considered with ranges from 0.5 lpsm to 6.5 lpsm. To simplify the calculation, an average value in each range is adopted in the calculation of interference radius.

(2) Pumping Rate

The pumping rate was estimated by assuming a drawdown of 10m with the average value of specific capacity and pump operation of 16 hours/day. The formula used to determine proper well spacing is the Jacob modified equation. Drawdown at the interference boundary is assumed at 1cm after a pumping duration of 16 hours.

Table 7.7.1 presents the estimated spacing requirements and number of wells to be constructed within a well field of one km². The spacing interval between adjacent wells to avoid well interference is planned to be more than twice the distances of the calculated interference radius.

Table 7.7.1 Spacing Arrangements for Planned Wells

Range of Specific Capacity (lps/m)	Estimated Pumping Rate (m ³ /day)	Estimated Interference Radius (m)	Estimated Number of Wells/km ²
0.5 - 1.5	500	80	45
1.5 - 3.0	1,000	120	20
3.0 - 4.5	2,000	160	11
4.5 - 6.0	2,500	200	7
> 6.0	>2,500	>200	>7