

TABLE 3.4
Adjusted Mean Monthly Rainfall in mm - Baker Lake (Hydrologic Year)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual
1949							0.0	0.9	8.6	5.8	5.8	4.9	
1950	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	40.1	38.5	23.7	108.9
1951	0.6	0.0	0.0		0.0	0.0	0.0	4.0	34.7	17.8	7.4	33.3	
1952	16.4	0.0	0.0	0.0	0.0	0.0	0.6	18.6	39.2	23.5	67.6	39.5	205.4
1953	0.0	0.0	0.0	0.0	2.3	0.0	2.1	1.9	21.3	54.0	63.9	13.7	159.2
1954	7.5	0.0	0.0	0.0	0.0	0.0	0.0	3.3	18.5	32.0	14.6	50.7	126.6
1955	11.5	0.0	0.0	0.0	0.0	0.0	0.0	18.2	57.8	55.5	61.9	37.1	242.0
1956	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.8	70.5	81.7	8.3	177.1
1957	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	9.4	70.0	52.8	12.4	145.2
1958	4.8	0.3	0.0	0.0	0.0	0.0	0.0	3.3	20.8	38.5	46.8	84.8	199.3
1959	13.4	0.3	0.0	0.0	0.0	0.0	0.0	0.9	28.8	51.9	77.7	32.1	205.1
1960	0.3	0.9	0.0	0.0	0.0	0.0	0.0	3.0	6.9	41.9	34.8	51.3	139.1
1961	43.6	0.3	0.0	0.0	0.0	0.0	0.0	1.8	13.6	9.4	59.8	58.2	186.7
1962	1.5	0.6	0.0	0.0	0.0	0.0	0.3	0.6	36.8	42.3	50.0	45.8	177.9
1963	16.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	3.5	35.0	24.7	10.2	90.3
1964	19.7	0.0	0.0	0.0	0.0	0.0	0.3	0.6	7.0	6.1	15.7	38.6	88.0
1965	9.9	0.3	0.0	0.0	0.0	0.0	0.3	0.9	22.5	24.2	11.0	6.7	75.8
1966	4.6	0.3	0.0	0.0	0.0	0.0	0.3	24.8	18.4	43.0	24.8	17.8	134.0
1967	2.5	0.0	0.0	0.0	0.0	0.0	0.0	2.1	36.9	57.0	35.5	50.7	184.7
1968	12.6	0.0	0.0	0.0	0.0	0.0	0.0	3.0	8.3	45.1	30.4	92.0	191.4
1969	11.9	1.2	0.0	0.0	0.0	0.0	0.5	0.8	5.8	59.1	11.1	16.1	106.5
1970	1.9	1.4	0.0	0.0	0.0	0.0	0.0	0.6	39.8	96.3	44.3	61.4	245.7
1971	20.5	0.3	0.0	0.0	0.0	0.0	1.0	8.9	25.4	49.0	50.2	37.7	193.0
1972	20.6	0.0	0.0	0.0	0.0	0.0	0.3	4.3	10.4	17.7	43.4	31.4	128.1
1973	1.3	0.0	0.0	0.0	0.0	0.0	0.0	10.2	15.4	2.9	65.0	83.9	178.7
1974	3.0	0.3	0.0	0.0	0.0	0.0	0.0	1.2	27.1	55.7	22.7	11.9	121.9
1975	1.5	0.9	0.0	0.0	0.0	0.0	0.0	14.1	26.8	74.8	74.5	32.3	224.9
1976	10.3	0.0	0.0	0.0	0.0	0.0	0.0	31.9	30.2	25.5	18.2	42.4	158.5
1977	0.3	0.3	0.5	0.0	0.0	0.0	13.3	21.7	25.5	29.0	46.3	41.1	178.0
1978	21.6	0.6	0.0	0.0	0.0	0.0	0.0	0.9	28.9	76.7	22.9	7.0	158.6
1979	7.8	0.0	0.0	0.0	0.0	0.0	0.7	35.4	29.5	32.3	31.1	8.0	144.8
1980			0.0	0.0	0.3	0.0	1.8	1.8	7.5	59.2	81.1	14.6	
1981	2.4	0.6	0.0	0.6	0.0	0.6	0.0	9.8	24.5	46.0	13.4	28.2	126.1
1982	26.9	0.0	0.0	0.0	0.0	0.0	0.0	4.9	21.4	46.7	23.2	48.2	171.3
1983	22.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	12.6	9.9	79.6	54.4	179.7
1984	5.6	0.9	0.3	0.0	0.9	0.0	1.5	1.2	18.8	42.3	69.7	25.1	166.3
1985	7.0	0.0	0.0	0.9	0.0	0.0	0.6	5.0	9.0	96.0	84.8	74.2	277.5
1986	4.2	0.9	0.6	0.0	0.0	0.0	0.3	30.2	32.1	9.0	94.9	25.9	198.1
1987	5.4	0.0	0.0	0.0	0.0	0.0	0.9	2.6	32.5	49.0	69.9	32.5	192.8
1988	1.2	3.2	0.9	0.0	0.0	0.0	0.0	1.2	45.6	41.6	46.9	54.3	194.9
1989	8.8	0.6	0.0	0.0	0.0	0.0	0.0	0.3	17.8	62.0	25.7	22.9	138.1
1990	2.7	0.0	0.0	0.0	0.0	0.0	0.3	11.2	15.2	81.4	44.6	33.1	188.5
1991	0.9	0.0	0.0	0.0	0.3	0.0	0.3	7.3	26.7	30.4	40.1	22.1	128.1
1992	4.4	0.0	0.6	0.9	0.0	0.0	0.3	4.6	9.1	12.5	56.9	48.2	137.5
1993	1.5	0.0	0.0	0.0	0.0	0.0	0.3	5.5	21.0	72.7	42.9	9.8	153.7
1994	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.6	13.2	82.9	44.4	62.0	203.4
1995	7.9	1.2	0.0	0.0	0.0	0.0	0.6	0.6	9.6	20.6	61.2	11.2	112.9
1996	11.1	0.0	0.0	0.0	0.0	0.0	0.0	2.5	25.3	47.9	84.3	89.1	260.2
1997	0.6	0.0	0.0	0.0	0.0	0.0	1.1	5.1	44.5	21.3	22.7	16.0	111.3
1998	12.3	0.3	0.3	0.0	0.0	0.0	0.9	5.4	48.7	56.4	49.1	77.3	250.7
1999	7.0	1.2	0.0	0.0	0.0	0.8	2.6	5.9	56.8	80.1	53.3	43.7	251.4
2000	3.3	0.0	0.3	0.0	0.0	0.0	0.9	13.7	2.5	30.3	39.6	62.0	152.6
2001	1.2	0.3	0.0	0.3	0.0	0.0	0.6	9.5	19.8	25.8	81.9	18.7	158.1
2002	11.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	20.8	71.4	95.0	20.1	219.5
2003	1.5	0.0	0.6	0.3	0.0	0.0	0.0	16.0	18.0	44.3	22.2	44.3	147.2
2004	1.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	16.1	11.3	24.2	75.0	128.3
Maximum	43.6	3.2	0.9	0.9	2.3	0.8	13.3	35.4	57.8	96.3	95.0	92.0	277.5
Mean	8.0	0.3	0.1	0.1	0.1	0.0	0.6	6.5	22.1	43.5	46.2	37.5	168.4
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.9	5.8	4.9	75.8

TABLE 3.5
Adjusted Mean Monthly Snowfall in cm - Baker Lake (Hydrologic Year)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual
1949							5.0	0.6	3.8	0.0	0.6	3.3	
1950	17.8	12.3	7.0	3.8	7.9	9.1	8.8	5.8	15.9	0.0	0.0	0.9	89.3
1951	16.7	11.9	10.8		4.8	8.8	14.9	4.7	1.1	0.0	0.0	5.1	
1952	7.1	13.4	12.4	13.4	3.0	14.1	21.6	2.4	0.7	0.2	0.0	1.7	90.0
1953	9.0	8.4	22.4	7.8	12.7	12.5	10.3	5.4	0.9	0.0	0.0	1.3	90.7
1954	19.6	19.3	2.6	1.3	18.8	5.9	6.0	2.5	0.7	0.0	0.0	1.1	77.8
1955	4.6	14.4	10.2	7.1	2.7	6.9	26.7	8.5	0.2	0.0	0.0	1.9	83.2
1956	26.5	32.9	9.6	6.8	5.5	5.6	9.8	10.1	0.5	0.0	0.2	6.9	114.4
1957	8.8	7.4	7.7	2.4	8.4	9.5	13.7	9.5	6.9	0.0	0.2	12.1	86.6
1958	16.7	11.4	4.1	14.2	2.2	11.4	10.3	7.2	3.6	0.0	0.0	5.9	87.0
1959	10.3	17.1	7.4	14.1	5.3	8.6	7.1	23.4	1.0	0.0	0.0	4.4	98.7
1960	32.3	10.4	28.9	7.8	6.2	10.0	19.2	4.7	0.0	0.0	0.0	4.4	123.9
1961	29.0	6.5	7.8	3.4	17.7	13.1	16.8	5.9	4.2	0.0	0.3	32.1	136.8
1962	27.0	32.5	22.0	4.0	3.6	29.1	13.6	9.8	0.3	0.0	0.2	1.3	143.4
1963	45.9	20.9	6.6	13.1	7.9	6.2	8.5	24.5	0.6	0.0	0.2	26.3	160.7
1964	42.7	49.0	5.8	11.9	7.8	2.9	52.6	15.1	18.6	0.0	0.0	3.6	210.0
1965	67.4	15.9	10.4	37.3	3.6	9.5	48.7	10.2	2.5	0.0	0.0	30.4	235.9
1966	35.9	17.0	10.2	7.0	14.9	17.2	14.2	4.8	0.3	0.0	0.0	4.5	126.0
1967	40.6	9.0	8.5	5.6	4.6	23.5	15.8	11.7	11.2	0.0	0.3	3.9	134.7
1968	42.8	49.7	48.5	24.2	29.5	34.6	24.3	8.9	3.3	0.0	0.4	6.3	272.5
1969	40.3	9.5	7.4	13.6	14.0	9.0	27.8	7.3	2.4	0.0	0.0	2.0	133.3
1970	17.3	90.0	24.5	17.7	11.3	23.0	5.7	9.3	2.3	0.0	0.0	14.7	215.8
1971	29.2	22.1	8.3	16.3	18.2	6.5	20.0	5.3	0.9	0.0	0.6	3.8	131.2
1972	35.8	28.2	5.6	8.3	7.1	14.5	30.3	28.6	3.5	0.0	0.0	11.8	173.7
1973	20.3	36.7	3.8	17.5	8.8	28.5	20.1	8.0	0.2	0.0	0.0	2.0	145.9
1974	39.3	10.6	13.1	29.5	8.6	7.4	14.5	6.6	0.3	0.0	0.9	27.1	157.9
1975	81.7	46.2	31.5	15.8	6.2	6.4	5.1	14.7	2.1	0.0	0.0	14.8	224.5
1976	104.2	16.0	14.6	14.4	8.7	9.4	26.5	9.1	1.3	0.2	0.5	19.8	224.7
1977	31.0	25.6	24.7	34.2	5.9	22.5	42.2	11.3	0.9	0.0	0.0	0.6	198.9
1978	54.3	82.3	22.6	18.9	19.4	12.5	30.5	11.6	23.6	0.5	0.5	3.8	280.5
1979	54.9	26.3	11.3	11.5	6.5	11.0	14.8	10.9	34.5	0.0	17.3	15.4	214.4
1980			12.7	6.2	6.6	21.8	32.5	17.5	5.5	0.0	0.0	15.4	
1981	15.8	31.9	16.8	6.6	25.3	20.5	14.7	5.5	15.8	0.0	0.2	0.3	153.4
1982	34.3	36.9	12.7	3.8	13.0	15.4	10.9	18.5	4.8	0.0	24.3	36.4	211.0
1983	53.8	22.7	25.8	22.8	11.5	16.7	16.6	20.3	1.8	0.6	0.0	11.3	203.9
1984	68.1	9.2	14.1	14.6	29.5	16.6	40.7	5.4	0.6	0.0	0.0	13.7	212.5
1985	26.4	20.3	6.4	11.5	17.5	31.2	25.1	13.5	0.7	0.0	10.3	5.1	168.0
1986	36.1	20.9	15.1	18.3	14.4	10.4	26.5	6.9	23.7	0.0	0.2	20.6	193.1
1987	51.1	38.5	32.9	27.0	21.6	47.4	49.9	10.4	3.7	0.0	0.3	1.3	284.1
1988	34.9	66.7	50.9	6.8	8.3	32.0	40.2	53.8	4.0	0.0	0.0	1.0	298.6
1989	68.5	44.5	37.3	19.2	10.9	6.9	31.7	38.2	7.1	0.0	0.0	19.5	283.8
1990	28.9	34.7	8.3	19.7	20.7	59.4	16.9	8.4	1.2	0.0	0.0	3.7	201.9
1991	28.1	36.2	22.1	6.9	7.5	26.8	38.0	10.3	0.2	0.0	0.2	30.9	207.2
1992	27.1	26.5	20.7	15.3	14.0	21.5	20.2	41.0	3.3	0.0	0.6	48.4	238.6
1993	46.2	36.8	20.5	26.3	17.0	24.5	11.5	23.5	0.4	0.0	0.0	11.0	217.7
1994	26.0	25.6	28.7	4.5	5.5	19.5	13.3	6.0	0.6	0.0	0.0	2.8	132.5
1995	19.6	22.6	24.9	12.2	4.6	22.5	9.5	4.6	0.2	0.0	0.0	19.1	139.8
1996	35.3	13.0	22.2	11.4	14.7	9.1	27.6	4.8	0.0	0.0	0.0	2.3	140.4
1997	43.4	21.3	10.0	5.2	18.2	10.4	7.9	18.3	0.0	0.0	0.0	6.2	140.9
1998	101.3	17.7	37.4	5.9	35.9	8.6	11.6	21.5	0.0	0.0	0.0	6.6	246.5
1999	7.8	30.9	23.7	15.0	24.6	20.8	15.0	31.8	10.0	0.0	0.0	9.5	189.1
2000	56.1	63.1	30.6	11.5	19.7	30.9	19.5	9.3	1.0	0.0	0.3	1.8	243.8
2001	31.3	26.6	14.2	22.5	8.8	30.1	5.9	27.5	5.7	0.0	0.0	1.3	173.9
2002	47.1	33.9	27.3	17.5	17.1	11.6	21.5	14.3	7.1	0.0	0.0	27.3	224.7
2003	21.3	17.3	15.3	16.2	20.3	22.3	11.1	16.4	2.6	0.0	0.0	5.1	147.9
2004	11.7	53.0	28.4	3.4	9.0	17.8	0.0	16.2	8.1	0.0	0.0	2.5	150.2
Maximum	104.2	90.0	50.9	37.3	35.9	59.4	52.6	53.8	34.5	0.6	24.3	48.4	298.6
Mean	35.7	27.8	17.6	13.2	12.3	17.2	19.7	13.3	4.6	0.0	1.0	10.3	174.8
Minimum	4.6	6.5	2.6	1.3	2.2	2.9	0.0	0.6	0.0	0.0	0.0	0.3	77.8

TABLE 3.6
Adjusted Mean Monthly Total Precipitation in mm - Baker Lake (Hydrologic Year)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual
1949							5.0	1.5	12.3	5.8	6.3	8.2	
1950	19.0	12.3	7.0	3.8	7.9	9.1	8.8	5.8	21.4	40.1	38.5	24.6	198.3
1951	17.3	11.9	10.8		4.8	8.8	14.9	8.6	35.8	17.8	7.4	38.5	
1952	23.5	13.4	12.4	13.4	3.0	14.1	22.2	21.1	39.9	23.7	67.6	41.3	295.6
1953	9.0	8.4	22.4	7.8	15.0	12.5	12.4	7.2	22.1	54.0	63.9	15.0	249.7
1954	27.0	19.3	2.6	1.3	18.8	5.9	6.0	5.9	19.2	32.0	14.6	51.9	204.5
1955	16.1	14.4	10.2	7.1	2.7	6.9	26.7	26.6	57.9	55.5	61.9	39.0	325.0
1956	39.0	32.9	9.6	6.8	5.5	5.6	9.8	10.4	4.3	70.5	81.8	15.2	291.4
1957	8.8	7.4	7.7	2.4	8.4	9.5	13.7	10.1	16.3	70.0	53.0	24.5	231.8
1958	21.5	11.7	4.1	14.2	2.2	11.4	10.3	10.5	24.4	38.5	46.8	90.7	286.3
1959	23.6	17.4	7.4	14.1	5.3	8.6	7.1	24.3	29.8	51.9	77.7	36.5	303.7
1960	32.6	11.3	28.9	7.8	6.2	10.0	19.2	7.7	6.9	41.9	34.8	55.7	263.0
1961	72.6	6.8	7.8	3.4	17.7	13.1	16.8	7.7	17.8	9.4	60.1	90.4	323.6
1962	28.5	33.1	22.0	4.0	3.6	29.1	13.9	10.4	37.0	42.3	50.2	47.2	321.3
1963	61.9	20.9	6.6	13.1	7.9	6.2	9.1	24.8	4.1	35.0	24.9	36.5	251.0
1964	62.4	49.0	5.8	11.9	7.8	2.9	52.9	15.7	25.5	6.1	15.7	42.2	297.9
1965	77.3	16.2	10.4	37.3	3.6	9.5	49.0	11.1	25.1	24.2	11.0	37.1	311.8
1966	40.5	17.3	10.2	7.0	14.9	17.2	14.5	29.6	18.7	43.0	24.8	22.3	260.0
1967	43.1	9.0	8.5	5.6	4.6	23.5	15.8	13.7	48.1	57.0	35.8	54.6	319.3
1968	55.4	49.7	48.5	24.2	29.5	34.6	24.3	11.8	11.6	45.1	30.8	98.3	463.8
1969	52.2	10.7	7.4	13.6	14.0	9.0	28.3	8.1	8.2	59.1	11.1	18.1	239.8
1970	19.2	91.4	24.5	17.7	11.3	23.0	5.7	9.9	42.0	96.3	44.3	76.1	461.4
1971	49.7	22.4	8.3	16.3	18.2	6.5	21.0	14.2	26.3	49.0	50.8	41.4	324.1
1972	56.4	28.2	5.6	8.3	7.1	14.5	30.6	33.0	13.9	17.7	43.4	43.2	301.9
1973	21.6	36.7	3.8	17.5	8.8	28.5	20.1	18.2	15.5	2.9	65.0	85.9	324.5
1974	42.3	10.9	13.1	29.5	8.6	7.4	14.5	7.8	27.4	55.7	23.5	39.0	279.7
1975	83.2	47.1	31.5	15.8	6.2	6.4	5.1	28.8	28.9	74.8	74.5	47.1	449.4
1976	114.5	16.0	14.6	14.4	8.7	9.4	26.5	41.0	31.5	25.6	18.7	62.2	383.1
1977	31.3	25.9	25.2	34.2	5.9	22.5	55.6	33.0	26.4	29.0	46.3	41.7	377.0
1978	76.0	82.9	22.6	18.9	19.4	12.5	30.5	12.5	52.5	77.2	23.3	10.9	439.2
1979	62.7	26.3	11.3	11.5	6.5	11.0	15.5	46.3	64.0	32.3	48.4	23.5	359.3
1980			12.7	6.2	6.9	21.8	34.3	19.3	12.9	59.2	81.1	30.0	
1981	18.2	32.5	16.8	7.2	25.3	21.1	14.7	15.3	40.4	46.0	13.6	28.5	279.6
1982	61.2	36.9	12.7	3.8	13.0	15.4	10.9	23.4	26.2	46.7	47.6	84.5	382.3
1983	76.4	22.7	25.8	22.8	11.5	16.7	16.6	20.9	14.4	10.5	79.6	65.7	383.6
1984	73.8	10.1	14.4	14.6	30.4	16.6	42.2	6.6	19.4	42.3	69.7	38.8	378.9
1985	33.4	20.3	6.4	12.4	17.5	31.2	25.8	18.5	9.7	96.0	95.1	79.3	445.6
1986	40.4	21.8	15.7	18.3	14.4	10.4	26.8	37.1	55.7	9.0	95.1	46.5	391.2
1987	56.5	38.5	32.9	27.0	21.6	47.4	50.8	13.0	36.2	49.0	70.2	33.8	476.9
1988	36.1	69.8	51.8	6.8	8.3	32.0	40.2	55.1	49.6	41.6	46.9	55.3	493.5
1989	77.3	45.1	37.3	19.2	10.9	6.9	31.7	38.5	24.9	62.0	25.7	42.5	422.0
1990	31.6	34.7	8.3	19.7	20.7	59.4	17.2	19.6	16.4	81.4	44.6	36.8	390.4
1991	29.0	36.2	22.1	6.9	7.8	26.8	38.3	17.6	26.8	30.4	40.3	52.9	335.1
1992	31.5	26.5	21.3	16.2	14.0	21.5	20.5	45.6	12.4	12.5	57.5	96.7	376.2
1993	47.8	36.8	20.5	26.3	17.0	24.5	11.8	29.0	21.4	72.7	42.9	20.8	371.5
1994	26.3	25.6	28.7	4.5	5.5	19.5	13.3	6.6	13.8	82.9	44.4	64.9	336.0
1995	27.5	23.8	24.9	12.2	4.6	22.5	10.1	5.2	9.7	20.6	61.2	30.4	252.7
1996	46.4	13.0	22.2	11.4	14.7	9.1	27.6	7.3	25.3	47.9	84.3	91.3	400.5
1997	44.0	21.3	10.0	5.2	18.2	10.4	9.1	23.5	44.5	21.3	22.7	22.2	252.4
1998	113.6	18.0	37.7	5.9	35.9	8.6	12.5	26.9	48.7	56.4	49.1	83.8	497.1
1999	14.8	32.1	23.7	15.0	24.6	21.6	17.6	37.8	66.8	80.1	53.3	53.2	440.6
2000	59.4	63.1	30.9	11.5	19.7	30.9	20.4	23.0	3.6	30.3	39.9	63.8	396.5
2001	32.6	26.9	14.2	22.8	8.8	30.1	6.5	37.0	25.5	25.8	81.9	20.0	332.1
2002	58.7	33.9	27.3	17.5	17.1	11.6	21.5	14.9	27.9	71.4	95.0	47.4	444.2
2003	22.8	17.3	15.9	16.5	20.3	22.3	11.1	32.4	20.6	44.3	22.2	49.3	295.0
2004	13.2	53.3	28.4	3.4	9.0	17.8	0.0	16.2	24.2	11.3	24.2	77.5	278.5
Maximum	114.5	91.4	51.8	37.3	35.9	59.4	55.6	55.1	66.8	96.3	95.1	98.3	497.1
Mean	43.7	28.2	17.7	13.3	12.4	17.2	20.3	19.8	26.6	43.5	47.2	47.8	343.2
Minimum	8.8	6.8	2.6	1.3	2.2	2.9	0.0	1.5	3.6	2.9	6.3	8.2	198.3

TABLE 3.7
Comparison of Adjusted and Unadjusted Annual Precipitation Totals - Baker Lake

Hydrologic Year	Total Annual Rainfall (mm)			Total Annual Snowfall (cm)			Total Annual Precipitation (mm)		
	Unadjusted	Adjusted	Factor	Unadjusted	Adjusted	Factor	Unadjusted	Adjusted	Factor
1950	90.4	108.9	1.20	59.2	89.3	1.51	149.5	198.3	1.33
1951	82.3			50.9			133.2		
1952	181.7	205.4	1.13	59.6	90.0	1.51	241.3	295.6	1.23
1953	141.1	159.2	1.13	62.0	90.7	1.46	203.0	249.7	1.23
1954	110.9	126.6	1.14	51.2	77.8	1.52	162.1	204.5	1.26
1955	214.4	242.0	1.13	53.2	83.2	1.56	267.5	325.0	1.21
1956	156.3	177.1	1.13	71.3	114.4	1.60	227.6	291.4	1.28
1957	122.6	145.2	1.18	53.4	86.6	1.62	176.0	231.8	1.32
1958	169.9	199.3	1.17	51.1	87.0	1.70	221.0	286.3	1.3
1959	173.9	205.1	1.18	56.8	98.7	1.74	230.7	303.7	1.32
1960	111.7	139.1	1.25	77.5	123.9	1.60	189.2	263.0	1.39
1961	158.5	186.7	1.18	85.5	136.8	1.60	243.9	323.6	1.33
1962	153.2	177.9	1.16	91.5	143.4	1.57	244.7	321.3	1.31
1963	72.2	90.3	1.25	100.5	160.7	1.60	171.7	251.0	1.46
1964	70.9	88.0	1.24	134.4	210.0	1.56	205.5	297.9	1.45
1965	57.7	75.8	1.31	153.9	235.9	1.53	202.8	311.8	1.54
1966	109.7	134.0	1.22	81.0	126.0	1.56	180.2	260.0	1.44
1967	160.9	184.7	1.15	83.6	134.7	1.61	245.1	319.3	1.3
1968	165.3	191.4	1.16	186.4	272.5	1.46	323.2	463.8	1.44
1969	83.6	106.5	1.27	85.0	133.3	1.57	168.0	239.8	1.43
1970	217.6	245.7	1.13	144.4	215.8	1.49	357.8	461.4	1.29
1971	165.3	193.0	1.17	83.1	131.2	1.58	238.6	324.1	1.36
1972	109.4	128.1	1.17	112.2	173.7	1.55	217.1	301.9	1.39
1973	158.2	178.7	1.13	96.6	145.9	1.51	234.4	324.5	1.38
1974	100.7	121.9	1.21	103.2	157.9	1.53	199.9	279.7	1.4
1975	198.1	224.9	1.14	153.9	224.5	1.46	344.9	449.4	1.3
1976	137.0	158.5	1.16	150.6	224.7	1.49	280.0	383.1	1.37
1977	155.6	178.0	1.14	132.4	198.9	1.50	287.2	377.0	1.31
1978	141.4	158.6	1.12	186.9	280.5	1.50	327.7	439.2	1.34
1979	128.8	144.8	1.12	139.3	214.4	1.54	269.1	359.3	1.34
1980	148.5			93.3			236.8		
1981	103.7	126.1	1.22	97.6	153.4	1.57	196.3	279.6	1.42
1982	151.5	171.3	1.13	135.4	211.0	1.56	295.8	382.3	1.29
1983	159.9	179.7	1.12	131.7	203.9	1.55	292.9	383.6	1.31
1984	145.2	166.3	1.15	137.3	212.5	1.55	281.8	378.9	1.34
1985	254.6	277.5	1.09	107.6	168.0	1.56	362.4	445.6	1.23
1986	180.8	198.1	1.10	125.2	193.1	1.54	283.9	391.2	1.38
1987	176.1	192.8	1.09	191.7	284.1	1.48	323.9	476.9	1.47
1988	178.8	194.9	1.09	205.0	298.6	1.46	286.3	493.5	1.72
1989	126.6	138.1	1.09	190.0	283.8	1.49	271.8	422.0	1.55
1990	169.6	188.5	1.11	127.9	201.9	1.58	261.7	390.4	1.49
1991	113.6	128.1	1.13	137.3	207.2	1.51	238.4	335.1	1.41
1992	119.7	137.5	1.15	157.9	238.6	1.51	273.9	376.2	1.37
1993	134.2	153.7	1.15	144.5	217.7	1.51	275.6	371.5	1.35
1994	189.2	203.4	1.08	81.7	132.5	1.62	266.1	336.0	1.26
1995	98.0	112.9	1.15	84.4	139.8	1.66	172.2	252.7	1.47
1996	245.9	260.2	1.06	86.1	140.4	1.63	317.1	400.5	1.26
1997	99.0	111.3	1.12	83.3	140.9	1.69	164.9	252.4	1.53
1998	234.3	250.7	1.07	165.0	246.5	1.49	366.9	497.1	1.35
1999	228.2	251.4	1.10	120.6	189.1	1.57	312.4	440.6	1.41
2000	136.1	152.6	1.12	157.2	243.8	1.55	200.7	396.5	1.98
2001	138.3	158.1	1.14	107.1	173.9	1.62	231.7	332.1	1.43
2002	<i>200.6</i>	<i>219.5</i>	<i>1.09</i>	<i>145.3</i>	<i>224.7</i>	<i>1.55</i>	<i>330.9</i>	<i>444.2</i>	<i>1.34</i>
2003	<i>128.8</i>	<i>147.2</i>	<i>1.14</i>	<i>88.2</i>	<i>147.9</i>	<i>1.68</i>	<i>217.2</i>	<i>295.1</i>	<i>1.36</i>
2004	<i>110.0</i>	<i>128.3</i>	<i>1.17</i>	<i>98.1</i>	<i>150.2</i>	<i>1.53</i>	<i>201.3</i>	<i>278.5</i>	<i>1.38</i>
Mean	146.7	169.1	1.15	111.8	174.8	1.56	247.4	344.5	1.38

Italics indicate adjustment made to observed values using mean adjustment factor

3.2.3 Meadowbank Project Precipitation

The Meadowbank Camp climate station collects rainfall data using an automated tipping-bucket rain gauge. Up until June 2002, readings were recorded once per calendar day. The recorded daily rainfalls for the Meadowbank Camp station for the 1997 – 2004, 84-month period of record available for this report are provided in Appendix B.3. A plot of the observed daily rainfall amounts is provided in Figure 3.3. A summary of observed monthly and annual rainfalls for the period, and their means, are summarized in Table 3.8.

TABLE 3.8
Meadowbank Camp Observed Monthly and Annual Total Rainfall (mm) 1997 – 2004

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Total/ Avg
97-98	7.6	0.0	0.0	0.0	0.0	0.0	1.3	10.9	23.4	69.5	49.6	34.6	196.9	1.38
98-99	6.5	0.1	0.0	0.0	0.0	0.0	6.6	17.8	8.7	67.9	80.0	33.6	221.2	1.55
99-00	3.9	0.0	0.0	0.0	0.0	0.9	5.8	15.9	0.4	11.9	44.7	43.5	127.0	0.89
00-01	1.1	0.0	0.0	0.0	0.0	0.0	0.9	16.9	18.5	15.5	44.9	5.2	103.0	0.72
01-02	4.4	0.0	0.0	0.0	0.0	0.0	1.6	4.3	35.2	40.7a	51.3	20.1	157.6	1.10
02-03	0.6	0.0	0.0	0.0	0.0	0.0	0.0	3.0e	9.5e	45.6a	23.1a	29.2e	111.0	0.78
03-04	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	6.0	5.9	25.2	44.2e	81.7	0.57
Average	3.5	0.0	0.0	0.0	0.0	0.1	2.3	9.8	14.5	36.7	45.5	30.1	142.6	
Fraction of Annual	0.02	0.0	0.0	0.0	0.0	0.0	0.02	0.07	0.10	0.26	0.32	0.21	1.0	

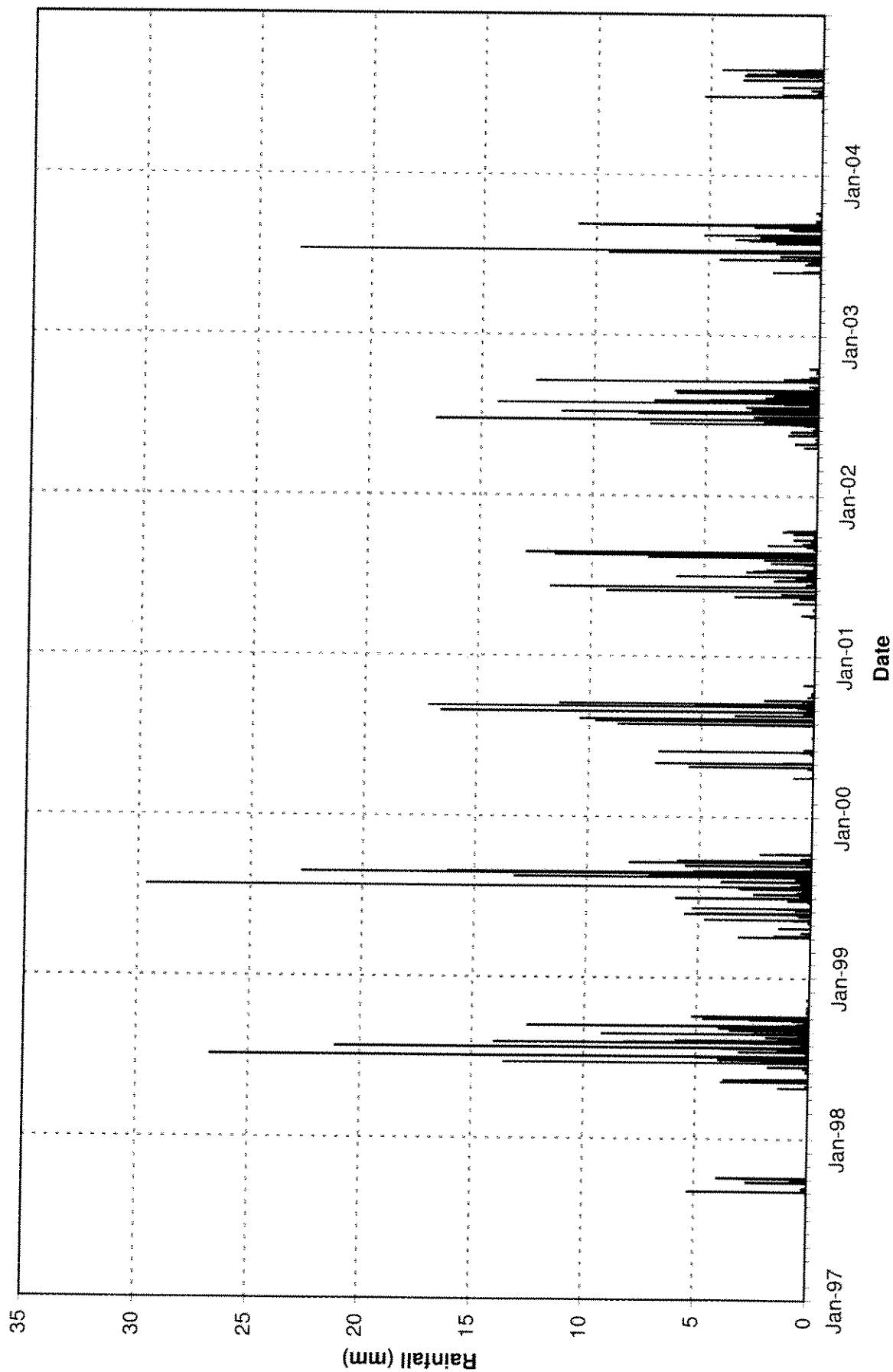
Note: a – manual rain gauge data
e – estimated from Baker Lake data

The tipping bucket rain gauge was shut down for the season on 9 September 2004. Daily rainfalls for the remainder of September were estimated from Baker Lake data using the correlation relationship established in AMEC's January 2004 report "Meadowbank Gold Project – Baseline Hydrology Report".

Review of the annual rainfalls summarized in Table 3.8 indicates that 2004 was the driest year since 1997 when data collection began, with a total rainfall of only 57% of the 1997 – 2004 average.

The annual rainfall for Meadowbank and Baker Lake are compared for the six-year period of record in Table 3.9.

Meadowbank Camp Observed Daily Rainfall (September 1997 - August 2004)



P:\PROJECT\W\1593.5\CLIMATE\MEADOWBANK\ Meadowbank annual precip.xls [Chart]
02/03/2005

Cumberland Resources Ltd. - Meadowbank Gold Project
AMEC Earth & Environmental Limited

Figure 3.3

TABLE 3.9
Meadowbank and Baker Lake Annual Observed Rainfall Comparison

Hydrologic Year	Meadowbank Camp Rainfall (mm)	Baker Lake Rainfall (mm)	Ratio Meadowbank to Baker Lake Rainfall
1998	196.9	234.3	0.84
1999	221.2	228.2	0.97
2000	127.0	136.1	0.93
2001	103.0	138.3	0.74
2002	157.6	200.6	0.79
2003	111.0 e	128.8	0.86
2004	81.7 e	110.0	0.74
Mean	142.6	168.0	0.85

Note: e = estimated

3.3 Evaporation

3.3.1 Meadowbank Camp Evaporation Data

Evaporation data for the Meadowbank project area was obtained using a Class A evaporation pan installed at the project for the 2002, 2003, and 2004 seasons. The Class A evaporation pan is the standard recommended by the World Meteorological Organization and is used at various Environment Canada climate stations throughout Canada.

In 2002 the evaporation pan was installed at the south camp on 24 June and decommissioned for the season on 22 September, after the pan water began to freeze. The camp location was moved about 1 km north at the end of the 2002 season, thus in 2003 the pan was installed near the new camp to facilitate daily reading, and was operated from 17 June through 17 September. In 2004 the pan was operated from 23 June through 8 September.

The cumulative daily pan evaporation data for 2002, 2003, and 2003 are shown in Figure 3.4. The recorded data included readings representing the total evaporation over periods of several days. For such periods, the data were adjusted by distributing the end of period reading evenly over the days for which evaporation had been accumulated. The days with evaporation so determined are identified in Figure 3.4 as "interpolated".

It was assumed that some pan evaporation would have occurred before the actual start date of pan operation in both 2002 and in 2003, corresponding to non-freezing conditions. Non-freezing conditions are estimated to start when lake outlets begin to discharge, which also corresponds to the time when lake ice cover begins to melt and open water begins to develop. The amount of pan evaporation occurring prior to the pan start-up date for each year was then estimated by assuming that the daily evaporation rate increases linearly from zero on the first non-freezing day to the value measured on the first full day of pan operation. The estimates are summarized in Table 3.10.

TABLE 3.10
Estimated Amount of Evaporation Prior to Pan Start-up

Year	Pan First Day		First Non-Freezing Day	No of Days to Estimate Evap.	Estimated Evap. (mm)
	Date	Evap (mm)			
2002	25 June	4.8	14 June	10	24.0
2003	18 June	2.9	3 June	14	20.3
2004	24 June	4.2	6 June	17	35.7

The pan was operated each year until daily evaporation readings of zero had started to occur and the pan water had begun to freeze. Pan evaporation was estimated to have been zero after that point.

Monthly pan evaporation for the 2002, 2003, and 2004 seasons is summarized in Table 3.11.

Meadowbank Camp 2002, 2003 and 2004 Cumulative Pan Evaporation

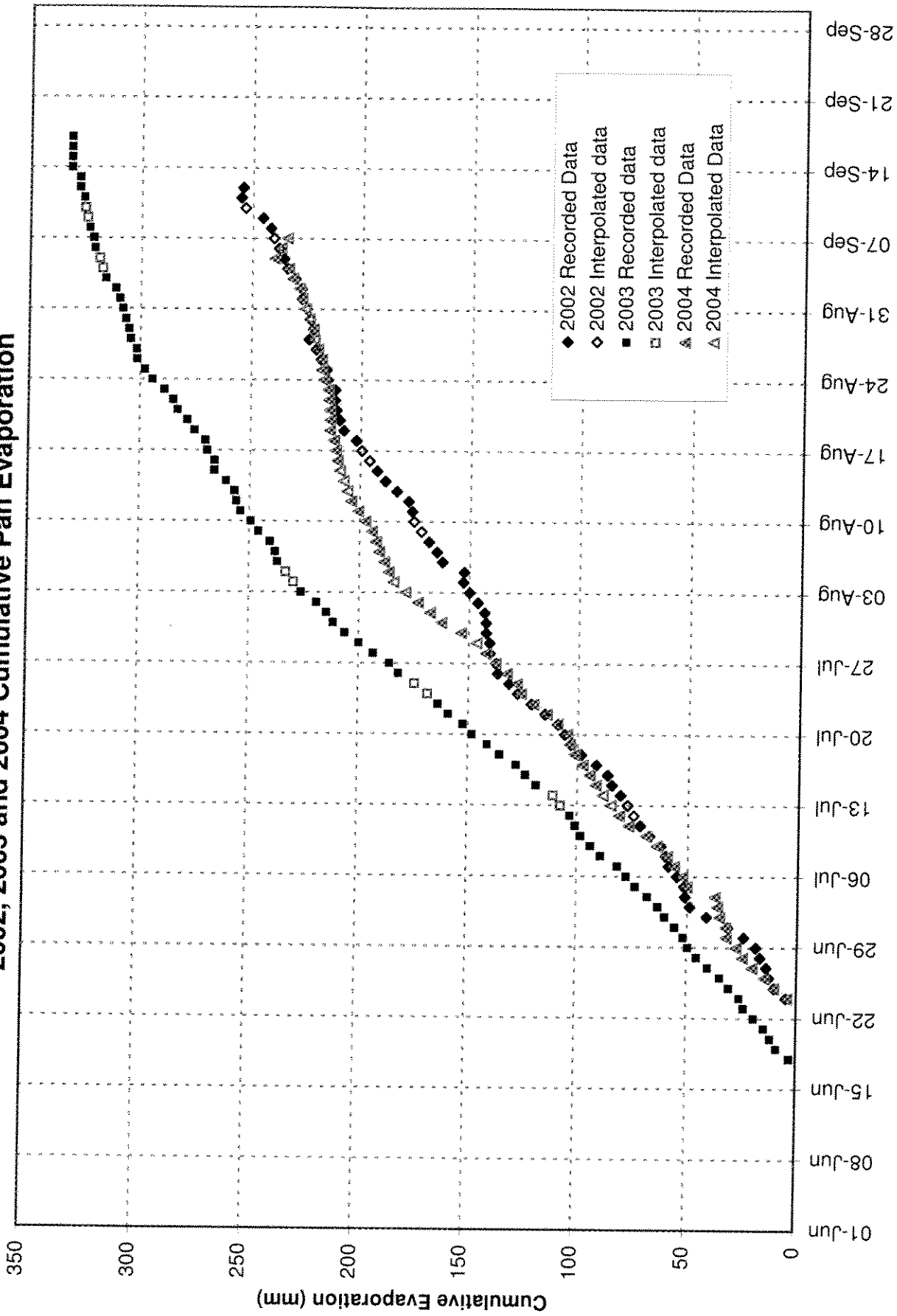


Figure 3.4

TABLE 3.11
Meadowbank Pan Evaporation Summary

Month	2002			2003			2004		
	No. of Days	Evap. (mm)	Fraction of Annual	No. of Days	Evap. (mm)	Fraction of Annual	No. of Days	Evap. (mm)	Fraction of Annual
Jun	17	42.8	0.15	28	72.1	0.20	25	67.8	0.25
Jul	31	123.4	0.44	31	159.6	0.45	31	130.4	0.48
Aug	31	79.9	0.29	31	96.7	0.28	31	63.3	0.23
Sep	22	32.3	0.12	17	23.6	0.07	8	8.6	0.03
Annual	101	278.4	1.00	107	352.0	1.00	95	270.0	1.00

3.3.2 Lake Evaporation

3.3.2.1 Conversion of Pan Data

Lake evaporation was estimated from the evaporation pan data using the method adopted by Environment Canada (Kohler, Nordenson, and Fox, 1955). That method computes lake evaporation as a function of the pan water temperature, the air temperature, the daily wind run (wind run = wind speed x duration), and the pan evaporation. The computational method and results are given in Appendix B.12. The average pan coefficient found for both the 2002 and the 2003 seasons equals 0.82. The average pan coefficient found for the 2004 season equals 0.84. The average pan coefficient value applied to the complete season of pan evaporation provides an estimate of the total lake evaporation. The lake evaporation estimates by month using the above procedure are given in Table 3.12.

TABLE 3.12
Meadowbank Project – Lake Evaporation Converted From Pan Data

Month	2002		2003		2004		Average	
	Evap. (mm)	Fraction of Annual	Evap. (mm)	Fraction of Annual	Evap. (mm)	Fraction of Annual	Evap. (mm)	Fraction of Annual
Jun	35.1	0.15	59.0	0.20	56.9	0.25	50.3	0.20
Jul	101.2	0.44	130.9	0.45	109.5	0.48	113.9	0.46
Aug	65.5	0.29	79.3	0.28	53.2	0.23	66.0	0.27
Sep	26.5	0.12	19.4	0.07	7.2	0.03	17.7	0.07
Annual	228.3	1.00	288.6	1.00	226.8	1.00	247.9	1.00

The pan coefficients of 0.82 and 0.84 found at Meadowbank are somewhat higher than the value of 0.70 to 0.75 typically quoted for southern Canada, but is consistent with computed values reported for evaporation pan measurements at the Meliadine site near Rankin Inlet (AGRA, 1998a; AGRA, 1998c; AGRA, 1999b; AMEC, 2000).

3.3.2.2 Adjustment of Data

There is a time lag in spring for lakes to melt their ice cover and develop open water conditions. Similarly there is a corresponding time lag in fall for lake water to cool and develop an ice cover, compared to what happens at an evaporation pan. Thus it is proposed to adjust the data reported in Table 3.12.

A recent paper on lake evaporation in the central Mackenzie Basin (approximately between 62° to 64°N latitude) provides useful information on the variation of monthly evaporation and the difference between land surfaces and small and large lakes (Rouse et al, 2002). The variations are represented here as Figure 3.5, which shows the monthly variation of evaporation from land surfaces and from small, medium and large lakes.

It is thought that on Figure 3.5 the relative timing of the land curve approximately represents that of an evaporation pan (although not necessarily the relative magnitude since the pan is not subject to moisture limitations as the land surface is). Lakes must first melt their ice cover and warm up before they can evaporate at rates comparable to the land surface (or evaporation pan). Figure 3.5 suggests that for small lakes this delay is in the order of 2 to 4 weeks, which corresponds to anecdotal information on the time required for the ice cover to melt on small lakes in the Meadowbank region. During these initial weeks, not only does the lake water surface area grow gradually, but also most of the incoming heat energy is being taken up by melting of the ice rather than evaporation.

Compared to small lakes, medium and large lakes warm much more slowly, and evaporation tends to be delayed by an additional one to two months. This delay carries through into the fall season, thus medium to large lakes will still evaporate into at least October, when small lakes are already ice-covered. Note that a "large" lake here refers to a lake such as Great Slave Lake. Thus the largest lakes in the Meadowbank region should be considered as "medium" lakes with reference to Figure 3.5.

With reference to the above, most of the lakes of interest at Meadowbank can be classified as small lakes. Thus, based on the above, it is proposed to transpose the evaporation data by 2 weeks to better represent small lake evaporation behaviour. The adjusted data are summarized in Table 3.13. Note that the total annual evaporation remains unaffected by this adjustment.

Seasonal Mean Monthly Lake Evaporation for Different-sized Lakes

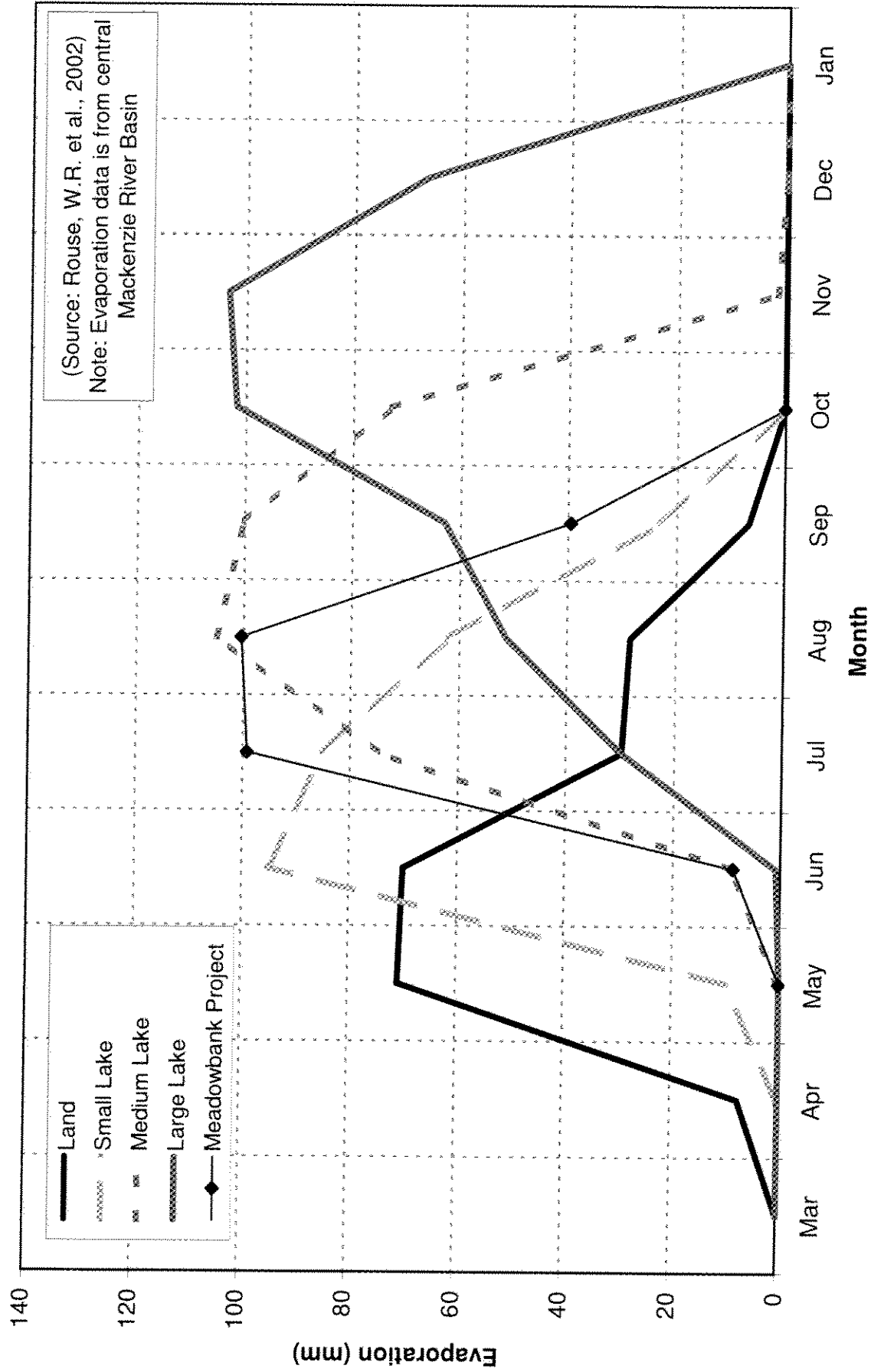


TABLE 3.13
Meadowbank Project – Small Lake Adjusted Evaporation

Month	2002		2003		2004		Average	
	Evap. (mm)	Fraction of Annual	Evap. (mm)	Fraction of Annual	Evap. (mm)	Fraction of Annual	Evap. (mm)	Fraction of Annual
Jun	1.1	0.01	14.4	0.05	10.8	0.05	8.8	0.04
Jul	89.4	0.39	106.9	0.37	101.2	0.45	99.2	0.40
Aug	89.8	0.39	116.1	0.40	95.2	0.42	100.4	0.40
Sep	47.7	0.21	51.1	0.18	19.6	0.09	39.5	0.16
Oct	0.2	0.00	0.0	0.00	0.0	0.00	0.1	0.00
Annual	228.3	1.00	288.6	1.00	226.8	1.00	247.9	1.00

The Meadowbank small lake adjusted evaporation values of Table 3.13 above have been superimposed on Figure 3.5 for comparison. The small lake at Meadowbank has an annual evaporation of 240 mm, compared to about 275 mm for the small lake in the Mackenzie Basin. This difference may be due to the somewhat colder climate at Meadowbank, but can also be explained by the small size of the sample data, which may not represent average conditions.

3.4 Wind

Mean daily wind speed and direction data have been collected at the Meadowbank Camp climate station since September 1997. Mean hourly wind speed and direction data have been collected at the Meadowbank Camp climate station since June 2002.

A plot depicting the relative frequency of mean daily wind speed and direction (wind rose) over the period of record is shown for the period of record on Figure 3.6. A plot of the wind rose for the months November through April is shown in Figure 3.7. A plot of the wind rose for the months May through October is shown in Figure 3.8. Wind roses based on hourly data were not developed, as only three months of hourly data were available for this report.

The wind rose depicts the relative frequency of wind direction on a 36-point compass, with north, east, south, and west directions going clockwise, whose value is listed adjacent to each of the compass points. Each ring on the wind rose represents a frequency of 2 to 5% of the total. The length of the shaded bars on each wind rose petal represents the frequency of wind recorded from a given direction within a certain speed range.

The overall annual prevailing winds for both the winter and summer months are from the northwest as indicated on Figures 3.6 through 3.8.

The maximum daily wind gust recorded at the Meadowbank climate station was 83 km/h and occurred on 21 May 2002.