

Appendix A

Rainfall data

<i>Description</i>	<i>Table no.</i>
<i>1) Hardap Catchment Rainfall Gauges</i>	<i>A-1</i>
<i>2) Naute Catchment Rainfall Gauges</i>	<i>A-2</i>
<i>3) Lower Fish Catchment Rainfall Gauges</i>	<i>A-3</i>

Table A-1: RAINGAUGES FOR THE HARDAP CATHMENT

STATION NUMBER	STATION NAME	TYPE	LOCATION		PERIOD OF RECORD		GAPS IN RECORD
			LAT (S)	LONG (E)	FROM	TO	
0565/666	Friedland	Raingauge	24° 36'	16° 23'	03/1934	09/1991	Minor
0566/007	Kamkas	Raingauge	24° 37'	16° 31'	03/1914	12/1977	Major
0566/678	Kameelberg	Raingauge	24° 39'	16° 36'	09/1918	05/1932	None
0566/309	Karab	Raingauge	24° 36'	16° 41'	12/1951	09/1992	Minor
0566/678	Namseb	Raingauge	24° 48'	16° 53'	07/1913	10/1944	Minor
0567/035	Sandhof	Raingauge	24° 35'	17° 18'	07/1913	03/1978	Minor
0567/571	Nababis	Raingauge	24° 31'	17° 20'	09/1929	03/1943	None
0568/095	Haribes	Raingauge	24° 35'	17° 34'	02/1918	09/1992	Major
0568/307	Dassiefontein	Raingauge	24° 37'	17° 41'	11/1950	09/1992	None
0568/752	Hardap Exp. Farm	Raingauge	24° 32'	17° 56'	01/1974	Sep-87	None
0608/712	Haruchas	Raingauge	24° 22'	16° 24'	07/1913	11/1939	Major
0609/057	Lahnstein	Raingauge	24° 27'	16° 32'	07/1913	09/1992	Major
0609/168	Gamis	Raingauge	24° 18'	16° 36'	05/1925	09/1940	None
0609/270	Urusis	Raingauge	24° 00'	16° 40'	07/1913	04/1987	Minor
0609/567	Nomtsas	Raingauge	24° 27'	16° 49'	07/1913	09/1992	Major
0609/734	Arusis	Raingauge	24° 14'	16° 55'	01/1940	09/1980	Minor
0610/592	Auros	Raingauge	24° 22'	17° 20'	07/1919	03/1934	Minor
0610/884	Kub-suid	Raingauge	24° 14'	17° 30'	01/1929	09/1992	Minor
0611/146	Zamnarib Ost	Raingauge	24° 26'	17° 35'	01/1939	09/1951	None
0611/153	Kalkrand	Raingauge	24°03'	17° 36'	01/1952	09/1992	Major
0611/287	Bisipoort	Raingauge	24° 17'	17° 40'	03/1960	09/1987	None
0611/630	Hardap	Raingauge	24° 30'	17° 52'	01/1914	09/1992	Major
0611/823	Twilight	Raingauge	24° 13'	17° 58'	01/1938	08/1992	Minor
0611/192	Middelplaas	Raingauge	23° 42'	16° 07'	12/1954	06/1980	None
0651/546	Alberta	Raingauge	23° 36'	16° 19'	10/1975	09/1984	None
0651/549	Nauchas	Raingauge	23° 39'	16° 19'	08/1948	06/1981	None
0651/651	Nauzerus	Raingauge	23° 54'	16° 22'	01/1926	04/1941	None
0651/759	Morgernroth	Raingauge	23° 39'	16° 26'	10/1924	05/1964	Major
0652/289	Klein Aub	Raingauge	23° 49'	16° 40'	01/1966	01/1986	Minor
0653/343	Tsumis	Raingauge	23° 43'	17° 12'	01/1937	03/1980	Minor
0695/227	Rooisand	Raingauge	23° 17'	16° 08'	10/1978	09/1984	Minor
0695/293	Corona	Raingauge	23° 23'	16° 10'	10/1978	09/1982	Minor
0695/533	Weener	Raingauge	23°23'	16° 18'	01/1954	09/1973	None
0695/707	Hohenheim	Raingauge	23° 17'	16° 24'	10/1949	09/1992	Minor
0695/771	Hornkranz	Raingauge	23° 21'	16° 26'	10/1970	08/1984	None
0695/794	Weissenfels	Raingauge	23° 14'	16° 27'	01/1940	09/1984	Minor
0695/8491	Portsmut	Raingauge	23° 09'	16° 29'	10/1977	03/1983	None
0696/018	Goellshau	Raingauge	23° 18'	16° 31'	01/1920	03/1986	Minor
0696/026	Isabis	Raingauge	23° 26'	16° 30'	01/1929	09/1992	Minor
0696/504	Marienhof	Raingauge	23° 24'	16° 30'	01/1925	04/1971	Major

Table A-2: RAINGAUGES FOR THE NAUTE SUBCATCHMENT

STATION NUMBER	STATION NAME	TYPE	LOCATION		PERIOD OF RECORD		GAPS IN RECORD
			LAT (S)	LONG (E)	FROM	TO	
0347/124	Klein Karas	Raingauge	27° 34'	18° 05'	11/1953	02/1974	None
0347/527	Blanksdam	Raingauge	27° 47'	18° 18'	07/1921	09/1994	None
0348/819	Duurdrift Noord	Raingauge	27° 39'	18° 58'	01/1939	03/1981	Major
0382/612	Oase	Raingauge	27° 12'	17° 51'	08/1953	03/1988	Minor
0382/686	Stamprivier	Raingauge	27° 26'	17° 53'	10/1954	08/1968	Minor
0383/008	Gabasis Ost	Raingauge	27° 08'	18° 01'	02/1952	05/1968	Major
0384/023	Noachabeb	Raingauge	27° 23'	18° 31'	03/1935	12/1993	Minor
0384/408	Rishon	Raingauge	27° 18'	18° 44'	06/1956	09/1994	Minor
0384/804	Nukois	Raingauge	27° 24'	18° 57'	09/1947	09/1978	None
0384/852	Naos	Raingauge	27° 12'	18° 59'	03/1929	09/1994	Major
0385/233	Hangas	Raingauge	27° 23'	19° 08'	08/1953	09/1994	None
0385/516	Warmfontein	Raingauge	27° 06'	19° 18'	03/1952	09/1992	None
0417/405	Konkiep	Raingauge	26° 45'	17° 14'	01/1952	06/1983	Minor
0418/058	Vogelstrauskluft	Raingauge	26° 58'	17° 32'	03/1952	10/1967	Minor
0418/310	Hostyn	Raingauge	26° 40'	17° 41'	01/1932	09/1968	None
0418/529	Seeheim	Raingauge	26° 49'	17° 48'	01/1931	03/1989	Major
0419/182	Keetmanshoop Lughawe	Raingauge	26° 32'	18° 07'	05/1970	09-1995	Minor
0419/184	Keetmanshoop Airport	Raingauge	26° 34'	18° 07'	10/1948	04/1970	None
0419/215	Keetmanshoop Dorp	Raingauge	26° 35'	18° 08'	02/1898	09-1994	Major
0419/665	Eisenstein	Raingauge	26° 35'	18° 23'	02/1952	09/1980	None
0420/146	Narubis	Raingauge	26° 56'	18° 35'	02/1925	08/1962	Major
0420/214	Stampriet	Raingauge	26° 34'	18° 38'	02/1950	04/1986	Minor
0421/629	Enos	Raingauge	26° 59'	19° 21'	03/1952	07/1977	None
0421/696	Salztal	Raingauge	26° 36'	19° 24'	10/1927	04/1989	Major
0422/257	Aroab	Raingauge	26° 47'	19° 39'	12/1912	09/1993	Major
0457/715	Garinai	Raingauge	26° 25'	18° 54'	07/1913	01/1938	Minor
0458/639	Morgenson Suid	Raingauge	26° 09'	19° 22'	06/1952	03-1967	Minor
0495/267	Koes	Raingauge	25° 57'	19° 09'	10/1950	09/1994	None
0495/534	Grabstein	Raingauge	25° 54'	19° 18'	05/1937	01/1993	Minor

Table A-3: RAINGAUGES FOR THE LOWER FISH

STATION NUMBER	STATION NAME	TYPE	LOCATION		PERIOD OF RECORD		GAPS IN RECORD
			LAT (S)	LONG (E)	FROM	TO	
0380/519	Rooiberg	Raingauge	27° 09'	16° 48'	04/1953	08/1982	Minor
0382/612	Oase	Raingauge	27° 12'	17° 51'	08/1953	03/1988	Minor
0384/023	Noachabeb	Raingauge	27° 23'	18° 31'	03/1935	12/1993	Minor
0416/872	Klipdrif	Raingauge	26° 32'	17° 00'	02/1952	04/1977	Minor
0418/529	Seeheim	Raingauge	26° 49'	17° 48'	01/1931	03/1989	Major
0419/182	Keetmanshoop Lughawe	Raingauge	26° 32'	18° 07'	05/1970	09/1995	Minor
0419/184	Keetmanshoop Airport	Raingauge	26° 34'	18° 07'	10/1948	04/1970	None
0419/215	Keetmanshoop Dorp	Raingauge	26° 35'	18° 8'	02/1898	09/1948	Major
0419/665	Eisenstein	Raingauge	26° 35'	18° 23'	02/1952	12/1980	None
0420/214	Stampriet	Raingauge	26° 34'	18° 38'	02/1950	11/1986	Minor
0456/027	Gellap Ost	Raingauge	26° 27'	18° 01'	06/1914	09/1994	Minor
0456/449	Gariganus	Raingauge	26° 29'	18° 15'	03/1953	02/1976	Minor
0489/583	Sinclair	Raingauge	25° 43'	16° 20'	01/1932	02/1977	Major
0490/132	Aurab	Raingauge	25° 42'	16° 35'	07/1913	12/1993	Minor
0491/006	Huams	Raingauge	25° 36'	17° 01'	7/1913	04/1947	Minor
0491/212	Kuteb	Raingauge	25° 32'	17° 08'	02/1922	09/1992	Major
0491/357	Alsuma	Raingauge	25° 57'	17° 12'	06/1950	09/1994	Minor
0492/153	Achterfontein	Raingauge	26° 33'	17° 36'	03/1929	10/1964	Minor
0492/509	Berseba	Raingauge	25° 59'	17° 47'	07/1927	09/1994	Major
0493/233	Tses	Raingauge	25° 53'	18° 08'	10/1927	09/1994	None
0527/017	Duwisib	Raingauge	25° 17'	16° 31'	07/1913	09/1994	Major
0527/332	Plattfontein	Raingauge	25° 02'	16° 42'	12/1951	01/1972	None
0527/430	Kleinfontein Noord	Raingauge	25° 10'	16° 45'	11/1930	02/1985	Major
0527/534	Osis	Raingauge	25° 24'	16° 48'	04/1952	09/1979	None
0529/428	Gibeon	Raingauge	25° 08'	17° 45'	07/1898	12/1981	Major
0529/449	Fahlgras	Raingauge	25° 29'	17° 45'	07/1942	10/1964	Minor
0529/452	Gibeon Reservaat	Raingauge	25° 02'	17° 46'	01/1936	09/1994	Minor
0565/666	Friedland	Raingauge	24° 36'	16° 23'	03/1934	09/1995	Minor
0566/007	Kamkas	Raingauge	24° 37'	16° 31'	03/1914	12/1977	Major
0566/309	Karab	Raingauge	24° 36'	16° 41'	12/1951	09/1995	Minor
0566/678	Namseb	Raingauge	24° 48'	16° 53'	07/1913	10/1944	Minor
0566/860	Maltahoehe	Raingauge	24° 50'	16° 59'	03/1900	09/1994	Major
0567/035	Sandhof	Raingauge	24° 35'	17° 18'	07/1913	03/1978	Minor
0568/095	Haribes	Raingauge	24° 35'	17° 34'	02/1918	09/1995	Major
0568/284	Gaisabis	Raingauge	24 44	17° 40'	02/1951	03/1973	None
0568/307	Dassiefontein	Raingauge	24° 37'	17° 41'	11/1950	09/1994	None
0568/752	Hardap Proefplaas	Raingauge	24° 32'	17° 56'	01/1974	09/1994	Major

Table A-3 (Continued): RAINGAUGES FOR THE LOWER FISH

STATION NUMBER	STATION NAME	TYPE	LOCATION		PERIOD OF RECORD		GAPS IN RECORD
			LAT (S)	LONG (E)	FROM	TO	
0568/817	Mariental	Raingauge	24° 37'	17° 58'	11/1948	09/1994	Minor
0608/712	Haruchas	Raingauge	24° 22'	16° 24'	07/1913	11/1939	Major
0609/057	Lahnstein	Raingauge	24° 27'	16° 32'	07/1913	09/1994	Major
0609/270	Urusis	Raingauge	24° 00'	16° 40'	07/1913	05/1987	Minor
0609/567	Nomtsas	Raingauge	24° 27'	16° 49'	07/1913	09/1994	Major
0609/734	Arusis	Raingauge	24° 14'	16° 55'	01/1940	12/1980	Minor
0610/884	Kub-suid	Raingauge	24° 14'	17° 30'	01/1929	09/1994	Minor
0611/146	Zamnarib Ost	Raingauge	24° 26'	17° 35'	01/1939	10/1951	None
0611/153	Kalkrand	Raingauge	24°03'	17° 36'	01/1952	09/1994	Major
0611/287	Bisipoort	Raingauge	24° 17'	17° 40'	03/1960	09/1987	None
0611/823	Twilight	Raingauge	24° 13'	17° 58'	01/1938	05/1995	Minor
0651/192	Middelplaas	Raingauge	23° 42'	16° 07'	12/1954	06/1980	None
0651/549	Nauchas	Raingauge	23° 39'	16° 19'	08/1948	06/1981	None
0651/759	Morgernroth	Raingauge	23° 39'	16° 26'	10/1924	08/1964	Major
0653/343	Tsumis	Raingauge	23° 43'	17° 12'	01/1937	03/1980	Minor
0695/533	Weener	Raingauge	23°23'	16° 18'	01/1954	09/1973	None
0695/707	Hohenheim	Raingauge	23° 17'	16° 24'	10/1949	09/1994	Minor
0695/771	Hornkranz	Raingauge	23° 21'	16° 26'	10/1970	08/1984	None
0696/018	Goellshau	Raingauge	23° 18'	16° 31'	01/1920	06/1986	Minor
0696/026	Isabis	Raingauge	23° 26'	16° 30'	01/1929	09/1994	Minor
0696/504	Marienhof	Raingauge	23° 24'	16° 30'	01/1925	04/1971	Major

Appendix B

Patched observed Runoff Records

<i>Description</i>	<i>Table no.</i>
<i>1) Hardap Dam flow record</i>	<i>B-1</i>
<i>2) Naute Dam flow record</i>	<i>B-2</i>
<i>3) Seeheim flow record</i>	<i>B-3</i>

Table B-1: Observed Flow Record (Patched) for Hardap Dam

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1962/63	0.00	0.00	0.00	370.00	0.00	21.33	12.12	0.00	0.00	0.00	0.00	0.00	403.45
1963/64	0.00	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.23
1964/65	0.00	0.00	0.00	15.37	22.22	2.39	21.11	0.00	0.00	0.00	0.00	0.00	61.09
1965/66	0.00	0.00	0.00	12.86	46.94	26.90	4.01	0.74	1.43	0.00	0.00	0.00	92.88
1966/67	0.00	0.00	2.11	3.96	104.50	90.76	0.00	0.00	0.00	0.00	0.00	0.00	201.33
1967/68	0.00	6.72	0.00	0.00	0.00	18.44	0.00	0.00	0.00	0.00	0.00	0.00	25.16
1968/69	0.00	0.52	10.96	0.00	56.47	66.87	0.00	0.00	0.00	0.00	0.00	0.00	134.82
1969/70	0.00	0.00	0.00	0.00	71.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.51
1970/71	0.00	0.00	3.24	0.00	135.90	0.86	11.87	0.00	0.00	0.00	0.00	0.00	151.87
1971/72	1.97	0.00	0.00	111.50	2.94	416.80	61.16	0.00	0.00	0.00	0.00	0.00	594.37
1972/73	0.00	0.00	0.00	0.00	21.12	38.52	11.10	0.00	0.00	0.00	0.00	0.00	70.74
1973/74	0.00	0.00	0.50	368.00	700.90	192.60	36.78	0.00	0.00	0.00	0.00	0.00	1298.78
1974/75	0.00	0.00	0.00	0.00	0.00	69.60	0.00	0.00	0.00	0.00	0.00	0.00	69.60
1975/76	0.00	0.00	0.00	297.70	165.10	280.50	43.77	0.00	0.00	0.00	0.00	0.00	787.07
1976/77	0.00	0.00	0.00	2.59	172.80	57.81	14.08	0.00	0.00	0.00	0.00	0.00	247.28
1977/78	0.25	3.00	0.84	6.30	18.20	30.36	2.09	0.00	0.00	0.00	0.00	0.00	61.04
1978/79	0.00	0.00	0.00	36.72	34.67	5.48	0.00	0.00	0.00	0.00	0.00	0.00	76.87
1979/80	0.00	0.00	0.00	0.00	0.00	90.28	0.00	0.00	0.00	0.00	0.00	0.00	90.28
1980/81	0.00	0.00	1.67	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.11
1981/82	0.00	0.00	0.00	0.00	2.71	4.90	0.00	0.00	0.00	0.00	0.00	0.00	7.61
1982/83	0.00	0.44	0.91	0.00	4.31	0.00	3.32	0.00	0.00	0.00	0.00	0.00	8.98
1983/84	0.00	8.95	24.14	1.11	3.98	39.73	34.93	0.00	0.00	0.00	0.00	0.00	112.84
1984/85	0.00	0.00	0.00	31.00	29.42	16.58	8.28	0.00	0.00	0.00	0.00	0.00	85.28
1985/86	0.00	1.98	5.14	26.99	29.34	51.37	8.33	0.00	0.00	0.00	0.00	0.00	123.15
1986/87	26.54	0.00	0.00	0.00	38.16	0.00	23.55	0.00	0.00	0.00	0.00	0.00	88.25
1987/88	0.00	0.00	0.00	45.93	21.10	53.11	7.20	0.00	0.00	0.00	0.00	0.00	127.34
1988/89	0.00	0.00	0.56	8.29	227.30	0.00	1.00	0.00	0.00	0.00	0.00	0.00	237.15
1989/90	0.00	0.00	0.00	1.73	0.00	0.89	1.39	0.00	0.00	0.00	0.00	0.00	4.01
1990/91	0.00	0.00	0.00	7.36	20.25	15.94	0.00	0.00	0.00	0.00	0.00	0.00	43.55
1991/92	0.00	0.00	0.00	5.55	2.44	2.34	0.00	0.00	0.00	0.00	0.00	0.00	10.33
1992/93	0.00	0.00	0.00	37.53	29.28	5.68	7.00	0.00	0.00	0.00	0.00	0.00	79.49
1993/94	0.00	1.30	0.00	22.73	57.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.06
1994/95	0.00	0.00	0.00	0.00	1.82	36.99	0.00	0.00	0.00	0.00	0.00	0.00	38.81
1995/96	0.00	0.00	0.00	59.56	14.27	0.95	1.42	0.00	0.00	0.00	0.00	0.00	76.20
1996/97	0.00	0.00	0.00	297.30	92.34	7.94	0.00	0.00	0.00	0.00	0.00	0.00	397.58
1997/98	5.54	0.94	2.21	19.57	0.82	4.47	1.41	0.00	0.00	0.00	0.00	0.00	34.96
1998/99	0.00	0.00	0.00	18.80	11.99	44.15	0.18	14.42	1.04	0.00	0.00	0.00	90.58
1999/ 0	0.00	0.90	59.63	23.35	670.60	793.20	1.15	0.00	0.00	0.00	0.00	0.00	1548.83
2000/ 1	0.00	0.00	0.00	0.22	8.82	2.31	96.68	2.89	0.00	0.00	0.00	0.00	110.92
Mean	0.88	0.69	2.87	46.97	72.30	63.85	10.61	0.46	0.06	0.00	0.00	0.00	198.70
Median	0.00	0.00	0.00	6.30	21.10	16.58	1.41	0.00	0.00	0.00	0.00	0.00	85.28
St dev	4.32	1.84	10.25	101.08	154.36	145.43	19.91	2.34	0.28	0.00	0.00	0.00	331.97
Coeff Var	4.91	2.66	3.57	2.15	2.13	2.28	1.88	5.06	4.41	-	-	-	1.67

Table B-2: Observed Flow Record (Patched) for Naute Dam

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1961/62	0.00	4.39	0.21	0.00	43.76	0.40	0.00	0.00	0.00	0.00	0.00	0.00	48.76
1962/63	0.00	0.92	0.00	50.16	0.04	1.73	73.98	0.00	0.00	0.00	0.00	0.00	126.83
1963/64	0.00	0.05	3.28	0.00	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	7.77
1964/65	0.00	0.00	0.00	0.00	0.00	24.67	16.73	0.00	0.00	0.00	0.00	0.00	41.40
1965/66	0.01	0.00	0.00	2.79	0.00	1.45	0.70	0.00	0.00	0.00	0.00	0.00	4.95
1966/67	0.10	0.42	0.00	0.26	2.37	5.42	1.41	0.00	0.00	0.00	0.00	0.00	9.98
1967/68	0.00	0.00	0.00	0.00	0.00	68.60	21.20	24.00	1.00	0.00	0.00	0.00	114.80
1968/69	0.00	0.00	0.00	0.00	39.36	9.51	1.95	0.00	0.00	0.00	0.00	0.00	50.82
1969/70	0.00	0.00	0.00	0.00	10.34	0.00	3.82	0.44	0.00	0.00	0.00	0.00	14.60
1970/71	0.00	0.00	0.00	0.00	14.77	0.78	1.41	0.05	0.00	0.00	0.00	0.00	17.01
1971/72	0.00	0.00	0.00	87.34	0.34	34.92	3.80	0.49	0.00	0.00	0.00	0.00	126.89
1972/73	0.00	0.00	0.00	0.00	28.46	2.80	17.47	0.00	0.00	0.00	0.34	0.00	49.07
1973/74	0.00	0.00	3.34	119.90	270.30	37.52	20.59	0.00	0.00	0.00	0.00	0.00	451.65
1974/75	0.00	6.11	0.00	1.07	0.00	26.53	0.41	0.64	0.00	0.00	0.00	0.00	34.76
1975/76	0.00	0.00	0.31	107.60	67.33	185.00	15.53	4.54	2.33	0.47	0.08	0.00	383.19
1976/77	0.00	0.00	0.00	0.00	3.68	10.83	20.94	0.00	0.00	0.00	0.00	0.00	35.45
1977/78	0.00	0.00	0.00	0.00	1.92	3.33	0.10	0.00	0.00	0.00	0.00	0.00	5.35
1978/79	0.00	0.00	0.00	0.24	0.88	0.00	0.11	0.00	0.00	0.00	0.00	0.00	1.23
1979/80	0.19	0.00	0.00	0.00	0.19	34.13	0.00	0.00	0.00	0.00	0.00	0.23	34.74
1980/81	0.00	0.00	0.00	0.00	2.68	18.60	0.00	0.00	0.00	0.00	0.00	0.00	21.28
1981/82	0.39	0.00	0.00	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	1.57
1982/83	0.00	0.00	0.06	0.25	0.00	0.13	0.19	0.00	0.00	0.00	0.00	0.00	0.63
1983/84	0.00	1.46	0.67	0.00	0.00	11.90	7.60	0.45	0.00	0.00	0.00	0.00	22.08
1984/85	0.00	1.26	0.00	1.21	0.00	2.84	0.00	0.00	0.00	0.00	0.00	0.00	5.31
1985/86	0.00	0.42	9.68	0.57	3.19	30.66	12.52	0.01	0.00	0.00	0.00	0.00	57.05
1986/87	0.00	0.00	0.00	0.00	2.18	1.41	0.32	0.00	0.00	0.00	0.00	0.00	3.91
1987/88	0.00	2.90	0.00	5.30	7.19	22.54	18.61	0.00	0.00	0.00	0.00	0.00	56.54
1988/89	0.00	0.00	0.75	28.41	94.40	1.88	7.16	0.00	0.00	0.00	0.00	0.00	132.60
1989/90	0.00	0.00	0.00	0.00	0.59	12.28	6.84	0.00	0.00	0.00	0.00	0.00	19.71
1990/91	0.00	0.00	2.50	1.53	7.69	8.56	0.76	0.00	0.00	0.00	0.00	3.15	24.19
1991/92	0.00	1.57	5.42	0.82	0.00	0.38	0.30	0.00	0.00	0.00	0.00	0.00	8.49
1992/93	0.00	0.00	0.00	28.63	7.44	1.70	8.76	0.00	0.00	0.00	0.00	0.00	46.53
1993/94	0.32	0.00	0.00	28.14	13.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.57
1994/95	0.00	0.00	0.00	0.00	0.00	2.15	0.00	2.81	0.00	0.00	0.00	0.00	4.96
1995/96	0.00	0.00	0.56	9.57	6.00	1.04	1.97	0.00	0.00	1.62	0.00	0.00	20.76
1996/97	0.00	2.84	1.31	2.99	0.00	110.70	0.00	0.00	0.00	0.00	0.00	0.00	117.84
1997/98	0.27	0.90	0.43	20.78	1.03	2.09	2.81	0.00	0.00	0.00	0.00	0.00	28.31
1998/99	0.27	0.16	3.66	1.73	0.49	3.49	0.16	6.31	0.00	0.00	0.00	0.00	16.27
1999/ 0	0.62	3.03	3.27	37.46	22.77	93.46	40.91	0.00	0.00	0.00	0.00	0.00	201.52
2000/ 1	0.00	0.00	0.00	0.51	2.39	14.98	67.99	0.41	0.00	0.00	0.00	0.00	86.28
Mean	0.05	0.66	0.89	13.43	16.37	19.71	9.57	1.00	0.08	0.05	0.01	0.08	61.92
Median	0.00	0.00	0.00	0.39	2.05	3.41	1.96	0.00	0.00	0.00	0.00	0.00	31.53
St dev	0.14	1.37	1.94	29.21	45.67	36.57	16.84	3.94	0.40	0.26	0.05	0.50	94.70
Coef Var	2.49	2.07	2.19	2.17	2.79	1.86	1.76	3.92	4.77	5.07	5.23	5.90	1.53

Table B-3: Observed Flow Record (Patched) for Seeheim

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1961/62	0.00	0.00	161.15	0.00	269.09	1.79	18.11	0.00	0.00	0.00	0.00	0.00	450.13
1962/63	0.00	0.00	0.00	820.04	0.00	96.93	223.99	0.00	0.00	0.00	0.00	0.00	1140.96
1963/64	0.00	0.00	0.00	0.00	0.00	0.00	8.09	0.00	0.00	0.00	0.00	0.00	8.09
1964/65	0.00	0.00	0.00	24.47	13.93	10.01	15.30	0.00	0.00	0.00	0.00	0.00	63.71
1965/66	0.00	0.00	0.61	45.18	98.68	17.80	35.03	0.98	0.00	0.00	0.00	0.00	198.27
1966/67	0.43	0.63	0.00	31.08	100.54	304.12	25.03	0.69	0.75	0.00	0.00	0.00	463.26
1967/68	0.00	15.16	0.00	0.00	0.00	109.34	26.96	54.76	0.00	0.00	0.00	0.00	206.21
1968/69	0.00	7.67	21.88	0.00	0.00	50.00	11.41	6.70	0.00	0.00	0.00	0.00	97.65
1969/70	0.00	0.00	0.00	0.00	10.00	0.00	2.53	0.72	0.00	0.00	0.00	0.00	13.25
1970/71	16.98	0.00	0.00	8.25	145.55	21.25	0.00	0.00	0.00	0.00	0.00	0.00	192.03
1971/72	0.00	0.00	0.00	342.33	2.38	987.98	106.23	1.09	0.00	0.00	0.00	0.00	1440.01
1972/73	0.00	0.00	0.00	0.00	84.81	46.54	5.47	0.00	0.00	0.00	0.00	0.00	136.81
1973/74	0.00	0.00	0.00	763.30	2379.11	591.71	145.09	40.60	12.08	8.11	4.42	1.54	3945.94
1974/75	0.00	0.00	0.00	0.00	0.00	25.78	1.53	0.00	0.00	0.00	0.00	0.00	27.31
1975/76	0.00	0.00	0.00	185.48	355.94	572.35	113.46	31.15	15.13	10.37	6.74	3.79	1294.40
1976/77	0.99	0.00	0.00	0.00	24.52	119.35	33.55	5.17	2.69	1.80	0.97	0.37	189.41
1977/78	0.07	0.00	0.00	0.00	3.14	40.62	6.12	0.46	0.00	0.00	0.00	0.00	50.40
1978/79	0.00	0.00	0.00	4.72	32.30	17.11	2.74	0.71	0.00	0.00	0.00	0.00	57.57
1979/80	0.00	0.00	0.00	0.00	0.00	104.27	3.37	0.09	0.00	0.00	0.00	0.00	107.73
1980/81	0.00	0.00	0.00	0.00	0.00	24.52	1.22	0.00	0.00	0.00	0.00	0.00	25.74
1981/82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1982/83	0.00	0.00	7.13	0.00	0.00	0.00	16.73	0.00	0.00	0.00	0.00	0.00	23.86
1983/84	0.00	15.86	32.08	5.63	0.00	39.33	34.71	0.49	0.00	0.00	0.00	0.00	128.11
1984/85	0.07	0.00	0.00	5.78	8.56	45.34	0.46	0.00	0.00	0.00	0.00	0.00	60.20
1985/86	0.00	0.57	30.10	7.15	29.56	23.88	2.79	0.21	0.12	0.00	0.00	0.00	94.39
1986/87	0.00	0.00	0.00	0.00	43.38	10.46	5.37	0.59	0.00	0.00	0.00	0.00	59.79
1987/88	0.00	12.99	0.26	57.12	37.31	320.17	34.08	11.75	2.59	1.94	0.45	0.00	478.66
1988/89	0.00	0.00	5.44	55.20	212.48	16.80	7.23	0.87	1.04	1.11	0.00	0.00	300.18
1989/90	0.00	0.00	0.00	0.00	0.00	2.67	4.98	2.24	0.04	0.00	0.00	0.00	9.92
1990/91	0.00	0.00	0.00	19.48	43.25	22.10	4.74	0.00	0.00	0.00	0.00	16.72	106.29
1991/92	1.81	4.77	15.43	3.43	0.00	6.99	3.55	0.12	0.00	0.00	0.00	0.00	36.08
1992/93	0.00	0.00	0.00	0.00	0.03	0.00	3.56	15.26	5.82	1.15	0.00	0.00	25.82
1993/94	0.00	0.00	0.00	23.85	44.70	3.37	0.00	0.00	0.00	0.00	0.00	0.00	71.92
1994/95	0.00	0.00	0.00	4.88	0.15	12.16	5.12	1.59	0.99	0.00	0.00	0.00	24.88
1995/96	0.00	0.00	14.59	91.95	23.74	20.61	8.96	0.02	0.00	5.07	15.04	5.26	185.23
1996/97	0.77	37.30	19.63	99.22	15.64	0.00	0.82	0.02	0.00	0.00	0.00	0.00	173.41
1997/98	0.00	0.00	0.00	90.99	0.43	10.00	6.58	0.00	0.00	0.00	0.00	0.00	108.00
1998/99	0.00	0.00	3.09	4.81	16.60	58.60	1.69	33.71	2.39	0.24	0.00	0.00	121.13
1999/ 0	0.00	0.00	18.22	52.95	840.82	1050.75	60.39	5.61	3.13	1.22	0.03	0.00	2033.11
2000/ 1	0.00	0.00	0.00	0.00	20.35	8.20	218.40	6.90	0.43	0.04	0.00	0.00	254.32
Mean	0.53	2.37	8.24	68.68	121.42	119.82	30.13	5.56	1.18	0.78	0.69	0.69	360.10
Median	0.00	0.00	0.00	4.84	14.78	21.67	6.35	0.47	0.00	0.00	0.00	0.00	107.86
St dev	2.69	6.98	26.28	179.64	394.88	250.29	54.99	12.46	3.14	2.18	2.65	2.80	728.85
Coeff Var	5.09	2.94	3.19	2.62	3.25	2.09	1.82	2.24	2.66	2.81	3.83	4.04	2.02

Appendix C

Synthesized Runoff Records for Input to System Analysis

Description	Table no.
1) Combined synthesized & observed flow Hardap Dam	C-1
2) Combined synthesized & observed flow Naute Dam	C-2
3) Combined synthesized & observed flow Seeheim	C-3
4) Hardap flow remaining at Seeheim	C-4
5) Incremental Naturalized flow for Seeheim	C-5
6) Total Naturalized flow for Seeheim	C-6
7) Lower Fish incremental natural flow	C-7
8) Konkiep River synthesized flow	C-8
9) Total Fish River at confluence with Orange River	C-9

Table C-1: Combined Synthesized and Observed Flow Record for Hardap

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1920	0.00	37.12	15.62	5.00	99.51	35.29	58.36	51.45	0.00	0.00	0.06	0.00	302.41
1921	0.04	14.19	8.40	6.38	19.68	1.93	0.03	9.31	0.07	0.00	0.00	0.00	60.03
1922	17.88	0.18	6.28	49.52	192.40	80.51	67.85	23.53	0.00	0.00	0.00	0.00	438.15
1923	2.75	8.10	0.12	7.63	102.84	29.57	19.74	0.00	0.00	0.00	0.00	0.00	170.75
1924	0.33	20.78	8.05	32.70	87.70	172.93	11.46	9.21	0.00	10.62	0.00	0.00	353.78
1925	3.99	0.19	36.97	79.01	0.42	23.63	16.67	4.19	32.61	0.00	0.00	9.60	207.28
1926	0.49	1.52	39.60	10.03	14.48	14.71	28.04	0.05	0.00	0.00	0.05	0.00	108.97
1927	0.03	49.51	21.83	69.33	25.06	90.39	24.33	0.00	0.00	0.00	0.01	0.14	280.63
1928	0.00	0.64	12.09	5.98	12.45	65.72	0.00	2.05	3.23	0.00	2.67	8.95	113.78
1929	2.72	0.56	3.69	4.69	12.95	18.81	0.00	0.02	0.00	0.00	0.00	0.00	43.44
1930	10.55	4.59	8.26	41.93	31.92	38.53	0.10	0.00	0.00	0.00	0.00	0.01	135.89
1931	0.00	18.66	5.53	7.87	12.44	50.84	0.64	5.55	0.00	0.00	0.00	0.00	101.53
1932	63.45	1.06	2.28	8.81	20.06	15.29	2.50	0.09	0.00	0.60	0.00	0.00	114.14
1933	0.84	12.26	52.69	210.56	135.03	151.54	22.76	0.44	0.00	0.00	0.00	0.00	586.12
1934	0.92	3.41	20.33	39.02	41.93	48.32	14.79	9.04	0.00	0.00	0.00	4.96	182.72
1935	0.65	0.95	5.38	27.37	1.19	81.27	3.12	13.53	0.44	0.00	0.00	0.00	133.90
1936	0.00	3.50	36.80	83.27	90.54	44.26	1.11	0.00	0.00	0.00	0.00	0.00	259.48
1937	0.62	8.69	17.39	83.90	5.33	2.41	55.21	33.06	3.72	0.00	0.00	0.00	210.33
1938	0.06	41.43	2.52	12.02	106.44	107.08	10.16	1.80	4.33	0.46	3.28	0.33	289.91
1939	21.32	11.41	10.65	30.30	75.85	12.70	0.47	0.00	5.77	0.00	0.00	6.39	174.86
1940	0.00	5.01	28.74	16.68	31.43	7.37	2.30	0.13	0.00	0.00	0.00	0.00	91.66
1941	15.07	0.11	0.20	2.64	160.65	27.90	7.98	8.70	0.06	0.13	0.00	2.11	225.55
1942	12.20	1.83	43.98	9.44	19.77	23.66	15.67	0.36	0.00	0.00	6.71	1.17	134.79
1943	0.69	12.11	93.28	103.43	7.10	8.49	0.00	2.46	0.00	0.00	0.00	0.16	227.72
1944	0.46	3.49	0.19	19.08	6.88	10.05	3.13	0.00	0.00	0.00	0.00	0.00	43.28
1945	0.00	8.39	83.41	7.65	13.29	17.88	12.36	0.07	0.00	0.00	0.00	0.00	143.05
1946	0.18	0.89	16.42	52.03	7.98	41.57	10.99	0.73	7.27	0.00	0.00	5.02	143.08
1947	0.00	0.00	12.55	35.78	42.01	33.89	8.29	0.00	0.00	5.62	1.72	0.00	139.86
1948	1.15	12.57	9.58	8.78	44.33	27.32	10.67	0.00	0.00	0.00	0.00	0.00	114.40
1949	1.34	3.64	8.59	58.50	98.54	90.50	28.32	7.76	0.00	0.00	0.00	0.00	297.19
1950	0.00	0.73	23.18	5.35	45.19	2.70	8.45	3.94	0.00	0.00	0.00	0.11	89.65
1951	1.73	75.12	2.92	7.59	149.26	1.87	21.69	0.00	0.60	0.00	0.00	1.94	262.72
1952	1.09	27.65	0.96	11.96	130.79	28.97	42.88	0.00	0.00	0.00	0.00	0.00	244.30
1953	13.91	1.98	18.90	36.06	29.86	164.60	4.84	1.07	0.08	0.00	-0.03	0.04	271.31
1954	2.01	18.09	4.24	81.30	53.15	31.13	8.98	2.47	10.95	0.00	0.00	0.00	212.32
1955	8.70	8.60	3.44	72.00	105.11	116.35	1.46	-0.01	0.01	1.40	0.00	0.00	317.06
1956	4.24	1.00	2.66	32.42	46.99	115.40	15.11	0.20	0.00	1.81	0.00	0.00	219.83
1957	2.69	27.15	28.46	22.33	33.12	17.84	1.21	0.23	0.00	0.00	0.00	0.24	133.27
1958	0.14	0.51	7.37	31.01	49.46	36.69	8.65	0.00	1.71	0.00	0.23	0.01	135.78
1959	0.09	7.03	1.57	14.66	66.18	32.36	0.70	0.00	0.00	0.00	0.00	0.23	122.82
1960	0.00	0.00	4.93	0.00	0.00	8.17	0.00	0.00	0.00	0.00	0.00	0.00	13.10
1961	0.00	0.00	0.00	0.00	42.20	27.43	3.63	0.00	0.00	0.00	0.00	0.00	73.26
1962	0.00	0.00	0.00	370.09	0.00	21.33	12.12	0.00	0.00	0.00	0.00	0.00	403.54
1963	0.00	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.23
1964	0.00	0.00	0.00	15.37	22.23	2.39	21.11	0.00	0.00	0.00	0.00	0.00	61.10

Table C-1(Continued): Combined Synthesized and Observed Flow Record for Hardap

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1965	0.00	0.00	0.00	12.86	46.94	26.90	4.01	0.74	1.43	0.00	0.00	0.00	92.88
1966	0.00	0.00	2.11	3.96	104.50	90.76	0.00	0.00	0.00	0.00	0.00	0.00	201.33
1967	0.00	6.72	0.00	0.00	0.00	18.44	0.00	0.00	0.00	0.00	0.00	0.00	25.16
1968	0.00	0.52	10.97	0.00	56.47	66.87	0.00	0.00	0.00	0.00	0.00	0.00	134.83
1969	0.00	0.00	0.00	0.00	71.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.51
1970	0.00	0.00	3.24	0.00	135.98	0.86	11.87	0.00	0.00	0.00	0.00	0.00	151.95
1971	1.97	0.00	0.00	111.53	2.94	416.80	61.16	0.00	0.00	0.00	0.00	0.00	594.40
1972	0.00	0.00	0.00	0.00	21.12	38.52	11.10	0.00	0.00	0.00	0.00	0.00	70.74
1973	0.00	0.00	0.50	368.00	700.97	192.66	36.78	0.00	0.00	0.00	0.00	0.00	1298.91
1974	0.00	0.00	0.00	0.00	0.00	69.60	0.00	0.00	0.00	0.00	0.00	0.00	69.60
1975	0.00	0.00	0.00	297.76	165.17	280.56	43.77	0.00	0.00	0.00	0.00	0.00	787.26
1976	0.00	0.00	0.00	2.59	172.81	57.81	14.08	0.00	0.00	0.00	0.00	0.00	247.29
1977	0.25	3.00	0.84	6.30	18.20	30.36	2.09	0.00	0.00	0.00	0.00	0.00	61.04
1978	0.00	0.00	0.00	36.72	34.67	5.48	0.00	0.00	0.00	0.00	0.00	0.00	76.87
1979	0.00	0.00	0.00	0.00	0.00	90.28	0.00	0.00	0.00	0.00	0.00	0.00	90.28
1980	0.00	0.00	1.67	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.11
1981	0.00	0.00	0.00	0.00	2.71	4.90	0.00	0.00	0.00	0.00	0.00	0.00	7.61
1982	0.00	0.44	0.91	0.00	4.31	0.00	3.32	0.00	0.00	0.00	0.00	0.00	8.98
1983	0.00	18.95	24.14	1.11	3.98	39.73	34.93	0.00	0.00	0.00	0.00	0.00	122.84
1984	0.00	0.00	0.00	31.00	29.42	16.58	8.28	0.00	0.00	0.00	0.00	0.00	85.28
1985	0.00	1.98	5.14	26.99	29.34	51.37	8.33	0.00	0.00	0.00	0.00	0.00	123.15
1986	26.54	0.00	0.00	0.00	38.16	0.00	23.55	0.00	0.00	0.00	0.00	0.00	88.25
1987	0.00	0.00	0.00	45.93	21.10	53.12	7.20	0.00	0.00	0.00	0.00	0.00	127.35
1988	0.00	0.00	0.56	8.29	227.35	0.00	1.00	0.00	0.00	0.00	0.00	0.00	237.20
1989	0.00	0.00	0.00	1.74	0.00	0.89	1.39	0.00	0.00	0.00	0.00	0.00	4.02
1990	0.00	0.00	0.00	7.36	20.25	15.94	0.00	0.00	0.00	0.00	0.00	0.00	43.55
1991	0.00	0.00	0.00	5.55	2.44	2.34	0.00	0.00	0.00	0.00	0.00	0.00	10.33
1992	0.00	0.00	0.00	37.53	29.28	5.68	7.00	0.00	0.00	0.00	0.00	0.00	79.49
1993	0.00	1.30	0.00	22.73	57.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.06
1994	0.00	0.00	0.00	0.00	1.82	36.99	0.00	0.00	0.00	0.00	0.00	0.00	38.81
1995	0.00	0.00	0.00	59.56	14.27	0.95	1.42	0.00	0.00	0.00	0.00	0.00	76.20
1996	0.00	0.00	0.00	297.30	92.34	7.94	0.00	0.00	0.00	0.00	0.00	0.00	397.58
1997	5.54	0.94	2.21	19.57	0.82	4.47	1.41	0.00	0.00	0.00	0.00	0.00	34.96
1998	0.00	0.00	0.00	18.88	11.99	44.15	0.18	14.42	1.04	0.00	0.00	0.00	90.66
1999	0.00	0.90	59.63	23.35	670.60	793.20	1.15	0.00	0.00	0.00	0.00	0.00	1548.83
2000	0.00	0.00	0.00	0.22	8.82	2.31	96.68	2.89	0.00	0.00	0.00	0.00	110.92
Mean	2.80	6.07	10.15	40.45	62.86	54.91	11.96	2.59	0.91	0.25	0.18	0.51	193.63
Median	0.00	0.73	2.28	12.86	29.42	27.43	4.01	0.00	0.00	0.00	0.00	0.00	127.35
St dev	8.46	12.49	17.99	75.44	112.48	105.68	18.15	7.60	3.96	1.35	0.89	1.77	305.32
Coeff Var	3.03	2.06	1.77	1.87	1.79	1.92	1.52	2.94	4.37	5.28	4.90	3.47	1.58

Table C-2: Combined Synthesized and Observed Flow Record for Naute

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1920	0.00	0.00	0.00	0.00	25.14	4.11	18.79	0.00	0.00	0.00	0.00	0.00	48.04
1921	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1922	0.00	0.00	0.00	7.83	105.91	122.20	59.77	0.00	0.00	0.00	0.00	0.00	295.72
1923	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1924	0.00	0.00	0.01	1.92	65.77	77.37	11.74	0.00	0.00	0.00	0.00	0.00	156.81
1925	0.00	0.00	1.72	0.00	0.00	0.00	1.10	0.00	0.00	0.00	0.00	0.00	2.82
1926	0.00	0.00	0.00	0.00	0.00	7.59	0.42	0.00	0.00	0.00	0.00	0.00	8.01
1927	0.00	0.00	0.00	26.93	0.00	59.61	0.00	0.00	0.00	0.00	0.00	0.00	86.54
1928	0.00	0.00	0.00	0.00	0.00	20.31	0.00	0.00	0.00	0.00	0.00	0.00	20.31
1929	0.00	0.00	3.95	0.00	5.33	1.92	0.00	0.00	0.00	0.00	0.00	0.00	11.20
1930	0.00	0.00	0.00	1.97	12.32	42.60	0.00	0.00	0.00	0.00	0.00	0.00	56.89
1931	0.00	13.82	0.00	0.00	5.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.66
1932	0.00	0.00	0.00	0.00	3.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.11
1933	0.00	0.00	29.89	95.58	41.07	165.93	0.37	0.00	0.00	0.00	0.00	0.00	332.84
1934	0.00	10.42	2.51	0.00	6.65	3.14	0.00	0.00	0.00	0.00	0.00	0.00	22.72
1935	0.00	0.00	0.00	0.00	0.00	20.23	0.00	0.00	0.00	0.00	0.00	0.00	20.23
1936	0.00	0.00	2.15	49.53	16.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.67
1937	0.00	0.00	14.51	25.65	0.41	0.00	4.33	0.33	0.00	0.00	0.00	0.00	45.23
1938	0.00	43.29	0.39	2.73	24.24	1.40	0.00	0.00	0.00	0.00	0.00	0.00	72.05
1939	0.00	0.00	0.00	4.75	34.56	0.00	0.00	0.00	0.00	0.00	0.00	4.80	44.11
1940	0.00	0.00	0.00	2.15	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16
1941	0.00	0.00	0.00	0.00	36.33	31.15	54.24	18.94	0.00	0.00	0.00	0.00	140.66
1942	0.00	0.00	3.25	0.00	0.00	6.34	0.38	0.00	0.00	0.00	0.00	0.00	9.97
1943	0.00	13.92	31.51	0.00	0.00	5.58	0.00	0.00	0.00	0.00	0.00	0.00	51.01
1944	0.00	0.00	0.00	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
1945	0.00	0.00	0.00	0.00	0.00	0.00	3.03	0.00	0.00	0.00	0.00	0.00	3.03
1946	0.00	0.00	0.00	10.53	0.00	30.89	0.00	0.05	0.00	0.00	0.00	0.00	41.47
1947	0.00	0.00	0.00	2.34	4.90	0.41	0.22	0.00	0.00	0.00	0.00	0.00	7.87
1948	0.00	0.23	2.92	2.42	10.58	49.90	20.67	0.00	0.00	0.00	0.97	0.00	87.69
1949	0.00	0.00	0.00	0.00	53.76	61.41	24.13	0.00	0.00	0.00	0.00	0.00	139.30
1950	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
1951	0.00	0.00	0.00	0.00	59.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.52
1952	0.00	11.37	0.00	0.00	36.98	5.63	2.41	0.00	0.00	0.00	0.00	0.00	56.39
1953	0.00	3.31	47.36	1.22	0.48	171.67	1.13	0.00	0.00	0.00	0.00	0.00	225.17
1954	0.00	0.00	0.00	19.52	0.00	6.01	0.00	0.00	12.41	0.00	0.00	0.00	37.94
1955	0.00	2.44	0.00	15.15	59.83	111.17	0.00	0.00	0.00	0.00	0.00	0.00	188.59
1956	0.00	0.00	0.00	0.00	0.00	4.14	0.00	0.00	0.00	0.00	0.00	0.00	4.14
1957	0.00	0.00	6.05	0.35	3.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.23
1958	0.00	0.00	0.00	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	3.52
1959	0.00	0.00	0.00	0.00	10.12	32.91	0.00	0.00	0.00	0.00	0.00	0.00	43.03
1960	0.00	0.00	0.00	0.00	0.00	15.24	48.77	0.00	15.44	0.00	0.00	0.00	79.45
1961	0.00	4.39	0.21	0.00	43.76	0.40	0.00	0.00	0.00	0.00	0.00	0.00	48.76
1962	0.00	0.92	0.00	50.16	0.04	1.73	73.98	0.00	0.00	0.00	0.00	0.00	126.83
1963	0.00	0.05	3.28	0.00	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	7.77
1964	0.00	0.00	0.00	0.00	0.00	24.67	16.73	0.00	0.00	0.00	0.00	0.00	41.40

Table C-2 (Continued): Combined Synthesized and Observed Flow Record for Naute

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1965	0.01	0.00	0.00	2.79	0.00	1.45	0.70	0.00	0.00	0.00	0.00	0.00	4.95
1966	0.10	0.42	0.00	0.26	2.37	5.42	1.41	0.00	0.00	0.00	0.00	0.00	9.98
1967	0.00	0.00	0.00	0.00	0.00	68.60	21.20	24.00	1.00	0.00	0.00	0.00	114.80
1968	0.00	0.00	0.00	0.00	39.36	9.51	1.95	0.00	0.00	0.00	0.00	0.00	50.82
1969	0.00	0.00	0.00	0.00	10.34	0.00	3.82	0.44	0.00	0.00	0.00	0.00	14.60
1970	0.00	0.00	0.00	0.00	14.77	0.78	1.41	0.05	0.00	0.00	0.00	0.00	17.01
1971	0.00	0.00	0.00	87.34	0.34	34.92	3.80	0.49	0.00	0.00	0.00	0.00	126.89
1972	0.00	0.00	0.00	0.00	28.46	2.80	17.47	0.00	0.00	0.00	0.34	0.00	49.07
1973	0.00	0.00	3.34	119.90	270.30	37.52	20.59	0.00	0.00	0.00	0.00	0.00	451.65
1974	0.00	6.11	0.00	1.07	0.00	26.53	0.41	0.64	0.00	0.00	0.00	0.00	34.76
1975	0.00	0.00	0.31	107.60	67.33	185.00	15.53	4.54	2.33	0.47	0.08	0.00	383.19
1976	0.00	0.00	0.00	0.00	3.68	10.83	20.94	0.00	0.00	0.00	0.00	0.00	35.45
1977	0.00	0.00	0.00	0.00	1.92	3.33	0.10	0.00	0.00	0.00	0.00	0.00	5.35
1978	0.00	0.00	0.00	0.24	0.88	0.00	0.11	0.00	0.00	0.00	0.00	0.00	1.23
1979	0.19	0.00	0.00	0.00	0.19	34.13	0.00	0.00	0.00	0.00	0.00	0.23	34.74
1980	0.00	0.00	0.00	0.00	2.68	18.60	0.00	0.00	0.00	0.00	0.00	0.00	21.28
1981	0.39	0.00	0.00	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	1.57
1982	0.00	0.00	0.06	0.25	0.00	0.13	0.19	0.00	0.00	0.00	0.00	0.00	0.63
1983	0.00	1.46	0.67	0.00	0.00	11.90	7.60	0.45	0.00	0.00	0.00	0.00	22.08
1984	0.00	1.26	0.00	1.21	0.00	2.84	0.00	0.00	0.00	0.00	0.00	0.00	5.31
1985	0.00	0.42	9.68	0.57	3.19	30.66	12.52	0.01	0.00	0.00	0.00	0.00	57.05
1986	0.00	0.00	0.00	0.00	2.18	1.41	0.32	0.00	0.00	0.00	0.00	0.00	3.91
1987	0.00	2.90	0.00	5.30	7.19	22.54	18.61	0.00	0.00	0.00	0.00	0.00	56.54
1988	0.00	0.00	0.75	28.41	94.40	1.88	7.16	0.00	0.00	0.00	0.00	0.00	132.60
1989	0.00	0.00	0.00	0.00	0.59	12.28	6.84	0.00	0.00	0.00	0.00	0.00	19.71
1990	0.00	0.00	2.50	1.53	7.69	8.56	0.76	0.00	0.00	0.00	0.00	3.15	24.19
1991	0.00	1.57	5.42	0.82	0.00	0.38	0.30	0.00	0.00	0.00	0.00	0.00	8.49
1992	0.00	0.00	0.00	28.63	7.44	1.70	8.76	0.00	0.00	0.00	0.00	0.00	46.53
1993	0.32	0.00	0.00	28.14	13.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.57
1994	0.00	0.00	0.00	0.00	0.00	2.15	0.00	2.81	0.00	0.00	0.00	0.00	4.96
1995	0.00	0.00	0.56	9.57	6.00	1.04	1.97	0.00	0.00	1.62	0.00	0.00	20.76
1996	0.00	2.84	1.31	2.99	0.00	110.70	0.00	0.00	0.00	0.00	0.00	0.00	117.84
1997	0.27	0.90	0.43	20.78	1.03	2.09	2.81	0.00	0.00	0.00	0.00	0.00	28.31
1998	0.27	0.16	3.66	1.73	0.49	3.49	0.16	6.31	0.00	0.00	0.00	0.00	16.27
1999	0.62	3.03	3.27	37.46	22.77	93.46	40.91	0.00	0.00	0.00	0.00	0.00	201.52
2000	0.00	0.00	0.00	0.51	2.39	14.98	67.99	0.41	0.00	0.00	0.00	0.00	86.28
Mean	0.03	1.55	2.24	9.98	15.78	22.85	7.83	0.73	0.38	0.03	0.02	0.10	61.53
Median	0.00	0.00	0.00	0.24	2.18	4.11	0.38	0.00	0.00	0.00	0.00	0.00	34.76
St dev	0.10	5.49	7.24	24.04	36.23	40.57	15.88	3.47	2.20	0.19	0.11	0.63	86.76
Coeff Var	3.67	3.54	3.23	2.41	2.30	1.78	2.03	4.72	5.71	7.24	6.64	6.28	1.41

Table C-3: Combined Synthesized and Observed Flow Record for Seeheim

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1920	0.00	0.00	0.00	0.00	160.28	30.67	112.01	1.65	0.00	0.00	0.00	0.00	304.61
1921	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1922	0.00	0.00	0.00	54.83	593.37	625.74	315.91	0.00	0.00	0.00	0.00	0.00	1589.85
1923	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1924	0.00	0.00	0.00	10.79	457.90	212.00	66.98	0.00	0.00	0.00	0.00	0.00	747.67
1925	0.00	0.00	0.00	0.00	0.00	11.86	0.00	0.00	0.00	0.00	0.00	0.00	11.86
1926	0.00	0.00	0.00	0.00	0.00	5.86	0.00	0.00	0.00	0.00	0.00	0.00	5.86
1927	0.00	0.00	0.00	5.02	0.00	326.81	0.00	0.00	0.00	0.00	0.00	0.00	331.83
1928	0.00	0.00	0.00	0.00	0.00	137.06	0.00	0.00	0.00	0.00	0.00	0.00	137.06
1929	0.00	0.00	0.00	0.00	5.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.98
1930	0.00	0.00	0.00	26.96	39.75	292.29	0.00	0.00	0.00	0.00	0.00	0.00	359.00
1931	0.00	0.00	0.00	0.00	18.31	9.56	0.00	0.00	0.00	0.00	0.00	0.00	27.87
1932	25.63	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.38
1933	0.00	0.00	206.02	605.76	579.05	813.73	28.47	0.00	0.00	0.00	0.00	0.00	2233.03
1934	0.00	0.00	0.00	7.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.27
1935	0.00	0.00	0.00	0.00	0.00	293.15	0.00	0.00	0.00	0.00	0.00	0.00	293.15
1936	0.00	0.00	0.00	336.36	49.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	385.38
1937	0.00	0.00	0.00	282.63	0.00	0.00	38.74	0.00	0.00	0.00	0.00	0.00	321.37
1938	0.00	135.35	0.00	0.00	235.58	71.58	0.00	0.00	0.00	0.00	0.00	0.00	442.51
1939	0.00	0.00	0.00	0.00	127.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	127.17
1940	0.00	0.00	0.00	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49
1941	0.00	0.00	0.00	0.00	705.66	0.00	33.33	0.00	0.00	0.00	0.00	0.00	738.99
1942	0.00	0.00	77.81	0.00	0.00	0.00	30.75	0.00	0.00	0.00	0.00	0.00	108.56
1943	0.00	9.91	181.21	280.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	472.05
1944	0.00	0.00	0.00	0.00	0.00	8.11	0.00	0.00	0.00	0.00	0.00	0.00	8.11
1945	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1946	0.00	0.00	0.00	3.90	0.00	70.04	0.00	0.00	0.00	0.00	0.00	0.00	73.94
1947	0.00	0.00	0.00	5.68	35.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.40
1948	0.00	0.00	0.00	28.10	20.26	173.49	0.00	0.00	0.00	0.00	0.00	0.00	221.85
1949	0.00	0.00	0.00	0.00	610.94	663.96	29.40	0.00	0.00	0.00	0.00	0.00	1304.30
1950	0.00	0.00	0.00	0.00	4.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.91
1951	0.00	0.00	0.00	0.00	498.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	498.41
1952	0.00	0.00	0.00	0.00	358.57	0.00	8.03	0.00	0.00	0.00	0.00	0.00	366.60
1953	0.00	0.00	32.65	0.00	21.76	704.55	0.00	0.00	0.00	0.00	0.00	0.00	758.96
1954	0.00	0.00	0.00	59.36	0.00	5.51	0.00	0.00	0.00	0.00	0.00	0.00	64.87
1955	0.00	0.00	0.00	64.09	546.03	720.50	0.00	0.00	0.00	0.00	0.00	0.00	1330.62
1956	0.00	0.00	0.00	0.00	0.00	7.70	0.00	0.00	0.00	0.00	0.00	0.00	7.70
1957	0.00	10.42	61.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.73
1958	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1959	0.00	0.00	0.00	0.00	59.12	100.63	0.00	0.00	0.00	0.00	0.00	0.00	159.75
1960	0.00	0.00	0.00	6.90	0.25	27.76	49.83	0.00	10.55	0.00	0.00	0.00	95.28
1961	0.00	0.00	161.15	0.00	269.09	1.79	18.11	0.00	0.00	0.00	0.00	0.00	450.13
1962	0.00	0.00	0.00	820.04	0.00	96.93	223.99	0.00	0.00	0.00	0.00	0.00	1140.96
1963	0.00	0.00	0.00	0.00	0.00	0.00	8.09	0.00	0.00	0.00	0.00	0.00	8.09
1964	0.00	0.00	0.00	24.47	13.93	10.01	15.30	0.00	0.00	0.00	0.00	0.00	63.71

Table C-3(Continued): Combined Synthesized and Observed Flow Record for Seeheim

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1965	0.00	0.00	0.61	45.18	98.68	17.80	35.03	0.98	0.00	0.00	0.00	0.00	198.27
1966	0.43	0.63	0.00	31.08	100.54	304.12	25.03	0.69	0.75	0.00	0.00	0.00	463.26
1967	0.00	15.16	0.00	0.00	0.00	109.34	26.96	54.76	0.00	0.00	0.00	0.00	206.21
1968	0.00	7.67	21.88	0.00	0.00	50.00	11.41	6.70	0.00	0.00	0.00	0.00	97.65
1969	0.00	0.00	0.00	0.00	10.00	0.00	2.53	0.72	0.00	0.00	0.00	0.00	13.25
1970	16.98	0.00	0.00	8.25	145.55	21.25	0.00	0.00	0.00	0.00	0.00	0.00	192.03
1971	0.00	0.00	0.00	342.33	2.38	987.98	106.23	1.09	0.00	0.00	0.00	0.00	1440.01
1972	0.00	0.00	0.00	0.00	84.81	46.54	5.47	0.00	0.00	0.00	0.00	0.00	136.81
1973	0.00	0.00	0.00	763.30	2379.11	591.71	145.09	40.60	12.08	8.11	4.42	1.54	3945.94
1974	0.00	0.00	0.00	0.00	0.00	25.78	1.53	0.00	0.00	0.00	0.00	0.00	27.31
1975	0.00	0.00	0.00	185.48	355.94	572.35	113.46	31.15	15.13	10.37	6.74	3.79	1294.40
1976	0.99	0.00	0.00	0.00	24.52	119.35	33.55	5.17	2.69	1.80	0.97	0.37	189.41
1977	0.07	0.00	0.00	0.00	3.14	40.62	6.12	0.46	0.00	0.00	0.00	0.00	50.40
1978	0.00	0.00	0.00	4.72	32.30	17.11	2.74	0.71	0.00	0.00	0.00	0.00	57.57
1979	0.00	0.00	0.00	0.00	0.00	104.27	3.37	0.09	0.00	0.00	0.00	0.00	107.73
1980	0.00	0.00	0.00	0.00	0.00	24.52	1.22	0.00	0.00	0.00	0.00	0.00	25.74
1981	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1982	0.00	0.00	7.13	0.00	0.00	0.00	16.73	0.00	0.00	0.00	0.00	0.00	23.86
1983	0.00	15.86	32.08	5.63	0.00	39.33	34.71	0.49	0.00	0.00	0.00	0.00	128.11
1984	0.07	0.00	0.00	5.78	8.56	45.34	0.46	0.00	0.00	0.00	0.00	0.00	60.20
1985	0.00	0.57	30.10	7.15	29.56	23.88	2.79	0.21	0.12	0.00	0.00	0.00	94.39
1986	0.00	0.00	0.00	0.00	43.38	10.46	5.37	0.59	0.00	0.00	0.00	0.00	59.79
1987	0.00	12.99	0.26	57.12	37.31	320.17	34.08	11.75	2.59	1.94	0.45	0.00	478.66
1988	0.00	0.00	5.44	55.20	212.48	16.80	7.23	0.87	1.04	1.11	0.00	0.00	300.18
1989	0.00	0.00	0.00	0.00	0.00	2.67	4.98	2.24	0.04	0.00	0.00	0.00	9.92
1990	0.00	0.00	0.00	19.48	43.25	22.10	4.74	0.00	0.00	0.00	0.00	16.72	106.29
1991	1.81	4.77	15.43	3.43	0.00	6.99	3.55	0.12	0.00	0.00	0.00	0.00	36.08
1992	0.00	0.00	0.00	0.00	0.03	0.00	3.56	15.26	5.82	1.15	0.00	0.00	25.82
1993	0.00	0.00	0.00	23.85	44.70	3.37	0.00	0.00	0.00	0.00	0.00	0.00	71.92
1994	0.00	0.00	0.00	4.88	0.15	12.16	5.12	1.59	0.99	0.00	0.00	0.00	24.88
1995	0.00	0.00	14.59	91.95	23.74	20.61	8.96	0.02	0.00	5.07	15.04	5.26	185.23
1996	0.77	37.30	19.63	99.22	15.64	0.00	0.82	0.02	0.00	0.00	0.00	0.00	173.41
1997	0.00	0.00	0.00	90.99	0.43	10.00	6.58	0.00	0.00	0.00	0.00	0.00	108.00
1998	0.00	0.00	3.09	4.81	16.60	58.60	1.69	33.71	2.39	0.24	0.00	0.00	121.13
1999	0.00	0.00	18.22	52.95	840.82	1050.75	60.39	5.61	3.13	1.22	0.03	0.00	2033.11
2000	0.00	0.00	0.00	0.00	20.35	8.20	218.40	6.90	0.43	0.04	0.00	0.00	254.32
Mean	0.58	3.09	10.97	55.91	123.28	124.76	23.69	2.77	0.71	0.38	0.34	0.34	346.82
Median	0.00	0.00	0.00	0.00	8.56	16.80	2.74	0.00	0.00	0.00	0.00	0.00	108.56
St dev	3.40	15.76	36.41	151.88	316.05	241.38	54.01	9.13	2.53	1.57	1.88	1.98	616.94
Coeff Var	5.89	5.09	3.32	2.72	2.56	1.93	2.28	3.30	3.55	4.11	5.51	5.80	1.78

Table C-4: Flow from Hardap remaining at Seeheim

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1920	0.00	15.19	6.39	2.05	40.71	14.44	23.88	21.05	0.00	0.00	0.02	0.00	123.72
1921	0.02	5.81	3.44	2.61	8.05	0.79	0.01	3.81	0.03	0.00	0.00	0.00	24.56
1922	7.31	0.07	2.57	20.26	78.71	32.94	27.76	9.63	0.00	0.00	0.00	0.00	179.25
1923	1.13	3.31	0.05	3.12	42.07	12.10	8.08	0.00	0.00	0.00	0.00	0.00	69.85
1924	0.14	8.50	3.29	13.38	35.88	70.75	4.69	3.77	0.00	4.34	0.00	0.00	144.73
1925	1.63	0.08	15.12	32.32	0.17	9.67	6.82	1.71	13.34	0.00	0.00	3.93	84.80
1926	0.20	0.62	16.20	4.10	5.92	6.02	11.47	0.02	0.00	0.00	0.02	0.00	44.58
1927	0.01	20.25	8.93	28.36	10.25	36.98	9.95	0.00	0.00	0.00	0.00	0.06	114.81
1928	0.00	0.26	4.95	2.45	5.09	26.89	0.00	0.84	1.32	0.00	1.09	3.66	46.55
1929	1.11	0.23	1.51	1.92	5.30	7.70	0.00	0.01	0.00	0.00	0.00	0.00	17.77
1930	4.32	1.88	3.38	17.15	13.06	15.76	0.04	0.00	0.00	0.00	0.00	0.00	55.59
1931	0.00	7.63	2.26	3.22	5.09	20.80	0.26	2.27	0.00	0.00	0.00	0.00	41.54
1932	25.96	0.43	0.93	3.60	8.21	6.26	1.02	0.04	0.00	0.25	0.00	0.00	46.69
1933	0.34	5.02	21.56	86.14	55.24	62.00	9.31	0.18	0.00	0.00	0.00	0.00	239.78
1934	0.38	1.40	8.32	15.96	17.15	19.77	6.05	3.70	0.00	0.00	0.00	2.03	74.75
1935	0.27	0.39	2.20	11.20	0.49	33.25	1.28	5.54	0.18	0.00	0.00	0.00	54.78
1936	0.00	1.43	15.05	34.07	37.04	18.11	0.45	0.00	0.00	0.00	0.00	0.00	106.15
1937	0.25	3.56	7.11	34.32	2.18	0.99	22.59	13.52	1.52	0.00	0.00	0.00	86.05
1938	0.02	16.95	1.03	4.92	43.54	43.81	4.16	0.74	1.77	0.19	1.34	0.14	118.60
1939	8.72	4.67	4.36	12.40	31.03	5.20	0.19	0.00	2.36	0.00	0.00	2.61	71.54
1940	0.00	2.05	11.76	6.82	12.86	3.02	0.94	0.05	0.00	0.00	0.00	0.00	37.50
1941	6.17	0.05	0.08	1.08	65.72	11.41	3.26	3.56	0.02	0.05	0.00	0.86	92.27
1942	4.99	0.75	17.99	3.86	8.09	9.68	6.41	0.15	0.00	0.00	2.75	0.48	55.14
1943	0.28	4.95	38.16	42.31	2.90	3.47	0.00	1.01	0.00	0.00	0.00	0.07	93.16
1944	0.19	1.43	0.08	7.81	2.81	4.11	1.28	0.00	0.00	0.00	0.00	0.00	17.71
1945	0.00	3.43	34.12	3.13	5.44	7.31	5.06	0.03	0.00	0.00	0.00	0.00	58.52
1946	0.07	0.36	6.72	21.29	3.26	17.01	4.50	0.30	2.97	0.00	0.00	2.05	58.53
1947	0.00	0.00	5.13	14.64	17.19	13.86	3.39	0.00	0.00	2.30	0.70	0.00	57.22
1948	0.47	5.14	3.92	3.59	18.14	11.18	4.37	0.00	0.00	0.00	0.00	0.00	46.80
1949	0.55	1.49	3.51	23.93	40.31	37.02	11.59	3.17	0.00	0.00	0.00	0.00	121.58
1950	0.00	0.30	9.48	2.19	18.49	1.10	3.46	1.61	0.00	0.00	0.00	0.05	36.68
1951	0.71	30.73	1.19	3.11	61.06	0.77	8.87	0.00	0.25	0.00	0.00	0.79	107.48
1952	0.45	11.31	0.39	4.89	53.51	11.85	17.54	0.00	0.00	0.00	0.00	0.00	99.94
1953	5.69	0.81	7.73	14.75	12.22	67.34	1.98	0.44	0.03	0.00	-0.01	0.02	110.99
1954	0.82	7.40	1.73	33.26	21.74	12.74	3.67	1.01	4.48	0.00	0.00	0.00	86.86
1955	3.56	3.52	1.41	29.46	43.00	47.60	0.60	0.00	0.00	0.57	0.00	0.00	129.71
1956	1.73	0.41	1.09	13.26	19.22	47.21	6.18	0.08	0.00	0.74	0.00	0.00	89.93
1957	1.10	11.11	11.64	9.14	13.55	7.30	0.50	0.09	0.00	0.00	0.00	0.10	54.52
1958	0.06	0.21	3.02	12.69	20.23	15.01	3.54	0.00	0.70	0.00	0.09	0.00	55.55
1959	0.04	2.88	0.64	6.00	27.07	13.24	0.29	0.00	0.00	0.00	0.00	0.09	50.25
1960	0.00	0.00	2.02	0.00	0.00	3.34	0.00	0.00	0.00	0.00	0.00	0.00	5.36
1961	0.00	0.00	0.00	0.00	17.26	11.22	1.49	0.00	0.00	0.00	0.00	0.00	29.97
1962	0.00	0.00	0.00	151.40	0.00	8.73	4.96	0.00	0.00	0.00	0.00	0.00	165.09
1963	0.00	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91
1964	0.00	0.00	0.00	6.29	9.09	0.98	8.64	0.00	0.00	0.00	0.00	0.00	25.00

TableC-4(Continued):Flow from Hardap remaining at Seeheim

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1965	0.00	0.00	0.00	5.26	19.20	11.00	1.64	0.30	0.59	0.00	0.00	0.00	38.00
1966	0.00	0.00	0.86	1.62	42.75	37.13	0.00	0.00	0.00	0.00	0.00	0.00	82.36
1967	0.00	2.75	0.00	0.00	0.00	7.54	0.00	0.00	0.00	0.00	0.00	0.00	10.29
1968	0.00	0.21	4.49	0.00	23.10	27.36	0.00	0.00	0.00	0.00	0.00	0.00	55.16
1969	0.00	0.00	0.00	0.00	29.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.25
1970	0.00	0.00	1.33	0.00	55.63	0.35	4.86	0.00	0.00	0.00	0.00	0.00	62.16
1971	0.81	0.00	0.00	45.63	1.20	170.51	25.02	0.00	0.00	0.00	0.00	0.00	243.17
1972	0.00	0.00	0.00	0.00	8.64	15.76	4.54	0.00	0.00	0.00	0.00	0.00	28.94
1973	0.00	0.00	0.20	150.55	286.77	78.82	15.05	0.00	0.00	0.00	0.00	0.00	531.38
1974	0.00	0.00	0.00	0.00	0.00	28.47	0.00	0.00	0.00	0.00	0.00	0.00	28.47
1975	0.00	0.00	0.00	121.81	67.57	114.78	17.91	0.00	0.00	0.00	0.00	0.00	322.07
1976	0.00	0.00	0.00	1.06	70.70	23.65	5.76	0.00	0.00	0.00	0.00	0.00	101.17
1977	0.10	1.23	0.34	2.58	7.45	12.42	0.86	0.00	0.00	0.00	0.00	0.00	24.97
1978	0.00	0.00	0.00	15.02	14.18	2.24	0.00	0.00	0.00	0.00	0.00	0.00	31.45
1979	0.00	0.00	0.00	0.00	0.00	36.93	0.00	0.00	0.00	0.00	0.00	0.00	36.93
1980	0.00	0.00	0.68	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86
1981	0.00	0.00	0.00	0.00	1.11	2.00	0.00	0.00	0.00	0.00	0.00	0.00	3.11
1982	0.00	0.18	0.37	0.00	1.76	0.00	1.36	0.00	0.00	0.00	0.00	0.00	3.67
1983	0.00	7.75	9.88	0.45	1.63	16.25	14.29	0.00	0.00	0.00	0.00	0.00	50.25
1984	0.00	0.00	0.00	12.68	12.04	6.78	3.39	0.00	0.00	0.00	0.00	0.00	34.89
1985	0.00	0.81	2.10	11.04	12.00	21.02	3.41	0.00	0.00	0.00	0.00	0.00	50.38
1986	10.86	0.00	0.00	0.00	15.61	0.00	9.63	0.00	0.00	0.00	0.00	0.00	36.10
1987	0.00	0.00	0.00	18.79	8.63	21.73	2.95	0.00	0.00	0.00	0.00	0.00	52.10
1988	0.00	0.00	0.23	3.39	93.01	0.00	0.41	0.00	0.00	0.00	0.00	0.00	97.04
1989	0.00	0.00	0.00	0.71	0.00	0.36	0.57	0.00	0.00	0.00	0.00	0.00	1.64
1990	0.00	0.00	0.00	3.01	8.28	6.52	0.00	0.00	0.00	0.00	0.00	0.00	17.82
1991	0.00	0.00	0.00	2.27	1.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	4.23
1992	0.00	0.00	0.00	15.35	11.98	2.32	2.86	0.00	0.00	0.00	0.00	0.00	32.52
1993	0.00	0.53	0.00	9.30	23.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.16
1994	0.00	0.00	0.00	0.00	0.74	15.13	0.00	0.00	0.00	0.00	0.00	0.00	15.88
1995	0.00	0.00	0.00	24.37	5.84	0.39	0.58	0.00	0.00	0.00	0.00	0.00	31.17
1996	0.00	0.00	0.00	121.63	37.78	3.25	0.00	0.00	0.00	0.00	0.00	0.00	162.65
1997	2.27	0.38	0.90	8.01	0.34	1.83	0.58	0.00	0.00	0.00	0.00	0.00	14.30
1998	0.00	0.00	0.00	7.72	4.91	18.06	0.07	5.90	0.43	0.00	0.00	0.00	37.09
1999	0.00	0.37	24.39	9.55	274.34	324.50	0.47	0.00	0.00	0.00	0.00	0.00	633.63
2000	0.00	0.00	0.00	0.09	3.61	0.95	39.55	1.18	0.00	0.00	0.00	0.00	45.38
Mean	1.14	2.48	4.15	16.55	25.72	22.47	4.89	1.06	0.37	0.10	0.07	0.21	79.21
Median	0.00	0.30	0.93	5.26	12.04	11.22	1.64	0.00	0.00	0.00	0.00	0.00	52.10
St dev	3.46	5.11	7.36	30.86	46.01	43.23	7.43	3.11	1.62	0.55	0.36	0.73	99.16
Coeff Var	3.03	2.06	1.77	1.87	1.79	1.92	1.52	2.94	4.37	5.28	4.90	3.47	1.25

Table C-5: Incremental Flow Record for Seeheim

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1920	0.00	0.00	0.00	0.00	159.60	30.54	111.53	1.64	0.00	0.00	0.00	0.00	303.31
1921	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1922	0.00	0.00	0.00	54.60	590.84	623.07	314.56	0.00	0.00	0.00	0.00	0.00	1583.08
1923	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1924	0.00	0.00	0.00	10.74	455.95	211.10	66.69	0.00	0.00	0.00	0.00	0.00	744.48
1925	0.00	0.00	0.00	0.00	0.00	11.81	0.00	0.00	0.00	0.00	0.00	0.00	11.81
1926	0.00	0.00	0.00	0.00	0.00	5.84	0.00	0.00	0.00	0.00	0.00	0.00	5.84
1927	0.00	0.00	0.00	5.00	0.00	325.42	0.00	0.00	0.00	0.00	0.00	0.00	330.42
1928	0.00	0.00	0.00	0.00	0.00	136.48	0.00	0.00	0.00	0.00	0.00	0.00	136.48
1929	0.00	0.00	0.00	0.00	5.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.95
1930	0.00	0.00	0.00	26.85	39.58	291.04	0.00	0.00	0.00	0.00	0.00	0.00	357.47
1931	0.00	0.00	0.00	0.00	18.23	9.52	0.00	0.00	0.00	0.00	0.00	0.00	27.75
1932	25.52	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.27
1933	0.00	0.00	205.14	603.18	576.58	810.26	28.35	0.00	0.00	0.00	0.00	0.00	2223.52
1934	0.00	0.00	0.00	7.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.24
1935	0.00	0.00	0.00	0.00	0.00	291.90	0.00	0.00	0.00	0.00	0.00	0.00	291.90
1936	0.00	0.00	0.00	334.93	48.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	383.74
1937	0.00	0.00	0.00	281.43	0.00	0.00	38.57	0.00	0.00	0.00	0.00	0.00	320.00
1938	0.00	134.77	0.00	0.00	234.58	71.28	0.00	0.00	0.00	0.00	0.00	0.00	440.62
1939	0.00	0.00	0.00	0.00	126.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.63
1940	0.00	0.00	0.00	2.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.48
1941	0.00	0.00	0.00	0.00	702.65	0.00	33.19	0.00	0.00	0.00	0.00	0.00	735.84
1942	0.00	0.00	77.48	0.00	0.00	0.00	30.62	0.00	0.00	0.00	0.00	0.00	108.10
1943	0.00	9.87	180.44	279.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	470.04
1944	0.00	0.00	0.00	0.00	0.00	8.08	0.00	0.00	0.00	0.00	0.00	0.00	8.08
1945	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1946	0.00	0.00	0.00	3.88	0.00	69.74	0.00	0.00	0.00	0.00	0.00	0.00	73.63
1947	0.00	0.00	0.00	5.66	35.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.22
1948	0.00	0.00	0.00	27.98	20.17	172.75	0.00	0.00	0.00	0.00	0.00	0.00	220.90
1949	0.00	0.00	0.00	0.00	608.34	661.13	29.27	0.00	0.00	0.00	0.00	0.00	1298.74
1950	0.00	0.00	0.00	0.00	4.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.89
1951	0.00	0.00	0.00	0.00	496.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	496.29
1952	0.00	0.00	0.00	0.00	357.04	0.00	8.00	0.00	0.00	0.00	0.00	0.00	365.04
1953	0.00	0.00	32.51	0.00	21.67	701.55	0.00	0.00	0.00	0.00	0.00	0.00	755.73
1954	0.00	0.00	0.00	59.11	0.00	5.49	0.00	0.00	0.00	0.00	0.00	0.00	64.59
1955	0.00	0.00	0.00	63.82	543.70	717.43	0.00	0.00	0.00	0.00	0.00	0.00	1324.95
1956	0.00	0.00	0.00	0.00	0.00	7.67	0.00	0.00	0.00	0.00	0.00	0.00	7.67
1957	0.00	10.38	61.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.42
1958	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1959	0.00	0.00	0.00	0.00	58.87	100.20	0.00	0.00	0.00	0.00	0.00	0.00	159.07
1960	0.00	0.00	0.00	6.87	0.25	27.64	49.61	0.00	10.51	0.00	0.00	0.00	94.88
1961	0.00	0.00	160.47	0.00	267.94	1.78	18.03	0.00	0.00	0.00	0.00	0.00	448.21
1962	0.00	0.00	0.00	816.55	0.00	96.52	223.04	0.00	0.00	0.00	0.00	0.00	1136.10
1963	0.00	0.00	0.00	0.00	0.00	0.00	8.06	0.00	0.00	0.00	0.00	0.00	8.06
1964	0.00	0.00	0.00	24.37	13.87	9.96	15.24	0.00	0.00	0.00	0.00	0.00	63.44

Table C-5 (Continued): Incremental Flow Record for Seeheim

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1965	0.00	0.00	0.61	44.98	98.25	17.72	34.88	0.98	0.00	0.00	0.00	0.00	197.42
1966	0.43	0.62	0.00	30.95	100.11	302.82	24.92	0.69	0.75	0.00	0.00	0.00	461.29
1967	0.00	15.09	0.00	0.00	0.00	108.88	26.84	54.52	0.00	0.00	0.00	0.00	205.33
1968	0.00	7.64	21.78	0.00	0.00	49.79	11.36	6.67	0.00	0.00	0.00	0.00	97.24
1969	0.00	0.00	0.00	0.00	9.96	0.00	2.52	0.71	0.00	0.00	0.00	0.00	13.19
1970	16.91	0.00	0.00	8.22	144.93	21.16	0.00	0.00	0.00	0.00	0.00	0.00	191.21
1971	0.00	0.00	0.00	340.87	2.37	983.77	105.78	1.09	0.00	0.00	0.00	0.00	1433.87
1972	0.00	0.00	0.00	0.00	84.44	46.34	5.44	0.00	0.00	0.00	0.00	0.00	136.23
1973	0.00	0.00	0.00	760.05	2368.97	589.18	144.47	40.42	12.03	8.08	4.40	1.53	3929.13
1974	0.00	0.00	0.00	0.00	0.00	25.67	1.52	0.00	0.00	0.00	0.00	0.00	27.19
1975	0.00	0.00	0.00	184.69	354.42	569.91	112.97	31.02	15.07	10.32	6.71	3.77	1288.88
1976	0.99	0.00	0.00	0.00	24.41	118.84	33.40	5.15	2.67	1.80	0.96	0.37	188.60
1977	0.07	0.00	0.00	0.00	3.13	40.44	6.09	0.46	0.00	0.00	0.00	0.00	50.19
1978	0.00	0.00	0.00	4.69	32.16	17.04	2.73	0.70	0.00	0.00	0.00	0.00	57.32
1979	0.00	0.00	0.00	0.00	0.00	103.82	3.35	0.09	0.00	0.00	0.00	0.00	107.27
1980	0.00	0.00	0.00	0.00	0.00	24.41	1.22	0.00	0.00	0.00	0.00	0.00	25.63
1981	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1982	0.00	0.00	7.10	0.00	0.00	0.00	16.66	0.00	0.00	0.00	0.00	0.00	23.75
1983	0.00	15.79	31.95	5.61	0.00	39.17	34.57	0.48	0.00	0.00	0.00	0.00	127.56
1984	0.07	0.00	0.00	5.75	8.52	45.14	0.46	0.00	0.00	0.00	0.00	0.00	59.95
1985	0.00	0.57	29.97	7.12	29.44	23.78	2.78	0.21	0.12	0.00	0.00	0.00	93.98
1986	0.00	0.00	0.00	0.00	43.19	10.41	5.34	0.59	0.00	0.00	0.00	0.00	59.53
1987	0.00	12.94	0.26	56.88	37.15	318.81	33.93	11.70	2.58	1.94	0.44	0.00	476.62
1988	0.00	0.00	5.41	54.96	211.57	16.73	7.20	0.87	1.04	1.11	0.00	0.00	298.90
1989	0.00	0.00	0.00	0.00	0.00	2.65	4.95	2.23	0.04	0.00	0.00	0.00	9.88
1990	0.00	0.00	0.00	19.40	43.07	22.00	4.72	0.00	0.00	0.00	0.00	16.64	105.84
1991	1.80	4.74	15.37	3.41	0.00	6.96	3.53	0.12	0.00	0.00	0.00	0.00	35.93
1992	0.00	0.00	0.00	0.00	0.03	0.00	3.54	15.19	5.80	1.15	0.00	0.00	25.71
1993	0.00	0.00	0.00	23.75	44.51	3.35	0.00	0.00	0.00	0.00	0.00	0.00	71.62
1994	0.00	0.00	0.00	4.85	0.15	12.11	5.09	1.58	0.99	0.00	0.00	0.00	24.77
1995	0.00	0.00	14.52	91.56	23.63	20.52	8.92	0.02	0.00	5.05	14.97	5.23	184.44
1996	0.77	37.14	19.55	98.80	15.57	0.00	0.82	0.02	0.00	0.00	0.00	0.00	172.67
1997	0.00	0.00	0.00	90.60	0.43	9.96	6.55	0.00	0.00	0.00	0.00	0.00	107.54
1998	0.00	0.00	3.07	4.79	16.53	58.35	1.68	33.57	2.38	0.23	0.00	0.00	120.62
1999	0.00	0.00	18.14	52.72	837.24	1046.27	60.13	5.58	3.12	1.21	0.03	0.00	2024.45
2000	0.00	0.00	0.00	0.00	20.27	8.17	217.47	6.87	0.42	0.04	0.00	0.00	253.24
Mean	0.57	3.08	10.92	55.67	122.76	124.23	23.59	2.76	0.71	0.38	0.34	0.34	345.34
Median	0.00	0.00	0.00	0.00	8.52	16.73	2.73	0.00	0.00	0.00	0.00	0.00	108.10
St dev	3.38	15.69	36.25	151.23	314.70	240.35	53.78	9.09	2.52	1.57	1.87	1.97	614.31
Coeff Var	5.89	5.09	3.32	2.72	2.56	1.93	2.28	3.30	3.55	4.11	5.51	5.80	1.78

Table C-6 : Naturalised Total Catchment Flow for Seeheim

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1920	0.00	15.19	6.39	2.05	200.31	44.98	135.41	22.69	0.00	0.00	0.02	0.00	427.03
1921	0.02	5.81	3.44	2.61	8.05	0.79	0.01	3.81	0.03	0.00	0.00	0.00	24.56
1922	7.31	0.07	2.57	74.86	669.55	656.01	342.32	9.63	0.00	0.00	0.00	0.00	1762.32
1923	1.13	3.31	0.05	3.12	42.07	12.10	8.08	0.00	0.00	0.00	0.00	0.00	69.85
1924	0.14	8.50	3.29	24.12	491.83	281.84	71.38	3.77	0.00	4.34	0.00	0.00	889.22
1925	1.63	0.08	15.12	32.32	0.17	21.48	6.82	1.71	13.34	0.00	0.00	3.93	96.61
1926	0.20	0.62	16.20	4.10	5.92	11.85	11.47	0.02	0.00	0.00	0.02	0.00	50.41
1927	0.01	20.25	8.93	33.36	10.25	362.40	9.95	0.00	0.00	0.00	0.00	0.06	445.22
1928	0.00	0.26	4.95	2.45	5.09	163.36	0.00	0.84	1.32	0.00	1.09	3.66	183.02
1929	1.11	0.23	1.51	1.92	11.25	7.70	0.00	0.01	0.00	0.00	0.00	0.00	23.73
1930	4.32	1.88	3.38	44.00	52.64	306.81	0.04	0.00	0.00	0.00	0.00	0.00	413.06
1931	0.00	7.63	2.26	3.22	23.32	30.32	0.26	2.27	0.00	0.00	0.00	0.00	69.29
1932	51.48	0.43	0.93	3.60	8.95	6.26	1.02	0.04	0.00	0.25	0.00	0.00	72.96
1933	0.34	5.02	226.70	689.32	631.82	872.26	37.66	0.18	0.00	0.00	0.00	0.00	2463.30
1934	0.38	1.40	8.32	23.20	17.15	19.77	6.05	3.70	0.00	0.00	0.00	2.03	81.99
1935	0.27	0.39	2.20	11.20	0.49	325.15	1.28	5.54	0.18	0.00	0.00	0.00	346.68
1936	0.00	1.43	15.05	368.99	85.85	18.11	0.45	0.00	0.00	0.00	0.00	0.00	489.89
1937	0.25	3.56	7.11	315.75	2.18	0.99	61.16	13.52	1.52	0.00	0.00	0.00	406.05
1938	0.02	151.72	1.03	4.92	278.12	115.08	4.16	0.74	1.77	0.19	1.34	0.14	559.23
1939	8.72	4.67	4.36	12.40	157.66	5.20	0.19	0.00	2.36	0.00	0.00	2.61	198.16
1940	0.00	2.05	11.76	9.30	12.86	3.02	0.94	0.05	0.00	0.00	0.00	0.00	39.98
1941	6.17	0.05	0.08	1.08	768.38	11.41	36.45	3.56	0.02	0.05	0.00	0.86	828.11
1942	4.99	0.75	95.47	3.86	8.09	9.68	37.03	0.15	0.00	0.00	2.75	0.48	163.24
1943	0.28	14.82	218.60	322.05	2.90	3.47	0.00	1.01	0.00	0.00	0.00	0.07	563.20
1944	0.19	1.43	0.08	7.81	2.81	12.19	1.28	0.00	0.00	0.00	0.00	0.00	25.78
1945	0.00	3.43	34.12	3.13	5.44	7.31	5.06	0.03	0.00	0.00	0.00	0.00	58.52
1946	0.07	0.36	6.72	25.17	3.26	86.75	4.50	0.30	2.97	0.00	0.00	2.05	132.16
1947	0.00	0.00	5.13	20.29	52.75	13.86	3.39	0.00	0.00	2.30	0.70	0.00	98.44
1948	0.47	5.14	3.92	31.57	38.31	183.93	4.37	0.00	0.00	0.00	0.00	0.00	267.71
1949	0.55	1.49	3.51	23.93	648.65	698.16	40.86	3.17	0.00	0.00	0.00	0.00	1420.32
1950	0.00	0.30	9.48	2.19	23.38	1.10	3.46	1.61	0.00	0.00	0.00	0.05	41.56
1951	0.71	30.73	1.19	3.11	557.35	0.77	8.87	0.00	0.25	0.00	0.00	0.79	603.77
1952	0.45	11.31	0.39	4.89	410.55	11.85	25.54	0.00	0.00	0.00	0.00	0.00	464.98
1953	5.69	0.81	40.24	14.75	33.88	768.89	1.98	0.44	0.03	0.00	-0.01	0.02	866.72
1954	0.82	7.40	1.73	92.37	21.74	18.22	3.67	1.01	4.48	0.00	0.00	0.00	151.45
1955	3.56	3.52	1.41	93.27	586.70	765.03	0.60	0.00	0.00	0.57	0.00	0.00	1454.66
1956	1.73	0.41	1.09	13.26	19.22	54.88	6.18	0.08	0.00	0.74	0.00	0.00	97.60
1957	1.10	21.48	72.69	9.14	13.55	7.30	0.50	0.09	0.00	0.00	0.00	0.10	125.95
1958	0.06	0.21	3.02	12.69	20.23	15.01	3.54	0.00	0.70	0.00	0.09	0.00	55.55
1959	0.04	2.88	0.64	6.00	85.94	113.44	0.29	0.00	0.00	0.00	0.00	0.09	209.32
1960	0.00	0.00	2.02	6.87	0.25	30.98	49.61	0.00	10.51	0.00	0.00	0.00	100.24
1961	0.00	0.00	160.47	0.00	285.20	13.00	19.51	0.00	0.00	0.00	0.00	0.00	478.18
1962	0.00	0.00	0.00	967.95	0.00	105.24	227.99	0.00	0.00	0.00	0.00	0.00	1301.19
1963	0.00	0.91	0.00	0.00	0.00	0.00	8.06	0.00	0.00	0.00	0.00	0.00	8.97
1964	0.00	0.00	0.00	30.65	22.97	10.94	23.87	0.00	0.00	0.00	0.00	0.00	88.44

Table C-6 (Continued): Naturalised Total Catchment Flow for Seeheim

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1965	0.00	0.00	0.61	50.25	117.46	28.73	36.52	1.28	0.59	0.00	0.00	0.00	235.42
1966	0.43	0.62	0.86	32.57	142.86	339.95	24.92	0.69	0.75	0.00	0.00	0.00	543.65
1967	0.00	17.84	0.00	0.00	0.00	116.42	26.84	54.52	0.00	0.00	0.00	0.00	215.63
1968	0.00	7.85	26.27	0.00	23.10	77.14	11.36	6.67	0.00	0.00	0.00	0.00	152.40
1969	0.00	0.00	0.00	0.00	39.21	0.00	2.52	0.71	0.00	0.00	0.00	0.00	42.44
1970	16.91	0.00	1.33	8.22	200.56	21.51	4.86	0.00	0.00	0.00	0.00	0.00	253.38
1971	0.81	0.00	0.00	386.49	3.58	1154.28	130.80	1.09	0.00	0.00	0.00	0.00	1677.04
1972	0.00	0.00	0.00	0.00	93.08	62.10	9.98	0.00	0.00	0.00	0.00	0.00	165.17
1973	0.00	0.00	0.20	910.60	2655.74	668.00	159.51	40.42	12.03	8.08	4.40	1.53	4460.51
1974	0.00	0.00	0.00	0.00	0.00	54.14	1.52	0.00	0.00	0.00	0.00	0.00	55.66
1975	0.00	0.00	0.00	306.51	421.99	684.69	130.88	31.02	15.07	10.32	6.71	3.77	1610.95
1976	0.99	0.00	0.00	1.06	95.11	142.49	39.16	5.15	2.67	1.80	0.96	0.37	289.77
1977	0.17	1.23	0.34	2.58	10.58	52.86	6.94	0.46	0.00	0.00	0.00	0.00	75.16
1978	0.00	0.00	0.00	19.72	46.34	19.28	2.73	0.70	0.00	0.00	0.00	0.00	88.77
1979	0.00	0.00	0.00	0.00	0.00	140.76	3.35	0.09	0.00	0.00	0.00	0.00	144.20
1980	0.00	0.00	0.68	0.00	0.18	24.41	1.22	0.00	0.00	0.00	0.00	0.00	26.49
1981	0.00	0.00	0.00	0.00	1.11	2.00	0.00	0.00	0.00	0.00	0.00	0.00	3.11
1982	0.00	0.18	7.47	0.00	1.76	0.00	18.01	0.00	0.00	0.00	0.00	0.00	27.43
1983	0.00	23.54	41.82	6.06	1.63	55.42	48.86	0.48	0.00	0.00	0.00	0.00	177.81
1984	0.07	0.00	0.00	18.44	20.56	51.93	3.85	0.00	0.00	0.00	0.00	0.00	94.83
1985	0.00	1.38	32.07	18.16	41.44	44.79	6.18	0.21	0.12	0.00	0.00	0.00	144.36
1986	10.86	0.00	0.00	0.00	58.80	10.41	14.98	0.59	0.00	0.00	0.00	0.00	95.64
1987	0.00	12.94	0.26	75.67	45.79	340.54	36.88	11.70	2.58	1.94	0.44	0.00	528.72
1988	0.00	0.00	5.64	58.35	304.58	16.73	7.61	0.87	1.04	1.11	0.00	0.00	395.94
1989	0.00	0.00	0.00	0.71	0.00	3.02	5.52	2.23	0.04	0.00	0.00	0.00	11.52
1990	0.00	0.00	0.00	22.41	51.35	28.52	4.72	0.00	0.00	0.00	0.00	16.64	123.65
1991	1.80	4.74	15.37	5.68	1.00	7.91	3.53	0.12	0.00	0.00	0.00	0.00	40.15
1992	0.00	0.00	0.00	15.35	12.01	2.32	6.41	15.19	5.80	1.15	0.00	0.00	58.23
1993	0.00	0.53	0.00	33.05	67.84	3.35	0.00	0.00	0.00	0.00	0.00	0.00	104.78
1994	0.00	0.00	0.00	4.85	0.89	27.24	5.09	1.58	0.99	0.00	0.00	0.00	40.65
1995	0.00	0.00	14.52	115.92	29.47	20.91	9.51	0.02	0.00	5.05	14.97	5.23	215.61
1996	0.77	37.14	19.55	220.43	53.35	3.25	0.82	0.02	0.00	0.00	0.00	0.00	335.32
1997	2.27	0.38	0.90	98.61	0.77	11.79	7.12	0.00	0.00	0.00	0.00	0.00	121.84
1998	0.00	0.00	3.07	12.52	21.43	76.42	1.76	39.47	2.81	0.23	0.00	0.00	157.70
1999	0.00	0.37	42.53	62.27	1111.58	1370.77	60.60	5.58	3.12	1.21	0.03	0.00	2658.07
2000	0.00	0.00	0.00	0.09	23.87	9.11	257.02	8.05	0.42	0.04	0.00	0.00	298.61
Mean	1.72	5.56	15.08	72.21	148.47	146.69	28.48	3.81	1.08	0.49	0.41	0.55	424.56
Median	0.02	0.41	1.73	11.20	23.10	21.51	6.18	0.18	0.00	0.00	0.00	0.00	157.70
St dev	6.22	17.95	40.51	177.70	354.73	275.77	59.14	9.62	2.91	1.64	1.89	2.07	701.16
Coeff Var	3.62	3.23	2.69	2.46	2.39	1.88	2.08	2.52	2.69	3.37	4.57	3.77	1.65

Table C-7: Incremental Flow Record for Lower Fish Upstream of Konkiep Catchment

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1920	0.00	0.00	0.00	0.00	40.54	7.76	28.33	0.42	0.00	0.00	0.00	0.00	77.04
1921	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1922	0.00	0.00	0.00	13.87	150.07	158.26	79.90	0.00	0.00	0.00	0.00	0.00	402.10
1923	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1924	0.00	0.00	0.00	2.73	115.81	53.62	16.94	0.00	0.00	0.00	0.00	0.00	189.10
1925	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
1926	0.00	0.00	0.00	0.00	0.00	1.48	0.00	0.00	0.00	0.00	0.00	0.00	1.48
1927	0.00	0.00	0.00	1.27	0.00	82.66	0.00	0.00	0.00	0.00	0.00	0.00	83.93
1928	0.00	0.00	0.00	0.00	0.00	34.66	0.00	0.00	0.00	0.00	0.00	0.00	34.66
1929	0.00	0.00	0.00	0.00	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.51
1930	0.00	0.00	0.00	6.82	10.05	73.93	0.00	0.00	0.00	0.00	0.00	0.00	90.80
1931	0.00	0.00	0.00	0.00	4.63	2.42	0.00	0.00	0.00	0.00	0.00	0.00	7.05
1932	6.48	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67
1933	0.00	0.00	52.11	153.21	146.45	205.81	7.20	0.00	0.00	0.00	0.00	0.00	564.77
1934	0.00	0.00	0.00	1.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.84
1935	0.00	0.00	0.00	0.00	0.00	74.14	0.00	0.00	0.00	0.00	0.00	0.00	74.14
1936	0.00	0.00	0.00	85.07	12.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.47
1937	0.00	0.00	0.00	71.48	0.00	0.00	9.80	0.00	0.00	0.00	0.00	0.00	81.28
1938	0.00	34.23	0.00	0.00	59.58	18.10	0.00	0.00	0.00	0.00	0.00	0.00	111.92
1939	0.00	0.00	0.00	0.00	32.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.16
1940	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
1941	0.00	0.00	0.00	0.00	178.47	0.00	8.43	0.00	0.00	0.00	0.00	0.00	186.90
1942	0.00	0.00	19.68	0.00	0.00	0.00	7.78	0.00	0.00	0.00	0.00	0.00	27.46
1943	0.00	2.51	45.83	71.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	119.39
1944	0.00	0.00	0.00	0.00	0.00	2.05	0.00	0.00	0.00	0.00	0.00	0.00	2.05
1945	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1946	0.00	0.00	0.00	0.99	0.00	17.71	0.00	0.00	0.00	0.00	0.00	0.00	18.70
1947	0.00	0.00	0.00	1.44	9.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.47
1948	0.00	0.00	0.00	7.11	5.12	43.88	0.00	0.00	0.00	0.00	0.00	0.00	56.11
1949	0.00	0.00	0.00	0.00	154.52	167.93	7.44	0.00	0.00	0.00	0.00	0.00	329.88
1950	0.00	0.00	0.00	0.00	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.24
1951	0.00	0.00	0.00	0.00	126.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.06
1952	0.00	0.00	0.00	0.00	90.69	0.00	2.03	0.00	0.00	0.00	0.00	0.00	92.72
1953	0.00	0.00	8.26	0.00	5.50	178.19	0.00	0.00	0.00	0.00	0.00	0.00	191.95
1954	0.00	0.00	0.00	15.01	0.00	1.39	0.00	0.00	0.00	0.00	0.00	0.00	16.41
1955	0.00	0.00	0.00	16.21	138.10	182.23	0.00	0.00	0.00	0.00	0.00	0.00	336.54
1956	0.00	0.00	0.00	0.00	0.00	1.95	0.00	0.00	0.00	0.00	0.00	0.00	1.95
1957	0.00	2.64	15.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.14
1958	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1959	0.00	0.00	0.00	0.00	14.95	25.45	0.00	0.00	0.00	0.00	0.00	0.00	40.40
1960	0.00	0.00	0.00	1.74	0.06	7.02	12.60	0.00	2.67	0.00	0.00	0.00	24.10
1961	0.00	0.00	40.76	0.00	68.06	0.45	4.58	0.00	0.00	0.00	0.00	0.00	113.85
1962	0.00	0.00	0.00	207.40	0.00	24.52	56.65	0.00	0.00	0.00	0.00	0.00	288.57
1963	0.00	0.00	0.00	0.00	0.00	0.00	2.05	0.00	0.00	0.00	0.00	0.00	2.05
1964	0.00	0.00	0.00	6.19	3.52	2.53	3.87	0.00	0.00	0.00	0.00	0.00	16.11

Table C-7 (Continued): Incremental Flow Record for Lower Fish Upstream of Konkiep Catchment

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1965	0.00	0.00	0.15	11.43	24.96	4.50	8.86	0.25	0.00	0.00	0.00	0.00	50.15
1966	0.11	0.16	0.00	7.86	25.43	76.92	6.33	0.18	0.19	0.00	0.00	0.00	117.17
1967	0.00	3.83	0.00	0.00	0.00	27.65	6.82	13.85	0.00	0.00	0.00	0.00	52.15
1968	0.00	1.94	5.53	0.00	0.00	12.65	2.89	1.69	0.00	0.00	0.00	0.00	24.70
1969	0.00	0.00	0.00	0.00	2.53	0.00	0.64	0.18	0.00	0.00	0.00	0.00	3.35
1970	4.30	0.00	0.00	2.09	36.81	5.37	0.00	0.00	0.00	0.00	0.00	0.00	48.57
1971	0.00	0.00	0.00	86.58	0.60	249.88	26.87	0.28	0.00	0.00	0.00	0.00	364.20
1972	0.00	0.00	0.00	0.00	21.45	11.77	1.38	0.00	0.00	0.00	0.00	0.00	34.60
1973	0.00	0.00	0.00	193.05	601.72	149.65	36.69	10.27	3.06	2.05	1.12	0.39	998.00
1974	0.00	0.00	0.00	0.00	0.00	6.52	0.39	0.00	0.00	0.00	0.00	0.00	6.91
1975	0.00	0.00	0.00	46.91	90.02	144.76	28.70	7.88	3.83	2.62	1.70	0.96	327.38
1976	0.25	0.00	0.00	0.00	6.20	30.18	8.48	1.31	0.68	0.46	0.24	0.09	47.90
1977	0.02	0.00	0.00	0.00	0.80	10.27	1.55	0.12	0.00	0.00	0.00	0.00	12.75
1978	0.00	0.00	0.00	1.19	8.17	4.33	0.69	0.18	0.00	0.00	0.00	0.00	14.56
1979	0.00	0.00	0.00	0.00	0.00	26.37	0.85	0.02	0.00	0.00	0.00	0.00	27.25
1980	0.00	0.00	0.00	0.00	0.00	6.20	0.31	0.00	0.00	0.00	0.00	0.00	6.51
1981	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1982	0.00	0.00	1.80	0.00	0.00	0.00	4.23	0.00	0.00	0.00	0.00	0.00	6.03
1983	0.00	4.01	8.11	1.42	0.00	9.95	8.78	0.12	0.00	0.00	0.00	0.00	32.40
1984	0.02	0.00	0.00	1.46	2.16	11.47	0.12	0.00	0.00	0.00	0.00	0.00	15.23
1985	0.00	0.14	7.61	1.81	7.48	6.04	0.71	0.05	0.03	0.00	0.00	0.00	23.87
1986	0.00	0.00	0.00	0.00	10.97	2.65	1.36	0.15	0.00	0.00	0.00	0.00	15.12
1987	0.00	3.29	0.06	14.45	9.44	80.98	8.62	2.97	0.65	0.49	0.11	0.00	121.06
1988	0.00	0.00	1.37	13.96	53.74	4.25	1.83	0.22	0.26	0.28	0.00	0.00	75.92
1989	0.00	0.00	0.00	0.00	0.00	0.67	1.26	0.57	0.01	0.00	0.00	0.00	2.51
1990	0.00	0.00	0.00	4.93	10.94	5.59	1.20	0.00	0.00	0.00	0.00	4.23	26.88
1991	0.46	1.21	3.90	0.87	0.00	1.77	0.90	0.03	0.00	0.00	0.00	0.00	9.13
1992	0.00	0.00	0.00	0.00	0.01	0.00	0.90	3.86	1.47	0.29	0.00	0.00	6.53
1993	0.00	0.00	0.00	6.03	11.31	0.85	0.00	0.00	0.00	0.00	0.00	0.00	18.19
1994	0.00	0.00	0.00	1.23	0.04	3.08	1.29	0.40	0.25	0.00	0.00	0.00	6.29
1995	0.00	0.00	3.69	23.26	6.00	5.21	2.27	0.01	0.00	1.28	3.80	1.33	46.85
1996	0.20	9.43	4.97	25.10	3.95	0.00	0.21	0.01	0.00	0.00	0.00	0.00	43.86
1997	0.00	0.00	0.00	23.01	0.11	2.53	1.66	0.00	0.00	0.00	0.00	0.00	27.32
1998	0.00	0.00	0.78	1.22	4.20	14.82	0.43	8.53	0.60	0.06	0.00	0.00	30.64
1999	0.00	0.00	4.61	13.39	212.66	265.75	15.27	1.42	0.79	0.31	0.01	0.00	514.21
2000	0.00	0.00	0.00	0.00	5.15	2.07	55.24	1.74	0.11	0.01	0.00	0.00	64.32
Mean	0.15	0.78	2.77	14.14	31.18	31.55	5.99	0.70	0.18	0.10	0.09	0.09	87.72
Median	0.00	0.00	0.00	0.00	2.16	4.25	0.69	0.00	0.00	0.00	0.00	0.00	27.46
St dev	0.86	3.99	9.21	38.41	79.93	61.05	13.66	2.31	0.64	0.40	0.48	0.50	156.03
Coeff Var	5.89	5.09	3.32	2.72	2.56	1.93	2.28	3.30	3.55	4.11	5.51	5.80	1.78

Table C-8: Synthesized Flow Record for Konkiep River Upstream of Confluence with Fish River

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1920	0.00	0.00	0.00	0.00	22.18	4.24	15.50	0.23	0.00	0.00	0.00	0.00	42.16
1921	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1922	0.00	0.00	0.00	7.59	82.13	86.61	43.72	0.00	0.00	0.00	0.00	0.00	220.05
1923	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1924	0.00	0.00	0.00	1.49	63.38	29.34	9.27	0.00	0.00	0.00	0.00	0.00	103.48
1925	0.00	0.00	0.00	0.00	0.00	1.64	0.00	0.00	0.00	0.00	0.00	0.00	1.64
1926	0.00	0.00	0.00	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.81
1927	0.00	0.00	0.00	0.69	0.00	45.23	0.00	0.00	0.00	0.00	0.00	0.00	45.93
1928	0.00	0.00	0.00	0.00	0.00	18.97	0.00	0.00	0.00	0.00	0.00	0.00	18.97
1929	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83
1930	0.00	0.00	0.00	3.73	5.50	40.46	0.00	0.00	0.00	0.00	0.00	0.00	49.69
1931	0.00	0.00	0.00	0.00	2.53	1.32	0.00	0.00	0.00	0.00	0.00	0.00	3.86
1932	3.55	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.65
1933	0.00	0.00	28.51	83.84	80.15	112.63	3.94	0.00	0.00	0.00	0.00	0.00	309.07
1934	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01
1935	0.00	0.00	0.00	0.00	0.00	40.57	0.00	0.00	0.00	0.00	0.00	0.00	40.57
1936	0.00	0.00	0.00	46.55	6.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.34
1937	0.00	0.00	0.00	39.12	0.00	0.00	5.36	0.00	0.00	0.00	0.00	0.00	44.48
1938	0.00	18.73	0.00	0.00	32.61	9.91	0.00	0.00	0.00	0.00	0.00	0.00	61.25
1939	0.00	0.00	0.00	0.00	17.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.60
1940	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
1941	0.00	0.00	0.00	0.00	97.67	0.00	4.61	0.00	0.00	0.00	0.00	0.00	102.28
1942	0.00	0.00	10.77	0.00	0.00	0.00	4.26	0.00	0.00	0.00	0.00	0.00	15.03
1943	0.00	1.37	25.08	38.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.34
1944	0.00	0.00	0.00	0.00	0.00	1.12	0.00	0.00	0.00	0.00	0.00	0.00	1.12
1945	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1946	0.00	0.00	0.00	0.54	0.00	9.69	0.00	0.00	0.00	0.00	0.00	0.00	10.23
1947	0.00	0.00	0.00	0.79	4.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73
1948	0.00	0.00	0.00	3.89	2.80	24.01	0.00	0.00	0.00	0.00	0.00	0.00	30.71
1949	0.00	0.00	0.00	0.00	84.56	91.90	4.07	0.00	0.00	0.00	0.00	0.00	180.53
1950	0.00	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
1951	0.00	0.00	0.00	0.00	68.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.98
1952	0.00	0.00	0.00	0.00	49.63	0.00	1.11	0.00	0.00	0.00	0.00	0.00	50.74
1953	0.00	0.00	4.52	0.00	3.01	97.52	0.00	0.00	0.00	0.00	0.00	0.00	105.05
1954	0.00	0.00	0.00	8.22	0.00	0.76	0.00	0.00	0.00	0.00	0.00	0.00	8.98
1955	0.00	0.00	0.00	8.87	75.57	99.72	0.00	0.00	0.00	0.00	0.00	0.00	184.17
1956	0.00	0.00	0.00	0.00	0.00	1.07	0.00	0.00	0.00	0.00	0.00	0.00	1.07
1957	0.00	1.44	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.93
1958	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1959	0.00	0.00	0.00	0.00	8.18	13.93	0.00	0.00	0.00	0.00	0.00	0.00	22.11
1960	0.00	0.00	0.00	0.95	0.03	3.84	6.90	0.00	1.46	0.00	0.00	0.00	13.19
1961	0.00	0.00	22.30	0.00	37.24	0.25	2.51	0.00	0.00	0.00	0.00	0.00	62.30
1962	0.00	0.00	0.00	113.50	0.00	13.42	31.00	0.00	0.00	0.00	0.00	0.00	157.92
1963	0.00	0.00	0.00	0.00	0.00	0.00	1.12	0.00	0.00	0.00	0.00	0.00	1.12
1964	0.00	0.00	0.00	3.39	1.93	1.39	2.12	0.00	0.00	0.00	0.00	0.00	8.82

Table C-8 (Continued): Synthesized Flow Record for Konkiep River Upstream of Confluence with Fish River

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1965	0.00	0.00	0.08	6.25	13.66	2.46	4.85	0.14	0.00	0.00	0.00	0.00	27.44
1966	0.06	0.09	0.00	4.30	13.92	42.09	3.46	0.10	0.10	0.00	0.00	0.00	64.12
1967	0.00	2.10	0.00	0.00	0.00	15.13	3.73	7.58	0.00	0.00	0.00	0.00	28.54
1968	0.00	1.06	3.03	0.00	0.00	6.92	1.58	0.93	0.00	0.00	0.00	0.00	13.52
1969	0.00	0.00	0.00	0.00	1.38	0.00	0.35	0.10	0.00	0.00	0.00	0.00	1.83
1970	2.35	0.00	0.00	1.14	20.14	2.94	0.00	0.00	0.00	0.00	0.00	0.00	26.58
1971	0.00	0.00	0.00	47.38	0.33	136.74	14.70	0.15	0.00	0.00	0.00	0.00	199.31
1972	0.00	0.00	0.00	0.00	11.74	6.44	0.76	0.00	0.00	0.00	0.00	0.00	18.94
1973	0.00	0.00	0.00	105.65	329.29	81.90	20.08	5.62	1.67	1.12	0.61	0.21	546.15
1974	0.00	0.00	0.00	0.00	0.00	3.57	0.21	0.00	0.00	0.00	0.00	0.00	3.78
1975	0.00	0.00	0.00	25.67	49.26	79.22	15.70	4.31	2.09	1.43	0.93	0.52	179.15
1976	0.14	0.00	0.00	0.00	3.39	16.52	4.64	0.72	0.37	0.25	0.13	0.05	26.22
1977	0.01	0.00	0.00	0.00	0.44	5.62	0.85	0.06	0.00	0.00	0.00	0.00	6.98
1978	0.00	0.00	0.00	0.65	4.47	2.37	0.38	0.10	0.00	0.00	0.00	0.00	7.97
1979	0.00	0.00	0.00	0.00	0.00	14.43	0.47	0.01	0.00	0.00	0.00	0.00	14.91
1980	0.00	0.00	0.00	0.00	0.00	3.39	0.17	0.00	0.00	0.00	0.00	0.00	3.56
1981	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1982	0.00	0.00	0.99	0.00	0.00	0.00	2.32	0.00	0.00	0.00	0.00	0.00	3.30
1983	0.00	2.20	4.44	0.78	0.00	5.44	4.80	0.07	0.00	0.00	0.00	0.00	17.73
1984	0.01	0.00	0.00	0.80	1.18	6.28	0.06	0.00	0.00	0.00	0.00	0.00	8.33
1985	0.00	0.08	4.17	0.99	4.09	3.30	0.39	0.03	0.02	0.00	0.00	0.00	13.06
1986	0.00	0.00	0.00	0.00	6.00	1.45	0.74	0.08	0.00	0.00	0.00	0.00	8.28
1987	0.00	1.80	0.04	7.91	5.16	44.31	4.72	1.63	0.36	0.27	0.06	0.00	66.25
1988	0.00	0.00	0.75	7.64	29.41	2.33	1.00	0.12	0.14	0.15	0.00	0.00	41.55
1989	0.00	0.00	0.00	0.00	0.00	0.37	0.69	0.31	0.01	0.00	0.00	0.00	1.37
1990	0.00	0.00	0.00	2.70	5.99	3.06	0.66	0.00	0.00	0.00	0.00	2.31	14.71
1991	0.25	0.66	2.14	0.47	0.00	0.97	0.49	0.02	0.00	0.00	0.00	0.00	4.99
1992	0.00	0.00	0.00	0.00	0.00	0.00	0.49	2.11	0.81	0.16	0.00	0.00	3.57
1993	0.00	0.00	0.00	3.30	6.19	0.47	0.00	0.00	0.00	0.00	0.00	0.00	9.95
1994	0.00	0.00	0.00	0.67	0.02	1.68	0.71	0.22	0.14	0.00	0.00	0.00	3.44
1995	0.00	0.00	2.02	12.73	3.29	2.85	1.24	0.00	0.00	0.70	2.08	0.73	25.64
1996	0.11	5.16	2.72	13.73	2.16	0.00	0.11	0.00	0.00	0.00	0.00	0.00	24.00
1997	0.00	0.00	0.00	12.59	0.06	1.38	0.91	0.00	0.00	0.00	0.00	0.00	14.95
1998	0.00	0.00	0.43	0.67	2.30	8.11	0.23	4.67	0.33	0.03	0.00	0.00	16.77
1999	0.00	0.00	2.52	7.33	116.38	145.43	8.36	0.78	0.43	0.17	0.00	0.00	281.40
2000	0.00	0.00	0.00	0.00	2.82	1.14	30.23	0.95	0.06	0.01	0.00	0.00	35.20
Mean	0.08	0.43	1.52	7.74	17.06	17.27	3.28	0.38	0.10	0.05	0.05	0.05	48.00
Median	0.00	0.00	0.00	0.00	1.18	2.33	0.38	0.00	0.00	0.00	0.00	0.00	15.03
St dev	0.47	2.18	5.04	21.02	43.74	33.41	7.48	1.26	0.35	0.22	0.26	0.27	85.39
Coeff Var	5.89	5.09	3.32	2.72	2.56	1.93	2.28	3.30	3.55	4.11	5.51	5.80	1.78

Table C-9 : Synthesized Flow Record for Fish River at Confluence with Orange River

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1920	0.00	11.59	4.88	1.56	237.03	49.83	163.20	17.97	0.00	0.00	0.02	0.00	486.08
1921	0.01	4.43	2.62	1.99	6.15	0.60	0.01	2.91	0.02	0.00	0.00	0.00	18.74
1922	5.58	0.06	1.96	85.27	833.50	849.71	435.84	7.35	0.00	0.00	0.00	0.00	2219.26
1923	0.86	2.53	0.04	2.38	32.11	9.23	6.16	0.00	0.00	0.00	0.00	0.00	53.32
1924	0.10	6.49	2.52	24.27	610.63	364.01	90.70	2.88	0.00	3.32	0.00	0.00	1104.91
1925	1.25	0.06	13.01	24.67	0.13	21.03	6.14	1.31	10.18	0.00	0.00	3.00	80.78
1926	0.15	0.47	12.37	3.13	4.52	17.81	9.11	0.02	0.00	0.00	0.02	0.00	47.60
1927	0.01	15.46	6.82	50.37	7.83	455.29	7.60	0.00	0.00	0.00	0.00	0.04	543.42
1928	0.00	0.20	3.78	1.87	3.89	195.63	0.00	0.64	1.01	0.00	0.83	2.79	210.64
1929	0.85	0.17	4.52	1.46	15.47	7.51	0.00	0.01	0.00	0.00	0.00	0.00	29.99
1930	3.29	1.43	2.58	45.81	66.23	384.86	0.03	0.00	0.00	0.00	0.00	0.00	504.24
1931	0.00	17.60	1.73	2.46	29.94	26.88	0.20	1.73	0.00	0.00	0.00	0.00	80.54
1932	49.32	0.33	0.71	2.75	9.78	4.77	0.78	0.03	0.00	0.19	0.00	0.00	68.66
1933	0.26	3.83	279.12	844.63	743.85	1125.59	40.20	0.14	0.00	0.00	0.00	0.00	3037.63
1934	0.29	9.94	8.49	20.55	18.76	17.76	4.62	2.82	0.00	0.00	0.00	1.55	84.78
1935	0.20	0.30	1.68	8.55	0.37	380.13	0.97	4.22	0.14	0.00	0.00	0.00	396.57
1936	0.00	1.09	13.32	455.47	99.19	13.82	0.35	0.00	0.00	0.00	0.00	0.00	583.24
1937	0.19	2.71	17.79	373.46	2.01	0.75	65.53	10.60	1.16	0.00	0.00	0.00	474.23
1938	0.02	205.66	1.12	6.08	325.13	117.04	3.17	0.56	1.35	0.14	1.02	0.10	661.40
1939	6.66	3.56	3.33	13.51	199.55	3.97	0.15	0.00	1.80	0.00	0.00	6.09	238.60
1940	0.00	1.56	8.97	9.91	9.82	2.30	0.72	0.04	0.00	0.00	0.00	0.00	33.33
1941	4.71	0.03	0.06	0.82	893.58	35.25	87.08	18.85	0.02	0.04	0.00	0.66	1041.12
1942	3.81	0.57	106.09	2.95	6.17	12.79	40.62	0.11	0.00	0.00	2.10	0.37	175.57
1943	0.22	27.05	264.61	355.75	2.22	7.41	0.00	0.77	0.00	0.00	0.00	0.05	658.07
1944	0.14	1.09	0.06	6.40	2.15	12.48	0.98	0.00	0.00	0.00	0.00	0.00	23.29
1945	0.00	2.62	26.05	2.39	4.15	5.58	6.44	0.02	0.00	0.00	0.00	0.00	47.25
1946	0.06	0.28	5.13	29.71	2.49	119.94	3.43	0.27	2.27	0.00	0.00	1.57	165.14
1947	0.00	0.00	3.92	19.71	58.42	10.93	2.78	0.00	0.00	1.75	0.54	0.00	98.04
1948	0.36	4.12	5.48	37.16	46.18	250.80	20.94	0.00	0.00	0.00	0.83	0.00	365.87
1949	0.42	1.14	2.68	18.27	779.98	845.04	63.25	2.42	0.00	0.00	0.00	0.00	1713.20
1950	0.00	0.49	7.24	1.67	19.76	0.84	2.64	1.23	0.00	0.00	0.00	0.03	33.91
1951	0.54	23.46	0.91	2.37	671.17	0.58	6.77	0.00	0.19	0.00	0.00	0.61	706.60
1952	0.34	18.32	0.30	3.73	485.19	13.84	24.69	0.00	0.00	0.00	0.00	0.00	546.42
1953	4.34	3.44	83.85	12.30	34.79	1008.86	2.47	0.33	0.02	0.00	-0.01	0.01	1150.41
1954	0.63	5.65	1.32	110.36	16.60	21.19	2.80	0.77	13.99	0.00	0.00	0.00	173.31
1955	2.72	4.76	1.07	109.18	712.47	960.60	0.46	0.00	0.00	0.44	0.00	0.00	1791.71
1956	1.32	0.31	0.83	10.12	14.67	48.43	4.72	0.06	0.00	0.57	0.00	0.00	81.04
1957	0.84	20.47	84.63	7.27	13.61	5.57	0.38	0.07	0.00	0.00	0.00	0.07	132.92
1958	0.04	0.16	2.30	9.68	15.44	14.46	2.70	0.00	0.53	0.00	0.07	0.00	45.40
1959	0.03	2.20	0.49	4.58	97.36	154.01	0.22	0.00	0.00	0.00	0.00	0.07	258.94
1960	0.00	0.00	1.54	7.94	0.29	47.49	98.92	0.00	25.31	0.00	0.00	0.00	181.49
1961	0.00	3.74	185.72	0.00	360.28	10.96	21.98	0.00	0.00	0.00	0.00	0.00	582.68
1962	0.00	0.78	0.00	1102.46	0.03	119.73	324.71	0.00	0.00	0.00	0.00	0.00	1547.72
1963	0.00	0.74	2.80	0.00	0.00	0.00	13.10	0.00	0.00	0.00	0.00	0.00	16.64
1964	0.00	0.00	0.00	32.97	22.98	33.29	38.46	0.00	0.00	0.00	0.00	0.00	127.71

Table C-9 (Continued) : Synthesized Flow Record for Fish River at Confluence with Orange River

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1965	0.01	0.00	0.70	58.41	128.27	30.13	42.17	1.36	0.45	0.00	0.00	0.00	261.49
1966	0.58	1.08	0.66	37.24	150.40	383.10	30.01	0.80	0.86	0.00	0.00	0.00	604.74
1967	0.00	19.55	0.00	0.00	0.00	190.10	49.10	83.50	0.85	0.00	0.00	0.00	343.10
1968	0.00	8.99	28.61	0.00	51.17	86.55	14.80	7.72	0.00	0.00	0.00	0.00	197.84
1969	0.00	0.00	0.00	0.00	42.65	0.00	6.17	1.20	0.00	0.00	0.00	0.00	50.02
1970	19.55	0.00	1.01	9.50	222.62	25.39	4.91	0.04	0.00	0.00	0.00	0.00	283.04
1971	0.62	0.00	0.00	503.38	3.95	1297.41	144.65	1.67	0.00	0.00	0.00	0.00	1951.68
1972	0.00	0.00	0.00	0.00	128.49	68.00	24.65	0.00	0.00	0.00	0.29	0.00	221.42
1973	0.00	0.00	3.00	1095.90	3188.38	773.39	196.07	46.74	13.91	9.34	5.08	1.77	5333.59
1974	0.00	5.21	0.00	0.91	0.00	74.02	2.11	0.55	0.00	0.00	0.00	0.00	82.79
1975	0.00	0.00	0.26	398.22	518.75	904.22	157.53	39.73	19.41	12.34	7.83	4.36	2062.64
1976	1.14	0.00	0.00	0.81	85.33	164.69	60.86	5.96	3.09	2.08	1.11	0.42	325.50
1977	0.16	0.94	0.26	1.97	10.94	59.08	7.78	0.53	0.00	0.00	0.00	0.00	81.65
1978	0.00	0.00	0.00	17.10	48.76	21.41	3.25	0.81	0.00	0.00	0.00	0.00	91.33
1979	0.16	0.00	0.00	0.00	0.16	177.32	3.88	0.11	0.00	0.00	0.00	0.20	181.82
1980	0.00	0.00	0.52	0.00	2.42	44.08	1.41	0.00	0.00	0.00	0.00	0.00	48.43
1981	0.33	0.00	0.00	0.00	0.85	1.53	1.01	0.00	0.00	0.00	0.00	0.00	3.71
1982	0.00	0.14	8.54	0.22	1.35	0.11	20.46	0.00	0.00	0.00	0.00	0.00	30.81
1983	0.00	25.42	45.05	6.83	1.24	67.83	57.35	0.94	0.00	0.00	0.00	0.00	204.67
1984	0.08	1.07	0.00	17.36	19.04	59.80	3.12	0.00	0.00	0.00	0.00	0.00	100.47
1985	0.00	1.63	44.51	17.15	45.92	69.66	16.48	0.25	0.14	0.00	0.00	0.00	195.74
1986	8.29	0.00	0.00	0.00	63.71	13.24	13.80	0.68	0.00	0.00	0.00	0.00	99.73
1987	0.00	17.43	0.30	84.62	55.67	404.42	57.34	13.53	2.98	2.24	0.51	0.00	639.05
1988	0.00	0.00	7.07	90.35	396.07	20.95	14.74	1.00	1.20	1.28	0.00	0.00	532.66
1989	0.00	0.00	0.00	0.54	0.50	13.81	11.99	2.57	0.05	0.00	0.00	0.00	29.47
1990	0.00	0.00	2.13	26.03	62.67	37.71	6.11	0.00	0.00	0.00	0.00	21.93	156.59
1991	2.08	6.82	22.38	6.38	0.76	9.10	4.34	0.13	0.00	0.00	0.00	0.00	52.00
1992	0.00	0.00	0.00	36.11	15.52	3.22	13.75	17.57	6.70	1.32	0.00	0.00	94.20
1993	0.27	0.41	0.00	58.54	80.45	3.88	0.00	0.00	0.00	0.00	0.00	0.00	143.54
1994	0.00	0.00	0.00	5.61	0.74	27.38	5.89	4.22	1.14	0.00	0.00	0.00	44.99
1995	0.00	0.00	17.27	132.62	36.90	24.91	12.44	0.02	0.00	7.22	17.31	6.05	254.74
1996	0.89	45.37	23.72	209.62	46.84	96.80	0.95	0.02	0.00	0.00	0.00	0.00	424.21
1997	1.96	1.06	1.06	128.58	1.63	14.69	10.40	0.00	0.00	0.00	0.00	0.00	159.39
1998	0.23	0.14	6.67	12.91	23.27	84.23	2.14	48.69	3.08	0.27	0.00	0.00	181.64
1999	0.53	2.86	42.38	100.17	1196.88	1537.10	104.75	6.46	3.60	1.40	0.03	0.00	2996.16
2000	0.00	0.00	0.00	0.50	28.22	22.93	339.58	9.19	0.49	0.05	0.00	0.00	400.96
Mean	1.56	6.78	17.71	85.50	175.02	180.26	37.68	4.62	1.43	0.54	0.46	0.64	512.20
Median	0.08	0.78	1.96	9.68	23.27	30.13	6.44	0.25	0.00	0.00	0.00	0.00	195.74
St dev	5.97	23.76	49.06	211.56	422.43	330.72	77.17	12.76	4.25	1.93	2.17	2.66	842.54
Coeff Var	3.83	3.51	2.77	2.47	2.41	1.83	2.05	2.76	2.97	3.55	4.68	4.16	1.64