

Year	Flows Scenarios for the Swakop River - No Dams					Flow Scenario for Swakop River - both dams				
	Inflow Von Bach (CAWMP)	Inflow Von Bach (DWA Mian)	Inflow Swakoppoort (DWA Mian) (No Dams)	Inflow Swakoppoort (CAWMP)	Dorstrivier - No Dams	Spill Von Bach (DWA Mian or actual)	Inflow Swakoppoort (DWA Mian)	Inflow Swakoppoort (CAWMP)	Spill Swakoppoort (Both Dams)	Dorstrivier - With Dams
1923	0.05			0.05					0	
1924	45.57			102.98				57.41		
1925	0	0	0.37	0	0.52	0	0.37	0	0	0.52
1926	14.92	7.37	15.37	22.96	42.82	0	8	8.04	0	19.86
1927	39.69	11.45	35.35	58.13	104.55	0	23.9	18.44	0	46.42
1928	0.53	1.97	3.65	2.63	5.65	0	1.68	2.1	0	3.02
1929	1.29	0	0	1.29	1.29	0	0	0	0	0
1930	34.3	10.26	55.86	72.26	136.7	0	45.6	37.96	5.4	69.84
1931	4.09	5.39	7.48	6.88	15.84	0	2.09	2.79	0	8.96
1932	0	0.5	1.07	0	0.77	0	0.57	0	0	0.77
1933	243.59	166.73	290.23	431.36	620.8	130.3	253.8	318.1	198.2	387.6
1934	0	0	0	0	0	0	0	0	0	0
1935	0.81	1.49	1.77	0.92	1.52	0	0.28	0.11	0	0.6
1936	8.46	4.77	8.67	24.93	35.71	0	3.9	16.47	0	10.78
1937	24.35	18.11	48.81	46.15	110.34	0	30.7	21.8	0	64.19
1938	7.88	7.33	19.43	26.1	51.17	0	12.1	18.22	0	25.07
1939	3.93	6.09	8.03	7.06	16.5	0	1.94	3.13	0	9.44
1940	2.61	9.09	9.69	2.61	13.7	0	0.6	0	0	11.09
1941	17.12	27.01	77.11	69.5	158.14	3.7	53.8	56.08	9.7	98.34
1942	3.63	11.99	15.98	12.62	31.95	0	3.99	8.99	0	19.33
1943	47.92	50.15	82.25	41.5	141.35	30.7	62.8	24.28	27	126.85
1944	0	2.47	2.92	0.19	2.43	0	0.45	0.19	0	2.24
1945	13.33	13.33	15.82	19.9	38.78	0	2.49	6.57	0	18.88
1946	30.69	30.69	86.59	69.65	145.4	10.8	66.7	49.76	27.5	103.25
1947	9.23	9.22	10.88	13.73	26.45	0	1.66	4.5	0	12.72
1948	28.75	28.75	76.45	55.09	111.75	10.6	58.3	36.94	29.9	86.56
1949	20.93	20.93	86.73	98.25	116.51	7.7	73.5	85.02	54.5	72.76
1950	2	2	2.13	2	2	0	0.13	0	0	0
1951	3.73	3.73	4.61	8.19	13.11	0	0.88	4.46	0	4.92
1952	20.85	20.85	58.05	57.1	123.97	1.5	38.7	37.75	4	70.87
1953	19.2	19.2	71.2	60.91	88.16	5.8	57.8	47.51	38	65.25
1954	1.87	1.87	4.1	2.16	5.96	0	2.23	0.29	0	3.8
1955	16.88	16.88	32.98	32.96	75.36	0	16.1	16.08	0	42.4
1956	2.75	2.75	4.31	2.89	7.17	0	1.56	0.14	0	4.28
1957	11.15	11.1	25.2	24.41	56.73	0	14.1	13.26	0	32.32
1958	6.09	6.09	6.97	6.64	14.71	0	0.88	0.55	0	8.07
1959	1.94	1.94	5.64	15.18	20.71	0	3.7	13.24	0	5.53
1960	6.94	13.29	15.15	9.46	27.32	0	1.86	2.52	0	17.86
1961	5.4	11.81	14.74	14.67	32.24	0	2.93	9.27	0	17.57
1962	73.99	74.31	148.41	125.57	264.55	58.9	133	110.48	74.9	213.88
1963	4.1	8.68	10.45	5.7	18	0	1.77	1.6	0	12.3
1964	7.42	7.43	13.3	12.37	28.92	0	5.87	4.95	0	16.55
1965	9.49	9.49	14.83	23.53	41.81	0	5.34	14.04	0	18.28
1966	22.69	28.7	58.55	28.98	105.32	11.9	41.75	18.19	8.3	84.64
1967	17.44	20.11	53.31	27.57	65.44	6.9	40.1	17.03	20.9	58.77
1968	2.26	5.03	7.75	8.2	13.35	0	2.72	5.94	0	5.15
1969	1.58	4.85	6.31	4.17	11.64	0	1.46	2.59	0	7.47
1970	30.86	30.86	67.76	83.78	169.92	0	86.14	52.92	16.8	102.94
1971	30.57	30.57	74.07	65.56	109.66	0	44.1	34.99	39.8	83.9
1972	10.57	10.57	11.53	13.67	30.07	95.159	111.559	3.1	0	16.4
1973	119.5	119.5	195.3	113.051	251.741	0	138.69	88.71	141	279.69
1974	7.58	7.58	8.42	8	17.11	0	9.11	0.42	0	9.11
1975	29.61	29.61	67.11	68.08	122.08	6.032	60.032	38.47	28.9	82.9
1976	5.22	5.22	5.22	0.778	8.838	0	8.06	1.59	0	8.06
1977	18.47	18.47	21.27	24.62	24.62	0	0	6.15	0	0
1978	3.4	3.4	4.42	3.55	3.55	0	0	0.15	0	0
1979	7.6	7.6	10.73	9.73	9.93	0	0.2	2.13	0	0.202
1980	3.54	3.54	3.97	4.33	4.33	0	0	0.79	0	0
1981	2.39	2.39	4.97	4.97	4.97	0	0	2.58	0	0
1982	18.41	18.41	37.61	21.04	21.04	0	0	2.63	0	0
1983	15.32	13.97	46.97	33.38	33.645	0	0.265	18.06	0	0.265

APPENDIX C

Synthetic Flood Records with and without Swakoppoort and Von Bach Dams

Flows Scenarios for the Swakop River - No Dams						Flow Scenario for Swakop River - both dams						
Year	Inflow Von Bach (CAWMP)	Inflow Von Bach (DWA Mian)	Inflow Swakoppoort (DWA Mian) (No Dams)	Inflow Swakoppoort (CAWMP)	Dorstrivier - No Dams	Spill Von Bach (DWA Mian or actual)	Inflow Swakoppoort (DWA Mian)	Inflow Swakoppoort (CAWMP)	Spill Swakoppoort (Both Dams)	Dorstrivier - With Dams		
1984	9.92	9.22	19.12	37.62	56.648	0	19.028	27.7	0	19.028		
1985	22.19		0	51.26	51.26	0		29.07	0	0		
1986	7.15		0	21.65	21.65	0		14.5	0	0		
1987	22.74			74.67	90.872	0		51.93	23.644	39.846		
1988	25			50.36	50.36	0		25.36	11.484	2.046		
1989	4.07			10.81	10.81	0		6.74	0	0		
1990	6.9			7.49	7.49	0		0.59	0	0		
1991	0.35			2.33	30.678	0		1.98	0	28.348		
1992	8.68			27.76	87.315	0		19.08	0	59.555		
1993	16.08			26.79	29.455	0		10.71	0	2.665		
1994	0			0.22		0		0.22	0	0		
1995	1.35			3.512		0		2.162	0	0		
											% reduction	
mean	17.4	17.1	33.8	33.3	60.8	mean	5.4	26.0	22.2	10.7	37.0	39
median	7.88	9.22	14.02	15.18	30.07	median	0	3.8	6.36	0	11.09	63
sdev	32.6	27.3	50.0	56.1	89.7	sdev	20.3	45.0	42.0	31.0	65.0	28
min	0	0	0	0	0	min	0	0	0	0	0	
max	243.59	166.73	290.23	431.36	620.76	max	130.3	253.8	318.07	198.2	387.6	38