

APPENDIX A

Israel

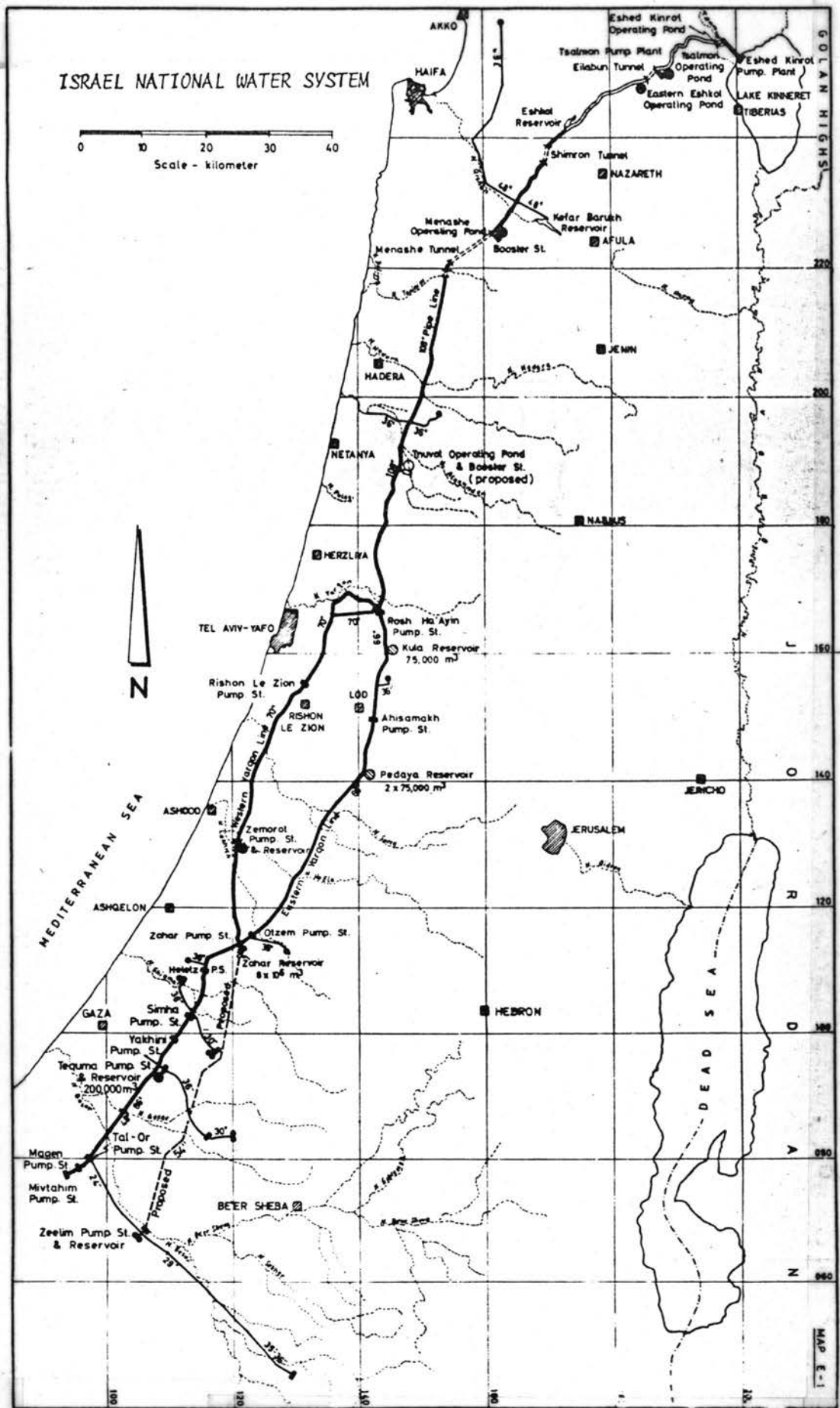


Figure A-1. National Water System in Israel, including pumping stations and reservoirs.  
 Source: E. Kally (1564), Figure 1.

Table A-1

PREDICTED WATER NEEDS IN WEST BANK/GAZA, 1985-2000  
(water needs in Mcm)

District	Land Area in ha	Present Use in Mcm	Predicted Need in 2000			Predicted Source in 2000		
			Agric	Non-Agric	Total	Local	Reclaimed	Import
Gaza	20,000	140	130	42	172	60	21	91
Jenin-Nablus- Tulkarem	30,700	44	186	41	227	35	21	171
Ramallah- Bethlehem	5,600	5	29	17	46	13	8	25
Hebron	10,000	6	50	23	73	17	12	44
Jericho	<u>7,700</u>	<u>64</u>	<u>81</u>	<u>2</u>	<u>83</u>	<u>55</u>	<u>1</u>	<u>27</u>
TOTAL	74,000	259	476	125	601	180	63	358

Source: E. Kally<sup>(1567)</sup>, Tables 2,3,4.

Table A-2

PREDICTED ISRAELI WATER CONSUMPTION TO YEAR 2000  
 ASSUMING AGRICULTURAL USE REMAINS STATIC

(in Mcm)

<u>Sector</u>	<u>1976</u>	<u>1985</u>	<u>1990</u>	<u>2000</u>
Agriculture	1,270	1,250	1,250	1,250
Domestic	305	402	471	550
Industrial	63	86	98	120
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TOTALS	1,638	1,738	1,819	1,920

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Source: Darr and Bardach<sup>(1565)</sup>, Tables 1.1, 1.2.

Table A-3

ACTUAL WATER CONSUMPTION IN ISRAEL BY SECTOR  
1983-1984  
(in Mcm)

District	Population x 1000	Water Use 1983-1984			Total 83-84	Total 82-83	Percent Change
		Agric.	Domes.	Indus.			
Galilee	230	152.0	15.5	1.8	169.3	168.5	+ 0.5
Acre	214	57.3	27.1	11.3	95.7	93.1	+ 2.8
Afula	302	351.3	24.0	4.4	351.3	333.9	+ 5.2
Hadera	610	166.5	48.1	22.4	237.0	237.2	- 0.1
Ranana	526	149.2	144.1	12.4	306.6	292.4	+ 4.9
Rehovot	736	156.0	50.7	11.8	218.4	207.5	+ 5.3
Negev	425	307.8	50.1	37.1	395.1	326.5	+21.0
Nazareth	220	9.8	11.0	0.3	21.2	20.0	+ 6.1
Jerusalem	218	34.1	47.4	1.6	83.1	76.9	+ 8.1
TOTALS	3481	1355.6	418.0	103.1	1877.7	1756.0	+ 7.0
Sectoral share (%)		72.1	22.3	5.4			

Source: Israel Ministry of Agriculture (1984).

Table A-4

CORRELATION OF ELEVATION, AREA, VOLUME  
IN LAKE TIBERIAS

<u>Height in m</u>	<u>Area in sq km</u>	<u>Volume in Mcm</u>
-254	0.108	0
-253	2.892	0.873
-252	8.120	5.939
-251	13.144	13.144
-250	17.188	31.446
-249	21.156	50.549
-248	25.364	73.745
-247	29.552	101.150
-246	34.076	132.910
-245	38.560	169.182
-244	42.752	209.802
-243	47.316	254.797
-242	51.816	304.330
-241	56.320	358.366
-240	60.724	416.860
-239	65.068	479.732
-238	69.740	547.109
-237	74.540	619.222
-236	80.000	696.460
-235	83.328	779.095
-234	91.040	867.248
-233	96.672	961.076
-232	102.724	1,060.724
-231	108.296	1,166.228
-230	114.152	1,277.426
-229	119.512	1,394.238
-228	124.408	1,516.181
-227	128.868	1,642.806
-226	133.152	1,773.804
-225	137.128	1,908.934
-224	140.608	2,047.795
-223	143.692	2,189.940
-222	146.576	2,335.068
-221	148.592	2,482.650
-220	151.072	2,632.478
-219	153.024	2,784.524
-218	154.812	2,938.439
-217	156.748	3,094.217
-216	158.816	3,251.996
-215	160.548	3,411.676
-214	162.188	3,573.043
-213	163.520	3,735.896
-212	165.552	3,900.430
-211	166.688	4,066.549
-210	167.824	4,233.804
-209	169.599	4,402.514

Source: Miro and Ben Zwi<sup>(1655)</sup>, Table 2.



Table A-5

HISTORICAL MONTHLY FLOWS INTO LAKE TIBERIAS, 1928-1970  
(in Mcm)

Year	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.
1928/29	92.13	143.75	186.64	138.44	102.89	47.53	36.18	22.84	18.01	11.53	11.43	49.10
1929/30	84.12	100.54	136.80	77.16	46.76	29.29	16.80	7.73	5.81	2.50	7.56	21.99
1930/31	69.30	101.57	173.23	117.72	72.70	39.57	25.70	13.88	10.77	5.64	9.00	20.03
1931/32	56.75	47.02	122.68	70.05	47.04	27.87	13.49	3.52	0.93	-1.27	7.56	19.36
1932/33	26.75	42.86	25.35	20.69	12.21	-3.71	-11.24	-15.66	-22.52	-15.58	6.33	0.80
1933/34	16.93	73.71	131.91	75.27	47.73	25.19	7.54	-2.87	-7.62	-1.62	1.79	8.69
1934/35	106.72	109.61	152.90	106.10	101.43	47.40	33.16	18.25	13.07	7.23	11.94	32.78
1935/36	52.53	82.23	103.03	84.15	57.35	33.92	19.73	10.18	7.69	4.24	8.17	58.20
1936/37	97.70	130.27	96.66	78.36	61.41	34.77	21.61	11.32	8.40	4.13	9.82	24.24
1937/38	40.98	126.11	149.55	143.02	70.50	46.28	30.75	17.97	13.74	8.38	10.15	56.38
1938/39	61.64	95.63	126.88	125.27	69.46	37.98	24.58	13.17	9.67	4.89	8.75	29.58
1939/40	67.24	141.61	111.94	101.94	65.91	36.76	24.16	13.46	10.50	5.75	10.68	30.40
1940/41	68.79	98.00	128.02	140.32	65.02	35.96	22.89	12.18	9.53	5.00	8.75	18.98
1941/42	76.16	106.70	99.58	115.57	66.30	37.02	24.30	13.32	10.50	5.86	13.89	47.68
1942/43	48.00	130.86	103.71	168.35	168.11	47.39	34.74	21.18	16.48	10.12	11.02	23.35
1943/44	49.53	135.58	102.48	108.44	62.45	36.67	23.88	13.74	11.18	6.49	9.25	102.85
1944/45	111.92	119.29	149.82	103.73	77.98	39.98	28.86	18.25	15.18	9.71	11.63	32.70
1945/46	60.97	56.97	129.19	88.51	52.93	37.89	24.30	13.03	9.53	4.78	8.54	17.93
1946/47	46.18	117.07	84.99	68.37	43.57	25.19	11.33	2.78	0.46	-1.27	5.31	18.69
1947/48	31.76	26.42	155.77	159.13	70.96	34.49	17.69	5.12	1.56	-1.27	5.24	19.36
1948/49	69.93	123.28	144.30	168.16	193.48	49.86	35.79	20.48	14.79	8.69	12.28	17.28
1949/50	67.08	147.13	108.98	95.07	65.20	47.41	21.56	8.38	3.69	7.03	6.78	29.11
1950/51	22.10	34.23	45.96	51.97	37.04	5.26	4.44	-6.94	-10.32	-2.26	6.83	18.04
1951/52	145.65	83.89	169.66	158.59	60.20	33.57	24.38	11.57	5.40	-6.09	-0.05	10.49
1952/53	36.01	91.86	116.06	175.98	118.80	44.03	36.50	12.84	9.20	5.71	17.38	60.20
1953/54	92.79	182.36	266.97	110.29	21.66	58.10	36.63	17.33	19.75	16.86	19.26	46.16
1954/55	74.34	40.58	56.37	50.58	40.35	22.63	4.86	-0.81	-9.78	-4.05	-6.43	25.41
1955/56	105.79	140.82	91.07	100.11	55.15	36.90	20.61	19.28	10.66	-3.35	11.69	16.92
1956/57	45.16	51.04	104.70	126.54	55.71	44.12	17.87	4.60	1.88	-0.41	5.46	21.10
1957/58	93.81	127.93	99.89	55.35	35.16	19.40	3.33	1.83	6.11	0.04	6.42	7.21
1958/59	39.18	50.31	73.49	90.86	42.68	26.53	6.46	4.25	0.46	1.93	2.54	16.58
1959/60	9.12	72.73	32.48	42.66	31.50	12.40	-4.72	-14.74	-20.10	-17.77	-9.16	12.68
1960/61	14.25	24.16	101.44	37.04	38.57	15.24	-7.16	-11.12	-22.16	-16.39	-3.96	14.76
1961/62	108.83	96.45	108.76	52.76	27.34	14.60	-2.59	-10.68	-8.90	-7.53	4.62	4.73
1962/63	51.96	94.73	122.58	95.26	63.31	58.57	15.62	0.17	-2.26	-1.19	14.10	24.19
1963/64	34.36	28.60	176.45	167.14	77.87	43.25	8.90	2.33	1.81	0.29	5.59	67.02
1964/65	57.04	134.27	126.45	69.90	67.80	28.70	5.25	-0.08	-4.98	0.35	11.44	15.63
1965/66	31.71	78.98	89.44	64.35	38.35	6.08	1.14	-15.42	-10.86	-7.43	11.72	7.12
1966/67	58.61	24.19	133.79	203.11	106.76	59.12	30.73	9.23	3.85	7.75	15.12	31.18
1967/68	61.79	225.64	146.36	91.82	62.69	36.51	12.27	-2.86	-5.58	8.22	5.43	34.07
1968/69	93.23	443.82	192.91	208.25	115.99	71.47	41.55	14.00	14.61	25.14	29.03	36.42
1969/70	42.35	122.04	58.97	169.75	70.32	34.27	14.46	-2.49	-4.09	3.76	5.45	34.07

Source: Kahan<sup>(1591)</sup>, Table 1.  
See also Figures 5.3 and 5.4, this report.

Table A-6

PROJECTED LEVELS FROM 1979 TO 1989  
IN THE YARKON-TANINIM AQUIFER

<u>Location</u>	<u>Season</u>	<u>Measured Level in 1979-80</u>	<u>Predicted Level w/o recharge</u>	<u>in 1989-90 w/recharge</u>
Menasheh	sp	15.38	11.1	13.3
	f	9.12	5.6	7.3
Petah- Tikva	sp	17.05	12.0	14.4
	f	11.77	7.7	9.7
Ayalon	sp	17.24	12.3	14.5
	f	12.42	8.4	10.3
Beer- Sheva	sp	16.06	11.06	13.5
Tatzpit	f	14.55	10.08	12.4

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Source: Goldshtoff and Shechnai<sup>(1657)</sup>, p. 19.



APPENDIX B

Jordan

# RAINFALL DISTRIBUTION: ISOHYETS - NORMAL YEAR

(LONG TERM AVERAGE)

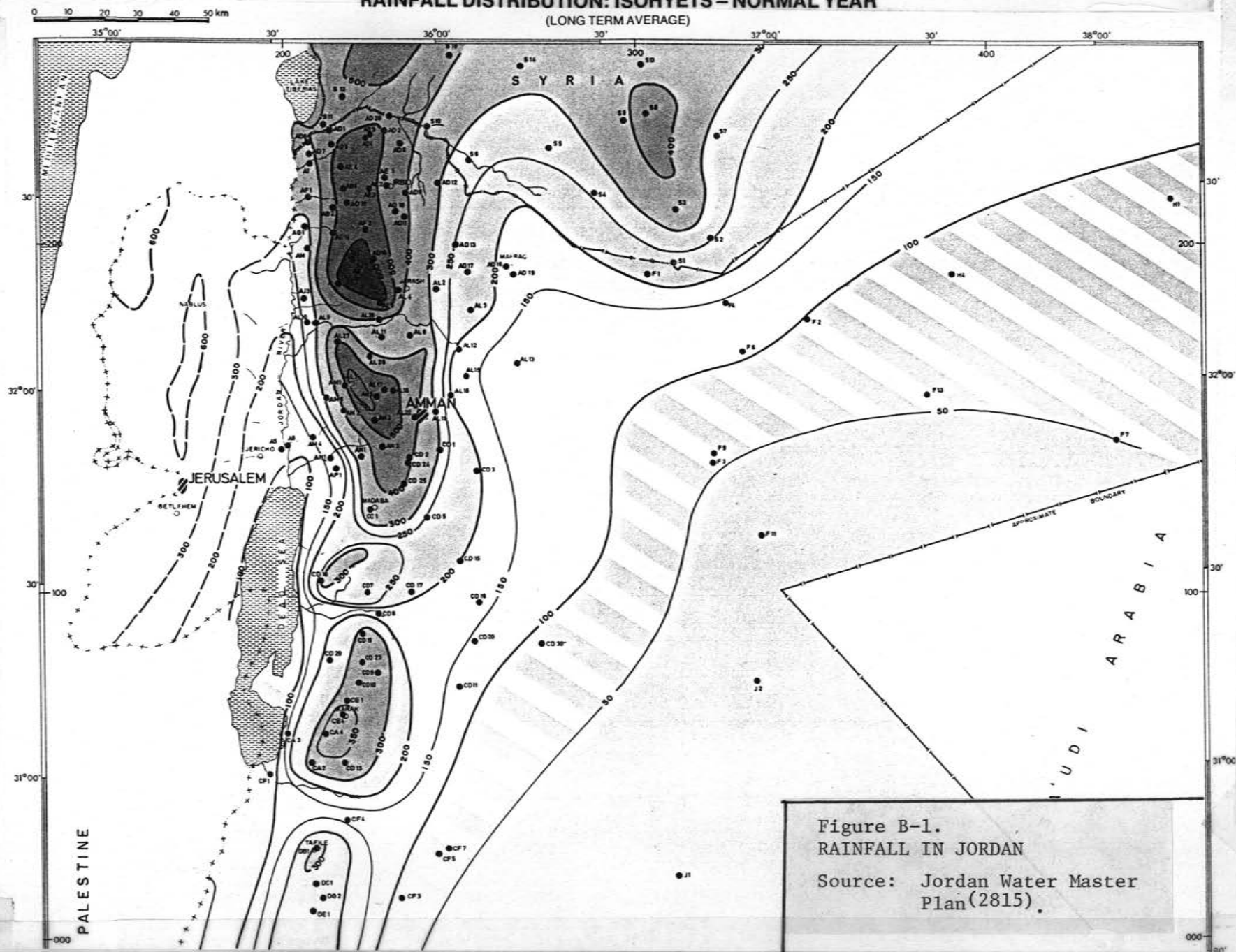


Figure B-1.  
RAINFALL IN JORDAN

Source: Jordan Water Master  
Plan(2815).

Table A-4

MONTHLY STREAMFLOW  
(Before Adjustment for Upstream Diversion)

Yarmouk River At Maqarin  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	15.0	16.0	19.0	55.0	110.0	33.0	25.0	15.0	14.0	15.0	15.0	16.0	348.0
1954/55	19.0	20.0	22.0	21.0	15.0	16.0	14.0	13.0	11.0	12.0	13.0	14.0	190.0
1955/56	15.0	24.0	31.0	42.0	31.0	26.0	21.0	18.0	17.0	19.0	19.0	19.0	282.0
1956/57	19.0	19.0	23.0	23.0	30.0	41.0	20.0	18.0	17.0	19.0	19.0	18.0	266.0
1957/58	19.0	20.0	24.0	31.0	23.0	20.0	18.0	16.0	16.0	18.0	18.0	17.0	240.0
1958/59	17.0	16.0	17.0	17.0	16.0	19.0	16.0	17.0	16.0	16.0	17.0	17.0	201.0
1959/60	17.0	16.0	17.0	18.0	17.0	18.0	18.0	18.0	17.0	16.0	17.0	16.0	205.0
1960/61	17.0	18.0	19.0	23.0	27.0	23.0	19.0	20.0	17.0	16.0	16.0	17.0	232.0
1961/62	19.3	18.9	36.4	27.6	31.0	20.6	14.3	14.5	13.7	14.5	16.1	18.1	245.0
1962/63	20.3	16.5	21.5	21.4	25.6	25.8	17.1	16.3	14.4	14.4	16.2	17.2	226.7
1963/64	17.4	17.0	22.1	19.7	45.9	34.8	17.4	16.1	14.7	14.4	16.0	16.0	251.5
1964/65	16.1	17.2	28.1	58.5	51.1	22.3	18.6	15.9	14.5	15.5	15.8	15.5	289.1
1965/66	16.9	15.8	17.7	17.2	17.8	24.2	15.1	12.0	11.9	12.4	13.0	14.8	188.8
1966/67	20.4	18.8	41.8	34.2	62.3	98.6	31.3	19.6	20.4	22.7	25.4	25.4	420.9
1967/68	7.8	9.2	11.7	69.4	37.8	9.0	8.1	8.6	9.8	9.3	10.6	11.7	203.0
1968/69	16.6	17.3	67.4	141.9	81.8	112.3	31.0	17.0	12.5	12.8	13.4	13.2	537.2
1969/70	15.8	19.6	17.5	27.3	21.5	44.8	15.4	13.9	11.8	12.2	12.2	11.8	223.8
1970/71	12.2	11.8	12.2	20.3	22.9	24.6	(49.6)	14.9	11.9	11.4	11.9	11.6	215.3
1971/72	(11.7)	(14.2)	13.2	19.7	24.7	13.8	18.1	17.2	12.0	10.8	11.6	11.6	(183.9)
1972/73	(11.5)	(13.9)	(16.7)	(20.9)	(23.5)	(34.9)	(11.8)	(10.6)	(10.1)	(9.0)	(8.9)	(9.2)	(181.0)
1973/74	(16.5)	(16.7)	(23.6)	53.3	71.2	62.4	17.4	13.9	11.7	11.2	11.7	12.1	(321.7)
1974/75	(16.5)	8.0	17.2	15.4	21.8	24.1	11.3	11.3	11.5	13.5	10.7	11.3	(172.6)
1975/76	<u>12.9</u>	<u>14.0</u>	<u>16.7</u>	<u>17.1</u>	<u>22.5</u>	<u>29.9</u>	<u>18.0</u>	-	-	-	-	-	-
Mean	16.2	16.5	23.6	35.3	36.7	34.2	19.4	15.3	13.9	14.3	14.9	15.2	255.6

Remarks:

Total flow:

830.4  
36.1

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 23.  
Jordan Central Water Authority, 1964.

Oct, 1963 through Sep, 1971: Jordan Natural Resources Authority records. (Unpublished)

Dec, 1971 through Sep, 1972: Jordan Natural Resources Authority records. (Unpublished)

Jan through Sep, 1974: Jordan Natural Resources Authority records. (Unpublished)

Table A-4a

## ADJUSTED MONTHLY STREAMFLOW

Yarmouk River at Maqarin  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	11.9	16.0	19.0	55.0	110.0	33.0	22.0	8.7	7.9	8.2	8.2	9.9	309.8
1954/55	15.9	20.0	22.0	21.0	15.0	16.0	11.2	7.1	5.3	5.7	6.7	8.3	154.2
1955/56	12.1	24.0	31.0	42.0	31.0	26.0	18.4	12.6	11.8	13.2	13.2	13.8	249.1
1956/57	16.3	19.0	23.0	23.0	30.0	41.0	17.6	13.0	12.2	13.7	13.7	13.2	235.7
1957/58	16.5	20.0	24.0	31.0	23.0	20.0	15.8	11.5	11.7	13.2	13.2	12.7	212.6
1958/59	14.8	16.0	17.0	17.0	16.0	19.0	14.0	13.0	12.1	11.6	12.6	13.1	176.2
1959/60	15.0	16.0	17.0	18.0	17.0	18.0	16.3	14.4	13.5	12.1	13.1	12.5	182.9
1960/61	15.2	18.0	19.0	23.0	27.0	23.0	17.5	16.9	14.0	12.6	12.6	14.0	212.8
1961/62	17.7	18.9	36.4	27.6	31.0	20.6	13.0	11.8	11.1	11.6	13.2	15.5	228.4
1962/63	19.0	16.5	21.5	21.4	25.6	25.8	16.0	14.1	12.2	12.0	13.8	15.0	212.9
1963/64	16.3	17.0	22.1	19.7	45.9	34.8	16.5	14.3	13.0	12.5	14.1	14.3	240.5
1964/65	15.2	17.2	28.1	58.5	51.1	22.3	18.0	14.6	13.2	14.1	14.4	14.2	280.9
1965/66	16.2	15.8	17.7	17.2	17.8	24.2	14.7	11.1	11.0	11.4	12.0	13.9	183.0
1966/67	20.0	18.8	41.8	34.2	62.3	98.6	30.9	18.7	19.5	21.7	24.4	24.5	415.4
1967/68	7.4	9.2	11.7	69.4	37.8	9.0	7.7	7.7	8.9	8.3	9.6	10.8	197.5
1968/69	16.2	17.3	67.4	141.9	81.8	112.3	30.6	16.1	11.6	11.8	12.4	12.3	531.7
1969/70	15.4	19.6	17.5	27.3	21.5	44.8	15.0	13.0	10.9	11.2	11.2	10.9	218.3
1970/71	11.8	11.8	12.2	20.3	22.9	24.6	(49.2)	14.0	11.0	10.4	10.9	10.7	209.8
1971/72	(11.3)	(14.2)	13.2	19.7	24.7	18.8	17.7	16.3	11.1	9.8	10.8	10.7	(178.3)
1972/73	(11.1)	(13.9)	(16.7)	(20.9)	(23.5)	(34.9)	(11.4)	(9.7)	(9.2)	(8.0)	(7.9)	(8.3)	(175.5)
1973/74	(16.1)	(16.7)	(23.6)	53.3	71.2	62.4	17.0	13.0	10.8	10.2	10.7	11.2	(316.2)
1974/75	(16.1)	8.0	17.2	15.4	21.8	24.1	10.9	10.4	10.6	12.5	9.7	10.4	(167.1)
1975/76	<u>12.5</u>	<u>14.0</u>	<u>16.7</u>	<u>17.1</u>	<u>22.5</u>	<u>29.9</u>	<u>17.6</u>	-	-	-	-	-	-
Mean	14.9	16.5	23.6	35.3	36.8	34.2	18.2	12.8	11.5	11.6	12.2	12.7	240.3



Table A-5

MONTHLY INTERVENING FLOW BETWEEN MAQARIN AND KHALID  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	6.7	9.2	12.5	87.5	91.7	14.2	17.5	5.8	4.2	4.2	5.0	5.0	263.5
1954/55	5.0	4.2	5.8	6.7	7.5	11.7	7.5	5.8	7.5	7.5	7.5	5.8	82.5
1955/56	5.8	5.0	26.7	48.3	21.7	14.2	5.8	6.7	4.2	2.5	2.5	2.5	145.9
1956/57	3.3	2.5	1.7	14.2	31.7	15.0	3.3	0.8	1.7	0.8	1.7	1.7	78.4
1957/58	2.5	1.7	10.0	65.8	8.3	3.3	3.3	5.8	4.2	0.8	1.7	3.3	110.7
1958/59	5.0	4.2	5.0	8.3	23.3	19.2	5.8	2.5	2.5	2.5	2.5	3.3	84.1
1959/60	4.2	4.2	4.2	7.5	4.2	4.2	2.5	0.8	0.8	1.7	0.8	2.5	37.6
1960/61	1.7	3.3	3.3	4.2	21.7	0.8	1.7	5.8	0.8	1.7	1.7	0.8	47.5
1961/62	2.3	3.8	35.3	20.9	36.2	6.0	3.1	3.4	3.8	2.8	1.7	1.4	120.7
1962/63	0.3	1.7	1.8	26.3	23.4	18.1	3.1	4.8	1.3	1.8	1.4	1.0	85.0
1963/64	7.8	7.0	14.0	9.0	57.3	41.8	14.1	13.7	13.5	12.9	12.3	11.4	214.8
1964/65	11.8	21.3	17.7	50.3	56.8	15.1	15.6	12.1	11.1	11.4	11.6	11.9	246.7
1965/66	10.8	10.0	9.7	20.0	25.1	21.5	12.3	12.7	11.1	11.2	12.1	13.0	169.5
1966/67	8.0	10.5	21.5	48.3	50.9	79.9	22.2	11.4	7.2	5.6	3.7	3.5	272.7
1967/68	8.0	7.9	2.8	1.4	4.2	32.5	7.6	6.8	5.3	5.5	0.8	0.8	83.6
1968/69	4.8	5.1	19.7	41.4	23.8	32.8	9.1	5.0	3.7	3.8	3.9	3.8	156.9
1969/70	4.6	5.8	5.1	8.0	6.3	13.1	4.5	4.1	3.4	3.6	3.6	3.4	65.5
1970/71	10.1	37.4	45.2	1.4	18.2	62.4	1.7	15.2	6.8	18.1	19.9	15.5	251.9
1971/72	3.4	4.2	13.8	13.1	27.1	7.4	2.7	0.8	1.5	3.3	2.5	1.8	81.6
1972/73	3.3	4.1	4.8	6.1	6.9	10.2	3.4	3.1	2.9	2.6	2.6	2.7	52.7
1973/74	5.3	7.8	11.7	15.6	20.8	18.2	5.1	4.1	3.4	3.3	3.4	3.5	102.2
1974/75	5.3	2.4	5.0	4.5	6.3	7.0	3.3	3.3	3.3	3.9	3.1	3.3	50.7
1975/76	3.8	4.1	4.8	5.0	6.6	8.8	5.3	-	-	-	-	-	-
Average	5.5	7.4	12.6	23.1	26.0	20.4	7.0	6.1	4.8	5.1	4.8	4.7	127.5

## Remarks:

Computed from intervening flow between Maqarin and Adasiye, using coefficient:

$$C = \frac{D.A. \text{ MQ-KH}}{D.A. \text{ MQ-AD}} = 0.83$$

123.8

5.4

167.7

73



Yarmouk River at Amasiya  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	23.0	27.0	34.0	160.0	220.0	50.0	46.0	22.0	19.0	20.0	21.0	22.0	664.0
1-54/55	25.0	25.0	29.0	29.0	24.0	30.0	23.0	20.0	20.0	21.0	22.0	21.0	289.0
1955/56	22.0	30.0	63.0	100.0	57.0	43.0	28.0	26.0	22.0	22.0	22.0	22.0	457.0
1956/57	23.0	22.0	25.0	40.0	68.0	59.0	24.0	19.0	19.0	20.0	21.0	20.0	360.0
1957/58	22.0	22.0	36.0	110.0	33.0	24.0	22.0	23.0	21.0	19.0	20.0	21.0	373.0
1958/59	23.0	21.0	23.0	27.0	44.0	42.0	23.0	20.0	19.0	19.0	20.0	21.0	302.0
1959/60	22.0	21.0	22.0	27.0	22.0	23.0	21.0	(19.0)	(18.0)	18.0	18.0	19.0	250.0
1960/61	19.0	22.0	23.0	28.0	53.0	24.0	21.0	27.0	18.0	18.0	18.0	18.0	289.0
1961/62	22.0	23.5	78.8	52.7	74.4	27.8	18.0	18.6	18.2	17.8	18.1	19.8	389.7
1962/63	20.7	(18.5)	23.7	52.9	53.7	47.5	20.8	22.0	15.9	16.5	17.9	18.4	328.5
1963/64	26.7	25.4	38.9	30.5	114.7	84.9	34.3	32.5	30.9	29.9	30.7	29.7	509.1
1964/65	30.3	42.7	49.3	118.9	119.3	40.4	37.3	30.4	27.8	29.2	29.7	29.8	585.1
1965/66	29.9	27.8	29.3	41.2	47.9	50.0	29.8	27.2	25.2	25.8	27.5	30.4	392.0
1966/67	30.0	31.4	67.6	92.2	123.4	194.5	57.9	33.3	29.0	29.4	29.8	29.6	748.1
1967/68	17.4	18.7	15.1	(71.1)	(42.8)	48.0	17.2	16.8	16.2	15.9	(11.6)	(12.7)	303.5
1968/69	(22.4)	(23.4)	(91.0)	(191.6)	(110.4)	(151.6)	(41.9)	(23.0)	(16.9)	(17.3)	(18.1)	(17.8)	(725.4)
1969/70	(21.3)	(26.5)	(23.6)	(36.9)	(29.0)	(60.5)	(20.8)	(18.8)	(15.9)	(16.5)	(16.5)	(15.9)	(302.2)
1970/71	24.3	56.7	66.4	22.0	44.7	99.5	51.6	33.1	20.1	33.1	35.8	30.2	517.5
1971/72	15.8	19.2	29.8	35.4	57.2	27.7	21.3	(18.2)	13.8	14.8	14.8	13.8	281.8
1972/73	15.5	18.8	22.5	28.2	31.8	47.1	15.9	14.3	13.6	12.1	12.0	12.4	244.2
1973/74	(22.9)	(26.1)	(37.6)	(72.0)	(96.1)	(84.2)	(23.5)	(18.8)	(15.8)	(15.1)	(15.8)	(16.3)	(444.2)
1974/75	(22.9)	(10.9)	(23.2)	(20.8)	(29.4)	(32.5)	(15.3)	(15.3)	(15.5)	(18.2)	(14.4)	(15.3)	(233.7)
1975/76	(17.4)	(18.9)	(22.5)	(23.1)	(30.4)	(40.4)	(24.3)	-	-	-	-	-	-
Mean	22.8	25.4	38.7	63.1	68.0	58.7	27.9	22.6	19.6	20.4	20.7	20.7	408.6

Remarks:

Total flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33,  
Jordan Central Water Authority, 1964.  
Oct, 1963 through Sep, 1968: Jordan Natural Resources Authority records.  
Oct, 1970 through Sep, 1973: Jordan Natural Resources Authority records.  
( ) = Harza estimate, 1976.

MONTHLY STREAMFLOW

Zarqa River at Deir Alla  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	5.2	5.7	5.3	6.7	12.4	7.4	4.6	5.3	5.0	4.3	4.2	4.7	70.8
1954/55	5.1	5.1	7.2	6.0	3.8	4.1	3.4	3.3	2.6	2.2	2.0	2.6	47.4
1955/56	3.5	9.9	8.2	6.1	3.8	5.8	5.5	4.3	3.6	3.5	3.2	3.0	60.4
1956/57	3.3	3.1	6.6	6.3	22.9	19.1	5.2	5.7	4.7	4.0	3.7	3.6	88.2
1957/58	4.1	4.9	6.0	7.5	21.3	4.4	4.2	4.1	3.3	3.0	3.0	3.2	69.0
1958/59	3.4	3.2	3.5	13.8	8.1	9.1	3.0	3.1	2.6	2.7	2.6	2.7	57.8
1959/60	3.0	3.0	3.8	4.7	3.2	3.4	2.7	1.5	1.2	1.1	2.1	2.1	31.8
1960/61	2.1	3.0	4.1	10.1	12.7	4.2	4.8	3.7	1.0	1.8	1.9	1.8	51.2
1961/62	2.8	4.8	18.5	12.3	15.7	5.2	2.4	2.4	2.6	3.0	3.6	3.7	(77.0)
1962/63	3.4	3.4	4.8	4.7	21.1	4.5	3.7	12.7	3.0	2.8	2.9	2.8	69.8
1963/64	4.6	5.4	16.4	10.8	12.0	10.4	6.9	5.3	3.5	1.9	1.8	1.8	80.8
1964/65	4.4	3.8	10.0	43.6	14.9	4.7	7.9	3.1	2.6	2.3	1.9	1.8	101.1
1965/66	(4.4)	(2.2)	(3.2)	(3.4)	(4.7)	(17.5)	(4.0)	(3.3)	(2.6)	(2.3)	(1.8)	(2.4)	(51.8)
1966/67	(2.7)	(3.7)	(7.4)	(15.5)	(9.7)	(8.7)	(4.8)	(3.1)	(2.7)	(2.5)	(2.5)	(2.8)	(66.1)
1967/68	(2.7)	(2.4)	(11.0)	(20.8)	(12.8)	(8.8)	(5.7)	(4.0)	(3.2)	(2.6)	(2.5)	(2.2)	(78.7)
1968/69	(3.0)	(3.6)	(5.6)	(7.1)	(7.2)	(28.2)	(7.7)	(4.8)	(3.8)	(3.2)	(2.7)	(3.3)	(80.3)
1969/70	(3.8)	(3.9)	(5.0)	(7.3)	(5.5)	(9.0)	(5.3)	(3.8)	(3.5)	(3.2)	(4.7)	(5.0)	(60.0)
1970/71	(3.2)	(3.4)	(5.1)	(6.8)	(4.5)	(5.3)	(24.2)	(2.7)	(2.1)	(1.7)	(1.6)	(1.3)	(61.9)
1971/72	1.5	2.2	9.9	3.9	5.8	7.8	5.9	2.4	1.5	1.4	1.3	1.3	44.9
1972/73	1.7	3.7	2.9	6.8	4.0	5.0	1.8	1.8	1.6	1.6	1.6	1.5	34.0
1973/74	(3.1)	(6.8)	(6.4)	(44.6)	(32.2)	(20.0)	(11.0)	(7.0)	(4.3)	(3.8)	(3.6)	(3.3)	(146.1)
1974/75	(1.8)	(3.1)	(6.3)	(5.0)	(13.0)	(7.5)	(7.3)	(1.7)	(1.2)	(1.2)	(1.2)	(1.2)	(50.5)
1975/76	(1.4)	(2.3)	(4.4)	(5.2)	(5.2)	(13.0)	-	-	-	-	-	-	-
Mean	3.3	4.1	7.1	11.5	11.5	9.1	6.0	40.1	28.0	26.0	2.6	2.6	67.3

Remarks:

1) Base flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.  
Oct, 1965 through Sep, 1971: Jordan Natural Resources Authority records. (Unpublished)

2) Flood flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.

3) Total flow:

Oct, 1963 through Nov. 1965: Jordan Natural Resources Authority records. (Unpublished)  
Feb. -Apr. 1966 : Jordan Natural Resources Authority records. (Unpublished)  
Oct., 1967 through Apr. 1968: Jordan Natural Resources Authority records. (Unpublished)  
Oct, 1971 through Sep, 1973: Jordan Natural Resources Authority records. (Unpublished)  
1974-75: Harra estimate, 1976.

MONTHLY STREAMFLOW

Wadi Arab at Shamsa Dam  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	2.9	5.3	3.1	3.3	3.9	3.5	3.5	3.5	3.3	3.2	3.2	3.3	42.0
1954/55	3.5	3.5	3.9	4.1	3.9	3.1	3.6	3.2	3.1	2.8	2.9	2.9	40.5
1955/56	3.1	3.9	4.1	3.7	3.4	3.5	2.8	2.7	2.6	2.6	2.5	2.6	37.5
1956/57	2.8	2.7	3.6	3.6	3.4	3.6	2.8	2.6	2.6	2.7	2.7	2.7	35.8
1957/58	2.1	3.1	4.5	3.6	3.1	2.1	2.2	2.3	2.6	2.5	2.7	2.6	33.4
1958/59	2.7	2.7	2.9	3.0	3.1	3.3	2.6	2.7	2.6	2.8	2.7	3.3	34.4
1959/60	2.7	2.7	2.8	2.6	2.1	2.9	2.3	2.4	2.3	2.4	2.7	2.5	30.4
1960/61	3.0	3.0	2.8	3.0	2.2	2.0	1.9	1.7	1.4	1.5	1.5	1.5	25.5
1961/62	1.5	1.6	4.0	2.0	1.9	1.9	1.4	1.4	1.3	1.4	1.3	1.4	21.1
1962/63	(1.6)	(1.8)	(2.2)	1.6	2.3	1.6	1.3	1.5	1.3	1.3	1.4	1.4	19.3
1963/64	1.5	1.6	1.8	1.6	1.7	1.5	1.5	1.2	1.6	1.3	1.4	1.2	17.9
1964/65	1.5	1.7	1.8	1.9	1.6	1.8	1.7	1.4	1.3	1.3	1.4	1.3	18.7
1965/66	1.7	1.7	1.6	1.6	1.6	1.8	1.6	1.7	1.5	1.5	1.5	1.4	19.2
1966/67	1.6	1.6	2.5	3.0	3.9	4.3	1.8	1.8	1.7	1.7	1.8	1.8	27.5
1967/68	2.0	2.0	2.6	5.2	2.3	2.1	2.2	2.3	2.1	1.9	1.9	1.9	28.6
1968/69	2.0	2.0	2.3	2.8	1.9	2.0	1.7	1.8	1.8	1.9	1.9	1.9	24.0
1969/70	2.2	2.1	2.2	2.7	2.5	2.9	2.6	2.6	2.7	2.6	2.6	2.4	30.2
1970/71	2.6	2.5	3.0	3.1	2.8	3.0	3.0	2.6	2.5	2.5	2.4	2.5	32.5
1971/72	2.7	2.8	3.1	3.1	2.6	3.1	2.7	2.5	2.5	2.5	2.5	2.6	32.7
1972/73	2.9	2.7	2.9	2.9	2.5	2.7	2.5	2.3	2.1	2.2	2.1	2.2	30.0
1973/74	2.1	2.4	2.6	(1.7)	2.4	2.5	2.3	1.7	1.9	2.2	2.8	3.0	27.6
1974/75	<u>2.6</u>	<u>(2.1)</u>	<u>2.6</u>	<u>(2.3)</u>	<u>(2.1)</u>	<u>(2.1)</u>	<u>(1.9)</u>	<u>(1.8)</u>	<u>(1.8)</u>	<u>(1.5)</u>	<u>(1.6)</u>	<u>(1.9)</u>	<u>24.3</u>
Mean	2.3	2.5	2.9	2.8	2.6	2.6	2.3	2.2	2.1	2.1	2.2	2.2	28.8

Remarks:

1) Base flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33,  
Jordan Central Water Authority, 1964.

2) Flood flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33,  
Jordan Central Water Authority, 1964.

3) Total flow:

Oct, 1963 through Dec, 1973: Jordan Natural Resources Authority records.  
Feb through Oct, 1974: Jordan Natural Resources Authority records.  
Dec, 1974: Jordan Natural Resources Authority records.



Wadi Ziqlab  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	1.0	2.0	1.3	1.2	1.8	1.0	1.1	1.1	1.0	1.0	1.1	1.1	14.7
1954/55	1.2	1.1	1.4	1.2	0.9	1.1	1.0	1.0	0.9	0.9	0.9	0.9	12.5
1955/56	0.9	1.3	1.4	1.3	0.8	1.1	0.8	0.8	0.8	0.8	0.8	0.8	11.6
1956/57	0.8	0.8	1.7	1.6	1.1	1.2	0.8	0.8	0.8	0.9	0.9	0.9	12.3
1957/58	1.0	1.1	1.8	1.7	0.9	0.9	0.8	0.9	0.8	0.9	0.9	0.9	12.6
1958/59	0.9	0.9	0.8	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.7	0.7	9.9
1959/60	0.8	0.7	0.8	0.7	0.6	0.9	0.7	0.6	0.6	0.6	0.5	0.5	8.0
1960/61	0.6	0.7	0.7	0.7	0.8	0.5	0.7	0.6	0.6	0.5	0.5	0.5	7.4
1961/62	0.5	0.5	1.5	1.1	1.0	1.0	0.7	0.5	0.8	0.5	0.5	0.5	9.1
1962/63	(0.7)	(0.4)	(0.7)	(0.6)	(0.8)	(0.5)	(0.4)	(0.5)	(0.4)	(0.4)	(0.5)	(0.4)	(6.3)
1963/64	0.4	0.5	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)	(0.4)	0.6	0.5	0.5	0.5	(6.2)
1964/65	0.6	0.5	0.5	(0.7)	(0.5)	(0.6)	0.2	0.3	0.5	0.6	0.6	0.6	(6.2)
1965/66	0.7	0.7	0.7	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	6.9
1966/67	0.8	0.7	1.0	1.2	0.7	1.0	0.6	0.7	0.8	0.8	0.8	0.8	9.9
1967/68	1.0	1.0	0.9	1.0	0.9	0.9	0.9	1.0	0.9	0.9	0.8	0.8	11.0
1968/69	0.8	0.7	0.8	0.9	0.9	1.0	0.7	0.8	0.8	0.8	0.8	0.9	9.9
1969/70	1.0	(0.7)	1.0	1.1	0.8	1.0	0.8	0.7	0.7	0.8	0.8	0.8	(10.2)
1970/71	(0.8)	(1.8)	1.0	1.0	(0.9)	0.9	(1.0)	0.8	0.7	0.7	0.8	0.6	(10.0)
1971/72	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.6	9.1
1972/73	0.7	0.7	0.8	0.8	0.7	0.8	0.6	0.7	0.6	0.6	0.5	0.6	8.1
1973/74	0.7	0.7	(0.6)	(0.6)	(0.7)	0.8	0.7	0.7	0.7	0.7	0.7	0.7	(8.3)
1974/75	0.7	0.7	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.6	7.8
Mean	0.8	0.9	1.0	1.0	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	9.5

Remarks:

1) Base Flow:

Oct. 1953 through Sep. 1962: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.

2) Flood flow:

Oct. 1953 through Sep. 1962: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.

3) Total flow:

Oct through Nov, 1963: Jordan Natural Resources Authority records.  
 Jun through Dec, 1964: Jordan Natural Resources Authority records.  
 Apr, 1965 through Oct, 1969: Jordan Natural Resources Authority records.  
 Dec, 1969 through Sep, 1970: Jordan Natural Resources Authority records.  
 Dec, 1970 through Jan, 1971: Jordan Natural Resources Authority records.  
 Mar, 1971: Jordan Natural Resources Authority records.  
 May, 1971 through Nov, 1973: Jordan Natural Resources Authority records.  
 Mar, 1974 through Sep, 1975: Jordan Natural Resources Authority records.

MONTHLY STREAMFLOW

Wadi Jurur  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	1.1	1.2	1.2	(1.4)	(1.2)	(1.1)	(1.2)	(1.3)	(1.4)	(1.3)	(1.3)	(1.2)	(14.9)
1954/55	(1.3)	(1.3)	(1.4)	(1.3)	(1.2)	(1.2)	(1.1)	(1.2)	(1.1)	(1.1)	(1.0)	(0.9)	(14.1)
1955/56	(1.0)	(1.0)	(0.9)	(0.8)	(0.7)	(0.8)	(0.9)	(0.9)	(0.9)	(1.0)	(1.0)	(0.9)	(10.8)
1956/57	(0.9)	(0.9)	(1.0)	(1.0)	(0.9)	(0.9)	(0.9)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(11.5)
1957/58	(1.1)	(1.0)	(1.1)	(1.2)	(1.1)	(1.0)	(1.0)	(1.0)	(1.0)	(1.1)	(1.1)	(1.0)	(12.7)
1958/59	(1.1)	(1.1)	(1.0)	(1.0)	(1.0)	(1.0)	(0.9)	(0.9)	(1.0)	(0.9)	(0.9)	(0.9)	(11.7)
1959/60	(0.9)	(0.8)	(0.8)	(0.9)	(0.8)	(0.8)	(0.7)	(0.8)	(0.7)	(0.7)	(0.7)	(0.7)	(9.3)
1960/61	(0.7)	(0.7)	(0.7)	(0.7)	(0.6)	(0.7)	(0.8)	(0.9)	(0.9)	(0.7)	(0.6)	(0.6)	(8.6)
1961/62	(0.7)	(0.7)	(0.6)	(0.6)	(0.5)	(0.7)	(0.8)	(0.9)	(0.9)	(0.9)	(0.9)	(0.8)	(9.0)
1962/63	(1.0)	(0.8)	(1.1)	(0.9)	(1.2)	(0.8)	(0.7)	(1.0)	(0.8)	(0.7)	(0.9)	(0.9)	(10.8)
1963/64	(0.7)	(0.7)	(0.6)	(0.6)	(0.7)	(0.5)	(0.8)	(0.8)	(0.9)	(0.9)	(1.0)	(0.9)	(9.1)
1964/65	(0.8)	(0.8)	(0.9)	(0.9)	(0.6)	(0.6)	(1.0)	(1.0)	(1.0)	(0.9)	(1.0)	(1.0)	(10.5)
1965/66	(0.9)	(0.8)	(0.7)	(0.3)	(0.3)	(0.9)	(0.7)	(0.7)	(0.8)	(0.8)	(0.8)	(0.7)	(8.4)
1966/67	0.7	0.7	0.8	0.8	0.7	0.8	0.9	1.0	1.0	1.1	1.0	1.1	10.6
1967/68	1.2	1.3	1.2	1.3	1.1	1.1	1.1	1.0	0.9	0.9	1.0	0.9	13.0
1968/69	1.1	1.1	(0.8)	1.3	1.2	1.1	1.1	1.2	1.1	1.1	1.3	1.3	(13.7)
1969/70	1.4	1.2	1.3	1.3	1.2	1.3	1.1	1.2	1.2	1.3	1.3	1.3	15.1
1970/71	1.3	1.3	1.4	1.4	1.6	1.3	1.3	1.0	0.9	1.0	1.0	1.0	14.5
1971/72	1.0	1.0	1.2	1.2	1.2	1.0	1.0	1.0	1.0	1.0	1.0	0.8	12.4
1972/73	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.6	8.3
1973/74	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.7	8.2
1974/75	0.8	0.8	0.8	0.7	0.7	0.7	0.6	(0.8)	(0.8)	(0.7)	(0.7)	(0.8)	(8.9)
Mean	1.0	0.9	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.9	1.0	0.9	11.2

Remarks:

1) Base flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.  
 Oct through Nov, 1963: Jordan Natural Resources Authority records.  
 Apr, 1964 through Jan, 1965: Jordan Natural Resources Authority records.  
 Apr, 1965 through Sep, 1965: Jordan Natural Resources Authority records.  
 Feb, 1966 through Sep, 1966: Jordan Natural Resources Authority records.

2) Flood flow:

Oct. 1953 through Sep, 1954: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.

3) Total flow:

Oct, 1966 through Nov, 1968: Jordan Irrigation Department records.  
 Jan, 1969 through Apr, 1975: Jordan Irrigation Department records.  
 ( ) = Harza estimate, 1976.



Table A-11  
MONTHLY STREAMFLOW

Wadi Yabis  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	0.4	0.8	0.6	0.6	1.2	1.0	0.7	0.5	0.4	0.3	0.3	0.3	7.1
1954/55	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	3.0
1955/56	0.2	0.3	0.4	0.8	1.2	0.6	0.5	0.4	0.3	0.3	0.2	0.3	5.5
1956/57	0.3	0.3	0.5	0.4	0.7	1.2	0.8	0.4	0.3	0.2	0.2	0.2	5.5
1957/58	0.3	0.5	0.8	0.7	0.6	0.4	0.3	0.3	0.3	0.2	0.2	0.2	4.8
1958/59	0.2	0.2	0.3	0.4	0.5	0.6	0.3	0.2	0.2	0.2	0.2	0.2	3.5
1959/60	0.1	0.2	0.2	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	2.0
1960/61	0.1	0.2	0.2	0.4	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	2.2
1961/62	0.1	0.1	0.7	0.5	0.5	0.4	0.2	0.2	0.1	0.1	0.1	0.1	3.1
1962/63	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.7
1963/64	(0.1)	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)	(0.2)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	(2.0)
1964/65	(0.2)	(0.1)	(0.1)	(0.3)	(0.3)	(0.4)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(2.2)
1965/66	(0.2)	(0.2)	(0.2)	(0.1)	(0.2)	(0.3)	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.1)	(2.4)
1966/67	(0.2)	(0.2)	(0.3)	(0.5)	(0.4)	(0.6)	(0.3)	(0.2)	(0.2)	0.2	0.3	0.2	(3.6)
1967/68	0.4	0.3	0.4	0.7	1.0	0.7	0.3	0.2	0.2	0.2	0.2	0.2	4.8
1968/69	0.2	0.2	0.2	0.4	0.3	0.5	0.6	0.4	0.3	0.2	0.2	0.2	3.7
1969/70	0.3	0.2	0.3	0.3	0.3	0.7	0.6	0.1	0.2	0.2	0.2	0.1	3.5
1970/71	0.2	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.3	0.2	0.2	0.1	3.1
1971/72	0.2	0.2	0.2	0.2	0.5	0.9	0.6	0.2	0.2	0.2	0.2	0.1	3.7
1972/73	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	(0.2)	(0.2)	(0.1)	(0.1)	(1.6)
1973/74	(0.2)	0.1	0.1	(0.1)	0.6	0.6	0.2	0.1	0.1	0.1	0.1	0.1	(2.4)
1974/75	0.1	0.1	0.1	0.1	0.2	0.3	0.1	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)	(1.7)
Mean	0.2	0.2	0.3	0.4	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.2	3.3

Remarks:

1) Base flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.

2) Flood flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.

3) Total flow:

Jul, 1967 through May, 1973: Jordan Natural Resources Authority records. (Unpublished)  
 Nov through Dec, 1973: Jordan Natural Resources Authority records. (Unpublished)  
 Feb, 1974 through Apr, 1975: Jordan Natural Resources Authority records. (Unpublished)

MONTHLY STREAMFLOW

Wadi Kufrinja  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	0.4	0.4	0.6	1.0	3.0	2.8	1.5	1.0	0.8	0.6	0.5	0.4	13.0
1954/55	(0.5)	(0.4)	(0.5)	(0.4)	(0.4)	(0.2)	(0.2)	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	3.7
1955/56	(0.2)	(0.6)	(0.9)	(1.5)	(2.4)	(1.3)	(1.1)	(0.7)	(0.5)	(0.4)	(0.3)	(0.4)	(10.3)
1956/57	(0.4)	(0.4)	(0.5)	(0.6)	(1.4)	(2.1)	(1.8)	(0.8)	(0.6)	(0.4)	(0.4)	(0.4)	(9.8)
1957/58	(0.5)	(0.5)	(0.7)	(0.6)	(1.2)	(0.9)	(0.4)	(0.5)	(0.3)	(0.2)	(0.2)	(0.2)	(6.2)
1958/59	(0.3)	(0.3)	(0.3)	(0.4)	(0.5)	(1.0)	(0.4)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(4.2)
1959/60	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(1.8)
1960/61	(0.2)	(0.3)	(0.4)	(0.4)	(0.4)	(0.9)	(0.3)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(3.7)
1961/62	(0.2)	(0.2)	(0.9)	(1.4)	(2.1)	(1.6)	(0.3)	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(7.8)
1962/63	(0.3)	(0.3)	(0.5)	(0.5)	(1.0)	(0.4)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(3.8)
1963/64	(0.4)	(0.5)	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)	(0.4)	(0.6)	(0.5)	(0.5)	(0.5)	(6.2)
1964/65	0.2	0.3	0.3	2.1	2.1	0.1	1.8	0.3	0.2	0.2	0.2	0.2	8.0
1965/66	0.2	0.4	0.3	0.4	0.4	0.1	0.2	0.2	0.0	0.1	0.1	0.1	2.5
1966/67	0.1	0.1	0.0	0.3	0.6	0.6	0.5	0.4	0.3	0.3	0.2	0.2	3.6
1967/68	0.3	0.3	0.3	3.3	0.5	0.7	0.3	0.2	0.1	0.1	0.1	0.1	6.3
1968/69	0.1	0.1	0.2	0.2	0.1	0.8	0.7	0.6	0.3	0.3	0.2	0.2	3.8
1969/70	0.2	0.3	0.0	0.3	0.3	0.8	0.7	0.4	0.3	0.2	0.2	0.2	3.9
1970/71	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.8	0.4	0.3	0.2	0.2	4.0
1971/72	0.2	0.2	1.2	0.4	0.1	0.8	0.7	0.5	0.3	(0.7)	(0.6)	(0.6)	(6.3)
1972/73	(0.7)	(0.7)	(0.9)	(0.9)	(0.7)	(0.9)	(0.6)	(0.7)	(0.6)	(0.6)	(0.5)	(0.6)	(8.4)
1973/74	0.4	0.6	0.7	2.0	0.6	0.8	0.5	0.4	(0.7)	(0.7)	(0.7)	(0.7)	(8.8)
1974/75	0.4	0.4	0.6	0.5	0.9	1.2	0.5	0.4	(0.6)	(0.5)	(0.5)	(0.6)	(7.1)
Mean	0.3	0.4	0.5	0.8	0.9	0.9	0.6	0.4	0.3	0.3	0.3	0.3	6.1

Remarks:

1) Base flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.

2) Flood flow:

Oct. 1953 through Sep, 1954: Review of Streamflow Data, Technical Paper No. 33, Jordan Central Water Authority, 1964.

3) Total flow:

Oct, 1964 through Jun, 1972: Jordan Natural Resources Authority records. (Unpublished)  
 Oct, 1973 through May, 1974: Jordan Natural Resources Authority records. (Unpublished)  
 Oct. 1974 through May, 1975: Jordan Natural Resources Authority records. (Unpublished)

Table A-13

## MONTHLY STREAMFLOW

Wadi Rajib  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	0.2	0.3	0.3	(1.9)	(1.6)	(3.3)	(1.6)	(0.7)	(0.5)	(0.4)	(0.4)	(0.3)	(11.5)
1954/55	(0.3)	(0.3)	(0.3)	(0.6)	(1.0)	(0.7)	(0.4)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)	(4.3)
1955/56	(0.2)	(0.4)	(0.5)	(1.5)	(2.6)	(2.0)	(0.9)	(0.4)	(0.3)	(0.3)	(0.2)	(0.3)	(9.6)
1956/57	(0.3)	(0.3)	(0.3)	(0.8)	(2.0)	(3.0)	(1.3)	(0.4)	(0.4)	(0.3)	(0.3)	(0.3)	(9.7)
1957/58	(0.3)	(0.4)	(0.4)	(1.0)	(2.0)	(1.8)	(0.5)	(0.3)	(0.3)	(0.2)	(0.2)	(0.2)	(7.6)
1958/59	(0.2)	(0.2)	(0.2)	(0.6)	(1.3)	(2.2)	(0.5)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)	(5.9)
1959/60	(0.2)	(0.2)	(0.3)	(0.4)	(0.7)	(0.7)	(0.6)	(0.5)	(0.5)	(0.5)	(0.4)	(0.4)	(5.4)
1960/61	(0.5)	(0.6)	(0.6)	(0.6)	(0.6)	(0.4)	(0.6)	(0.6)	(0.5)	(0.4)	(0.4)	(0.4)	(6.2)
1961/62	(0.4)	(0.4)	(1.2)	(0.9)	(0.8)	(0.8)	(0.6)	(0.4)	(0.6)	(0.4)	(0.4)	(0.4)	(7.3)
1962/63	(0.6)	(0.3)	(0.6)	(0.5)	(0.6)	(0.4)	(0.3)	(0.4)	(0.3)	(0.3)	(0.4)	(0.3)	(5.0)
1963/64	(0.3)	(0.4)	(0.5)	(0.5)	(0.5)	(0.4)	(0.4)	(0.3)	(0.5)	(0.4)	(0.4)	(0.4)	(5.0)
1964/65	(0.5)	(0.4)	(0.4)	(0.6)	(0.4)	(0.5)	(0.2)	(0.2)	(0.4)	(0.5)	(0.5)	(0.5)	(5.1)
1965/66	(0.6)	(0.6)	(0.6)	(0.2)	(0.3)	(0.4)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(5.7)
1966/67	(0.6)	(0.6)	(0.8)	(1.0)	(0.6)	(0.8)	(0.5)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(7.9)
1967/68	(0.8)	(0.8)	(0.7)	(0.8)	(0.7)	(0.7)	(0.7)	(0.8)	(0.7)	(0.7)	(0.6)	(0.6)	(8.6)
1968/69	(0.6)	(0.6)	(0.6)	(0.7)	(0.7)	(0.8)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.7)	(7.7)
1969/70	(0.8)	(0.6)	(0.8)	(0.9)	(0.6)	(0.8)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(8.1)
1970/71	(0.6)	(0.6)	(0.8)	(0.8)	(0.7)	(0.7)	(0.8)	(0.6)	(0.6)	(0.6)	(0.6)	(0.5)	(7.9)
1971/72	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)	(7.0)
1972/73	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.5)	(0.6)	(0.5)	(0.5)	(0.4)	(0.5)	(6.6)
1973/74	(0.6)	(0.6)	(0.5)	(0.5)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(7.0)
1974/75	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)	(0.5)	(0.4)	(0.4)	(0.5)	(6.4)
Mean	0.5	0.5	0.6	0.8	0.9	1.0	0.6	0.5	0.5	0.4	0.4	0.4	7.1

## Remarks:

## 1) Base flow:

Oct. 1953 through Feb, 1960: Review of Streamflow Data, Technical Paper No. 33,  
Jordan Central Water Authority, 1964.

## 2) Flood flow:

Oct. 1953 through Dec, 1953: Yarmouk - Jordan Valley Project, Master Plan Report Harza, 1955.

## 3) Total : 0.0



Table A-14

## MONTHLY STREAMFLOW

Wadi Shueib at Shunat Nimrin.  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	0.5	1.8	1.6	1.3	2.0	1.9	1.6	1.3	1.0	0.9	0.8	0.7	15.4
1954/55	0.6	0.7	1.2	0.8	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	6.8
1955/56	0.4	0.9	1.0	1.5	1.1	1.4	1.0	0.9	0.7	0.7	0.6	0.5	10.7
1956/57	0.5	0.5	1.0	1.6	1.1	1.7	1.2	1.1	1.0	0.9	0.8	0.7	12.1
1957/58	0.7	0.7	1.3	1.5	1.0	0.8	0.7	0.6	0.5	0.5	0.4	0.4	9.1
1958/59	0.4	0.4	0.5	1.1	1.5	1.1	0.8	0.7	0.6	0.6	0.5	0.5	8.7
1959/60	0.5	0.5	0.5	0.7	0.4	0.7	0.3	0.3	0.3	0.3	0.3	0.2	5.0
1960/61	0.2	0.7	0.4	1.3	1.0	0.8	0.7	0.5	0.5	0.4	0.4	0.4	7.3
1961/62	0.4	0.4	1.5	0.8	0.9	0.8	0.6	0.4	0.4	0.4	0.4	0.3	7.3
1962/63	0.3	0.3	0.4	0.5	1.6	0.6	0.3	0.5	0.2	0.2	0.2	0.2	5.3
1963/64	(0.2)	(0.4)	(0.5)	(0.6)	(0.7)	(0.6)	(0.5)	(0.4)	(0.5)	(0.4)	(0.3)	(0.3)	(5.4)
1964/65	(0.3)	(0.4)	(0.4)	(0.7)	(0.6)	(0.7)	(0.2)	(0.3)	(0.4)	(0.4)	(0.4)	(0.4)	(5.2)
1965/66	(0.4)	(0.5)	(0.5)	(0.3)	(0.5)	(0.6)	(0.6)	(0.5)	(0.5)	(0.4)	(0.4)	(0.4)	(5.6)
1966/67	(0.4)	(0.5)	(0.8)	(1.2)	(0.8)	(1.1)	(0.6)	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)	(8.2)
1967/68	(0.5)	(0.7)	(0.7)	(1.0)	(1.0)	(1.0)	(0.9)	(0.9)	(0.7)	(0.7)	(0.5)	(0.5)	(9.1)
1968/69	(0.4)	(0.5)	(0.6)	(0.9)	(1.0)	(1.1)	(0.7)	(0.7)	(0.6)	(0.6)	(0.5)	(0.5)	(8.1)
1969/70	(0.5)	(0.5)	(0.8)	(1.1)	(0.9)	(1.1)	(0.8)	(0.6)	(0.5)	(0.6)	(0.5)	(0.5)	(8.4)
1970/71	(0.4)	(0.6)	(0.8)	(1.0)	(1.0)	(1.0)	(1.0)	(0.7)	(0.5)	(0.5)	(0.5)	(0.4)	(8.4)
1971/72	(0.4)	(0.6)	(0.6)	(0.8)	(0.9)	(0.9)	(0.8)	(0.7)	(0.6)	(0.5)	(0.4)	(0.4)	(7.6)
1972/73	(0.4)	(0.5)	(0.6)	(0.8)	(0.8)	(0.9)	(0.6)	(0.6)	(0.5)	(0.4)	(0.3)	(0.4)	(6.8)
1973/74	(0.4)	(0.5)	(0.5)	(0.6)	(0.8)	(0.9)	(0.7)	(0.6)	(0.5)	(0.5)	(0.5)	(0.4)	(6.9)
1974/75	<u>(0.4)</u>	<u>(0.5)</u>	<u>(0.8)</u>	<u>(0.8)</u>	<u>(0.8)</u>	<u>(0.8)</u>	<u>(0.6)</u>	<u>(0.5)</u>	<u>(0.5)</u>	<u>(0.4)</u>	<u>(0.3)</u>	<u>(0.4)</u>	<u>(6.6)</u>
Mean	0.4	0.6	0.8	1.0	1.0	1.0	0.7	0.6	0.5	0.5	0.5	0.4	7.9

## Remarks:

## 1) Base flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33,  
Jordan Central Water Authority, 1964.

## 2) Flood flow:

Oct. 1953 through Sep, 1963: Review of Streamflow Data, Technical Paper No. 33,  
Jordan Central Water Authority, 1964.

## 3) Total flow:

Table A-15

## MONTHLY STREAMFLOW

Wadi Kafrein  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	0.4	1.4	1.1	1.0	2.6	2.6	2.1	1.7	1.3	1.0	0.7	0.6	16.5
1954/55	0.5	0.5	1.3	0.9	0.7	0.7	0.6	0.5	0.4	0.4	0.4	0.3	7.2
1955/56	0.3	0.7	1.2	1.9	1.4	2.1	1.5	1.2	0.9	0.7	0.6	0.4	12.9
1956/57	0.4	0.4	0.5	1.6	2.7	4.3	3.2	2.6	2.0	1.6	1.2	0.9	21.4
1957/58	0.7	0.6	0.9	1.9	1.1	0.9	0.7	0.6	0.5	0.4	0.4	0.3	9.0
1958/59	0.3	0.3	0.3	0.4	1.4	0.9	0.8	0.6	0.5	0.4	0.4	0.3	6.6
1959/60	0.3	0.3	0.3	0.4	0.3	0.5	0.5	0.4	0.4	0.4	0.3	0.3	4.4
1960/61	0.3	0.4	0.4	1.2	2.0	1.0	0.9	0.8	0.6	0.5	0.4	0.4	8.9
1961/62	0.3	0.3	2.7	1.0	0.9	0.9	0.7	0.6	0.5	0.4	0.4	0.3	9.0
1962/63	0.3	0.3	0.3	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.3	4.3
1963/64	0.3	0.3	3.3	1.1	2.2	2.6	2.0	1.6	1.2	0.9	0.7	0.5	16.7
1964/65	0.5	0.6	0.7	4.8	2.6	2.6	2.2	1.8	1.3	1.0	0.8	0.6	19.5
1965/66	0.6	0.6	0.6	0.7	0.7	1.3	0.9	0.7	0.6	0.5	0.4	0.4	8.0
1966/67	0.4	0.4	2.4	4.2	2.9	10.2	4.4	3.1	1.9	1.5	1.1	0.8	33.3
1967/68	0.7	0.7	0.9	2.6	1.2	1.2	1.0	0.8	0.6	0.5	0.4	0.4	11.0
1968/69	0.4	0.4	1.2	1.4	0.9	6.1	3.4	2.7	1.9	1.5	1.1	0.8	21.8
1969/70	0.7	0.6	0.5	1.1	0.8	1.6	1.0	0.9	0.7	0.5	0.4	0.4	9.2
1970/71	0.4	0.3	0.4	0.5	0.6	0.8	3.7	1.4	1.0	0.8	0.6	0.5	11.0
1971/72	0.4	0.5	2.9	1.6	2.1	2.5	2.1	1.7	1.3	1.0	0.7	0.6	17.4
1972/73	0.5	0.5	0.5	2.2	0.9	1.1	0.9	0.7	0.5	0.5	0.4	0.3	9.0
1973/74	0.3	0.6	0.6	10.1	17.3	6.7	4.1	2.2	1.6	1.3	0.9	0.7	46.4
1974/75	(0.4)	(0.4)	(0.8)	(1.5)	(1.7)	(1.4)	(1.4)	(1.0)	(0.8)	(0.5)	(0.4)	(0.4)	(11.2)
Mean	0.4	0.5	1.1	1.9	2.1	2.4	1.8	1.3	1.0	0.8	0.6	0.5	14.3

## Remarks:

Total flow:

Oct. 1953 through Sep, 1974: Hisban - Kafrein Feasibility Study, Sir M. MacDonald and Partners, 1975.

( ) = Harza estimate, 1976.



Table A-16

## MONTHLY STREAMFLOW

Wadi Hisban  
(MCM)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1953/54	0.3	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	4.6
1954/55	0.3	0.3	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	3.8
1955/56	0.2	0.4	0.4	0.7	0.6	0.8	0.7	0.6	0.5	0.5	0.4	0.4	6.2
1956/57	0.4	0.3	0.4	0.5	0.7	0.9	0.8	0.8	0.7	0.6	0.5	0.4	7.0
1957/58	0.4	0.4	0.5	0.6	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	4.7
1958/59	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2	3.7
1959/60	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	2.8
1960/61	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	3.7
1961/62	0.3	0.2	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	3.6
1962/63	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.4
1963/64	0.2	0.2	0.6	0.5	0.8	1.0	0.8	0.7	0.6	0.6	0.5	0.4	6.9
1964/65	0.4	0.4	0.4	0.8	0.7	0.8	0.7	0.6	0.5	0.5	0.4	0.4	6.6
1965/66	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.3	0.3	4.6
1966/67	0.3	0.3	0.5	0.7	0.7	0.8	0.7	0.6	0.5	0.5	0.4	0.4	6.4
1967/68	0.4	0.4	0.4	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	5.0
1968/69	0.3	0.3	0.4	0.4	0.4	0.6	0.5	0.4	0.4	0.4	0.3	0.3	4.7
1969/70	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	3.9
1970/71	0.3	0.2	0.3	0.3	0.3	0.3	0.5	0.4	0.4	0.3	0.3	0.3	4.1
1971/72	0.3	0.3	0.6	0.5	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.3	5.6
1972/73	0.3	0.4	0.3	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	4.3
1973/74	0.3	0.3	0.3	2.3	3.3	1.6	1.1	0.8	0.6	0.6	0.5	0.4	12.1
1974/75	(0.3)	(0.3)	(0.3)	(0.4)	(0.5)	(0.5)	(0.4)	(0.4)	(0.3)	(0.3)	(0.2)	(0.3)	(4.2)
Mean	0.3	0.3	0.4	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.3	0.3	5.0

Remarks:

Total flow:

Oct. 1953 through Sep, 1974: Hisban - Kafrein Feasibility Study, Sir M. MacDonald and Partners, 1975.

( ) = Harza estimate, 1976.

6.7

APPENDIX C

Syria

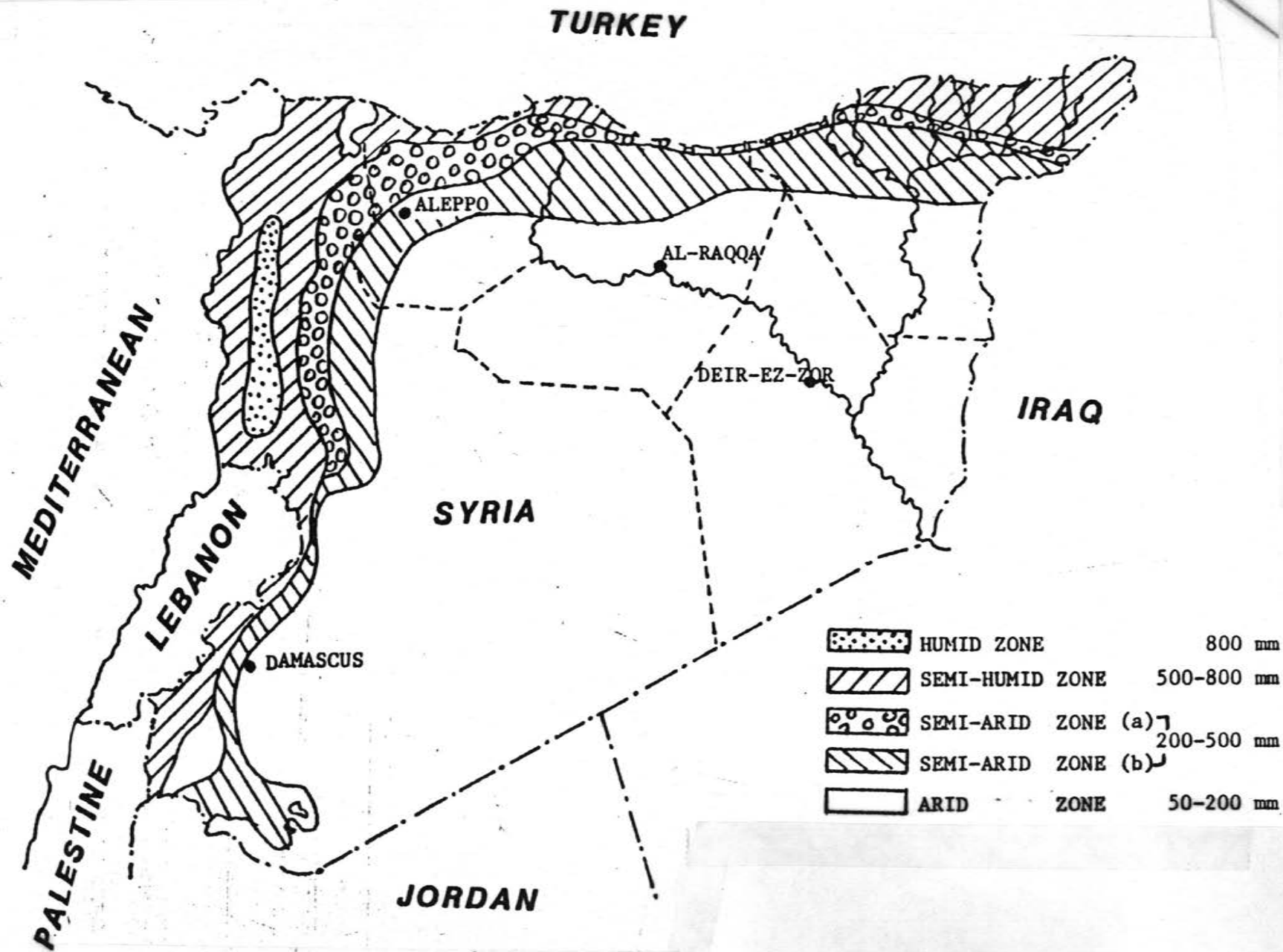


Figure C-1. RAINFALL AND CLIMATE PATTERNS IN SYRIA. Source: M. al-Ashram<sup>(2059)</sup>, p. 2.

Table 4.1A

Israeli Agricultural Production  
(thousand tons unless otherwise stated)

	<u>1948/49</u>	<u>1959/60</u>	<u>1969/70</u>	<u>1979/80</u>	<u>1981/82</u>	<u>1982/83</u>	<u>1983/84</u>
<b>FIELD CROPS</b>							
Cereals and pulses for grain							
Wheat	54.9	96.3	162.6	314.0	203.2	436.7	173.1
Barley	21.1	41.3	125.0	253.2	147.0	335.0	130.0
Sorghum	20.0	26.6	13.6	28.9	13.0	38.0	8.5
Other	3.0	15.6	10.9	7.2	15.2	25.3	6.7
Industrial and oil crops							
Cotton lint	---	10.7	35.3	78.1	87.7	92.7	87.5
Cotton seed	---	16.9	58.6	129.0	144.3	153.1	145.0
Sugarbeet	---	169.0	237.0	0.0	---	---	---
Groundnuts	0.3	17.0	18.7	19.5	25.9	23.1	21.5
Tobacco	0.6	1.7	1.6	0.5	0.5	0.6	0.3
Sunflower	0.4	2.6	3.1	9.8	9.3	9.6	5.1
Canning peas		1.5	3.6	5.4	7.1	6.5	6.5
Other	1.3	4.3	0.9	2.6	6.9	7.7	9.1
Hay	40.6	78.6	137.3	110.0	115.0	120.0	95.0
Green fodder & silage	373.0	1696.1	1573.9	1060.0	1030.0	1035.0	1050.0
Straw	48.3	62.0	127.9	191.3	127.6	189.0	109.9
Green manure (1,000 dunums)	15.3	86.8	10.5	1.0	0.5	0.2	0.2
<b>VEGETABLES, POTATOES &amp; MELONS</b>							
Vegetables	80.6	297.7	474.1	607.0	756.5	764.5	778.3
Tomatoes	22.2	110.0	157.0	255.2	309.7	369.9	350.6
Cucumbers	14.2	27.8	44.8	50.5	30.9	55.7	53.7
Carrots	6.9	35.5	58.7	46.7	49.1	52.2	55.7
Peppers and gamba	3.2	10.9	29.8	53.9	44.0	44.3	48.5
Dry onions	1.7	18.9	47.2	31.4	57.3	46.8	57.7
Eggplants	4.8	13.6	22.9	25.0	20.6	21.0	23.1
Vegetable marrows	2.9	9.5	13.8	15.1	12.3	17.2	18.6
Cabbage	5.2	13.9	16.8	26.2	35.1	34.5	37.3
Beets	2.4	6.2	8.4	8.3	4.4	9.3	11.2
Celery	0.2	1.2	5.5	15.2	18.9	16.3	17.5
Strawberries		0.6	3.1	7.5	8.0	8.4	9.1
Other	16.9	49.6	66.1	72.0	166.4	88.9	95.3
potatoes	26.0	81.8	137.1	171.7	200.0	199.3	198.2
Watermelons	11.0	29.7	102.0	75.1	76.2	78.2	90.1
Melons	1.4	20.8	27.7	42.0	41.0	42.3	40.4



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Table 4.1A, continued

	<u>1948/49</u>	<u>1959/60</u>	<u>1969/70</u>	<u>1979/80</u>	<u>1981/82</u>	<u>1982/83</u>	<u>1983/84</u>
CITRUS	272.7	609.6	1261.9	1542.8	1795.9	1522.8	1547.3
Shamouti	...	399.7	677.9	608.2	771.1	528.3	620.1
Lates	...	85.5	207.6	277.0	293.0	315.4	306.6
Grapefruit	...	74.6	284.3	508.8	532.2	457.7	401.7
Lemons	...	19.7	39.8	59.1	68.9	72.0	58.8
Other	30.1	52.3	89.7	130.7	149.0	160.1	

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Source: Statistical Abstract of Israel, 1985<sup>(1593)</sup>, pp. 400-401.

Table 4.1B  
 Israeli Agricultural Production  
 (thousand tons unless otherwise stated)

	1948/49	1959/60	1969/70	1979/80	1981/82	1982/83	1983/84
<b>FRUIT, EXCL. CITRUS</b>							
Apples	39.2	145.6	289.0	410.4	459.9	521.1	441.0
Pears		23.2	61.8	100.8	117.9	132.1	107.4
Peaches		2.2	35.8	7.9	16.3	17.4	17.9
Apricots	5.2	2.4	18.0	26.2	30.2	41.1	29.4
Plums		0.6	14.6	9.2	10.9	14.3	8.4
Table grapes	10.6	31.1	24.7	39.2	42.0	48.0	16.1
Wine grapes	7.2	21.6	36.0	37.2	44.4	45.7	47.5
Bananas	3.5	34.3	61.2	75.0	73.2	66.5	67.7
Almonds	...	...	1.8	3.0	2.4	2.0	3.2
Pecan nuts	—	—	0.5	1.5	1.8	1.7	2.3
Olives	10.7	6.8	6.6	45.0	37.2	37.2	17.3
Avocado		0.2	4.1	32.0	40.1	61.6	52.5
Dates	2.0		2.3	4.9	5.0	5.3	5.4
Persimmons		15.6	13.6	3.4	8.1	12.7	8.1
Other				9.9	11.9	12.8	13.5
<b>MISCELLANEOUS CROPS</b>							
Flowers (millions)							
Roses	...	...	...	<sup>1</sup> 142.0	...	...	...
Carnations	...	...	...	<sup>1</sup> 288.4	...	...	...
Gladioli	...	...	...	<sup>1</sup> 8.3	...	...	...
Other	...	...	...	...	...	...	...
Seedlings and garden plants	...	...	...	...	...	...	...
Vegetable seeds	...	...	...	...	...	...	...
Citron	...	...	...	...	...	...	...
Forest output	...	...	70.5	166.9	173.5	176.6	164.4
<b>LIVESTOCK AND PRODUCTS</b>							
<b>LIVESTOCK FOR MEAT</b>							
Poultry	5.0	45.7	101.7	200.0	228.8	250.3	269.0
Broilers	...	...	...	140.5	161.9	173.5	187.4
Turkeys	...	...	...	48.6	54.3	64.1	70.0
Layers and others	...	...	...	10.9	12.6	12.7	11.6
Cattle	2.0	25.1	35.6	40.2	56.0	57.8	58.3
Sheep	0.5	2.6	5.1	5.8	5.9	6.2	6.3
Goats		2.3	3.3	2.7	2.8	3.0	2.9
Other	<sup>2</sup> —	5.7	7.1	12.7	12.6	11.8	11.2
<b>MILK (million litres)</b>							
Cow's milk	78.8	277.3	440.5	670.3	720.9	753.3	797.4
Sheep's milk	7.2	16.4	18.9	18.8	21.1	22.0	21.6
Goat's milk		24.1	28.3	23.1	24.5	25.4	25.3

Table 4.1B, continued

	<u>1948/49</u>	<u>1959/60</u>	<u>1969/70</u>	<u>1979/80</u>	<u>1981/82</u>	<u>1982/83</u>	<u>1983/84</u>
EGGS AND CHICKS (millions)	231.6	1108.1	1213.3	1577.4	1664.8	1725.6	1976.7
Table eggs	231.6	1108.1	1193.2	1451.0	1522.7	1589.5	1848.9
Hatching eggs, exports	—	—	20.1	28.2	21.8	12.6	12.7
Chicks	...	...	...	98.2	120.3	123.5	115.1
FISH	3.5	13.9	21.8	24.7	24.3	21.5	23.4
Pond culture	...	3.9	12.0	12.7	12.5	11.8	12.4
Lake fisheries	...	1.3	1.6	2.3	1.8	2.2	1.6
Marine catch	...	8.7	8.2	9.7	10.0	7.6	9.4
MISCELLANEOUS							
Changes in livestock inventory	...	...	...	...	—	22.0	1.5
Exports of cattle, sheep & goats	...	...	...	1.1	—	—	—
Organic manure	0.4	2.2	2.3	2.9	3.0	3.1	3.1
Honey	0.5	0.8	1.7	1.7	2.0	2.2	2.0
Wool	...	...	0.4	0.7	0.6	0.6	0.6
Miscellaneous	...	...	...	...	0.4	0.1	0.1

<sup>1</sup> For exports only

<sup>2</sup> Not included in agricultural production

Source: Statistical Abstract of Israel, 1985<sup>(1593)</sup>, pp. 402-403.

Table 4.1C

SUMMARY OF AGRICULTURAL PRODUCTION IN ISRAEL (thousand tons)

<u>Year</u>	<u>1948/49</u>	<u>1959/60</u>	<u>1969/70</u>	<u>1979/80</u>	<u>1981/82</u>	<u>1982/83</u>	<u>1983/84</u>
Total crops (minus misc.)	965.1	3428.7	4662.8	4770.2	5087.5	5202.4	4798.5
Field crops	534.7	2243.5	2371.0	1921.2	1758.0	2074.2	1703.2
Vegetables, potatos, melons	119.0	430.0	740.9	895.8	1073.7	1084.3	1107.0
Citrus	272.7	609.6	1261.9	1542.8	1795.9	1522.8	1547.3
Non-citrus fruits	39.2	145.6	289.0	410.4	459.9	521.1	441.0

Source: Statistical Abstract of Israel, 1985<sup>(1593)</sup>, pp. 400-403.

Table 4.2

SUMMARY OF AGRICULTURAL DATA FOR ISRAEL

YEAR	WATER	QUANTITY INDEX		Total
	(in Mcm)	Livestock	Crops	
1948/49	257	13	14	13
1949/50	332	18	18	18
1950/51	413	20	18	18
1951/52	468	21	26	23
1952/53	563	22	28	25
1953/54	660	25	35	29
1954/55	760	32	34	32
1955/56	830	36	42	38
1956/57	830	40	47	42
1957/58	1000	53	47	49
1958/59	990	62	54	57
1959/60	1060	66	54	59
1960/61	1025	73	61	66
1961/62	1125	81	64	71
1962/63	1140	81	71	75
1963/64	1025	88	82	84
1964/65	1095	87	84	85
1965/66	1265	90	84	87
1966/67	1115	100	99	99
1967/68	1265	100	100	100
1968/69	1235	102	106	104
1969/70	1340	109	110	109
1970/71	1245	120	123	121
1971/72	1275	127	136	131
1972/73	1295	132	131	131
1973/74	1160	141	140	140
1974/75	1230	148	150	149
1975/76	1325	161	153	157
1976/77	1300	165	164	164
1977/78	1270	167	176	172
1978/79	1325	168	179	174
1979/80	1220	164	187	177
1980/81	1212	167	201	187
1981/82	1260	178	215	200
1982/83		187	231	213
1983/84		198	211	207

Source: Statistical Abstract of Israel, 1985<sup>(1593)</sup>, p. 390-393.