

**Wadi Zarga Ma'an Zarga Springs Project**

**Hydraulic Analysis (M m<sup>3</sup>/yr)**

Item	Allocation	Water Qty	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Water Produced		20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saved		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Municipal Water	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Physical Losses (%)		0.24	0.23	0.22	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Physical Losses		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Administrative/Managerial Losses (%)		0.21	0.19	0.14	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Delivered		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Where Bills are Collected		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Water	1.20	4.0	0.0	0.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Physical Losses (%)		0.24	0.23	0.22	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Physical Losses		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Administrative/Managerial Losses (%)		0.21	0.19	0.14	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Delivered		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Where Bills are Collected		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation Water	1.80	16.0	0.0	0.0	0.0	0.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Physical Losses (%)		0.24	0.23	0.22	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Physical Losses		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Administrative/Managerial Losses (%)		0.21	0.19	0.14	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Delivered		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Where Bills are Collected		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Financial Analysis (M JD at 2000 Prices)**

Item	Percent	Amount	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Costs</b>																							
Local Costs	30%	3.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Costs	30%	12.0	0.0	0.0	2.4	7.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Duty & Taxes	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Capital Costs		15.0	0.0	0.0	3.0	9.6	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Contingency Costs		0.0	0.0	3.0	12.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
O & M Costs		0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Costs		0.0	0.0	3.0	9.6	3.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<b>Revenues</b>																							
Municipal Usage Qty (M m <sup>3</sup> )			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Municipal Tariff (JD/m <sup>3</sup> )			0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294
Municipal Revenues (M JD)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Usage Qty (M m <sup>3</sup> )			0.0	0.0	0.0	0.0	2.7	2.7	2.9	3.0	3.0	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Industrial Tariff (JD/m <sup>3</sup> )			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Industrial Revenues (M JD)			0.0	0.0	0.0	0.0	2.7	2.8	2.9	3.0	3.0	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Irrigation Usage Qty (M m <sup>3</sup> )			0.0	0.0	0.0	0.0	10.7	11.2	11.5	11.8	12.2	12.5	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
Irrigation Tariff (JD/m <sup>3</sup> )			0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Irrigation Revenues (M JD)			0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Revenues (M JD)			0.0	0.0	0.0	0.0	2.8	2.9	3.0	3.1	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Net Cash Flow (M JD)			0.0	-3.0	-9.6	-3.0	2.6	2.8	2.8	2.9	3.0	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Discounting (DR=6.5%)			0.93897	0.88166	0.82795	0.77732	0.72968	0.68533	0.64351	0.60423	0.56775	0.53373	0.50201	0.46988	0.44102	0.41410	0.38933	0.36510	0.34281	0.32189	0.30224	0.28380	0.26648
Total Qty Where Bills are Collected (M m <sup>3</sup> )			0.0	0.0	0.0	0.0	13.4	14.0	14.4	14.8	15.2	15.6	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
<b>IRR</b>																							
NPV (M JD)	17.5		0.0	-2.6	-7.5	-2.3	1.9	1.9	1.8	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.9	0.8	0.8
PV of Total Costs (M JD)	13.9		0.0	2.6	7.5	2.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
PV of Total Bills Collected Qty (M m <sup>3</sup> )	150.7		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unit Water Price (FJD/m <sup>3</sup> )	92																						

Economic Analysis (M JD at 2000 Prices)																									
Item	Percent	Amount	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
<b>Costs</b>																									
Local Costs	20%	3.8	0.0	0.6	1.8	0.6	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8		
Foreign Costs	90%	12.8	0.0	2.4	7.2	2.4	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8		
Duty & Taxes	0%	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8		
Total Capital Costs		15.8	0.0	3.0	9.8	3.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8		
Operational Costs		0.0	0.0	3.0	12.8	15.0	15.0	15.8	15.0	15.0	15.8	15.0	15.0	15.8	15.0	15.0	15.8	15.0	15.0	15.8	15.0	15.0	15.8		
O & M Costs		0.0	0.0	0.8	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
Total Costs			0.0	3.0	9.8	3.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
<b>Benefits</b>																									
Municipal Usage Qty (M m <sup>3</sup> )			0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8		
Unit Benefits of Municipal Water (JD/m <sup>3</sup> )			0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735		
Municipal Benefits (M JD)			0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8		
Industrial Usage Qty (M m <sup>3</sup> )			0.0	0.0	0.8	0.0	3.2	3.2	3.2	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4		
Unit Benefits of Industrial Water (JD/m <sup>3</sup> )			2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740		
Industrial Benefits (M JD)			0.0	0.0	0.8	0.0	8.7	8.8	8.9	9.0	9.1	9.2	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3		
Irrigation Usage Qty (M m <sup>3</sup> )			0.0	0.0	0.8	0.0	12.6	12.8	13.0	13.1	13.3	13.4	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6		
Unit Benefits of Irrigation Water (JD/m <sup>3</sup> )			0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183		
Irrigation Benefits (M JD)			0.0	0.0	0.8	0.0	3.6	3.6	3.7	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8		
Total Benefits (M JD)			0.0	0.0	0.8	0.0	12.2	12.4	12.5	12.7	12.9	13.0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2		
Net Cash Flow (M JD)			0.0	-3.0	-9.8	-3.0	12.1	12.3	12.4	12.6	12.7	12.9	13.0	13.8	13.0	13.0	13.8	13.0	13.0	13.8	13.0	13.0	13.8		
Discounting (DR=10%)			0.90909	0.81645	0.75131	0.68301	0.61092	0.56447	0.51316	0.46651	0.42418	0.38554	0.35049	0.31861	0.28966	0.26333	0.23919	0.21763	0.19784	0.17984	0.16351	0.14864	0.13513		
Total Qty Delivered (M m <sup>3</sup> )			0.0	0.0	0.8	0.0	15.8	16.8	16.2	16.4	16.6	16.8	17.0	17.8	17.0	17.0	17.8	17.0	17.0	17.8	17.0	17.0	17.8		
<b>EIRR</b>																									
NPV (M JD)	52%		0.0	-2.5	-6.8	-2.0	7.5	6.8	6.4	5.9	5.4	5.0	4.6	4.1	3.8	3.4	3.1	2.8	2.6	2.3	2.1	1.9	1.8		
PV of Total Costs (M JD)			0.0	2.5	6.8	2.0	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1		
PV of Total Qty Delivered (M m <sup>3</sup> )			105.0	0.0	8.8	0.0	9.8	9.0	8.3	7.7	7.0	6.5	6.0	5.4	4.9	4.5	4.1	3.7	3.4	3.1	2.8	2.5	2.3		
Unit Water Price (FJD/m <sup>3</sup> )			11.7																						

### Mujib Weir Conveyer and Southern Ghors Infrastructure

#### Hydraulic Analysis (M m<sup>3</sup>/yr)

Item	Allocation	Water Qty	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Water Produced		54.5	0	0	0	0	0	54.5	54.5	54.5	54.5	54.5	54.5
Saved		0	0	0	0	0	0	0	0	0	0	0	0
Municipal Water	0.00	6.8	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Physical Losses (%)		0.24	0.23	0.22	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15
Physical Losses		1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Administrative/Managerial Losses (%)		0.21	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05
Administrative/Managerial Losses		1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Delivered		1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Whose Bills are Collected		1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Water	0.55	38.8	1.0	1.0	0.0	0.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Physical Losses (%)		0.24	0.23	0.22	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15
Physical Losses		1.0	1.0	0.0	0.0	0.0	6.0	5.7	5.4	5.1	4.8	4.5	4.5
Administrative/Managerial Losses (%)		0.21	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05
Administrative/Managerial Losses		1.0	1.0	0.0	0.0	0.0	3.0	2.7	2.4	2.1	1.8	1.5	1.5
Quantity Delivered		1.0	1.0	0.0	0.0	0.0	24.0	24.3	24.6	24.9	25.2	25.5	25.5
Quantity Whose Bills are Collected		1.0	1.0	0.0	0.0	0.0	21.0	21.6	22.2	22.8	23.4	24.0	24.0
Irrigation Water	0.45	24.5	1.0	1.0	0.0	0.0	24.5	24.5	24.5	24.5	24.5	24.5	24.5
Physical Losses (%)		0.24	0.23	0.22	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15
Physical Losses		1.0	1.0	0.0	0.0	0.0	4.9	4.7	4.4	4.2	3.9	3.7	3.7
Administrative/Managerial Losses (%)		0.21	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05
Administrative/Managerial Losses		1.0	1.0	0.0	0.0	0.0	2.5	2.3	2.0	1.7	1.5	1.2	1.2
Quantity Delivered		1.0	1.0	0.0	0.0	0.0	19.6	19.9	20.1	20.4	20.6	20.8	20.8
Quantity Whose Bills are Collected		1.0	1.0	0.0	0.0	0.0	17.2	17.7	18.1	18.6	19.1	19.6	19.6

#### Financial Analysis (M JD at 2006 Prices)

Item	Percent	Amount	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Costs</b>													
Local Costs	20%	13.4	1.0	1.0	5.0	3.6	1.8	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Costs	80%	53.8	1.0	12.0	20.0	14.4	7.4	0.0	0.0	0.0	0.0	0.0	0.0
Duty & Taxes	0%	8.8	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Capital Costs		87.2	1.0	15.0	25.0	18.0	9.2	0.0	0.0	0.0	0.0	0.0	0.0
Operative Costs			1.0	15.0	40.0	58.0	67.2	67.2	67.2	67.2	67.2	67.2	67.2
O & M Costs			1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Costs			1.0	15.0	25.0	18.0	9.2	0.0	0.0	0.0	0.0	0.0	0.0
<b>Revenues</b>													
Municipal Usage Qty (M m <sup>3</sup> )			1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Municipal Tariff (JD/m <sup>3</sup> )		0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294
Municipal Revenues (M JD)		1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Usage Qty (M m <sup>3</sup> )		1.0	1.0	0.0	0.0	0.0	21.0	21.6	22.2	22.8	23.4	24.0	24.0
Industrial Tariff (JD/m <sup>3</sup> )		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Industrial Revenues (M JD)		1.0	1.0	0.0	0.0	0.0	21.0	21.6	22.2	22.8	23.4	24.0	24.0
Irrigation Usage Qty (M m <sup>3</sup> )		1.0	1.0	0.0	0.0	0.0	17.2	17.7	18.1	18.6	19.1	19.6	19.6
Irrigation Tariff (JD/m <sup>3</sup> )		0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Irrigation Revenues (M JD)		1.0	1.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Revenues (M JD)		1.0	1.0	0.0	0.0	0.0	21.2	21.8	22.4	23.0	23.6	24.2	24.2
Net Cash Flow (M JD)		1.0	-15.0	-25.0	-18.0	-9.2	12.3	12.9	13.5	14.1	14.7	15.3	15.3
Discounting (Df=6.5%)		0.92897	0.88166	0.82785	0.77732	0.72988	0.68533	0.64351	0.60423	0.56735	0.53275	0.50021	0.46968
Total Qty Whose Bills are Collected (M m <sup>3</sup> )		1.0	1.0	0.0	0.0	0.0	38.2	39.2	40.3	41.4	42.5	43.6	43.6
<b>FIRR</b>													
FIRR (M JD)	16%	76.3	1.0	-13.2	-20.7	-14.0	-6.7	8.4	8.3	8.2	8.0	7.8	7.7
FV of Total Costs (M JD)	134.6	0.0	13.2	20.7	14.0	6.7	6.1	5.7	5.3	5.1	4.7	4.4	4.2
FV of Total Bills Collected Qty (M m <sup>3</sup> )	384.8	0.0	0.0	0.0	0.0	0.0	26.1	25.3	24.4	23.5	22.6	21.8	21.5
Unit Water Price (Flak/m <sup>3</sup> )	351												

**Economic Analysis (M JD at 2000 Prices)**

Item	Percent	Amount	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Costs</b>																							
Local Costs	20%	13.4	0.0	3.0	5.0	3.6	1.8	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0
Foreign Costs	80%	53.8	0.0	12.0	21.0	14.4	7.4	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0
Duty & Taxes	0%	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0
Total Capital Costs		67.2	0.0	15.0	25.0	18.1	9.2	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0
Operational Costs			0.0	15.0	48.0	51.1	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2	67.2
O & M Costs			0.0	0.0	1.0	1.1	0.0	8.8	8.8	8.8	1.1	1.1	8.8	8.8	8.8	8.8	1.1	1.1	8.8	8.8	8.8	8.8	1.1
Total Costs			0.0	15.0	25.0	18.1	9.2	8.8	8.8	8.8	1.1	1.1	8.8	8.8	8.8	8.8	1.1	1.1	8.8	8.8	8.8	8.8	1.1
<b>Benefits</b>																							
Municipal Usage Qty (M m <sup>3</sup> )			0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0
Unit Benefits of Municipal Water (JD/m <sup>3</sup> )			0.735	0.735	0.735	0.735	1.735	0.735	0.735	0.735	0.735	0.735	1.735	0.735	0.735	0.735	0.735	0.735	1.735	0.735	0.735	0.735	1.735
Municipal Benefits (M JD)			0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0	1.0
Industrial Usage Qty (M m <sup>3</sup> )			0.0	0.0	1.0	1.1	0.0	24.0	24.3	24.6	24.9	25.1	25.5	25.5	25.5	25.5	25.5	25.47875	25.47875	25.47875	25.47875	25.47875	25.47875
Unit Benefits of Industrial Water (JD/m <sup>3</sup> )			2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740
Industrial Benefits (M JD)			0.0	0.0	1.0	1.1	0.0	65.7	66.5	67.3	68.2	69.1	69.8	69.8	69.8	69.8	69.8	69.8	69.8	69.8	69.8	69.8	69.8
Irrigation Usage Qty (M m <sup>3</sup> )			0.0	0.0	1.0	1.1	0.0	19.6	19.9	20.1	21.4	21.4	20.8	20.8	20.8	20.8	21.3	21.3	20.8	20.8	20.8	20.8	21.3
Unit Benefits of Irrigation Water (JD/m <sup>3</sup> )			0.281	1.283	0.283	0.283	0.283	0.283	0.283	1.283	0.283	0.283	0.283	0.283	1.281	1.283	0.283	0.283	0.283	0.283	1.281	1.283	0.283
Irrigation Benefits (M JD)			0.0	0.0	1.0	1.1	0.0	5.6	5.6	5.7	5.8	5.8	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Total Benefits (M JD)			0.0	0.0	1.0	1.1	0.0	71.3	72.1	73.0	73.9	74.8	75.7	75.7	75.7	75.7	75.7	75.7	75.7	75.7	75.7	75.7	75.7
Net Cash Flow (M JD)			0.0	-15.0	-25.0	-18.1	-9.2	62.4	63.3	64.2	65.1	66.1	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9
Discounting (DR=10%)			1.11909	0.82845	0.75131	0.68301	0.62852	1.59447	1.51516	0.46651	0.42410	0.50554	0.35849	1.31165	1.28966	0.28333	0.25939	0.21781	0.19784	1.17586	1.16351	0.14664	0.13513
Total Qty Delivered (M m <sup>3</sup> )			0.0	0.0	1.0	1.1	0.0	43.6	44.1	44.7	45.2	45.1	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3	46.3
<b>NPV</b>																							
NPV (M JD)	47%	334.5	0.0	-12.4	-18.8	-12.3	-5.7	35.2	32.5	29.9	27.6	25.4	23.4	21.3	19.4	17.6	16.0	14.4	13.2	12.0	10.9	9.9	9.0
PV of Total Costs (M JD)		59.5	0.1	12.4	18.8	12.3	5.7	5.0	4.5	4.1	3.8	3.4	3.1	2.8	2.4	2.3	2.1	1.9	1.8	1.6	1.4	1.3	1.2
PV of Total Qty Delivered (M m <sup>3</sup> )		259.4	0.1	0.0	0.0	0.0	0.0	24.6	22.7	20.8	19.2	17.7	16.2	14.8	13.4	12.2	11.1	10.1	9.2	8.3	7.6	6.9	6.3
Unit Water Price (Fiskal)		384																					

# Al Wabds Dam Water Supply Project/Trid

## Hydraulic Analysis (M m³/yr)

Item	Allocation	Water Qty	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Water Produced		25	1	0	1	0	0	0	0	1	0	0	25	25	25	25	25	25	25	25	25	25	25
Evap		0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Municipal Water	0.90	22.5	0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Physical Losses (%)			0.24	0.23	0.22	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Physical Losses			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Administrative/Managerial Losses (%)			0.11	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Quantity Delivered			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1
Quantity Whse Bills are Collected			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8
Industrial Water	0.10	2.5	0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Physical Losses (%)			0.24	0.23	0.22	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Physical Losses			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Administrative/Managerial Losses (%)			0.21	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Quantity Delivered			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Quantity Whse Bills are Collected			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Irrigation Water	0.00	0.0	0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Physical Losses (%)			0.24	0.23	0.22	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Physical Losses			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Administrative/Managerial Losses (%)			0.11	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Delivered			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Quantity Whse Bills are Collected			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

## Financial Analysis (M JD at 2000 Prices)

Item	Percent	Amount	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Costs</b>																							
Local Costs			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Foreign Costs			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Day & Taxes			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Total Capital Costs		27.0	0.0	1.0	0.0	1.1	0.0	0.1	0.0	5.0	18.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cumulative Costs			0.0	1.0	0.0	1.1	0.0	0.1	0.0	5.0	15.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
O & M Costs			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	0.0	0.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Total Costs			0.0	1.0	0.0	1.1	0.0	0.1	0.0	5.0	18.0	12.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
<b>Revenues</b>																							
Municipal Usage Qty (M m³)			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8
Municipal Tariff (JD/m³)			0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294
Municipal Revenue (M JD)			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Industrial Usage Qty (M m³)			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Industrial Tariff (JD/m³)			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Industrial Revenues (M JD)			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Irrigation Usage Qty (M m³)			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation Tariff (JD/m³)			0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Irrigation Revenue (M JD)			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Revenues (M JD)			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Net Cash Flow (M JD)			0.0	1.0	0.0	1.1	0.0	0.1	0.0	-5.0	-18.0	-12.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Discounting (DR=6.5%)			0.91877	0.88166	0.84785	0.77732	0.72062	0.61513	0.64351	0.68423	0.56735	0.53273	0.50121	0.46968	0.44102	0.41410	0.38883	0.36511	0.34281	0.32189	0.30224	0.28380	0.26643
Total Qty Whse Bills are Collected (M m³)			0.0	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8
<b>FINR</b>																							
NPV (M JD)	9%	4.6	0.0	1.0	0.0	1.1	0.0	0.1	0.0	-3.0	-5.7	-4.4	1.5	1.4	1.3	1.2	1.1	1.1	1.0	0.9	0.9	0.8	0.8
PV of Total Costs (M JD)		44.3	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	5.7	6.4	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2
PV of Total Bills Collected Qty (M m³)		134.8	1.0	0.0	1.1	0.0	0.1	0.0	0.0	1.0	0.0	0.0	10.0	9.4	9.3	8.5	7.8	7.3	6.9	6.4	6.0	5.7	5.3
Unit Water Price (P/m³)		331																					

Economic Analysis (M JD at 2000 Prices)		Item	Percent	Amount	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Costs</b>																									
Land Costs					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Costs					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Duty & Taxes					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Capital Costs		27.8			0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	10.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Operative Costs					0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	15.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
O & M Costs					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Total Costs					0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	10.0	12.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
<b>Benefits</b>																									
Municipal Usage Qty (M m <sup>3</sup> )					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1
Unit Benefits of Municipal Water (JD/m <sup>3</sup> )					0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735
Municipal Benefits (M JD)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1
Industrial Usage Qty (M m <sup>3</sup> )					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1	2.1	2.1	2.1	2.125	2.125	2.125	2.125	2.125	2.125
Unit Benefits of Industrial Water (JD/m <sup>3</sup> )					2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740
Industrial Benefits (M JD)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Irrigation Usage Qty (M m <sup>3</sup> )					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unit Benefits of Irrigation Water (JD/m <sup>3</sup> )					0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283
Irrigation Benefits (M JD)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Benefits (M JD)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9
Net Cash Flow (M JD)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	-5.0	-10.0	-12.0	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
Discounting (DR=10%)					0.90909	0.82645	0.75131	0.68181	0.62092	0.56447	0.51216	0.46451	0.42410	0.38954	0.35949	0.33363	0.31166	0.29299	0.27693	0.26304	0.25084	0.23996	0.23011	0.22124	0.21331
Total Qty Delivered (M m <sup>3</sup> )					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3
<b>IRR</b>		42%																							
NPV (M JD)		44.3			0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.3	-4.2	-4.6	5.4	4.9	4.5	4.1	3.7	5.4	3.1	2.8	2.5	2.5	2.1
PV of Total Costs (M JD)		26.7			0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	4.2	4.6	1.5	1.4	1.3	1.1	1.0	0.8	0.9	0.8	0.7	0.6	0.6
PV of Total Qty Delivered (M m <sup>3</sup> )		75.7			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	6.8	6.2	5.6	5.1	4.8	4.2	3.8	3.5	3.2	2.9
Unit Water Price (FJD/m <sup>3</sup> )		353																							