ANNEXES TO SECTION 3

Appendix 3.1

Characteristics of irrigation-drainage network, close drains parameters (direction 02.02)

No	Project code	Irrigated area, ha	Construction peculiarities		Close drainage main parameters					
			irrigation network	drainage network	specific extent, m/ha	depth, m	drain spacing, m	drainage modulus, l/sec/ha	drainage outflow, m^3/ha per year	drainage effluent salinity, g/l
1	02.7 Uz	97	Concrete flumes. efficiency- 0.96-0.98	Close drains and open collectors. Tile tubes d=200 mm, plastic tubes with gravel-sand filling	40.0	2.5-3.0	200-250	0.16-0.21	5640	2.0-8.0
2	02.23' Uz	9.0	Concrete flumes efficiency 0.92-0.45	Close drains, length 500-1300 m. Asbestos-cement tubes, d=144 mm with gravel-pebble filling	40.0	2.7 - 3.0	280.0	0.2 - 0.3	6000	5 - 12
3	02.23 Uz	6.12	see project 02.23' Uz	see project 02.23' Uz	40.0	2.7- 3.0	280	0.2 - 0.3 ; 0.5 (leaching)	6000	5 - 12
4	02.1. Tad.	20	Open earthen canals	Close drains made of asbestos-cement tubes with gravel-sand filling	50.0	2.2 - 2.4	120	1.5		3 - 5
5	02.2 Kyr.	1248.0	Concrete canals to each sprinkler machine EDFM "Kuban"	Close draines made of ceramic tubes d=250-300 mm with gravel-sand filling. Collectors made of ceramic and concrete tubes, d=200-300 mm and 400-800 mm	20.0	3.5 - 4.5	400 - 420	0.015-0.11	210 - 2340	1.8 - 8.9
6	02.3 Kyr.	17.6	Concrete flumes to sprinkler machines DDN-70 and DDA-100M	Close drains made of ceramic tubes d=150-350 mm with gravel-sand filling (screen)	60	3.5	177	0.01-0.113	1415-1710	7-22.0
7	02.35 Uz	60; 150; 200	Flumes (ЛР-60, ЛР-80) efficiency- 0.92-0.96	Close drains and collectors. Polyethilene tubes d=100-150 mm length 6-8 m, asbestos-cement tubes	42-105	2.5-3.5	100-250	0.12-0.17	1.5-2.7	8.6-39.2

No	Project code	Irrigated area, ha	Construction peculiarities		Close drainage main parameters					
			irrigation network	drainage network	specific extent, m/ha	depth, m	drain spacing, m	drainage modulus, l/sec/ha	drainage outflow, m^3/ha per year	drainage effluent salinity, g/l
				d=100-150 mm length 3-4 m, ceramic tubes d=100-200 mm length 0.33-0.6=1.0 m and tile tubes						
8	02.12 Uz	70; 40	Flumes, efficiency 0.92-0.96	Close drains over 40 ha, vertical drainage over 70 ha. Drains: tile, ceramic with sand-gravel screens	-	2.8	-	0.038	1200	11.0
9	02.27 Uz	11912	Inter-farm canals are lined. Distributors - flumes, efficiency0.92-0.96	see project 02.35 Uz	75	2.5-4.0	135.0	0.04-0.094	1260-2970	8-15
10	02.14 Uz	8218	On-farm distributors - lined canals; field distributors - concrete flumes with parabolic cross-section ЛР-60, ЛР-80, ЛР-100	Close collectors - 10.4 % extent; tile tubes, length 55 cm and plastic perforated tubes d=65/75 mm, screen - sand-gravel mix	112.8	2.5	90.0	0.19-0.2	5600	10.9-27.9
11	02.2 Kyr	70	Earthen canals	Close drains, asbestos-cement tubes with sand-crashed stone screen	40-45.0	2.5-3.0	100.0 200.0 300.0	0.06-0.1	3150	6.0-11.6
12	02.6 Kaz.	180	Group distributors and field distributors in earthen channel	Close drains, asbestos-cement tubes d=200 mm with gravel filling	20-100	1.6	100-600	0.2-0.6	2100-7300	2.2-3.2
13	02.4 Tad.	400	no data	PVC tubes, ceramic 150 and d=200-300 mm with sand-gravel screen	37.8	3.5-4.0	105-155	0.01-0.05	976-1165	29-66
14	02.6 Tad.	70	no data	PVC tubes, screen: sand-gravel	84.0	1.8-3.5	170-340	0.03-0.23	13800-15200	-
15	02.5 Tad.	40	Flume network, efficiency- 0.84	Ceramic, asbestos-cement tubes, screen: sand-gravel	67.2	1.6-3.5	60-140	0.13-0.34	4100-10720	1.48-4.3
16	02.7 Tad.	26000	Magistral and distributive earthen	Close drains	no data	no data	no data	0.09-0.145	2840-4570	10.5-12.4

No	Project code	Irrigated area, ha	Construction peculiarities		Close drainage main parameters					
			irrigation network	drainage network	specific extent, m/ha	depth, m	drain spacing, m	drainage modulus, l/sec/ha	drainage outflow, m^3/ha per year	drainage effluent salinity, g/l
			canals, efficiency- 0.83. on-farm network - flumes							
17	02.28 ‘ Uz.	145000	On-farm network - concrete flumes (efficiency0.96-0.98), inter-farm network - concrete on polyethilene film (efficiency0.96-0.97)	Vertical drainage, horizontal and combined drainage; tile tubes with gravel-sand filling	12.57	3.0-3.5	200-250	0.04-0.15	1280-4800	2.2-20
18	02.25 Uz	250	85 % flumes (JIP-100), rest of area - earthen canals	Plastic corrugated tubes with sand-gravel screen		2.2-2.5	80-150-300-400	0.05-0.08	1620-2440	4-50
19	02.1 Tur	49.5	Earthen canals	Close drains without slope and flooded mouth; polyethilene tubes	28.0	2.55-3.06	500	0.05-0.20	4500	1.5-3.0
20	02.2 Tur	2000	Earthen canals	Vacuum drainage system; spacing 500-800 m, depth 2-2.7 m, vertical drain depth 6 m, polyethylene tubes		2.0-2.2	500-800	0.04-0.6	5040	3.0-9.2
21	02.20 Uz.	303.0	Earthen canals	Asbestos-cement, sandy-concrete and ceramic tubes; screen: sand-crashed stone mix	30.0	1.5-3.0	150-300	0.476	1500	3.2-4.6
22	02.29 Uz.	129.6	Flumes, efficiency– 0.86	Plastic corrugated tubes; screen - textile and sand filling	74.4	1.80	100.0	0.12-0.16	3700-5000	3.1-4.1
23	02.1 Uz.	214	Earthen canals and flumes, efficiency– 0.86	Plastic corrugated tubes d=125-200 mm; tile, concrete tubes with sand-gravel screen	70.0	1.3-1.6	40-80	0.01-0.20	1838	1.14-12
24	02.8 Uz.	160	Earthen canals	Asbestos-cement tubes	23.0	2.1-2.7	400	0.12-0.18	2650	12-34

No	Project code	Irrigated area, ha	Construction peculiarities		Close drainage main parameters					
			irrigation network	drainage network	specific extent, m/ha	depth, m	drain spacing, m	drainage modulus, l/sec/ha	drainage outflow, m^3/ha per year	drainage effluent salinity, g/l
				d=300 mm with gravel-sand filling; corrugated tube with sand-gravel filling						
25	02.26 Uz.	145	rice system, earthen canals	Area 33.91 ha; asbestos-cement tubes d=150 mm; tile tube d=150-200-300 mm	36.0	2.0	200-230	0.53-0.84	16710-26400	1.5-4.6
26	02.2' Uz.	500 000	Earthen canals, efficiency: inter-farm and magistral canals - 0.85-0.92 on-farm - 0.65; system - 0.56	Open collectors; depth: inter-farm - 2.5-3.5 m; on-farm - 1.8-2.0 m	30-32	1.8-3.6	-	-	2068-6670	1.9-4.3
27	02.16 Uz	45	Rice irrigation system, earthen canals	Open drains, outfalls depth 1.5 m; collector depth 1,8 m; on-farm collectors 2.5-3.1 m	44-47	1.8-2.5	-	0.29-0.55	9400-17300	9.5-11.9

Appendix 3.2

Vertical drainage pilot plots characteristics

Index	Irriga-ted area, ha	Irrigation network					Collector-drainage network					
		canal's channel	specific length, m/ha	network efficiency	on-farm system efficiency	system efficiency	specific length, m/ha	drain depth, m	distance between drains, m	drainage modulus, l/sec/ha	horiz. drainage outflow, m^3/ha/year	Drainage effluent salinity, g/l

Syrdarya upper reaches

Index	Irriga-ted area, ha	Irrigation network					Collector-drainage network					
		canal's channel	specific length, m/ha	network efficiency	on-farm system efficiency	system efficiency	specific length, m/ha	drain depth, m	distance between drains, m	drainage modulus, l/sec/ha	horiz. drainage outflow, m^3/ha/year	Drainage effluent salinity, g/l
					Objects of Uzbekistan							
02.17. Uz.	26650	earthen and concrete	-	-	-	-	19.6	2.5-4.0	-	-	-	-
02.24. Uz.	678	earthen	21	-	0.9-0.95	0.65-0.70	40.5	1.5-3.5	-	0.14	4415	-
02.33. Uz.	565	earthen	-	-	-	0.65-0.70	20.3	2.5-3.0	200-250	0.159	1860	1.8-3.0
					Objects of Kyrgyzstan							
02.1. Kyrg.	65.3	concrete tubes	-	-	0.96-0.98	-	12.5	3.5	-	0.028	883	9.1-11.7
02.2. Kyrg.					Field investigation have not been conducted							
					Syrdarya middle reaches							
					Objects of Uzbekistan							
02.4. Uz.	551.9	concrete	-	-	0.96	0.96	-	-	-	0.057	1800	-
02.18. Uz.	50	concrete	-	-	-	0.96	-	-	-	0.04	1100	-
02.19. Uz.	3000	earthen	-	-	-	0.65-0.75	12-20	1.8-2.2	-	0.03	950	2.65

Index	Irriga-ted area, ha	Irrigation network					Collector-drainage network					
		canal's channel	specific length, m/ha	network efficiency	on-farm system efficiency	system efficiency	specific length, m/ha	drain depth, m	distance between drains, m	drainage modulus, l/sec/ha	horiz. drainage outflow, m^3/ha/year	Drainage effluent salinity, g/l
02.27. Uz.	117100	earthen	-	-	-	0.6-0.65	12-14	1.8-2.2	-	0.03-0.05	950-1576	3-4
02.30. Uz.	403520	earthen and concrete	-	0.95	0.73	0.65-0.70	21.4-107	2-3	-	0.095	2990	-
02.36. Uz.	850000	earthren and concrete	-	-	-	0.6-0.8	8-20	1.5-2-3	-	0.03-0.1	950-3154	0.7-20
02.37. Uz.	3000	earthen	-	-	-	0.65-0.75	25-45	1.5-3.5	-	0.03-0.035	980-1090	0.7-15
Objects of Uzbekistan in Kazakhstan												
02.11. Uz.	59661	earthen and concrete	-	0.90	0.75-0.80	0.65-0.70	8-15	2-2.5	-	0.03-0.05	1100-1500	0.7-15
02.12. Uz.	157000	earthen and concrete	-	-	-	0.65-0.70	8-15	1.5-2.5	-	0.03-0.05	1100-1500	0.6-15
02.13. Uz.	5700	earthen and concrete	-	-	-	0.65-0.75	8-20	1.5-3.0	-	0.04-0.05	1150-1500	0.7-20
02.14. Uz.	52400	earthen and concrete	16.6	-	-	0.77	9-10	2.5-3.0	-	0.05-0.095	1560-3000	-

Index	Irriga-ted area, ha	Irrigation network					Collector-drainage network					
		canal's channel	specific length, m/ha	network efficiency	on-farm system efficiency	system efficiency	specific length, m/ha	drain depth, m	distance between drains, m	drainage modulus, l/sec/ha	horiz. drainage outflow, m^3/ha/year	Drainage effluent salinity, g/l
02.7. Uz.	13500	earthen and concrete	-	-	0.94	0.7-0.75	12-14	2.5-3.0	-	0.03-0.05	1100-1500	0.7-15
02.9. Uz.	117000	earthen	-	0.8-0.9	-	0.65-0.75	15-18	2.5-3.0	-	0.08-0.108	2700-3400	-
					Objects of Kazakhstan							
02.1.Kaz.	12000	field investigation have not been conducted.	16.6	-	-	0.75	-	-	-	0.061	1920	-
02.2. Kaz.	500	field investigation have not been conducted.	-	-	-	0.75	-	-	-	0.07	2240	-
					Syrdarya low reaches							
					Objects of Uzbekistan							
02.8. Uz.	77700	earthen	-	0.92	-	0.6-0.65	27.5	2.5-3.5	-	-	-	-

Index	Irriga-ted area, ha	Irrigation network					Collector-drainage network					
		canal's channel	specific length, m/ha	network efficiency	on-farm system efficiency	system efficiency	specific length, m/ha	drain depth, m	distance between drains, m	drainage modulus, l/sec/ha	horiz. drainage outflow, m^3/ha/year	Drainage effluent salinity, g/l
02.10. Uz.	1327	concrete	24	0.90	0.90	0.65-0.75	15-20	-	-	0.012-0.035	390-1090	-
					Objects of Kazakhstan							
02.3. Kaz.	488	earthen	25-30	-	-	0.65-0.75	15-25	-	-	0.078-0.290	2490-9160	-
					Amudarya basin Upper reaches Objects of Tadjikistan							
02.1.Tad.	400	earthen	20	-	-	0.65-0.7	22	1.5-2.0	200-600	0.05-0.12	2840-3784	-
					Amudarya middle reaches							
					Objects of Uzbekistan							
02.31. Uz.	51900	earthen	-	-	-	0.65-0.7	8.46	1.5-2.5	-	0.017	550	-
02.40. Uz.	21500	earthen and concrete	-	0.9	0.75	0.65-0.7	32	2.4	-	0.04	1260	-
02.41. Uz.	937000	regional objects										
02.42. Uz.	666080	regional objects										

Appendix 3.3

Constructive parameters and technical characteristics of vertical wells

Code, index	Number of wells	Well depth, m	Captured layer thickness, m	Filter type	Filter depth, m	Aquifer deposits	Well com-mand area, ha	Well discharge, l/sec/m	Well specific yield, l/sec/m	Drainage modulus, l/sec/ha	Drainage outflow, m^3/ha per year	Abstracted water salinity, g/l
					SyrDarya upper reaches							
					Objects of Uzbekistan							
02.17. Uz.	230	30-70	-	-	12-25	-	115	20-60	1.7-5	0.13-0.24	4100-7670	0.5-1.0 seldom 2.5
02.24. Uz.	7	23-61	15-26	gravel-sand	7-18	gravel-pebble	90-100	60-70	5-7.5	0.14	4415-7884	0.45-1.6
02.33. Uz.	5	32-48	15-26	gravel-sand	11.8-25	pebble-gravel-sand	113	10-40	3-8	0.12-0.18	4730	0.6-1.5
					Objects of Kyrgyzstan							
02.1. Kyr.	2	105	16-55	-	-	-	30	30	-	0.007-0.013	210-416	0.26-0.37
02.2. Kyr.	Field investigations have not been conducted											
					SyrDarya middle reaches							

Code, index	Number of wells	Well depth, m	Captured layer thickness, m	Filter type	Filter depth, m	Aquifer deposits	Well com-mand area, ha	Well discharge, l/sec/m	Well specific yield, l/sec/m	Drainage modulus, l/sec/ha	Drainage outflow, m^3/ha per year	Abstracted water salinity, g/l
Objects of Uzbekistan												
02.4. Uz.	8	60-100	40-50	gravel-sand	-	fine-grained sand	68	20-50	-	0.19-0.253	6248-8004	4.0-18.0
02.18. Uz.	12	60-70	-	perforated with gravel screen	-	gravel-pebble	250	75-85	8-12	0.04-0.08	1100-2500	0.67-1.0
02.19.Uz.	28	65-80	50-100	slotted with gravel screen	25-40	gravel, sand	110	100-200	10-15	0.1-0.18	3800-5700	1.3-1.9
02.27. Uz.	Shuruzyak 212, Bayaut 101	50-80	50-100 10-50	slotted with gravel screen	10-40	gravel, sand, pebble	320 500	30-100 25-50	7-15 6-11	0.19 0.11	5990 3470	0.3-4.0
02.30. Uz.	599	35-80	10-100	slotted or perforated	10-40	gravel, sand, pebble	220-500	25-100	6-15	0.095-0.16	3000-5000	0.3-6.0
02.36. Uz.	1100	40-100	10-100	slotted or perforated	10-40	gravel-pebble	288	12-100	6-15	0.11-0.3	3470-9460	0.3-6.0
02.37. Uz.	28	65-80	50-100	slotted or perforated	20-35	gravel-pebble	107	100-150	8-15	0.1-0.17	3400-5435	1.5-2.5
Objects of Uzbekistan in Kazakhstan												
02.11. Uz.	280	50-70	15-50	slotted or perforated	20-36	gravel-pebble	213	38	1-10	0.05-0.082	1600-2600	0.1-4.0

Code, index	Number of wells	Well depth, m	Captured layer thickness, m	Filter type	Filter depth, m	Aquifer deposits	Well com-mand area, ha	Well discharge, l/sec/m	Well specific yield, l/sec/m	Drainage modulus, l/sec/ha	Drainage outflow, m^3/ha per year	Abstracted water salinity, g/l
02.12. Uz.	1794	15-50	15-50	slotted or perforated	20-36	gravel-pebble	90-100	30-50	5-8	0.15-0.28	4730-8830	0.5-4.5
02.13. Uz.	18	55-75	-	slotted or perforated	26	fine-grained sand	297	60-75	4.2	0.085-0.21	2700-6500	1.0-3-6.0
02.14. Uz.	504	30-45	54	-	-	-	104	35-40	-	0.04-0.13	1360-4010	1.5-2.0
02.7. Uz.	78	55-75	15-50	slotted with gravel screen	15-30	gravel-sand	166	50-75	4-6	0.11-0.16	3500-5000	4-4.5
02.9. Uz.	Djetysay 285, Kirov 273	55-75	-	slotted with gravel screen	25-26	gravel-sand	190-220	50-75	4-6	0.04-0.19	1400-6000	4-5
					Objects of Kazakhstan							
02.1. Kaz.	60	25-30	10-30	gravel-sand	15-18	gravel-pebble	200	20-45	2-4	0.050-0.061	1420-1920	0.5-1.5
02.2. Kaz.	5	25-30	25-30	gravel-sand	15-18	gravel, pebble, clay	100	45-59	3-4	0.07-0.085	2240-2680	0.5-0.6
					SyrDarya low reaches							
					Objects of Uzbekistan							

Code, index	Number of wells	Well depth, m	Captured layer thickness, m	Filter type	Filter depth, m	Aquifer deposits	Well com-mand area, ha	Well discharge, l/sec/m	Well specific yield, l/sec/m	Drainage modulus, l/sec/ha	Drainage outflow, m^3/ha per year	Abstracted water salinity, g/l
02.8. Uz.	208	37-55	12-53	gravel-sand	10-27	fine and medium-grained sand	210-370	35-50	3-5	0.06-0.24	1800-7500	1-3.5
02.10. Uz.	8	40-59	29-72	slotted with gravel screen	15-20	medium-grained sand	215	35-45	1.8-5.6	0.07-0.20	2090-3410	0.94-1.4
					Objects of Kazakhstan							
02.3. Kaz.	6	50	30-60	slotted	20	fine-grained sand	80	40-60	3-5	0.371-0.315	11710-9930	0.8-1.5
					AmuDarya upper reaches							
					Objects of Tadjikistan							
02.1. Tad.	3	51	up to 100	-	-	gravel	130	36-68	-	0.28-0.52	8895-16405	4.8-10.4
					AmuDarya middle reaches							
					Objects of Uzbekistan							
02.31. Uz.	232	25-45	1.8-45	perforated with gravel screen	8-10	gravel-pebble	225	5-120	3.1-13	0.019-0.15	600-4800	1.5-3.0
02.40. Uz.	127	20-25	3-30	slotted	8-10	gravel-pebble	170	20-35-45	3.5-10	0.04-0.072	1200-2300	1.3-3.5
02.41. Uz.					Regional objects – Golodnaya steppe, Fergana valley, Bukhara province							

Code, index	Number of wells	Well depth, m	Captured layer thickness, m	Filter type	Filter depth, m	Aquifer deposits	Well com-mand area, ha	Well discharge, l/sec/m	Well specific yield, l/sec/m	Drainage modulus, l/sec/ha	Drainage outflow, m^3/ha per year	Abstracted water salinity, g/l
02.42. Uz.					Regional object – all Golodnaya steppe							