APPENDIX-I

KAKRAPAR IRRIGATION PROJECT

****

I.1 GENERAL

Kakrapar irrigation project is a venture of Government of Gujarat. The Kakrapar weir is situated across the river Tapi near Kakrapar village of Surat district. It is situated between rivers Kim and Par. The command area lies geographically between 20^0 31' to 21^0 29' N latitudes and 72^0 34' to 73^0 20' E longitudes. The command area falling under talukas Choryasi, Olpad, Kamrej, Palsana, Mangrol, Mandvi, Bardoli, Mahuva and Navsari, Gandevi, Chikhli, Valsad talukas of Navsari, Surat and Valsad districts respectively.

The Kakrapar weir with F. R. L. 160.00 m. and main canal offtaking on right bank and left bank with its F. S. L. at 153.08 m. at C. B. L. 143.58 m. and F. S. L. 149.8 m. at C. B. L. 139.8 m. respectively, provide irrigation waters through 3,033 km long canal network in the entire command.

I.2 GEOLOGY OF THE AREA

The geology of the command area is discussed in enclosed CD.

The command area of Navsari Branch canal is mainly underlain by the Deccan trap, suite of rock, under thin cover of alluvium.

I.3 DRAINAGE

The geology of the command area is discussed in enclosed CD.

The command area is situated as at an elevation of 3 to 30 meters from the sea-level, drains out the excess water at an average slope gradient of 1:175. Generally the area, sloping down from Navsari Branch canal in East to Arabian sea in West plains to nearly leveled lands towards sea-coast do not provide satisfactory surface drainage to the excess water applied.

I.4 CLIMATE

The geology of the command area is discussed in enclosed CD.

The command area of Navsari Branch command lies between the Isohyets of 1200 to 2000 mm the climate thus can be considered to be sub humid. The rainfall in the command is generally restricted to the monsoon season, beginning from the middle of June to the end of September with some post monsoon precipitation. The monsoon season is followed by winter season which starts from November to the middle of March. The summer commences from the middle of March and ends by about middle of June.

I.5 LAND USE AND AGRICULTURE PRACTICE FOR NAVSARI BRANCH CANAL

Table –I.1: Table Showing the Classification of Navsari Branch Canal Command Area

Description	Area,ha
Gross Command Area	34,343
Residential Area	880
Balance Gross Command Area (B.G.C.A.)	24,743
Culturable Area to B.G.C.A.	18,131
Unculturable Area to B.G.C.A.	6,612
Culturable Waste Area to B.G.C.A.	1,537
Net Cropped Area to B.G.C.A.	16,595
Gross Cropped Area to B.G.C.A.	18,691
Net Cropped Area to C.A.	16,595
Double Cropped Area to C.A.	2,096

I.6 SURVEY AND INVESTIGATION

On the basis of soil investigation in the command area under report, it is found that the most of the soils of the area are very deep having soil depth is more than 90 cm.

The colour of surface soil varies from dark brown (10 YR 3/3) to yellowish brown (10 YR 4/6) , whereas subsurface horizons have soil colour ranging generally from dark yellowish brown (10 YR ¾) to yellowish brown (10 YR 5/6).

The most of area is having texture like clay, silty clay & sandy clay under the command.

Most of the area (97.1%) is covered under high available water holding capacity (more than 12 cm). The remaining area shows available water holding capacity between 6 to 12 cm.

The water intake rate is found to be ranged from 0.18 to 0.94 cm/h. Average water intake rate is 0.56 cm/h.

I.7 DETAILS OF WELLS IN NAVSARI BRANCH CANAL COMMAND

Table –I.2: Statement Showing the S.W.L and Quality of Well Waters of Navsari Branch Canal Command under Kakrapar Irrigation Project (Zone – IV) of Pre-Monsoon 1999

Sr. no.	Village	Well no.	S.W.L. m	EC 1:2 Soil water ratio mhos/cm
1	Shekhpur	1	10.10	858
2	Andhatri	1A	3.50	1,248
3	Andhatri	1B	6.50	1,638
4	Mudat	2	9.00	1,716
5	Nihali	3	10.30	1,248
6	Kodada	4	9.90	1,248
7	Miyapur	6	3.60	577
8	Kuret	10	7.30	1,794
9	Nihali	12A	6.60	2,028
10	Dholikui	13	3.00	4,680
11	Kodada	15B	4.00	1,092
12	Karchelia	18	2.60	780
13	Dandeshwar	19	6.90	1,170
14	Khergam	22	9.20	1,404
15	Shahu	24	5.00	1,000
16	Dholikui	26A	3.40	936
17	Fulwadi	27	1.60	1,248
18	Vachharvad	28	3.50	780
19	Karchelia	30A	2.80	718
20	Chovisi	33	6.70	1,638
21	Dharagirti	35	14.95	1,560
22	Bhattai	37	3.40	3,354
23	Vasar	38	5.10	780
24	Ambada	39A	1.30	1,248
25	Ambada	40	2.50	663
26	Ugat	41	8.70	1,872
27	Dedvasan	42	1.30	468
28	Dedvasan	42A	8.00	764
29	Dedvasan	43	4.40	749
30	Bilakhadi	44	1.90	780
31	Bartad	45	3.30	1,170
32	Bartad	46	7.85	1,872

33	Bartad	46B	2.20	780
34	Vachha	53	13.00	1,326
35	Munsad	55	4.00	7,800
36	Munsad	56	3.50	7,800
37	Munsad	57	2.80	1,560
38	Sadlav	58B	5.10	1,716
39	Ugat	60A	1.80	593
40	Gopara	61	9.90	1,014
41	Gopara	62	1.60	780
42	Gopara	62A	1.90	1,325
43	Gadoi	63C	4.40	1,452
44	Sisodara	74	6.90	1,950
45	Sisodara	75	4.35	1,482
46	Sisodara	75B	4.10	1,794
47	Sisodara	75C	5.10	1,872
48	Un	76A	8.90	1,872
49	Sadlav	77	5.80	1,872
50	Satem	80	3.00	1,404
51	Satem	80A	6.40	3,120
52	Satem	81A	2.05	702
53	Nagdhara	82	2.00	1,950
54	Vaheshar	84	2.30	1,014
55	Vagheshar	84B	8.70	780
56	Zervavara	85	4.70	936
57	Italva	92	2.80	1,092
58	Adada	93	4.80	4,758
59	Kachhoi	95	3.30	764
60	Khadsupa	96	3.10	1,404
61	Navatalav	97	2.95	1,482
62	Pardi	98A	3.75	1,794
63	Sarpar	99	8.95	1,092
64	Butlay	101	2.20	4,056
65	Nagdhara	102A	5.40	1,482
66	Nagdhara	103	2.60	1,170
67	Mogar	109A	4.60	1,950
68	Adda	111	17.10	2,028
69	Kachhoi	113	6.90	764
70	Khadsupa	115	2.60	1,248
71	Dstagam	116	2.10	1,326
72	Rajwad	117	1.70	1,248
73	Butlav	118	1.35	858
74	Mahudi	119A	2.70	2,106
75	Puni	120	2.90	601
76	Vedchha	124	7.05	1,326
77	Vedchha	125	7.90	2,496
78	Vedchha	125A	7.45	1,248
79	Danbhar	126	13.10	1,950
80	Danbhar	127C	4.60	1,950
81	Chandravasan	128	1.90	936
82	Vegam	130A	1.90	936
83	Vegam	131A	2.00	1,092
84	Beriyach	132	10.00	1,014
85	Saloj	139	11.25	936
86	Ichchhapar	140	11.30	1,326
87	Pinjara	141	2.50	632
88	Gathai	63B	1.90	936

I.8 ACTUAL AREA OF CROPS GROWN IN THE NAVSARI BRANCH CANAL COMMAND

The actual areas of the crops are given in Table I.3 given below and the irrigation intensities of the different minors of Surat branch canal are worked in Table I.4

The actual areas of the crops are given in Table I.5 given below and the irrigation intensities of the different minors of Bardoli branch canal are worked in Table I.6

The actual areas of the crops are given in Table I.7 given below and the irrigation intensities of the different minors of Chalthan branch canal are worked in Table I.8

The actual areas of the crops are given in Table I.9 given below and the irrigation intensities of the different minors of Umbhrat branch canal upto 58 R.D. are worked in Table I.10

The actual areas of the crops are given in Table I.11 given below and the irrigation intensities of the different minors of Umbhrat branch canal beyond 58 R.D. are worked in Table I.12

The actual areas of the crops are given in Table I.13 given below and the irrigation intensities of the different minors of Navsari branch canal are worked in Table I.14

The actual areas of the crops are given in Table I.15 given below and the irrigation intensities of the different minors of Amalsad branch canal are worked in Table I.16

The actual areas of the crops are given in Table I.17 given below and the irrigation intensities of the different minors of Valsad branch canal are worked in Table I.18

Table I.13: Actual Cropping Pattern for Minors 1 to 7 of Navsari Branch Canal for Year 1999-2000

Kharif of year 1999				
Minor	Area of crops,ha			
	Sugarcane	Mango	Paddy	Grass
Dandeswar	61	5	465	133
Dandi	0	1	86	16
Machhad	14	0	22	64
Onjal	1	3	87	9
Sadlav	40	0	480	100
Vachharvad	118	13	470	109
Veraval	100	15	445	106
Total	334	37	2055	534
Rabi of year 1999-2000				
Minor	**Area of crops,ha**			
	Sugarcane	**Mango**	**Paddy**	**Grass**
Dandeswar	45	3	190	61
Dandi	5	1	20	34
Machhad	27	0	5	65
Onjal	2	2	30	36
Sadlav	40	0	460	135
Vachharvad	195	10	330	55
Veraval	65	8	160	30
Total	379	24	1195	416
Hot weather of year 2000				
Minor	**Area of crops,ha**			
	Sugarcane	**Mango**	**Paddy**	**Grass**
Dandeswar	45	3	190	80
Dandi	4	1	17	13
Machhad	28	-	5	62
Onjal	4	2	40	9
Sadlav	85	-	460	69
Vachharvad	235	11	340	121
Veraval	65	8	160	41
Total	466	25	1212	395

Table I.14: Actual Irrigation Intensity for Navsari Branch Canal for the Year 1999-2000

Minor	Area irrigated			Total area ha	C.C.A. ha	Irrigation intensity %
	Kharif ha	Rabi ha	Hot weather ha			
Dandeswar	664	299	318	1281	465.81	275
Dandi	103	60	35	198	2044	10
Machhad	100	97	95	292	579	50
Onjal	100	70	55	225	1360	17
Sadlav	620	635	614	1869	580.71	322
Vachharvad	710	590	707	2007	847.65	237
Veraval	666	263	274	1203	385.78	312