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Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
13th August 1873.

Read the following papers:—

No. 209. From R. SMITH, Esq., District Engineer, Nellore, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, Fort St. George, dated Nellore, 17th May 1873, No. 28.

4 Appendices.
1 Sketch Map by banghy.

I HAVE the honour to acknowledge the receipt of Captain Smith's letter, No. 338 of 31st December last, requesting me to furnish information regarding the irrigable area that could be brought under wet cultivation by a high level channel from the Nellore Anicut, and the extent of land dependent on the existing river channels that traverse the country commanded by the proposed new channels from Sungum. The details connected with the latter were prepared by the Collector, and will be found in Appendix B; and I trust the other documents that accompany this Report are sufficiently explicit to demonstrate that there are 52,760 acres to be irrigated from the Nellore Anicut before the Madras Irrigation Company have any claim to the flood waters of the Pennair.

2. A channel, with the head six feet below the crest of the anicut and falling at the rate of two inches per mile, would follow the line indicated on the accompanying sketch map, and would, with some few exceptions, irrigate the whole country on the east of it to within a short distance of the sea. To facilitate reference, this area has been coloured yellow on the map alluded to.

3. From Appendix A. it will be seen that 75,003 acres of this tract "can be easily cultivated," that the average area irrigated, during five consecutive years, was 24,634 acres, and that the area under wet and dry cultivation, in the same period, was only 31,451 acres. These figures show that 50,369 acres* are available for the extension of *wet* cultivation, but as the actual area that will be converted into rice land, in each village, cannot be ascertained at present, a considerable deduction has been made from the above for isolated patches, that would be rather costly to irrigate, and for a certain amount of dry cultivation being retained in the delta.

		Rs.
* Total irrigable area	... ...	75,003
Deduct present cultivation	...	24,634
		50,369

4. By referring to Appendix C. it will be observed that I have assumed the increase, in the area of wet cultivation, will be limited to 22,525 acres, or to about 45 per cent. of the irrigable land, and that the total acreage to be classed as "wet" in that part of the delta has been fixed at 60,435 acres. The distribution described would leave 14,568 acres of the irrigable land without the means of irrigation, but it must be remembered that a large proportion of this area would be required for the enlargement and improvement of the principal tanks in those parts to compensate for the loss of the Kanaghery reservoir, which is on too high a level to be supplied by a feeder from the Nellore Anicut.

5. A somewhat less storage capacity would, however, suffice for a scheme of irrigation, from the Nellore Anicut, than was provided for in the Sungum project, as the area under the former (inclusive of the land commanded by the old river channels) is 2,654 acres less than the tract to be watered by the latter.

6. The details of the present and proposed irrigation are given in Appendix D, and it will be gathered from that document that 91,346 acres,* on the northern flank of the Nellore Anicut, are available for wet cultivation and have, therefore, a decided claim to be supplied with water before the Pennair is tapped for the benefit of lands not under the influence of the existing works on that river.

	Acres.
* New cultivation	43,791
Old do.	47,555
	91,346

7. It will be seen from the papers now submitted that the existing river channels and the Nellore Anicut are capable of watering an area closely approximating to that commanded by the projected Sungum works, and that by far the greater proportion of the irrigable area, on the left bank of the Pennair, could be watered as well from the existing as from the proposed sources of supply. This being the case the point from which the supply will be drawn from the Pennair is immaterial to the general public; but, in the interests of Government and the Indian public, the most desirable site should undoubtedly be selected to guard against failure and consequent disappointment. With this object the Sungam scheme was planned, and for no other was the head of the main feeder fixed at Sungum, and, I think, I may safely assert it will not *in any way* interfere with the rights of the Madras Irrigation and Canal Company.

8. With reference to paragraph 7 of the despatch* from the Right Honourable the Secretary of State, I beg to explain that I approved of Mr. Chenchalrow's application for a farm under the Sungam channels as he was willing to take up *waste* land and to pay the ordinary dry assessment on it, while the works were in progress. This would have been an increase of revenue at the outset, which I thought very desirable, and on the completion of the channels to his holding the full water-rate, in addition to the dry assessment referred to, would be chargeable on the whole area, according to the terms of the agreement he was prepared to enter into.

* Dated 31st July 1872.

9. No provision, it is true, was made in the estimate to cover the interest on capital during the construction of the works; but, on the other hand, no credit was taken for the returns that will be realized during that period, and, in reviewing the estimates, I trust the circumstance of my having allowed for the requisite establishment to superintend the works will not be overlooked, and particularly so as the Madras Government* seem doubtful of the necessity of entertaining a district staff for this special work.

* *Vide* paragraph 6 of G. O., No. 1,818, dated 28th July 1870.

10. The expenditure incurred on the preliminary investigation and preparation of the Sungam scheme, under all heads, was Rupees 46,698.

11. The enclosures that accompanied Captain Smith's letter are herewith returned.*

* By banghy.

Enclosures 61.

1 copy of Despatch from Secretary of State.
1 G. O., No. 1,511-1872.
1 Letter to Government of India, No. 819-1871.
1 G. O., No. 818-1871.
1 ,, ,, 1,818-1870.
1 ,, ,, 260-1870.
55 Tracings.

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APPENDIX A.

Statement showing the irrigable area, the average area under wet cultivation for five consecutive years, and the additional area available for wet cultivation in the tract of country coloured yellow on the accompanying Sketch Map.

No.	Names and Villages.	Extent of land that can be cultivated by the proposed channel.		Extent under River Channel and Tanks in the life of the proposed channel.		Rejected Tanks.		Amount of revenue raised by cultivation on dry and wet lands, on pasturage and jungle, on average for the last five years.	Extent in acres of dry and wet lands now under cultivation.		Remarks.
		Number of acres that can be easily cultivated.	Number of acres of jungle tract which can be cultivated at the expense of labour.	Extent of irrigable area.	Number of acres under cultivation on average for five years.	Number.	Extent.		Total amount of acres.		
								Rs.			
1	Thalamanchi... ...	4,426	932	1,314	841	.....	.....	2,780	5,358	1,136	This statement is an extract of the return of cultivation, etc., furnished by the Collector when the project was under preparation.
2	Alluru	17,169	.....	9,673	5,289	.....	.....	21,734	17,169	6,903	
3	Beerangunta ...	481	.....	219	217	.....	.....	893	481	233	
4	Damegunta	637	.....	409	305	.....	.....	981	637	421	
5	Chavukacherla ...	1,452	... ...	1,053	793	.....	.....	3,480	1,452	983	
6	Venkannapalem ...	331	.....	319	122	.....	.....	628	331	207	
7	Basavapalem ...	567	.....	471	267	.....	.....	1,409	567	253	
8	Gundalamapalem ...	505	.....	441	294	.....	.....	1,389	505	352	
9	Kodavaluru	1,396	.....	1,095	641	.....	.....	2,870	1,396	916	
10	Parlapally	1,782	.....	1,229	690	1	362	2,802	1,782	995	
11	Viddavaluru	3,401	.....	2,405	1,568	.....	.....	7,988	3,401	2,162	
12	Allurupad	267	.....	242	149	1	23	597	267	155	
13	Maneeguntapadu ...	490	.....	469	248	.....	.....	1,444	490	268	
14	Modigunta	540	.....	534	391	.....	.....	1,994	540	491	
15	Viguru	3,950	.....	2,383	1,648	.....	.....	8,985	3,950	2,068	
16	Ramanapalem ...	635	.....	513	249	.....	.....	1,057	635	297	
17	Reddipalem	293	.....	233	133	.....	.....	659	293	139	
18	Legantapad	896	.....	649	444	.....	.....	2,532	896	545	
19	Inamadugu	1,149	.....	810	630	.....	.....	3,317	1,149	718	
20	Isukapilly	2,919	.....	757	785	.....	.....	2,499	2,919	846	
21	Gogulapally	4,817	.....	759	559	.....	.....	2,442	4,817	762	
22	Indupuru	990	.....	722	596	.....	.....	3,755	990	702	
23	Purui	2,214	.....	1,562	982	.....	.....	4,272	2,214	1,342	
24	Pannapudi	1,376	.....	190	131	.....	.....	542	1,376	164	
25	Mamidiguntа ...	516	.....	174	179	.....	.....	585	516	289	

Statement showing the irrigable area, the average area under wet cultivation for five consecutive years, etc.—(Concluded.)

No.	Names and Villages.	Extent of land that can be cultivated by the proposed channel.		Extent under River Channel and Tanks in the line of the proposed channel.		Rejected Tanks.		Remarks.
		Number of acres that can be easily cultivated.	Number of acres of jungle tract which can be cultivated at the expense of labour.	Extent of irrigable area.	Number of acres under cultivation on average for five years.	Number.	Extent.	
26	Varni ...	5,329	.....	1,654	1,134	.....	.....	
27	Thaudigunta ...	831	.....	655	513	2	324	
28	Thampuru ...	1,772	.....	1,099	706	.....	.....	
29	Vavilla ...	752	.....	697	516	.....	.....	
30	Alagunipadu ...	1,123	.....	1,032	670	2	400	
31	Vutakuru ...	7,129	.....	1,517	1,371	.....	.....	
32	Mudavarthi ...	3,942	.....	2,067	1,323	1	544	
33	Jammalapalem ...	499	.....	226	179	1	51	
34	Thumaguntа ...	427	.....	388	61	2	225	
	Total...	75,003	932	37,910	24,634	10	1,929	
	Deduct the area under River Channel including in the above ...	.....	.....	.....	7,381	.....	.....	
		.....	.....	28,306	17,253	.....	.....	

Amount of revenue raised by cultivation on dry and wet lands, on pasturage and jungle, on average for the last five years.	Extent in acres of dry and wet lands now under cultivation.	Average area under wet cultivation for five consecutive years.
Rs.		
4,268	1,427	...
1,602	631	...
3,073	988	...
2,662	647	...
2,669	726	...
5,742	1,629	...
5,895	1,622	...
858	214	...
273	127	...
1,08,676	31,421	1,091
.....	.....	...
.....	.....	...

(Signed) R. SMITH,
District Engineer, Nellore.

NELLORE,
17th May 1873.

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APPENDIX B.

Statement showing the irrigable area under the Duvur, Gandavaram, Panchadu, Kovoor, and Vaguru Channels, Nellore Taluq.

No.	Names of River Channels.	Names of Tanks to which they flow.	Names of Villages irrigated under the Tanks.	Description.	Area that has been irrigated.	Area under Cultivation.	Wet Cultivation in dry lands.
1	Duvur Channel.	Duvur Tank ...	1. Padamatipolem ...	Government ...	204	167	...
				Inam ...	27	27	...
					231	194	...
			2. Siddepuram ...	Government ...	189	161	11
				Inam ...	83	78	...
					272	239	11
			3. Vengareddipolem ...	Government ...	249	221	1
				Inam ...	37	33	...
					286	254	1
			4. Duvuru ...	Government ...	1,449	1,155	23
				Inam ...	556	493	...
					2,005	1,648	23
			5. Annareddipolem ...	Government ...	1,096	791	16
				Inam ...	48	48	1
					1,144	849	17
			6. Kaligirekonduru ...	Government ...	216	190	19
				Inam ...	31	28	...
					247	218	19
			7. Vangallu ...	Government ...	696	613	68
				Inam ...	210	176	...
					906	789	68
			8. Lopolem ...	Government ...	432	430	...
				Inam ...	113	113	...
					545	543	...
			9. Kovalipolem ...	Shotriem ...	196	196	...
			Total...	Government ...	4,531	3,728	138
			Total...	Inam ...	1,105	996	1
			Total...	Shotriem ...	196	196	...
					5,832	4,920	139
		Annareddipolem Village Tank.	Annareddipolem ...	Government ...	303	124	...
				Inam ...	35	35	...
					338	159	...
		Direct Irrigation.	1. Padamalipolem ...	Government ...	307	199	...
				Inam ...	50	45	...
					357	244	...
			2. Siddepuram ...	Government ...	377	239	2
				Inam ...	28	22	...
					405	261	2
			3. Vengareddipolem ...	Government ...	247	89	3
				Inam ...	17	14	...
					264	103	3

Statement showing the irrigable area under the Duvur, Gandavaram, Panchadu, Kovoor, and Vaguru Channels, Nellore Taluq.—(Continued.)

No.	Number of River Channels.	Names of Tanks to which they flow.	Names of Villages irrigated under the Tanks.	Description.	Area that has been irrigated.	Area under Cultivation.	Wet Cultivation in dry lands.
			4. Tarumivoya ...	Government ...	379	205	24
				Inam ...	94	62	...
					473	267	24
			Total...	Government ...	1,310	732	29
			Total...	Inam ...	189	143	...
					1,499	875	29
			Total irrigable area under Duvuru Channel.	Government ...	6,144	4,584	167
				Inam ...	1,329	1,174	1
				Shotriem ...	196	196	...
					7,669	5,954	168
2	Panchadu Channel.	Panchadu Tank.	1. Minagallu ...	Government ...	140	106	...
				Inam ...	59	39	...
					199	145	...
			2. Panchadu ...	Government ...	737	552	3
				Inam ...	74	74	2
					811	626	5
			3. Panchadu Kandriga	Government ...	31	13	...
				Inam ...	17	7	...
					48	20	...
			4. Penuballi ...	Government ...	705	449	2
				Inam ...	9	2	...
					714	451	2
			5. Kavutipolem ...	Shotriem ...	86	86	...
			Total...	Government ...	1,613	1,120	5
				Inam ...	159	122	2
				Shotriem ...	86	86	...
					1,858	1,328	7
		Direct Irrigation.	Minagallu ...	Government ...	41	...	...
				Inam ...	2	...	...
					43	...	...
			Total irrigable area under the Channel.	Government ...	1,654	1,120	5
				Inam ...	161	122	2
				Shotriem ...	86	86	...
					1,901	1,328	7
3	Gandavaram Channel.	Kanigiri Tank.	1. Kalayakagollu ...	Government ...	220	187	...
				Inam ...	13	12	...
					233	199	...
			2. Panuballi ...	Government ...	264	201	5
				Inam ...	53	42	...
					317	243	5
			3. Dasavadadinna ...	Government ...	55	20	...
				Inam ...	2	...	...
					57	20	...

Statement showing the irrigable area under the Duvur, Gandavaram, Panchadu, Kovoor, and Vaguru Channels, Nellore Taluq.—(Continued.)

No.	Names of River Channels.	Names of Tanks to which they flow.	Names of Villages irrigated under the Tanks.	Description.	Area that has been irrigated.	Area under Cultivation.	Wet Cultivation in dry lands.
			4. Vavaru ...	Government ...	1,172	1,058	73
				Inam ...	172	172	3
					1,344	1,230	76
			5. Iskapallem ...	Government ...	107	89	9
				Inam ...	13	12	...
					120	101	9
			6 Pellapollem ...	Government ...	273	215	...
				Inam ...	39	39	...
					312	254	...
			7. Rabala ...	Government ...	539	479	10
				Inam ...	60	60	...
					599	539	10
			8. Paturu ...	Government ...	318	137	2
				Inam ...	40	30	...
					358	167	2
			9. Damaramadugu ...	Government ...	714	448	...
				Inam ...	89	76	...
					803	524	...
			10. Kovuru ...	Government ...	1,634	1,370	2
				Inam ...	259	252	...
					1,893	1,622	9
			11. Yallayapollem ...	Government ...	2,135	1,797	2
				Inam ...	137	132	...
					2,272	1,929	2
			12. Gandavaram ...	Government ...	1,156	811	...
				Inam ...	562	290	...
					1,718	1,101	...
			13. Nayudupollem ...	Government ...	354	241	...
				Inam ...	65	51	...
					419	292	...
			14. Nagamambapuram	Government ...	289	259	2
				Inam ...	23	15	...
					312	274	2
			15. Bodduvaripollem ...	Government ...	1,045	811	1
				Inam ...	86	82	...
					1,131	893	1
			16. Kodavaluru ...	Government ...	354	204	...
				Inam ...	13	13	...
					367	217	...
			17. Alurpaud ...	Government ...	163	137	...
				Inam ...	16	14	...
					179	151	...

Statement showing the irrigable area under the Duvur, Gandavaram, Panchadu, Kovoor, and Vaguru Channels, Nellore Taluq.—(Continued.)

No.	Names of River Channels.	Names of Tanks to which they flow.	Names of Villages irrigated under the Tanks.	Description.	Area that has been irrigated.	Area under Cultivation.	Wet Cultivation in dry lands.
			18. Razupollem ...	Government ...	772	564	...
			Talamanchi ...	Inam ...	54	43	...
					826	607	...
			19. Manuguntapaud ...	Government ...	446	404	...
				Inam ...	44	41	...
					490	445	...
			20. Modagunta ...	Government ...	472	442	...
				Inam ...	66	65	...
					538	507	...
			21. Reddipollem ...	Government ...	234	175	...
				Inam ...	21	21	...
					255	196	...
			22. Ramanapollem ...	Government ...	471	369	2
				Inam ...	113	110	...
					584	479	2
			23. Chintachalica ...	Government ...	548	271	...
				Inam ...	21	12	...
					569	283	...
			24. Gudipalli ...	Government ...	73	70	...
				Inam ...	9	9	2
					82	79	2
			25. Basavapollem ...	Government ...	481	345	1
				Inam ...	63	52	...
					544	397	1
			26. Venkanapuram ...	Government ...	269	205	...
				Inam ...	52	47	...
					321	252	...
			27. Gundalummapollem	Government ...	442	330	...
				Inam ...	37	29	...
					479	359	...
			28. Damagunta ...	Government ...	346	267	...
				Inam ...	17	16	...
					363	283	...
			29. Strirangarazapuram	Shotriem ...	46	46	...
			30. Chellayapollem ...	Do. ...	293	293	...
			31. Gottapollem ...	Do. ...	62	62	...
					401	401	...
		Paturu Village Tank.	Paturu	Government ...	502	276	...
				Inam ...	89	84	...
					591	360	...
		Paturu Chinna Tank.	Do.	Government ...	214	145	...
				Inam ...	5	5	...
					219	150	...

Statement showing the irrigable area under the Duvur, Gandavaram, Panchadu, Kovoor, and Vaguru Channels, Nellore Taluq.—(Continued.)

No.	Names of River Channels.	Names of Tanks to which they flow.	Names of Villages irrigated under the Tanks.	Description.	Area that has been irrigated.	Area under Cultivation.	Wet Cultivation in dry lands.
		Naidu Tank ...	Gandavaram ...	Government ...	369	239	45
				Inam ...	206	206	...
					575	445	45
			Bodduvaripollem ...	Government ...	163	137	...
				Inam ...	80	66	6
					243	203	6
			Gotlapollem ...	Shotriem ...	124	124	...
			Total ...	Government ...	532	376	45
				Inam ...	286	272	6
				Shotriem ...	124	124	...
					942	772	51
		Kodavalur Village Tank.	Kodavalur ...	Government ...	759	639	...
				Inam ...	186	186	...
					945	825	...
			Parlapalli ...	Government ...	56	49	...
				Inam ...	18	18	...
					74	67	...
			Total ...	Government ...	815	688	...
				Inam ...	204	204	...
					1,019	892	...
		Alurpaud Village Tank.	Alurpaud ...	Government ...	48	46	...
				Inam ...	16	16	...
					64	62	...
			Total irrigable area under the Channel.	Government ...	17,457	13,437	161
				Inam ...	2,739	2,318	11
				Shotriem ...	525	525	...
					20,721	16,280	172
4	Kovuru Channel.	Kovuru Tank ...	1. Kovuru ...	Government ...	1,410	1,286	35
				Inam ...	85	82	30
					1,495	1,368	65
			2. Inamadugu ...	Government ...	9	2	...
				Inam ...	...	...	...
					9	2	...
			3. Gangavaram ...	Shotriem ...	77	77	...
			4. Padugupaud ...	Do. ...	234	234	...
					311	311	...
			Total ...	Government ...	1,419	1,288	35
			Total ...	Inam ...	85	82	30
			Total ...	Shotriem ...	311	311	...
					1,815	1,681	65
		Direct Irrigation.	1. Kalayakagollu ...	Government ...	91	56	...
				Inam ...	8	8	...
					99	64	...

Statement showing the irrigable area under the Duvur, Gandavaram, Panchadu, Kovoor, and Vaguru Channels, Nellore Taluq.—(Continued.)

No.	Names of River Channels.	Names of Tanks to which they flow.	Names of Villages irrigated under the Tanks.	Description.	Area that has been irrigated.	Area under Cultivation.	Wet Cultivation in dry lands.
			2. Damaramadugu ...	Government ...	143	121	3
				Inam ...	...	...	...
					143	121	3
			3. Gangavaram ...	Shotriem ...	71	71	...
			Total...	Government ...	239	177	3
				Inam ...	8	8	...
				Shotriem ...	71	71	...
					318	256	3
			Total area under Kovuru Channel.	Government ...	1,658	1,405	33
				Inam ...	93	90	30
				Shotriem ...	382	382	...
					2,133	1,937	68
5	Vaguru Channel.	Vaguru Tank...	1. Vaguru ...	Government ...	1,195	1,018	1
				Inam ...	201	197	4
					1,396	1,215	5
			2. Vadavalur ...	Government ...	413	268	...
			3. Lagondapaud ...	Government ...	66	46	1
				Inam ...	5	5	...
					71	51	1
			Total...	Government ...	1,674	1,832	2
			Total...	Inam ...	206	202	4
					1,880	1,534	6
		Vaguru Small Tank.	1. Vaguru ...	Government ...	465	455	...
				Inam ...	53	53	...
					518	508	...
		Inamadugu Village Tank.	Inamadugu ...	Government ...	347	262	12
				Inam ...	35	30	...
					382	292	12
		Jammipolliem Village Tank.	Jammipollem ...	Government ...	168	136	7
				Inam ...	16	16	...
					184	152	7
		Vidavaluru Village Tank.	Parlapalli ...	Government ...	104	94	...
				Inam ...	3	3	...
					107	97	...
			Total...	Government ...	1,084	947	10
			Total...	Inam ...	107	102	...
					1,191	1,049	19
		Direct Irrigation.	1. Parlapalli ...	Government ...	33	19	...
				Inam ...	...	...	...
					33	19	...

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Statement showing the irrigable area under the Duvur, Gandavaram, Panchadu, Kovoor, and Vaguru Channels, Nellore Taluq.—(Concluded.)

No.	Names of River Channel.	Names of Tanks to which they flow.	Names of Villages irrigated under the Tanks.	Description.	Area that has been irrigated.	Area under Cultivation.	Wet Cultivation in dry lands.
			2 Vaguru ...	Government ...	544	300	2
				Inam ...	7	7	...
					551	307	2
			3. Reddipollem ...	Government ...	38	10	...
				Inam ...	...	...	...
					38	10	...
			4. Inamadugu ...	Government ...	407	351	4
				Inam ...	64	61	22
					471	412	26
			5. Lagondapaud ...	Government ...	346	306	...
				Inam ...	20	20	...
					366	326	...
			Jammipollem ...	Government ...	124	2	...
				Inam ...	4	...	...
					128	2	...
			Padugupaud ...	Shotriem ...	90	90	...
			Total area under the Channel.	Government ...	4,250	3,267	27
				Inam ...	408	392	26
				Shotriem ...	90	90	...
					4,748	3,749	53
			Grand Total exclusive of Maldavy.	Government ...	31,163	23,873	398
				Inam ...	4,730	4,096	70
				Shotriem ...	1,279	1,279	...
					37,172	29,248	468
	Malidavy ...	Supplied by the Kaligiri Tank watered by Gandavaram Channel.	1. Parlapalli ...	Government ...	152	149	...
				Inam ...	137	74	...
					289	223	...
			2. Vidavaluru ...	Government ...	6	1	...
			3. Mudiverti ...	Government ...	612	350	...
				Inam ...	15	12	...
					627	362	...
			4. Vutukoor ...	Government ...	24	...	...
			Total...	Government ...	804	500	...
				Inam ...	142	86	...
					946	586	...
			Grand Total including Maldavy.	Government ...	31,967	24,373	398
				Inam ...	4,872	4,182	70
				Shotriem ...	1,279	1,279	...
					38,118	29,834	468

The area to which Government are bound to supply water is 38,118 acres classed as wet, besides water has to be supplied for 468 acres classed as dry, and which has been usually irrigated.

(Signed) V. T. DORAISSAMI,
Acting Tahsildar.

(Signed) G. VANSAGNEW,
Collector.

Proceedings of the Madras Government, Public Works Department, 13th August 1873.

APPENDIX C.

Statement showing the approximate area available, for the extension of wet cultivation, in the tract of country colored yellow on the accompanying Sketch Map, and the area proposed to be brought under cultivation

Names of Villages.	Area that can be easily cultivated, *vide* Collector's Return.	Land now classed as Wet.	Land now classed as "dry" or "waste" to be converted into Wet Cultivation.	Total of Columns 3 and 4.	Difference between Columns 5 and 2.
1	2	3	4	5	6
	Acres.	Acres.	Acres.	Acres.	Acres.
Thalamanachi	4,426	1,314	500	1,814	2,612
Alluru	17,169	9,673	5,000	14,673	2,496
Beerangunta	481	219	120	339	142
Damegunta...	637	409	130	539	98
Chavukacherla	1,452	1,053	300	1,353	99
Kodavaluru	1,396	1,095	100	1,195	201
Parlapally	1,782	1,229	400	1,629	153
Viddavaluru	3,401	2,405	600	3,005	396
Viguru	3,950	2,383	1,300	3,683	267
Ramanapalem	635	513	25	538	97
Legantapad	896	649	100	749	147
Inamadugu...	1,149	810	100	910	239
Isukapilly	2,919	757	1,600	2,357	562
Gogulapally	4,817	759	2,000	2,759	2,058
Indupuru	990	722	50	772	218
Purni	2,214	1,562	500	2,062	152
Pannapudi	1,376	190	300	490	886
Mamidigunta	516	174	250	424	92
Varni	5,329	1,654	3,000	4,654	675
Thaudigunta	831	655	50	705	126
Thampuru	1,772	1,099	500	1,599	173
Vutakuru	7,129	1,517	4,200	5,717	1,412
Mudavarthi	3,942	2,067	1,300	3,367	575
Jammalapalem	499	226	100	326	173
Venkannapalem	331	319	.....	319	12
Basavapalem	567	471	.....	471	96
Gundalamapalem	505	441	.....	441	64
Allurupad...	267	242	.....	242	25
Manceguntapadu	490	469	.....	469	21
Modugunta	540	534	.....	534	6
Reddipalem	293	233	.....	233	60
Vavilla	752	697	.....	697	55
Alaganipadu	1,123	1,032	.....	1,032	91
Thumagunta	427	338	.....	338	89
Total...	75,003	37,910	22,525	60,435	14,568

NELLORE,
17*th May* 1873.

(Signed) R. SMITH,
District Engineer, Nellore.

Proceedings of the Madras Government, Public Works Department, 13th August 1873.

APPENDIX D.

Abstract Statement showing the area under wet cultivation on the left bank of the Pennair, the additional area to be supplied before the Madras Irrigation Company could divert any of the Pennair water, and the area of dry or waste land that would be commanded by a high level channel, from the Northern flank of the existing Nellore Anicut.

Sub-Division.	Area now under cultivation.	Area under existing river channels and tanks.	Dry or waste land to be converted into wet cultivation and to be watered by high level channel from Nellore Anicut.	Total of Columns 3 and 4.	Difference between columns 2 and 5 or the area available for the extension of irrigation from the existing sources of supply.
1	2	3	4	5	6
	Acres.	Acres.	Acres.	Acres.	Acres.
As per Statement A. ...	17,253	28,306	.....	28,306	11,053
,, ,, B. ...	30,302	38,586	.....	38,586	8,284
,, ,, C. ..	...	...	22,525	22,525	22,525
Land in beds of tanks to be reclaimed, *vide* Statement A.	...	...	1,929	1,929	1,929
Total...	...	...	.....	91,346	43,791*

NELLORE,
17*th May* 1873.

(Signed) R. SMITH,
District Engineer, Nellore.

From Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, to R. SMITH, Esq., District Engineer, Nellore, dated 11th June 1873, No. 363.

I HAVE the honour to acknowledge the receipt of your letter No. 28 of the 17th ultimo, with its enclosures, and, in reply, to request information on the following points:—

1*st.*—In paragraph 3 of your letter, alluding to the tract commanded by the supposed anicut channel, and that can be easily cultivated, by which in this connection irrigation is meant, it is said that 75,003 acres are the area so commanded. What is the gross area of this tract? Judging from the sketch map the gross area is not more than about 75,000 acres, and, if so, it appears to be certain that at least one-third, if not more, must be deducted for village sites, tanks, roads, etc.

2*nd.*—In paragraph 1 it is said that there are 52,760 acres to be irrigated from the Nellore Anicut before the Madras Irrigation and Canal Company have any claim to the flood-waters of the Pennair; it is not clear how these figures are obtained.

2. What has to be shown is that the 94,000 acres to be irrigated by the Sungum project are entitled to water. Appendix A. shows that there are 37,910 acres of land classed as wet which could be commanded by a channel from the

* The volume of water required for the irrigation of this area and for the existing cultivation must be allowed to pass the Irrigation Company's works.

anicut, but of these 9,604 are included in Appendix B., leaving 28,306 Acres.
Appendix B. shows that under the existing five river-channels
the area entitled to water is ... ... 38,118 ,,
And also ... ... 468 ,,
It is also reported in Appendix C. that the dry and waste lands
irrigable by an anicut channel are ... ... 22,525 ,,
And in Appendix A. lands in the beds of tank similarly commanded are entered at ... ... 1,929 ,,
91,346 ,,

If this area be correct the infringement of the rights of the Company involved in carrying out the project would be to the extent of the irrigation of 94,000*— 91,346 = 2,654 acres. The answer to the question put in paragraph 1 above, as to the gross area of the tract of country coloured yellow on the sketch map, will show tolerably clearly whether there is room for an extension of irrigation there to 22,525 acres hitherto not classed as wet. I do not know how the figures shown in column 4 of Appendix C. were obtained, but it is of much importance that the real facts and circumstances should be clearly laid before Government.

3. I would further remark that 2 inches a mile should not be taken as the fall of a channel from the Nellore Anicut on the north bank of the river. The supply of water required could not be economically carried with a channel so arranged, and so far as I am aware the idea of projecting a channel with such a fall has not been entertained; 6 or 8 inches a mile fall would probably be adopted in practice, and, allowing the former, some additional deduction from the area commanded will be required.

No. 209A. From R. SMITH, Esq., District Engineer, Nellore, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, dated Camp at Ongole, 28th June 1873, No. 45.

With reference to your letter, No. 363, of 11th instant, calling for further information regarding the proposed extension of irrigation in the northern delta of the Pennair, I have the honour to submit the following particulars:—

2. According to the Ordnance Map the gross area of the tract coloured yellow on the Sketch Map forwarded with my No. 28, dated 28th May last, is 84,480 acres, or 9,477 acres in excess of the area shown in the return furnished by the late Mr. Boswell as available for cultivation. As the difference between this area and the gross acreage is much less than the proportion that is generally deducted from the latter for villages, tanks, and roads, I left a fair margin for contingencies in estimating the area that could be watered by a high level channel from the Nellore Anicut.

3. With reference to your observation, "that at least one-third, if not more, must be deducted for village sites, tanks, roads, etc.," from the gross area, I would draw your attention to the tract north of Alluru, where the irrigable area will certainly be at the rate of 550 acres per square mile; to the land between the Pennair and the Moldavy on the east of the Vagoor Tank, as I believe 550 acres per square mile may also be fairly assumed as the proportion suitable for wet cultivation there; and to the country between Alluru and the Pydaru, as it seems

that a deduction of 140 acres from each square mile in that part of the delta, would more than cover the area occupied by villagers, tanks, etc. Should you however still consider that a deduction of one-third must be made from the gross acreage, the result would not differ very materially from my estimate of the available land; but I must add, and I trust you will kindly excuse my doing so, that, from what I know of the country, I consider a less per-centage would suffice.

4. Adverting to your query regarding the 52,760 acres to be watered from the Nellore Anicut, before the Madras Irrigation Company have any claim to the flood-waters of the Pennair, I have to explain that from Appendix C. it will be seen 60,435 acres of the present cultivable land are proposed to be brought under wet cultivation, and from Appendix A. it will be observed that 1,929 acres have to be added to the above on account of the land to be reclaimed from tanks. The total area would therefore be 62,364 acres. From this, however, the area (9,604 acres) under the river channels* has to be deducted as annexed:—

* *Vide* Appendix A.

62,364 — 9,604 = 52,760 acres, the area to be irrigated from the northern flank of the Nellore Anicut.

5. The area to be converted into wet cultivation, as shown in column 4 of Appendix C., was fixed partly with reference to the available land shown in the return received from the Collector when the Sungum Project was under investigation, and partly from my knowledge of the country traversed by the proposed channels. The extent entered opposite each village is necessarily approximate, as no accurate information can be obtained at this stage regarding the additional land that will ultimately be brought under rice cultivation in those parts.

6. If the fall in the high level channel is increased, as suggested in paragraph 3 of your letter under notice, the area commanded by it would be reduced about 1,025 acres, and the revenue would suffer to the extent of Rupees 4,100 annually.

No. 422A.

No. 209B. *Note by the Chief Engineer for Irrigation.*

The Secretary of State in the despatch communicated with G. O., of the 9th January 1873, No. 69, called for certain additional information regarding the Sungum project. The most important point raised was whether the Government are in a position to take water from the Pennair without infringing the rights of the Madras Irrigation and Canal Company under their contract with the Secretary of State, and, in order to show how the project was in this respect circumstanced, a report was called for from the officer who prepared the project.

2. The contract with the Madras Irrigation and Canal Company reserved the rights of all existing irrigation in Nellore, as well as of prospective irrigation under the Nellore Anicut across the Pennair. It was originally intended to carry a channel from the anicut on the north bank of the river, but the large amount of drainage to be crossed rendered it doubtful whether such an extension of irrigation could be economically carried out. The necessity also for improving the means

of irrigation under the existing river channels having their heads at Sungum* and between that† and the Nellore Anicut, led to the proposal to substitute for the northern channel from the Nellore Anicut, and for the improvement of the five channels to the westward, on the north bank above mentioned, a complete system of irrigation, having its head at Sungum. This project, as submitted for sanction and approved by this Government and the Government of India, provided for irrigating 94,000 acres, as noticed in paragraph 3 of the Secretary of State's despatch.

* Duvuru, Gundaveram.
† Punchedu, Kovur, Veguru.

3. If the contract with the Madras Irrigation and Canal Company is to be so interpreted as to admit of the Government taking water from the Pennair, only in the precise way in which it was contemplated by the framers of the contract that it would be drawn from that river for existing and prospective irrigation, it would follow of course that the Sungum project, which provides for taking a supply from a different point of the river for the lands commanded by the Pennair Anicut at Nellore, is not, so far as these lands are concerned, within the reservation allowed; if, on the other hand, the reservation should be interpreted to allow of certain lands being supplied in the manner most convenient instead of in a particular way, the Sungum project may be carried out almost as projected without infringing the rights of the Company.

4. From Mr. R. Smith's Report, No. 28, dated 17th May 1873, and its Appendices, and from the subsequent correspondence* with that officer, it will be seen that nearly the whole of the lands included in the 94,000 acres, the irrigation of which is contemplated, are entitled to water. With a main feeder from the northern flank of the Pennair Anicut at Nellore, laid out with a fall of two inches a mile, it was shown by Mr. R. Smith, as summarized from the Appendices to his Report in paragraph 2 of my letter No. 363, that the total area which could be irrigated, without any infringement of the agreement with the Company, is 91,346 acres, made up as follows:—

* To No. 363, 11th June.
From ,, 45, 28th June.

	Acres.	Acres.
Area under the five existing river channels*	38,586	
Area of land classed as wet capable of being irrigated by an anicut channel. This is under rain-fed tanks or tanks fed by minor streams	28,306	
Area of dry and waste lands irrigable by an anicut channel ...	22,525	52,760
Area of lands in the beds of tanks to be abandoned as reservoirs do. do.	1,929	
Total...	91,346	

It appeared to me however that, as it was improbable that a channel from the Nellore Anicut having so small a fall as two inches a mile would be contemplated, it would be better to reduce the area irrigable from this source to that commanded by a canal having the more reasonable fall, for this part of the country, of six inches a mile, and the District Engineer of Nellore reports that this alteration would strike out 1,025 acres from the area, thereby reducing the total area to 90,321 acres, or, say, in round numbers 90,000 acres.

* Duvuru, Gundaveram, Punchedu, Kovur, Veguru.

5. It will likewise be seen that the gross area of the tract of country coloured yellow on the Sketch Map is 84,480 acres, from which deducting 1,025 acres, as above, 83,455 remain, and that the area to be irrigated within this tract is

	Acres.	Acres.
That under existing channels	.....	9,604
,, irrigable by an anicut channel	52,760	.....
Deducting the difference for a canal with a 6″ fall ...	1,025	.....
		51,735
Total		61,339

equivalent to 73½ per cent. of the area commanded, or acres 470 to the square mile. Whether this estimate would be confirmed or not by a detailed investigation I cannot say, but it will be noticed that Mr. R. Smith's attention has been specially called to the point, and he is of opinion that the proportion of land to be irrigated to gross area is not too high, and that in certain parts of this tract of country the proportion may be expected to exceed the above average very considerably.

6. I do not think that anything more can be usefully said on this question of the connection between the project and the claims of the Madras Irrigation and Canal Company, upon the waters of the Pennair. It is possible that a more detailed investigation might show that the Government are entitled to take water for the whole of the 94,000 acres, on the other hand it has been shown, on data which appear to be reasonable, that at any rate 90,000 acres are entitled to water.

7. Paragraph 5 of the Secretary of State's despatch points out that the estimates do not include the preliminary expenditure on the investigation of the project. These, under all heads, are reported to have amounted to Rupees 46,698. It is noticed also that allowance has not been made for the accumulation of interest during the five years that the works are expected to be under construction, and that the returns of revenue have been calculated as if the whole irrigable area would at once become fully profitable on the opening of the canals.

With regard to the accumulation of interest, it would of course be easy to fix arbitrarily the yearly expenditure, and to show to what the interest thereon would amount. The total of the estimates is Rupees 25,83,800, and, at a rough guess, the expenditure might be expected to be as follows:—

	Rs.
1st year	1,83,800
2nd ,, ...	6,00,000
3rd ,, ...	8,00,000
4th ,, ...	8,00,000
5th ,, ...	2,00,000

and the corresponding interest at 4½ per cent. per annum would be—

1st year	$\frac{1,83,800}{2} + \frac{4\frac{1}{2}}{100}$	= Rupees 4,135
2nd ,,	$(1,83,800 + \frac{6,00,000}{2}) \times \frac{4\frac{1}{2}}{100}$	= ,, 21,771
3rd ,,	$(7,83,800 + \frac{8,00,000}{2}) \times \frac{4\frac{1}{2}}{100}$	= ,, 53,271
4th ,,	$(15,83,800 + \frac{8,00,000}{2}) \times \frac{4\frac{1}{2}}{100}$	= ,, 89,271
5th ,,	$(23,83,800 + \frac{2,00,000}{2}) \times \frac{4\frac{1}{2}}{100}$	= ,, 1,11,771

Total Interest Rupees 2,80,219

on the other hand, as a set off against this interest, must be taken the increase of revenue to be derived from the works during the five years. It is impracticable to show clearly what this will be, but, as regards the compensation for interest on capital outlay, it will suffice if in the first year irrigation be extended to about 1,000 acres, in the second year to about 5,500 acres, in the third year to 13,300 acres, in the fourth year to 22,500 acres, and in the fifth year to 28,000 acres. This calculation is based on the estimate of the Board of Revenue that the net return on 49,947 acres of additional irrigation will be Rupees 2,03, 800, or a little more than 4 Rupees an acre, and it does not seem unreasonable to expect that such a rate of extension will be realized. Any attempt at a more accurate estimate might only mislead, for, as I have before said, the success and the results of such a project as this will depend in a great measure upon the executive agency employed to carry it out. Provision has been made in the estimates for an ample establishment, but at the present moment it would be impossible to organize the staff out of the existing Public Works Establishment, and, in my opinion, the works in progress in the Northern Deltas and Tanjore, as also in the southern part of this Pennair Delta are being carried out under very inadequate supervision, and, as a consequence, the results anticipated when expenditure was sanctioned will either not be realized at all, or the time of realization will be postponed.

8. The proposals made for the abandonment of certain tanks as reservoirs, and for the sale and cultivation of their beds, were based upon a careful consideration of the circumstances of the water supply. Paragraph 10 of my Note printed in Proceedings, Madras Government, of the 28th July 1870, No. 1,818, shows that for the existing irrigation of 44,053 acres, with a very inefficient supply from the Pennair to only a part of this area, the storage amounts to 152·50 millions of cubic yards, while for the full area of 94,000 acres 320·59 millions will be stored, the sources of supply being at the same time greatly improved. Experience has been thus very closely followed as a guide.

9. The question of allowing holders of Inam lands to irrigate all such lands without any charge, although not more than 6,056 acres out of 8,854 acres have hitherto been cultivated, was referred to the Revenue Department for consideration, and Government have decided* that under Standing G. O., No. 1,871, of the 11th August 1865, which was reiterated in G. O., 1st September 1870, No. 1,375, no charge can be made.

* G. O., Revenue Department, No. 119, 29th January 1873.

10. Paragraph 8 of Mr. R. Smith's letter, No. 28, of the 17th May last, explains what the circumstances of the application for land, referred to in paragraph 102 of that officer's report of 30th October 1869, and noticed in paragraph 7 of the Secretary of State's despatch, were. These proposals were rejected by the Collector of Nellore, but it will be seen they involved no loss of revenue, but rather an immediate gain of some small dry assessment to which would have been added, in due course, the water-rate.

Proceedings, Madras Government, 28th July 1870, No. 1,818.

11. In conclusion, I would mention the importance of an early decision as to whether this project is to be carried out; because, for many years past all

improvements of the present Sungum channels have been put aside, lest they should be superseded, and waste of money be thus incurred. When I was District Engineer of Nellore in 1856—61 the need of radical improvements to the Duvur and Gundaveram channels was ascertained; and, if the execution of the larger project be finally negatived, it will be advisable that no time should be lost in taking in hand the reformation of the old channels to the extent to which they may be capable of being improved.

OOTACAMUND, *12th July* 1873. (Signed) J. MULLINS, Lieut.-Colonel, R.E., *Chief Engineer for Irrigation.*

No. 210. ORDER THEREON, 13th August 1873, No. 2,015.

IRRIGATION, No. 11.

ORDERED that these papers be communicated to the Government of India, with reference to their Proceedings, No. 835-I, dated 26th September 1872.

2. His Excellency the Governor in Council is of opinion that the information contained in the Note by the Chief Engineer for Irrigation shows that the carrying out of the Sungum project in its entirety would not involve any real infringement of the contract rights of the Madras Irrigation and Canal Company, unless those rights be interpreted in a manner purely technical, which probably the Company itself would not at all desire; while, were the proposed extent of irrigation reduced from 94,000 acres to 90,000 acres no land in excess of the area for which the State is entitled to appropriate water would be irrigated.

3. His Excellency concurs with the Chief Engineer for Irrigation in considering it to be desirable that it should be settled at an early date whether the execution of this project is to be sanctioned, or negatived, in order that, in the latter case, such improvements to existing channels, as may be practicable and necessary, may at once be carried out.

Ordered that the following letter be sent:—

(Here enter No. 2,016, dated 13th August 1873.)

(True Extract.)

Lieut.-Colonel, R.E.,
Joint Secretary to Government.

To the District Engineer, Nellore.
,, Chief Engineer for Irrigation.
,, Revenue Department.

Exd. S. T. Austin.

Spare Copies. will be supplied from Madras office 27 Aug 73

To Board of Rev 6-9-73

Revenue 1873 Sept
No 253

Govt. of {1873} Madr

PUBLIC WORKS.

To

THE DISTRICT ENGINEER, NELLORE

&c., &c., &

Dated August 13th

Rec'd 25 Aug 1873 Encl.

G. O., 13th August 1873, No. 2,015.

AUGUST.

Nos. 209-210

Sungum Project, Nellore District—
ssing orders on Note by the Chief
gineer for Irrigation affording informa-
n regarding the Sungum project.

With Order