

# GENERAL DISCUSSION

XXXIII

## Irrigation Works

Tables 12 to 15 present an inventory of irrigation works, by States, and principal drainage basins for the Censuses of 1940, 1930, and 1920. The marked increase in the number of practically all physical structures during the last decade indicates the installations of betterments and increased efforts to conserve water and develop additional water supplies. Storage dams increased from 2,949 in 1930 to 4,607 in 1940, or 56.2 percent. The number of storage reservoirs increased from 5,122 in 1930 to 7,709 in 1940, or 50.5 percent. The total storage capacity of reservoirs increased from 24,508,590 acre-feet in 1930 to 33,787,362 acre-feet in 1940, or 37.9 percent. Although the number of reservoirs reported decreased in a few States, each irrigation State, except Kansas, shows increased storage capacity. The statistics presented on storage dams and reservoirs for the Census of 1920 include some developments installed for other purposes besides irrigation. Therefore,

in several States, the data are not comparable with those of later censuses when only structures installed primarily for irrigation purposes were included.

Judging from increases in storage capacity, the most important developments in the conservation of water by storage in the decade 1930 to 1940 took place in the States of Arizona, Nebraska, and Utah and in the principal drainage basins of the Missouri, Colorado, and Columbia Rivers and in the Great Basin.

The lengths and capacities of canals show only slight increases, while the lengths of reported pipe lines of all kinds increased from 17,363.1 miles in 1930 to 28,584.9 miles in 1940, or 64.6 percent. The major portion of this increase was concrete pipe lines installed in California, Arizona, and Texas.

The number of flowing wells decreased from 4,811 in 1930 to 4,641 in 1940 and their capacities decreased from 609,367 gallons per minute to 555,073 gallons per minute, or 8.9 percent.

TABLE 12.—NUMBER OF DIVERSION AND STORAGE DAMS, 1940, 1930, AND 1920, BY MATERIALS, 1940; AND NUMBER OF RESERVOIRS WITH CAPACITY, 1940, 1930, AND 1920; BY STATES AND BY PRINCIPAL DRAINAGE BASINS

(For the 17 western States and Arkansas and Louisiana)

ITEM	DIVERSION DAMS							STORAGE DAMS						RESERVOIRS					
	Total			Materials, 1940				Total			Materials, 1940			Total			Capacity		
	1940	1930	1920	Con-crete or ma-sonry	Tim-ber	Earth and rock	All other <sup>1</sup>	1940	1930	1920	Con-crete or ma-sonry	Earth and rock	All other	1940	1930	1920	1940	1930	1920
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	Acre-ft.	Acre-ft.	Acre-ft.
<b>Total (19 States)</b>	34,544	21,947	23,894	3,666	4,595	18,032	8,251	4,607	2,949	3,931	409	3,795	403	7,709	5,122	7,538	33,787,362	24,508,590	21,246,436
<b>STATE</b>	<b>BY STATES</b>																		
Arizona	602	267	248	84	5	321	192	199	78	99	17	167	15	333	378	340	4,860,898	3,410,975	1,510,856
Arkansas	6	1	63	—	1	4	1	27	6	17	—	21	6	24	10	16	31,992	7,342	20
California	2,714	1,654	2,070	527	477	1,111	599	709	421	455	126	531	52	2,652	1,769	3,030	3,581,621	3,225,675	1,091,394
Colorado	4,792	3,672	5,647	367	427	2,858	1,160	1,015	706	803	19	951	45	1,071	765	979	2,071,522	1,924,982	2,406,372
Idaho	3,209	2,305	2,872	536	290	1,964	619	260	152	288	44	185	31	290	155	249	3,795,272	3,645,373	3,493,511
Kansas	102	27	10	16	4	65	17	40	7	13	8	22	10	80	19	36	32,584	66,293	391
Louisiana	105	56	419	3	15	45	42	114	61	63	1	91	22	75	85	74	34,199	13,909	7,632
Montana	6,136	2,856	3,545	254	1,067	3,217	1,598	468	326	523	19	385	64	517	282	468	1,301,422	857,067	1,571,720
Nebraska	351	185	260	76	24	165	86	156	28	73	4	146	6	164	40	59	2,306,159	199,185	197,890
Nevada	1,896	1,640	1,523	95	84	1,077	640	122	118	82	8	110	4	200	209	134	696,005	529,369	504,428
New Mexico	1,072	665	1,423	121	102	475	374	141	69	153	7	124	10	502	240	328	3,280,550	2,945,220	2,960,718
North Dakota	19	9	26	—	1	14	4	14	10	11	—	14	—	14	8	9	3,946	1,466	1,110
Oklahoma	8	4	7	—	1	6	1	21	3	5	—	2	18	1	20	7	900	293	52
Oregon	5,097	3,806	3,285	663	877	2,220	1,337	247	167	309	35	156	58	257	120	266	2,212,315	1,698,426	1,905,037
South Dakota	258	91	207	13	19	198	28	74	10	182	2	69	3	62	5	119	209,785	203,124	212,264
Texas	244	107	165	76	4	136	28	194	168	134	47	134	13	542	325	368	1,406,024	935,088	392,999
Utah	1,973	1,717	1,479	611	217	778	367	362	287	307	39	513	10	438	413	476	3,417,704	1,093,252	1,600,505
Washington	1,755	499	579	166	453	725	411	125	100	115	21	81	23	114	78	205	1,165,527	699,807	477,789
Wyoming	4,205	2,406	2,066	257	528	2,673	747	319	212	301	12	277	30	334	214	374	3,379,957	3,051,745	2,911,748
<b>DRAINAGE BASIN</b>	<b>BY PRINCIPAL DRAINAGE BASINS</b>																		
Red River (of the North)	5	—	—	—	—	5	—	2	—	—	—	2	—	2	—	—	720	—	—
Missouri River	8,897	5,006	5,973	673	1,046	5,351	1,827	1,237	734	1,246	33	1,119	85	1,332	743	1,220	6,715,271	4,043,135	4,860,616
Mississippi River, exclu- sive of Missouri River	959	814	1,704	88	58	472	341	360	180	259	17	300	43	425	209	381	1,608,164	1,523,856	1,163,306
Gulf of Mexico streams, other than Mississippi River and Rio Grande	196	99	148	42	11	85	58	204	195	162	45	140	21	436	321	360	334,176	296,264	305,415
Rio Grande	1,450	922	1,639	198	158	670	424	162	99	125	14	137	11	567	306	351	3,664,857	3,120,623	3,233,164
Colorado River	4,391	3,155	2,468	318	469	2,614	970	840	494	565	25	772	45	1,030	734	639	5,717,080	3,748,284	1,676,038
Whitewater Draw and Vamori Wash <sup>2</sup>	158	7	6	1	—	67	90	6	4	51	—	6	—	18	90	76	74	140	85,071
Great Basin	4,263	3,806	5,234	756	441	1,953	1,133	462	409	449	53	395	14	766	787	800	3,781,538	1,922,757	2,289,641
Columbia River	11,208	6,247	6,494	1,066	1,748	5,698	2,696	590	414	603	65	388	117	614	353	646	7,517,123	6,316,670	5,711,783
Klamath River	670	472	505	29	155	292	194	52	20	41	5	40	7	60	32	90	1,165,143	1,110,562	1,022,365
Sacramento-San Joaquin Delta and tributary streams	1,497	781	1,128	555	313	478	371	358	218	285	47	287	24	1,310	949	1,639	2,681,435	2,100,255	677,957
Pacific Ocean streams, excl. of Gulf of California streams, Columbia and Klamath Rivers, and Sacramento-San Joaquin Delta and tributary streams	850	638	595	160	176	367	147	334	182	145	87	209	38	1,149	598	1,136	401,801	326,244	221,080

<sup>1</sup>Other and mixed, and not reported. Other and mixed are principally temporary dams, replaced annually.

<sup>2</sup>Data for Censuses of 1930 and 1920 are for Whitewater Draw and unidentified tributaries, and do not include the independent basin, Vamori Wash.