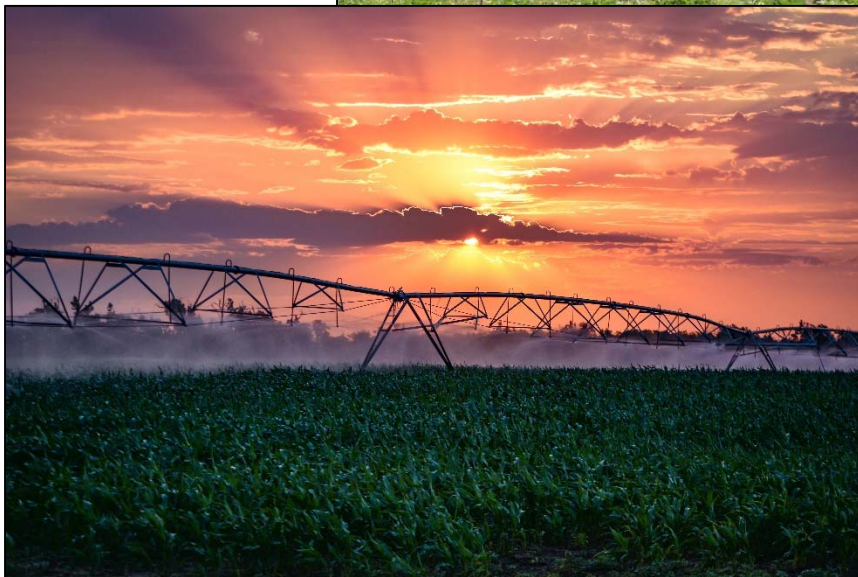


Irrigation Water Use in Kansas, 2017

Kansas Department of Agriculture

Division of Water Resources

In Cooperation with the United States Geological Survey



Kansas Department of Agriculture

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Photographs courtesy of...

Front cover, upper right: Center pivot at dawn by Collin Forrest of Conway Springs, Kansas
Front cover, lower left: Center pivot at dusk by Leah Blankley of Louisville, Kansas
Inside cover: Flood irrigation system by Pam Spaulding of Manhattan, Kansas



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Irrigation Water Use in Kansas, 2017

Abstract

This report, prepared by the Kansas Department of Agriculture, Division of Water Resources, presents derivative statistics of 2017 irrigation water use in Kansas. The regional and county-level statistics from the previous four years (2013–2016) are shown with the 2017 statistics and are used to calculate a five-year average. Statewide averages and regional averages are also presented. Total reported irrigation water use in 2017 was 2.8 million acre-feet of water applied to 3.1 million irrigated acres.

Introduction

Agriculture is the largest land use in Kansas, accounting for approximately 88 percent of all Kansas land (National Agricultural Statistics Service, 2014). Irrigated agricultural land is by far the largest use of water in Kansas, representing 84% of non-domestic consumptive use (average 1990–2017). Irrigation is most prevalent in western Kansas where average annual rainfall is less than 20 inches and sufficient groundwater can be pumped to compensate for the lack of precipitation (High Plains Regional Climate Center, 2015).

Kansas has two State agencies with responsibilities related to water quantity planning: the Kansas Department of Agriculture, Division of Water Resources (DWR) and the Kansas Water Office. The DWR administers the Kansas Water Appropriation Act (Kansas Statutes Annotated § 82a–701 to 82a–726), which governs how water is allocated and used within the State through water rights and collects annual information on amounts of water used.

Purpose and Scope

This report presents reported water use, acres irrigated, and derivative statistics of 2017 irrigation water use in Kansas. Average application depths are calculated as a function of total irrigation withdrawals and total irrigated acres. Tabular statistics in this report are aggregated geographically by the Kansas irrigation water use analysis regions (Figure 1), Kansas regional planning areas (Figure 2), and all 105 counties in the state.

Annual Irrigation Water Use Reporting

A provision of the Kansas Water Appropriation Act requires all irrigation water right owners to submit an annual water use report. An example of a report form is in Appendix D. Data submitted on the water use reports are stored in the DWR's Water Rights Information System (WRIS). WRIS is the primary record-keeping and reporting mechanism for water rights and water use information for the State of Kansas. Information is reported by point of diversion (the point from which water was obtained) and includes the quantity of water diverted each calendar year, type of crops irrigated, number of acres irrigated, and type of irrigation system. Each acre is counted only once regardless of the number of times it was irrigated or harvested. DWR staff send follow-up letters and make phone calls to obtain missing data and to confirm or correct anomalous data.

Description of Irrigation Water Use Statistics Calculated

Application Depth

Water used for irrigation is often described in terms of application rate or depth, which is the depth of water used per acre of land irrigated. Application depth is often expressed in inches. Irrigation application rates can vary from year to year and are affected by precipitation, soil permeability, temperature, wind, crop type, length of irrigation season and irrigation system type (Perry, 2006). Application depth is utilized in this report as a method of comparing irrigation water use intensity among regions and counties. Statistics from the previous four years (2013–2016) are also shown with the 2017 statistics. The statistics are used to calculate a five-year average for Kansas irrigation by irrigation water use regions, regional planning areas and counties (Figures 3–4, Tables 1–3). An overall Kansas average and regional averages are presented. Although most of the irrigated lands in Kansas are for crops, some counties may have additional irrigation water use for golf courses, nurseries and recreational areas.

Precipitation Data

Reported irrigation water withdrawals vary substantially from year to year, as affected by climatic fluctuations (Kenny and Juracek, 2013). Historically, Kansas has experienced large year-to-year variations in precipitation. At the beginning of 2017, southwest Kansas was categorized to be in a severe drought (U.S. Drought Monitor, 2017) (Figure 5). By May, no portion of the state was categorized to be in a drought. Central Kansas was in moderate drought from August through the end of 2017.

Area-weighted statistical summarizations were performed on gridded precipitation data for 2017 annual total precipitation and the current 30-year climatic normal (based on 1981–2010). The data was summarized for the irrigation water use analysis regions, regional planning areas and counties. Gridded precipitation data came from Oregon State University's Parameter-elevation Regressions on Independent Slopes Model (PRISM) (PRISM Climate Group, 2018). PRISM is an analytical model that generates gridded estimates of annual precipitation from point data at National Weather Service climatological stations and a digital elevation model (Di Luzio et al., 2008).

Tabular Statistics

Irrigation water use statistics in this report are summarized by irrigation water use analysis regions, regional planning areas, and the 105 counties within Kansas. Regional application depth averages for the years 2013, 2014, 2015, 2016, and 2017, as well as the five-year average, are provided in Table 1, organized by water use analysis region. The 2017 average annual precipitation and the 30-year normal precipitation, as well as the number of reporting and active points of diversion by irrigation water use analysis region, are also shown in Table 1. The information presented in Table 1, aggregated by regional planning area (Table 2) and county (Table 3), are also presented.

Application depths are further grouped by crop type. The instructions on the 2017 irrigation water use report request that crops that were irrigated in 2017 be listed using crop codes for each point of diversion. The crop codes are integer values for the following crops: alfalfa, corn, grain sorghum (milo), soybeans, wheat, oats, barley, rye, dry beans, sunflowers, golf course/sports fields, truck farm, orchard, nursery, cotton, grapes, more than one type of crop, double crop and other. The amount of water used, irrigated acres and application depths for 2017 are summarized for alfalfa; corn; grain sorghum (milo); soybeans; wheat; combination of alfalfa, corn, grain sorghum, soybeans, or wheat; more than one type of crop specified; other; and those crops not specified on 2017 water use report. These statistics are aggregated by irrigation water use analysis region, regional planning area and county (Tables 4 – 6). Because it is common to irrigate multiple crop types with a single point of diversion during a 12-month period, many irrigators list more than one crop code on their water use report. For tabular statistics purposes, when an irrigator specified a combination of alfalfa, corn, grain sorghum (milo), soybeans and wheat on a point of diversion, they were combined under the column heading “Combination”. When an irrigator specified “more than one type of crop”; “double crop”; or a combination of crops including a crop other than alfalfa, corn, wheat, grain sorghum (milo), soybeans and wheat, then the water used, irrigated acres, and application depths for 2017 are combined under the column heading “Multiple”. The “Other” column is composed of the following crop types: oats, barley, rye, dry beans, sunflowers, golf course and (or) sports fields, truck farm, orchard, nursery, cotton, grapes, or other. Any water use report where the crop code was left blank is listed under the column heading “Not specified.” Statewide historical crop data is presented in Figure 6. A statewide summary for each crop code or combination of crop codes is provided in Table 7.

Water use efficiency varies significantly by irrigation system type. Water use by irrigation method for 2017 is summarized by irrigation water use analysis region in Table 8. The instructions on the 2017 irrigation water use report request that a code be entered for the type of irrigation system used by each point of diversion. The irrigation-system codes are integer values for the following system types: center pivot with drop nozzles, center pivot sprinkler, center pivot and flood, flood, drip (subsurface irrigation), drip and other system, sprinkler other than center pivot, center-pivot with mobile drip, and other. The “Subsurface drip, and combination of drip and other system” column in Table 8 is a combination of “drip (subsurface irrigation)” and “drip and other systems”. The 2017 water use by irrigation method and regional planning area is provided in Table 9. The 2017 water use by irrigation method and county is provided in Table 10. Statewide historical irrigation system data is presented in Figure 7.

these systems contain total water use and total acres irrigated and are tabled separately from the other water rights because the amount of water applied to irrigated acres cannot be accurately associated with the point of diversion (Table 11). Frequently, these acres are irrigated by both ditch water and individual water rights; therefore, the number of acres listed in Table 10 should not be combined with the state totals.

Summary

This report documents 2017 irrigation water use in Kansas. The tables provided in this report were prepared using self-reported data from irrigation reports filed for the year 2017 with the Kansas Department of Agriculture, Division of Water Resources. The published regional and county-level statistics from the previous four years (2013–2016) are shown with the 2017 statistics and are used to calculate a five-year average. An overall Kansas average and regional averages also are calculated and presented. Total reported irrigation water use in 2017 was 2.8 million acre-feet of water applied to 3.1 million irrigated acres.

Surface-Water Ditch Companies and Irrigation Districts

Several private ditch companies with irrigation water rights are in southwest Kansas in Hamilton, Finney and Kearny Counties. Irrigation districts with water rights are in north-central Kansas in Cloud, Jewell, Mitchell, Norton, Osborne, Ottawa, Phillips, Republic, Rooks and Smith Counties. Reports filed by

Appendix A - Figures

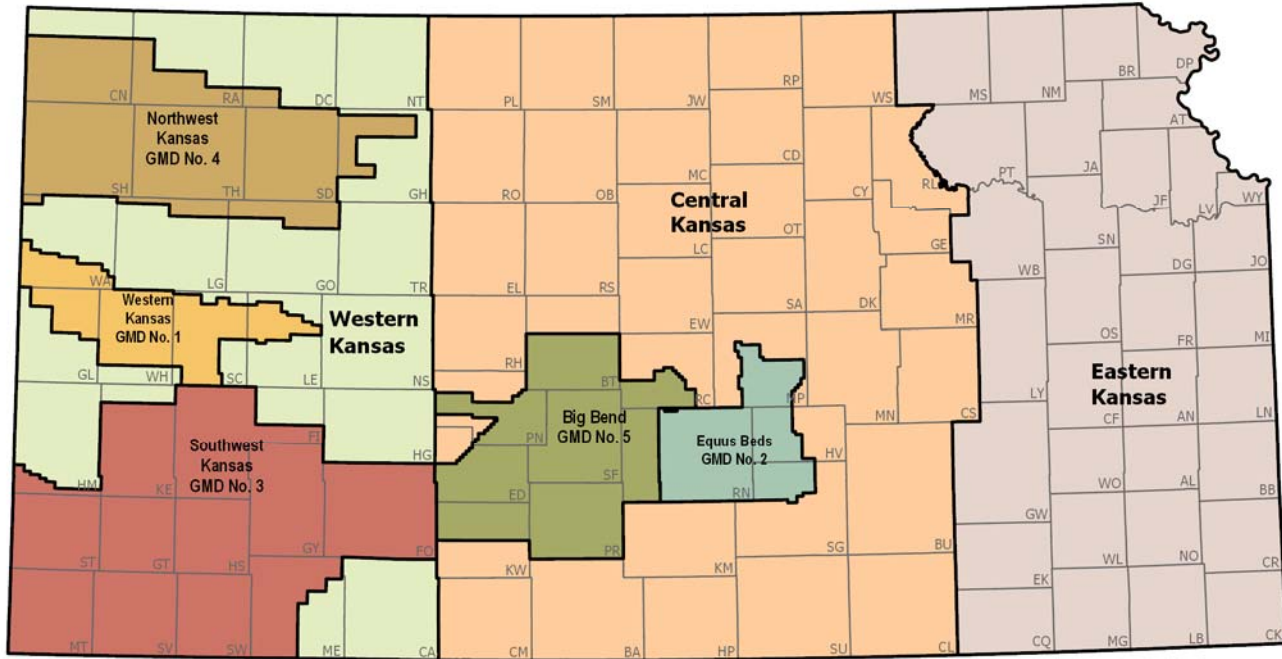


Figure 1: Kansas Irrigation Water Use Analysis Regions [GMD, Groundwater Management District]

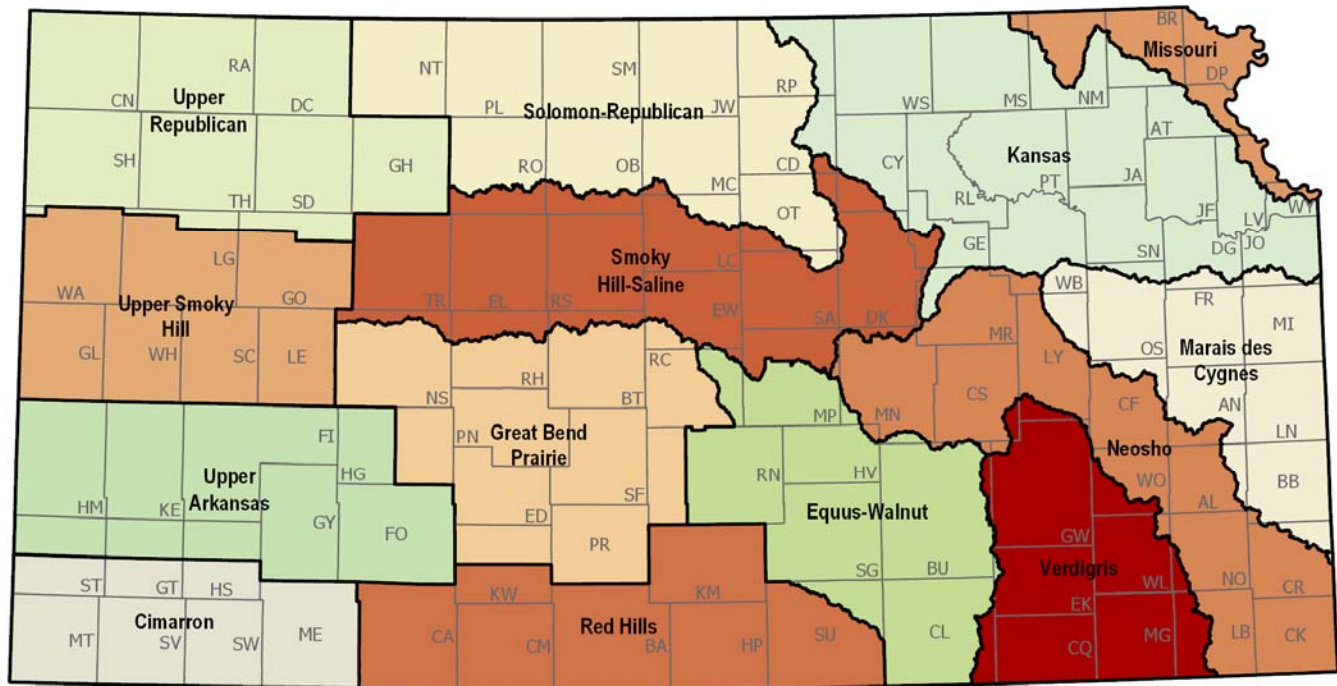


Figure 2: Kansas Regional Planning Areas in the Kansas Water Plan

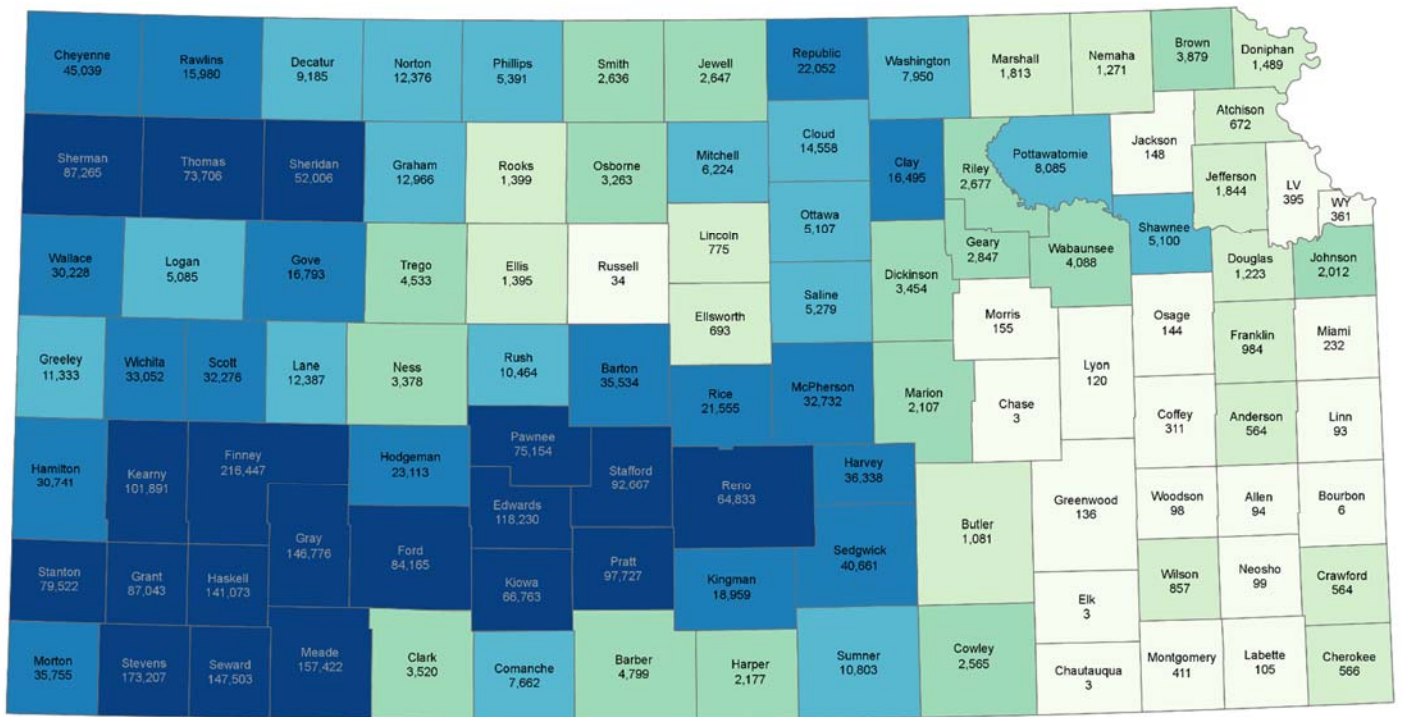


Figure 3: Quantity of Water Diverted for Irrigation in Acre-Feet by County, 2017

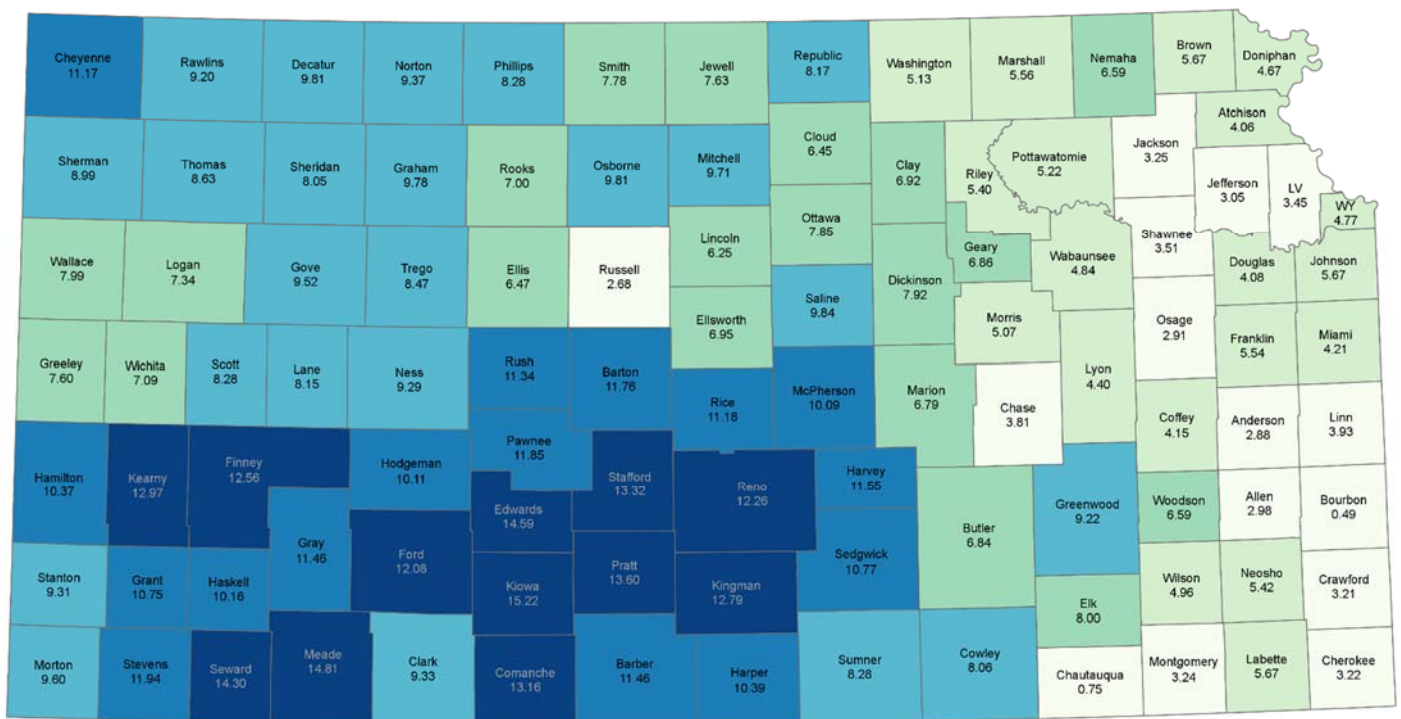


Figure 4: Application Depth in Inches by County, 2017

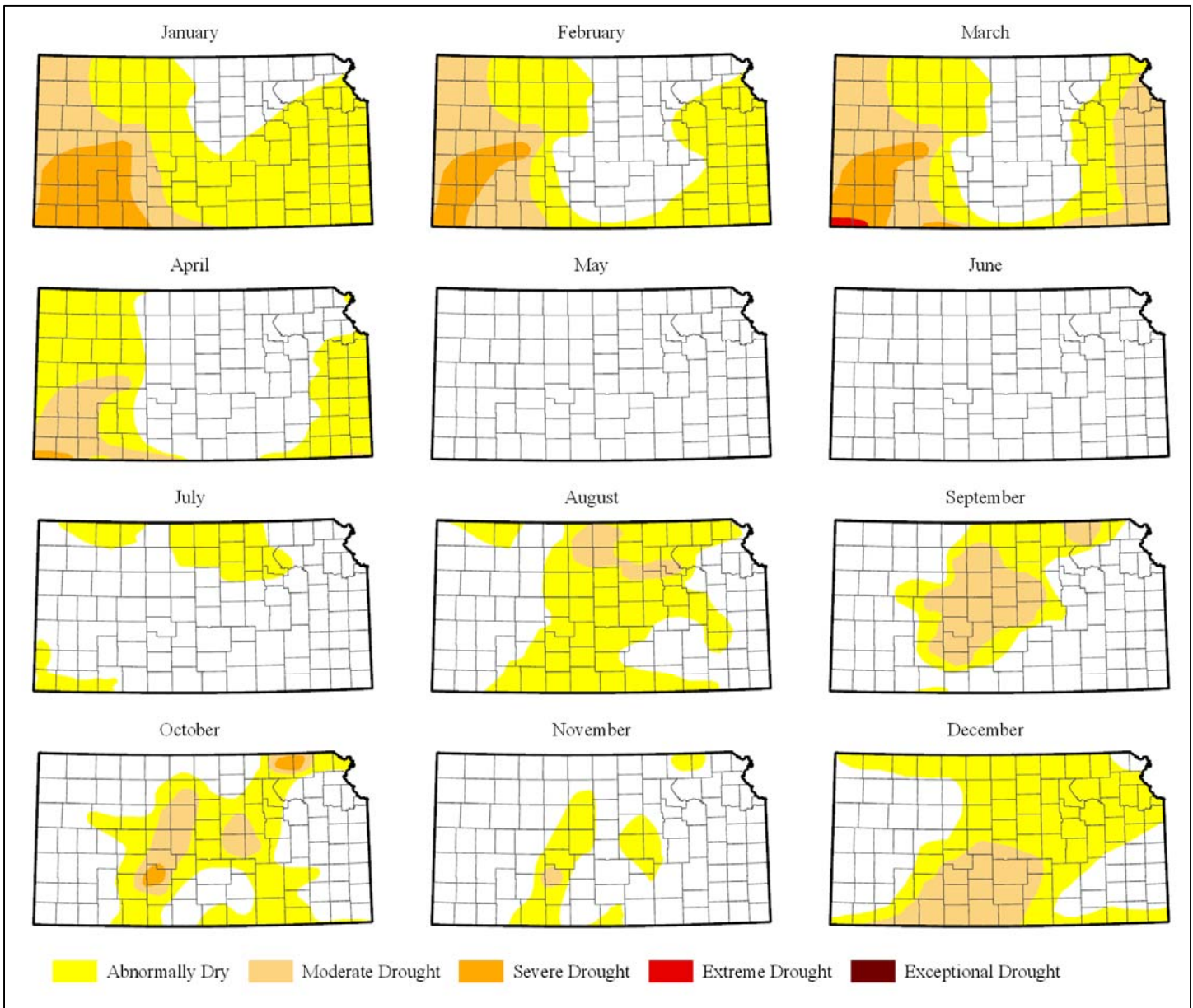


Figure 5: Drought Intensity for the First Tuesday of Each Month, 2017 (Data: U.S. Drought Monitor)

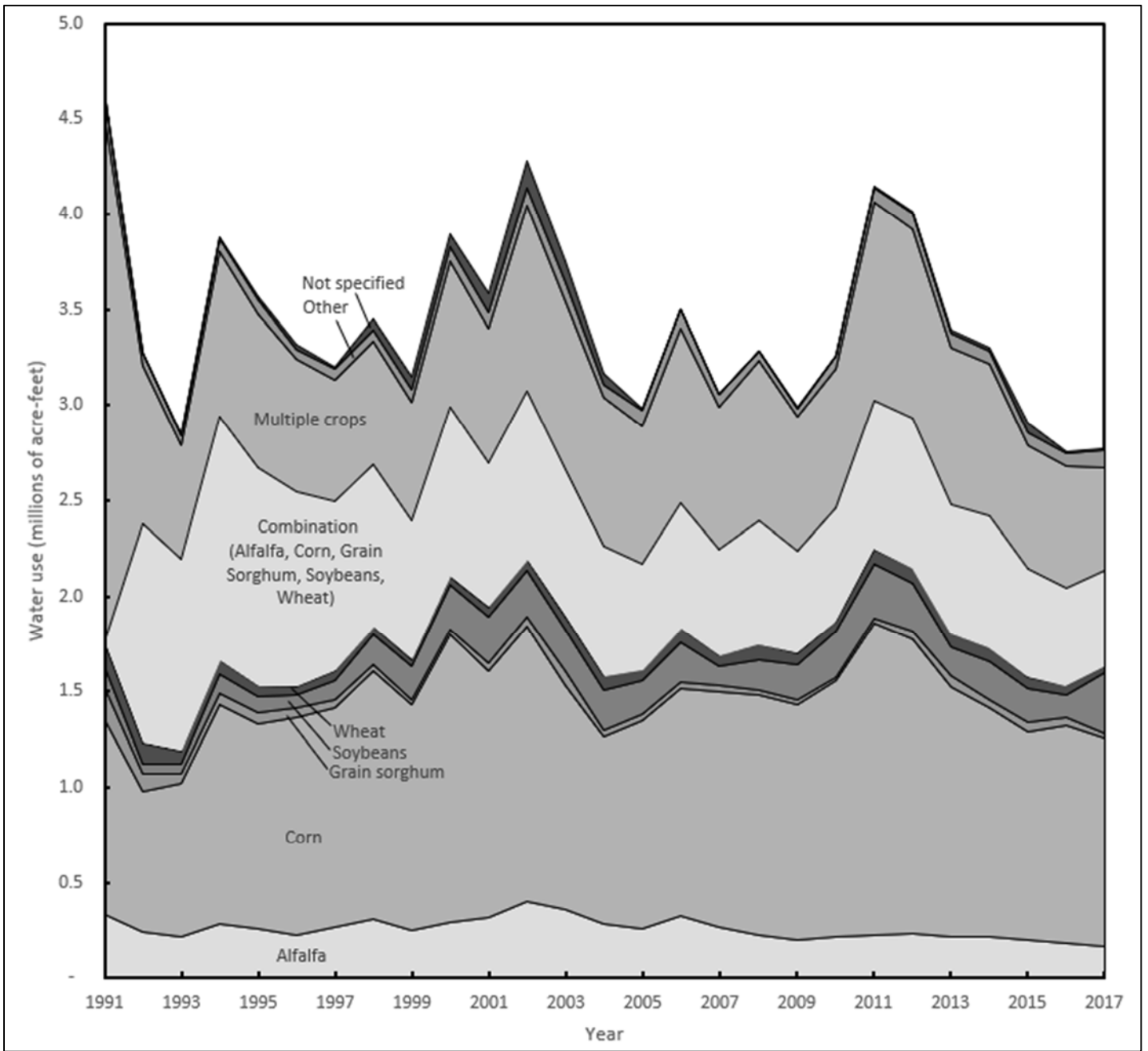


Figure 6: Historical Water Use in Acre-Feet by Crop 1991–2017.

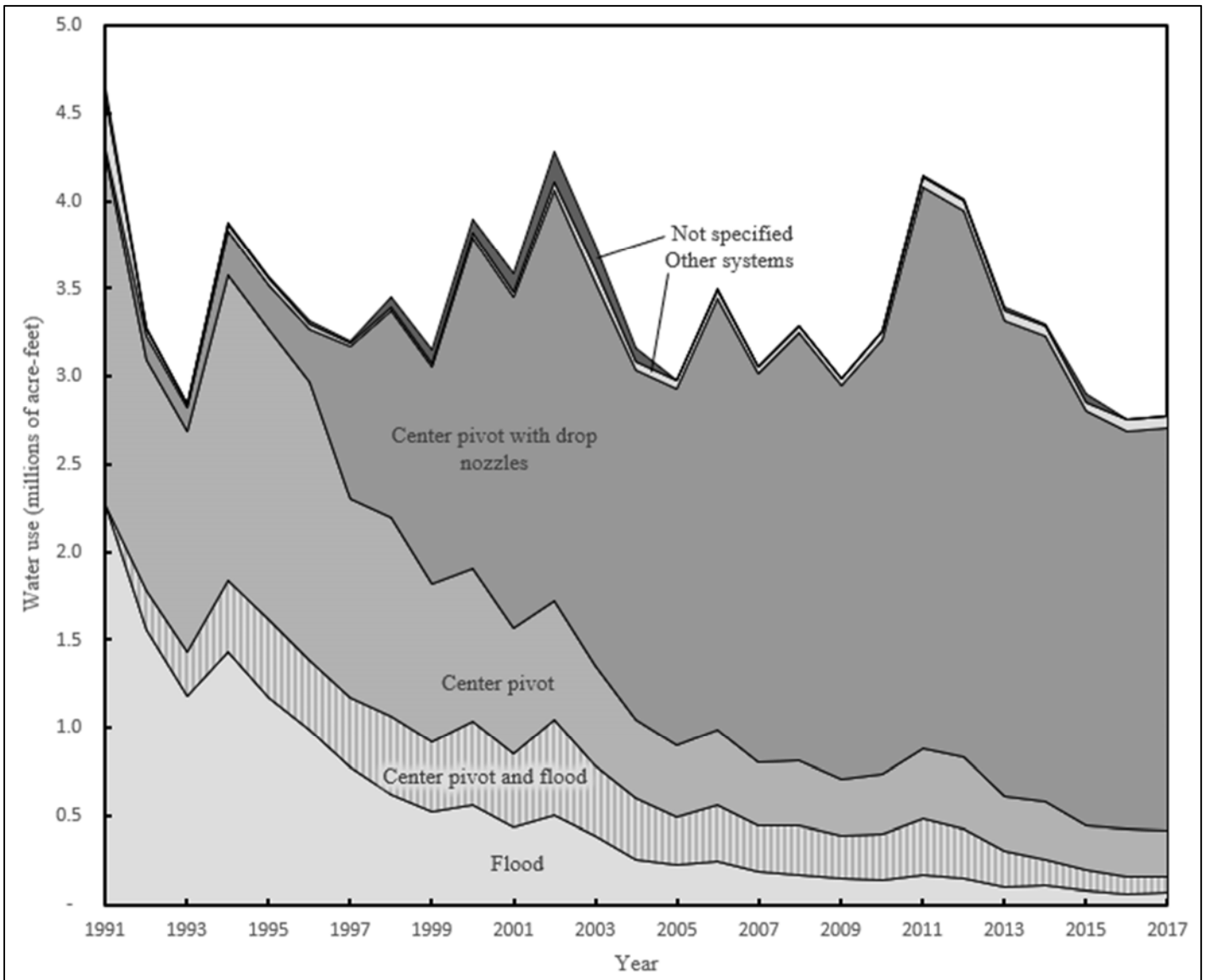


Figure 7: Historical Water Use in Acre-Feet by System Type, 1991–2017. Systems reported as center pivot with mobile drip, sprinkler other than center pivot, drip (subsurface irrigation), drip and other systems, and “Other” are combined in series “Other systems.” Reduction in the water use for flood and center pivot flood is largely a result of newer methods being adopted.

Appendix B - Tables

Table 1: Water use and precipitation statistic by irrigation water use analysis region, 2013–2017

Kansas irrigation water use analysis regions (Figure 1)	Total number of active points of diversion, 2017	Water use, 2017 (acre-feet)	Reported irrigated area, 2017 (acres)	Application depth (inches)					2013-2017 Average	2017 Average annual precipitation (inches)	1981-2010 average annual precipitation (inches)
				2013	2014	2015	2016	2017			
Western Kansas											
GMD No. 1	2,787	115,306	177,528	11.30	10.96	9.29	9.02	7.79	9.67	27.09	18.78
Southwest Kansas											
GMD No. 3	10,963	1,383,587	1,393,101	15.65	15.55	12.90	12.99	11.92	13.80	27.00	19.36
Northwest Kansas											
GMD No. 4	3,722	293,669	392,003	14.22	12.25	11.42	11.20	8.99	11.62	27.66	20.06
Remainder of Western Kansas	2,464	93,205	113,022	11.86	10.94	9.92	9.86	9.90	10.50	25.79	20.77
<i>Equus Beds</i>											
GMD No. 2 ¹	2,524	145,596	150,786	7.74	10.21	9.21	6.35	11.59	9.02	28.83	31.71
Big Bend											
GMD No. 5	4,879	511,326	458,119	11.52	11.83	12.92	10.87	13.39	12.11	27.78	26.80
Remainder of Central Kansas	6,311	190,922	273,152	7.14	7.58	7.07	5.97	8.39	7.23	30.23	30.02
All Eastern Kansas	2,034	37,769	100,809	5.46	5.10	3.18	4.02	4.50	4.45	40.50	39.26
State Total	35,684	2,771,380	3,058,520	13.10	12.89	11.46	10.89	10.87	11.84	-	-

¹GMD No. 2 was expanded in July 2017. For comparison purposes, water use data is for the current boundaries for all years

Table 2: Water use and precipitation statistics by regional planning area, 2013–2017

Kansas Regional Planning Area	Total number of active points of diversion, 2017	Water use, 2017 (acre-feet)	Reported irrigated area, 2017 (acres)	Application depth (inches)					2017 Average annual precipitation (inches)	1981-2010 Average annual precipitation (inches)	
				2013	2014	2015	2016	2017			2013-2017 Average
Cimarron	3,994	655,973	639,482	16.08	16.24	13.21	13.48	12.31	14.27	27.54	18.85
<i>Equus</i> -Walnut	3,423	168,285	183,873	7.44	9.74	8.68	6.23	10.98	8.61	33.43	34.38
Great Bend Prairie	5,834	548,754	499,458	11.42	11.66	12.66	10.65	13.18	11.91	27.50	25.59
Kansas	2,554	68,359	148,754	5.94	5.77	4.03	4.28	5.51	5.11	36.05	34.86
Marais des Cygnes	207	2,186	6,404	5.53	4.84	5.46	4.24	4.10	4.83	44.70	40.75
Missouri	188	6,498	14,644	5.39	3.90	3.60	5.00	5.32	4.64	32.68	35.38
Neosho	292	4,123	10,381	4.41	4.97	4.37	3.27	4.77	4.36	39.85	39.68
Red Hills	726	43,176	43,305	9.60	11.24	10.73	10.01	11.96	10.71	29.33	28.94
Smoky Hill-Saline	1,124	23,949	35,276	6.50	7.92	7.48	5.43	8.15	7.09	27.75	27.21
Solomon-Republican	2,437	60,673	87,513	8.04	7.59	7.36	6.31	8.32	7.52	27.68	26.14
Upper Arkansas	7,309	750,694	778,959	15.23	14.91	12.58	12.56	11.56	13.37	26.31	19.66
Upper Republican	4,289	312,201	415,293	14.15	12.16	11.38	11.13	9.02	11.57	26.82	20.48
Upper Smoky Hill	3,159	124,920	191,058	11.21	10.87	9.22	8.96	7.85	9.62	26.46	19.10
Verdigris	147	1,410	3,820	3.62	3.96	3.60	2.55	4.43	3.63	39.51	40.66
State Total	35,683	2,771,201	3,058,220	13.10	12.89	11.46	10.89	10.87	11.84	-	-

Table 3: Water use and precipitation statistics by county, 2013–2017

County	Total number of active points of diversion, 2017	Water use, 2017 (acre-feet)	Reported irrigated area, 2017 (acres)	Application depth (inches)					2013-2017 Average	2017 Average annual precipitation (inches)	1981-2010 Average annual precipitation (inches)
				2013	2014	2015	2016	2017			
Allen	11	94	380	1.50	1.64	1.24	1.09	2.98	1.69	43.20	42.57
Anderson	36	564	2,348	4.68	3.81	3.64	2.86	2.88	3.58	41.22	40.79
Atchison	41	672	1,985	3.65	1.95	3.59	4.32	4.06	3.52	37.42	37.01
Barber	95	4,799	5,025	9.51	10.00	9.82	9.35	11.46	10.03	30.50	28.46
Barton	477	35,534	36,266	9.50	10.07	11.68	9.61	11.76	10.52	27.67	26.57
Bourbon	13	6	152	3.30	2.07	2.01	0.56	0.49	1.69	53.36	43.81
Brown	105	3,879	8,215	4.72	4.51	4.08	5.03	5.67	4.80	30.47	34.59
Butler	52	1,081	1,896	5.78	6.80	4.16	6.98	6.84	6.11	36.36	36.57
Chase	15	3	11	1.67	3.91	0.00	0.00	3.81	1.88	31.29	35.97
Chautauqua	12	3	40	0.09	4.79	0.29	0.00	0.75	1.18	40.83	40.96
Cherokee	30	566	2,107	3.03	4.26	3.57	2.33	3.22	3.28	51.02	44.95
Cheyenne	628	45,039	48,371	17.38	12.00	13.89	12.00	11.17	13.29	22.07	18.79
Clark	68	3,520	4,528	9.76	8.95	7.13	8.00	9.33	8.64	23.96	23.20
Clay	406	16,495	28,609	6.69	6.59	5.09	4.74	6.92	6.00	33.43	30.81
Cloud	436	14,558	27,065	6.17	6.24	4.83	3.87	6.45	5.51	34.38	28.94
Coffey	39	311	898	4.81	4.44	3.83	3.03	4.15	4.05	37.17	39.30
Comanche	100	7,662	6,988	11.25	12.31	11.54	11.33	13.16	11.92	26.21	25.86
Cowley	106	2,565	3,821	4.64	6.73	6.65	6.39	8.06	6.49	40.87	38.26
Crawford	30	564	2,107	5.30	3.72	2.85	3.41	3.21	3.70	54.67	45.08
Decatur	271	9,185	11,233	14.36	11.85	10.68	10.78	9.81	11.50	26.23	21.43
Dickinson	173	3,454	5,231	6.19	8.15	7.05	4.60	7.92	6.78	31.95	32.48
Doniphan	28	1,489	3,828	5.25	2.23	2.37	3.96	4.67	3.69	32.13	36.08
Douglas	70	1,223	3,599	6.25	4.71	2.99	5.68	4.08	4.74	45.85	38.83
Edwards	1,028	118,230	97,233	12.46	12.70	13.59	11.80	14.59	13.03	26.40	25.14
Elk	1	3	5	7.36	9.45	8.95	7.87	8.00	8.33	37.56	40.24
Ellis	145	1,395	2,586	8.86	9.33	6.80	4.59	6.47	7.21	27.09	23.72
Ellsworth	33	693	1,195	5.15	4.61	7.21	5.18	6.95	5.82	28.49	28.50
Finney	1,914	216,447	206,742	16.88	16.36	13.97	13.39	12.56	14.63	24.86	19.55
Ford	938	84,165	83,597	12.56	11.76	11.13	10.05	12.08	11.52	26.98	22.52
Franklin	56	984	2,132	5.21	5.84	10.15	6.71	5.54	6.69	42.94	39.45
Geary	96	2,847	4,982	5.91	6.46	3.77	4.17	6.86	5.43	33.68	34.21
Gove	378	16,793	21,158	11.67	10.83	10.28	9.64	9.52	10.39	26.22	20.79
Graham	248	12,966	15,916	13.10	11.55	12.00	9.53	9.78	11.19	27.00	22.38
Grant	812	87,043	97,129	15.31	15.47	12.81	13.11	10.75	13.49	28.88	17.60
Gray	1,592	146,776	153,755	14.49	14.19	10.99	11.42	11.46	12.51	26.31	20.76
Greeley	271	11,333	17,900	11.26	11.45	9.92	8.75	7.60	9.79	25.12	17.74
Greenwood	16	136	177	12.89	7.73	6.05	4.28	9.22	8.03	36.24	38.49
Hamilton	267	30,741	35,587	16.28	15.49	13.54	14.76	10.37	14.09	25.06	17.39

Table 3: Water use and precipitation statistics by county, 2013–2017 — Continued

County	Total number of active points of diversion, 2017	Water use, 2017 (acre-feet)	Reported irrigated area, 2017 (acres)	Application depth (inches)					2013-2017 Average	2017 Average annual precipitation (inches)	1981-2010 Average annual precipitation (inches)
				2013	2014	2015	2016	2017			
Harper	80	2,177	2,515	7.13	11.56	7.97	9.01	10.39	9.21	30.80	31.83
Harvey	593	36,338	37,762	7.24	9.28	8.60	5.67	11.55	8.47	29.39	33.14
Haskell	1,139	141,073	166,654	13.26	13.63	10.66	10.46	10.16	11.63	24.98	19.01
Hodgeman	464	23,113	27,428	10.69	10.14	8.64	8.57	10.11	9.63	27.74	22.27
Jackson	17	148	546	3.94	2.85	2.38	2.84	3.25	3.05	36.83	36.02
Jefferson	133	1,844	7,245	5.45	4.93	2.04	3.74	3.05	3.84	42.92	38.20
Jewell	94	2,647	4,162	7.01	5.79	6.39	5.69	7.63	6.50	24.79	27.14
Johnson	118	2,012	4,261	8.97	7.49	6.19	7.63	5.67	7.19	49.35	40.73
Kearny	839	101,891	94,283	17.51	18.19	16.25	16.18	12.97	16.22	26.40	18.71
Kingman	261	18,959	17,794	8.99	12.09	11.81	10.44	12.79	11.22	31.18	31.24
Kiowa	476	66,763	52,625	13.51	13.19	14.75	13.01	15.22	13.94	24.70	25.40
Labette	23	105	222	2.98	1.97	1.94	0.95	5.67	2.70	48.51	43.69
Lane	263	12,387	18,245	10.23	9.45	8.63	8.63	8.15	9.02	24.56	20.44
Leavenworth	36	395	1,377	5.79	4.66	2.77	4.44	3.45	4.22	45.98	39.12
Lincoln	48	775	1,490	6.20	5.36	6.15	4.99	6.25	5.79	29.90	28.04
Linn	11	93	283	5.70	5.22	5.14	4.19	3.93	4.83	46.44	42.36
Logan	134	5,085	8,311	10.82	10.23	9.89	8.76	7.34	9.41	26.55	18.66
Lyon	15	120	327	5.32	3.95	5.27	3.87	4.40	4.56	34.91	37.40
Marion	117	2,107	3,725	4.77	7.04	5.47	4.46	6.79	5.71	29.96	33.87
Marshall	111	1,813	3,911	5.73	5.45	4.33	5.34	5.56	5.28	29.92	33.09
McPherson	666	32,732	38,912	6.67	9.20	8.99	6.17	10.09	8.22	27.98	31.39
Meade	734	157,422	127,582	17.66	17.47	13.62	14.11	14.81	15.53	26.33	20.98
Miami	32	232	661	12.49	7.23	9.94	4.94	4.21	7.76	46.78	41.08
Mitchell	205	6,224	7,695	5.69	6.95	7.88	5.07	9.71	7.06	27.12	27.42
Montgomery	48	411	1,526	2.67	3.26	2.88	2.83	3.24	2.97	42.80	42.99
Morris	23	155	366	4.12	4.68	8.20	3.61	5.07	5.14	30.62	35.35
Morton	426	35,755	44,688	12.24	14.78	11.86	12.75	9.60	12.25	28.79	17.43
Nemaha	59	1,271	2,315	6.16	4.86	3.99	6.02	6.59	5.52	28.62	34.11
Neosho	11	99	219	4.01	4.76	2.29	2.29	5.42	3.75	39.85	39.68
Ness	146	3,378	4,364	9.54	9.73	8.86	6.98	9.29	8.88	26.54	21.99
Norton	495	12,376	15,852	11.18	10.38	9.77	10.98	9.37	10.33	26.80	22.54
Osage	32	144	594	3.57	3.96	3.71	2.90	2.91	3.41	38.97	38.31
Osborne	198	3,263	3,989	9.38	9.07	8.01	7.09	9.81	8.67	23.67	26.27
Ottawa	253	5,107	7,804	4.17	6.15	6.24	3.30	7.85	5.54	30.83	29.69
Pawnee	907	75,154	76,124	10.86	11.28	10.64	8.33	11.85	10.59	26.42	24.45
Phillips	299	5,391	7,809	10.58	9.34	9.73	9.19	8.28	9.42	28.59	23.91
Pottawatomic	312	8,085	18,592	5.18	5.69	2.74	3.32	5.22	4.43	32.30	34.15
Pratt	794	97,727	86,247	11.61	11.40	13.04	11.94	13.60	12.32	29.24	27.81

Table 3: Water use and precipitation statistics by county, 2013–2017 — Continued

County	Total number of active points of diversion, 2017	Water use, 2017 (acre-feet)	Reported irrigated area, 2017 (acres)	Application depth (inches)					2013-2017 Average	2017 Average annual precipitation (inches)	1981-2010 Average annual precipitation (inches)
				2013	2014	2015	2016	2017			
Rawlins	300	15,980	20,838	13.41	10.95	10.85	10.14	9.20	10.91	26.34	20.88
Reno	1,169	64,833	63,478	8.78	11.42	11.23	7.69	12.26	10.28	29.07	30.45
Republic	502	22,052	32,409	7.54	6.36	6.64	5.58	8.17	6.86	30.84	29.41
Rice	442	21,555	23,133	8.95	10.40	11.63	8.43	11.18	10.12	26.97	28.77
Riley	135	2,677	5,945	5.74	5.67	2.66	3.41	5.40	4.58	32.50	33.07
Rooks	84	1,399	2,397	10.98	8.90	8.86	4.55	7.00	8.06	25.45	24.09
Rush	352	10,464	11,077	10.04	8.63	11.07	7.46	11.34	9.71	25.75	23.77
Russell	19	34	151	4.60	9.81	6.01	2.90	2.68	5.20	26.78	26.10
Saline	225	5,279	6,440	4.94	7.63	7.74	5.91	9.84	7.21	27.93	30.34
Scott	886	32,276	46,803	10.71	11.18	10.18	9.68	8.28	10.01	28.10	19.39
Sedgwick	882	40,661	45,284	7.26	9.49	7.05	5.85	10.77	8.08	32.67	33.83
Seward	725	147,503	123,779	17.65	17.19	14.60	15.01	14.30	15.75	26.17	19.51
Shawnee	318	5,100	17,454	5.89	5.27	1.84	3.56	3.51	4.01	39.05	37.09
Sheridan	810	52,006	77,505	11.40	11.51	10.29	10.03	8.05	10.26	30.04	21.24
Sherman	913	87,265	116,537	15.52	12.94	11.75	11.97	8.99	12.23	27.31	18.97
Smith	187	2,636	4,065	6.92	6.64	6.46	5.66	7.78	6.69	27.34	25.51
Stafford	792	92,667	83,508	11.29	11.74	13.55	10.86	13.32	12.15	29.03	27.01
Stanton	824	79,522	102,470	14.20	13.71	11.59	11.72	9.31	12.11	29.57	17.18
Stevens	947	173,207	174,146	17.29	16.96	13.88	14.39	11.94	14.89	28.65	18.49
Sumner	398	10,803	15,649	5.52	7.49	6.19	4.90	8.28	6.48	35.08	34.32
Thomas	846	73,706	102,518	13.85	12.44	10.89	11.34	8.63	11.43	29.16	19.96
Trego	157	4,533	6,419	10.70	10.00	10.51	8.27	8.47	9.59	24.30	22.18
Wabaunsee	177	4,088	10,142	5.43	6.06	2.57	3.64	4.84	4.50	36.15	36.12
Wallace	562	30,228	45,412	13.54	12.61	9.84	9.97	7.99	10.79	26.95	18.20
Washington	351	7,950	18,594	4.51	4.66	3.93	3.90	5.13	4.42	33.16	31.31
Wichita	939	33,052	55,904	10.37	9.83	8.07	7.89	7.09	8.65	28.33	18.63
Wilson	70	857	2,072	4.19	4.21	3.96	2.27	4.96	3.92	40.75	42.05
Woodson	2	98	179	4.01	4.46	6.62	1.62	6.59	4.66	36.62	41.41
Wyandotte	21	361	910	7.76	5.86	3.84	7.22	4.77	5.89	50.43	40.26
State Total	35,684	2,771,380	3,058,520	13.10	12.89	11.46	10.89	10.87	11.84	-	-

Table 4: Water use, irrigated area and application depth by crop type and irrigation water use analysis region, 2017

Irrigation water use analysis regions	Water use (thousands of acre-feet)									Reported irrigated area (thousands of acres)								Application depth (inches)									
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴
Western Kansas																											
GMD No. 1	0.9	41.2	1.6	0.7	2.2	30.7	37.0	0.9	0.1	0.7	50	3.1	0.9	5.5	54.1	61.1	1.7	0.1	15.18	9.82	6.36	9.35	4.85	6.81	7.27	6.18	9.87
Southwest Kansas																											
GMD No. 3	121.1	478.7	11.4	69.2	21.2	299.2	340.5	40.3	2.1	82.1	415	14.5	56.9	27.6	363.3	384.0	47.8	2.2	17.70	13.85	9.43	14.59	9.18	9.88	10.64	10.12	11.50
Northwest Kansas																											
GMD No. 4	4.8	171.2	2.4	20.6	2.9	50.3	33.4	7.4	0.6	5.7	201	4.8	25.2	10.4	77.3	53.5	13.0	1.0	10.21	10.21	5.90	9.81	3.39	7.81	7.50	6.84	7.36
Remainder of Western Kansas	11.3	36.5	2.3	5.4	1.5	15.6	17.6	2.5	0.5	11.0	39	3.0	6.8	2.9	21.3	23.0	5.0	0.8	12.34	11.15	9.36	9.68	6.14	8.79	9.18	5.95	7.10
Equus Beds																											
GMD No. 2 ⁵	1.1	49.5	0.5	45.9	0.4	23.2	21.1	3.5	0.4	1.3	48	0.6	48.6	0.5	24.3	23.2	4.1	0.5	10.07	12.47	11.15	11.33	8.43	11.47	10.88	10.05	11.98
Big Bend																											
GMD No. 5	23.5	230.3	3.4	119.1	3.7	35.1	69.6	25.6	1.1	21.8	187	4.3	103.9	8.6	33.6	66.4	32.0	0.8	12.94	14.81	9.47	13.75	5.08	12.53	12.58	9.61	16.19
Remainder of Central Kansas	5.3	64.1	2.4	47.0	0.4	43.5	18.5	9.1	0.6	8.5	85	3.8	69.4	1.3	66.0	25.1	12.9	1.2	7.45	9.05	7.73	8.13	3.75	7.91	8.86	8.46	5.77
All Eastern Kansas	0.1	13.8	-	10.3	-	7.4	2.4	3.7	0.0	0.2	35	-	30.9	-	22.7	4.9	7.5	0.0	4.59	4.79	-	4.01	-	3.93	5.78	6.01	2.60
State Total	168.1	1,085.3	24.0	318.1	32.2	505.1	540.1	93.0	5.4	131.3	1,059.3	34.0	342.5	56.9	662.6	641.3	124.0	6.6	15.36	12.29	8.49	11.15	6.80	9.15	10.11	9.00	9.81

¹Combination of alfalfa, corn, grain sorghum (milo), soybeans and wheat

²“More than one type of crop”, “Double crop” or a combination of crops including a crop other than alfalfa, corn, grain sorghum, soybeans and wheat

³Oats, barley, rye, dry beans, sunflowers, golf course, truck farm, orchard, nursery, sod/turf grass, cotton, grapes and other

⁴Crop not specified on water use report

⁵GMD No. 2 was expanded in July 2017. For comparison purposes, water use data is for the current boundaries for all years

Table 5: Water use, irrigated area and application depth by crop and regional planning area, 2017

Regional planning area	Water use, in thousands of acre-feet									Reported irrigated area in thousands of acres								Application depth, in inches										
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	
	Cimarron	7.5	249.1	4.0	0.7	5.8	163.2	177.8	14.2	0.2	4.8	211	5.3	27.5	8.5	174.8	187.4	20.2	0.3	18.62	14.19	9.08	0.29	8.10	11.20	11.39	8.41	10.04
Equus-Walnut	1.1	57.0	0.5	69.2	0.4	25.3	22.8	6.2	0.4	1.3	59	0.6	60.9	0.6	27.6	25.9	7.8	0.5	10.07	11.65	11.15	13.62	8.35	3.33	10.54	9.57	11.98	
Great Bend Prairie	25.0	243.8	4.8	20.6	4.5	41.8	79.7	26.2	1.1	23.5	200	6.2	107.2	9.6	41.3	78.2	33.3	0.8	12.78	14.67	9.32	2.30	5.57	5.12	12.24	9.44	16.25	
Kansas	0.1	24.5	0.0	5.4	0.0	19.0	3.4	3.6	0.1	0.2	48	0.1	43.7	0.0	41.8	7.6	6.6	0.2	6.52	6.07	3.23	1.50	0.12	12.74	5.36	6.58	5.59	
Marais des Cygnes	0.0	0.6	-	45.9	-	0.5	0.5	0.5	-	0.0	2	-	1.1	-	1.9	0.1	1.2	-	1.10	3.36	-	518.50	-	13.15	48.70	4.70	-	
Missouri	-	2.9	-	119.1	-	1.7	-	0.3	-	-	6	-	4.4	-	4.2	-	0.3	-	-	5.93	-	322.66	-	-	-	10.52	-	
Neosho	0.1	1.1	-	47.0	-	1.3	0.3	0.2	-	0.1	3	-	3.0	-	3.2	1.0	0.4	-	4.59	4.84	-	185.71	-	5.18	4.04	5.50	-	
Red Hills	1.1	11.9	0.9	10.3	0.3	5.3	7.6	3.8	0.2	1.5	10	1.4	10.7	0.9	5.1	8.0	5.1	0.3	8.32	13.82	7.79	11.56	3.68	8.06	11.49	8.96	8.27	
Smoky Hill-Saline	0.7	7.9	0.6	-	0.0	7.0	2.8	1.0	0.4	1.0	10	0.8	5.9	0.3	9.9	4.6	1.5	1.2	8.43	9.32	8.10	-	1.86	-	7.19	7.57	4.49	
Solomon-Republican	2.7	26.1	0.5	-	0.2	14.1	4.1	0.8	0.2	5.5	35	0.8	18.2	0.7	19.4	6.6	1.4	0.2	5.97	9.01	7.21	-	3.34	-	7.49	6.28	12.43	
Upper Arkansas	120.8	234.0	8.4	-	15.7	140.6	166.6	26.5	1.9	83.1	208	10.1	30.7	19.7	195.7	200.8	28.6	1.9	17.45	13.48	9.92	-	9.54	-	9.96	11.14	11.70	
Upper Republican	7.9	180.5	2.6	-	3.1	51.4	35.9	8.1	0.7	9.1	212	5.2	27.3	10.8	78.7	56.9	14.3	1.1	10.43	10.22	6.01	-	3.45	11.39	7.56	6.81	7.16	
Upper Smoky Hill	1.1	45.6	1.8	-	2.3	33.2	38.5	1.5	0.1	1.2	56	3.5	0.9	5.8	57.4	63.9	2.8	0.1	11.85	9.87	6.15	-	4.81	10.02	7.23	6.43	9.87	
Verdigris	-	0.4	-	-	-	0.5	0.1	0.1	-	-	1	-	1.0	-	1.4	0.3	0.4	-	-	6.32	-	-	-	-	6.57	4.62	4.24	-
State Total	168	1,085	24	318	32	505	540	93	5	131	1,059	34	342	57	662	641	124	6.6	15.36	12.29	8.49	11.15	6.80	6.96	10.11	9.00	9.81	

¹Combination of alfalfa, corn, grain sorghum (milo), soybeans and wheat

²“More than one type of crop”, “Double crop” or a combination of crops including a crop other than alfalfa, corn, grain sorghum, soybeans and wheat

³Oats, barley, rye, dry beans, sunflowers, golf course, truck farm, orchard, nursery, sod/turf grass, cotton, grapes and other

⁴Crop not specified on water use report

Table 6: Water use, irrigated area and application depth by crop and irrigation water use analysis region, 2017

County	Water use in thousands of acre-feet									Reported irrigated area in thousands of acres								Application depth in inches									
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴
Allen	0.1	0.1	-	-	-	0.0	-	-	-	-	0.1	-	-	-	0.2	-	-	-	-	4.81	-	-	-	1.91	-	-	-
Anderson	-	0.0	-	0.1	-	0.4	0.0	0.0	-	-	0.2	-	0.6	-	1.3	0.1	0.1	-	-	2.65	-	1.63	-	3.33	4.34	3.60	-
Atchison	-	0.3	-	0.1	-	0.2	-	0.0	-	-	1.0	-	0.5	-	0.5	-	0.0	-	-	4.13	-	2.56	-	5.12	-	6.35	-
Barber	0.1	2.1	-	1.2	-	0.1	0.4	0.8	-	0.1	2.0	-	1.1	-	0.1	0.5	1.2	-	10.31	12.94	-	13.42	-	12.74	9.46	8.20	-
Barton	1.7	16.3	0.5	8.6	0.2	2.8	4.0	1.4	-	2.1	15.1	0.7	9.3	0.4	2.6	4.3	1.8	-	9.42	12.95	9.31	11.20	6.35	13.15	11.06	9.23	-
Bourbon	0.0	-	-	0.0	-	-	-	0.0	-	0.0	-	-	0.1	-	-	-	0.0	-	1.10	-	-	0.57	-	-	-	0.07	-
Brown	-	1.6	-	0.9	-	1.3	-	0.0	-	-	2.9	-	2.3	-	3.0	-	0.0	-	-	6.74	-	4.87	-	5.18	-	13.48	-
Butler	-	0.2	-	0.0	-	0.5	-	0.3	-	-	0.5	-	0.2	-	0.8	-	0.4	-	-	4.83	-	1.87	-	8.06	-	9.34	-
Chase	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	3.81	-
Chautauqua	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	0.75	-
Cherokee	-	0.3	-	0.2	-	-	0.1	-	-	-	0.8	-	0.7	-	-	0.6	-	-	-	3.76	-	2.88	-	-	2.85	-	-
Cheyenne	2.9	28.3	0.0	3.3	0.3	4.2	5.2	0.8	-	2.7	28.8	0.1	3.3	1.1	4.4	6.8	1.2	-	13.17	11.79	4.10	11.76	3.40	11.39	9.28	8.32	-
Clark	0.1	0.2	0.0	0.5	0.1	1.4	0.8	0.1	0.2	0.4	0.2	0.0	0.4	0.4	1.7	1.0	0.2	0.3	4.01	12.79	8.72	15.87	2.89	10.02	10.12	7.98	8.27
Clay	-	6.7	-	3.7	-	5.4	0.7	0.1	-	-	10.4	-	7.1	-	9.8	1.2	0.1	-	-	7.73	-	6.18	-	6.57	6.90	12.11	-
Cloud	0.3	4.5	-	2.5	-	5.8	1.5	0.1	-	1.4	7.9	-	5.1	-	9.9	2.5	0.2	-	2.23	6.91	-	5.79	-	6.96	7.07	2.80	-
Coffey	-	0.2	-	0.0	-	0.1	-	0.0	-	-	0.4	-	0.1	-	0.3	-	0.1	-	-	5.02	-	3.06	-	2.54	-	6.40	-
Comanche	0.7	1.8	0.7	1.7	0.1	-	2.4	0.3	-	0.8	1.3	0.8	1.2	0.2	-	2.2	0.5	-	9.38	17.08	9.31	17.26	5.98	-	13.51	7.00	-
Cowley	-	0.7	-	0.7	0.0	0.6	0.3	0.2	-	-	0.8	-	1.3	0.0	1.1	0.5	0.2	-	-	10.54	-	6.81	0.02	7.09	8.86	9.13	-
Crawford	-	0.1	-	0.1	-	0.3	-	0.0	-	-	0.4	-	0.7	-	1.0	-	0.1	-	-	4.08	-	2.03	-	3.47	-	5.46	-
Decatur	0.6	5.6	0.1	1.2	0.0	0.3	0.9	0.4	0.0	0.8	6.1	0.2	1.4	0.2	0.3	1.5	0.6	0.1	8.71	11.07	6.11	10.51	2.22	11.56	7.14	7.63	4.93
Dickinson	0.2	1.5	-	0.5	-	0.8	0.4	0.1	-	0.2	1.8	-	1.0	-	1.3	0.8	0.1	-	9.87	9.75	-	5.92	-	7.14	6.52	12.60	-
Doniphan	-	0.6	-	0.6	-	0.2	-	0.0	-	-	1.5	-	1.4	-	0.9	-	0.0	-	-	5.20	-	5.54	-	2.54	-	1.30	-

Table 6: Water use, irrigated area and application depth by crop and irrigation water use analysis region, 2017 — Continued

County	Water use in thousands of acre-feet									Reported irrigated area in thousands of acres								Application depth in inches									
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴
Douglas	-	0.4	-	0.3	-	0.1	0.3	0.2	-	-	1.3	-	1.3	-	0.5	0.3	0.3	-	-	3.78	-	3.10	-	1.50	10.97	6.63	-
Edwards	3.9	56.5	1.2	28.2	0.7	6.3	19.6	1.8	0.2	3.3	43.0	1.3	22.2	2.2	6.7	16.7	1.9	0.1	14.20	15.77	10.96	15.25	3.88	11.34	14.09	11.23	15.20
Elk	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	8.00	-
Ellis	0.3	0.4	0.2	0.1	0.0	-	0.3	0.1	-	0.4	0.6	0.3	0.1	0.0	-	0.5	0.7	-	7.71	8.42	8.33	12.89	9.28	-	6.80	2.54	-
Ellsworth	-	0.1	-	0.2	-	0.1	0.3	-	-	-	0.1	-	0.5	-	0.3	0.3	-	-	-	12.29	-	5.78	-	3.13	10.26	-	-
Finney	47.5	56.8	1.8	11.6	6.0	38.0	41.1	12.2	1.5	32.7	50.3	2.3	9.0	5.8	53.1	41.8	10.5	1.2	17.42	13.53	9.30	15.58	12.45	8.59	11.81	13.87	14.37
Ford	6.6	35.1	1.6	9.4	1.5	20.6	8.6	0.6	0.1	4.6	29.1	2.5	7.8	2.6	25.8	10.0	0.8	0.3	17.24	14.48	7.91	14.43	6.93	9.56	10.30	9.24	3.78
Franklin	-	0.4	-	0.0	-	0.2	0.4	-	-	-	1.4	-	0.2	-	0.5	0.0	-	-	-	3.28	-	1.72	-	3.64	104.8 3	-	-
Geary	-	1.1	-	0.3	-	1.1	0.3	0.1	-	-	1.8	-	0.7	-	1.4	1.0	0.1	-	-	7.53	-	4.49	-	8.93	3.25	16.07	-
Gove	0.3	8.9	0.2	1.3	0.2	3.0	1.9	0.8	0.1	0.4	9.9	0.3	1.6	0.6	3.9	2.9	1.2	0.2	9.65	10.76	7.63	9.37	3.19	9.24	8.16	7.91	7.91
Graham	0.9	7.1	0.2	1.6	0.1	2.0	1.1	0.1	-	1.0	8.0	0.6	2.0	0.3	2.1	1.7	0.2	-	9.87	10.57	4.31	9.51	5.36	11.39	7.55	4.83	-
Grant	1.4	21.6	1.3	1.8	2.6	22.8	33.7	2.0	-	0.9	20.4	1.3	2.0	2.9	27.3	37.8	4.6	-	18.84	12.72	11.48	10.87	10.72	10.02	10.70	5.08	-
Gray	18.7	60.1	2.2	6.6	2.8	25.3	27.8	3.3	-	13.4	51.0	2.4	6.0	5.2	38.1	34.2	3.6	-	16.78	14.13	10.94	13.17	6.50	7.97	9.77	11.19	-
Greeley	-	6.6	0.2	-	0.8	1.9	1.9	0.1	-	-	7.5	0.8	-	1.7	4.6	3.1	0.2	-	-	10.47	2.68	-	5.47	4.81	7.42	4.78	-
Greenwood	-	0.1	-	-	-	-	-	0.0	-	-	0.1	-	-	-	-	-	0.0	-	-	10.35	-	-	-	-	-	5.82	-
Hamilton	8.4	5.0	1.0	0.0	0.4	7.3	8.4	0.2	-	6.4	4.3	0.8	0.2	0.6	10.4	12.4	0.5	-	15.88	13.89	13.86	2.16	8.24	8.40	8.13	4.54	-
Harper	-	0.2	0.1	0.6	-	-	0.8	0.4	-	-	0.2	0.1	0.8	-	-	0.8	0.6	-	-	10.26	8.49	9.92	-	-	13.01	8.09	-
Harvey	0.2	12.3	0.0	10.1	0.0	8.6	4.8	0.3	-	0.2	12.0	0.1	11.3	0.1	8.7	5.1	0.4	-	13.56	12.31	4.20	10.70	5.26	11.81	11.39	10.39	-
Haskell	4.2	55.7	1.4	5.8	0.6	33.8	33.6	5.6	0.4	2.8	53.9	1.9	5.5	1.7	47.9	45.1	7.5	0.5	18.47	12.41	9.15	12.57	4.01	8.47	8.93	9.03	9.94
Hodgeman	0.1	8.9	0.5	1.1	0.4	3.8	7.4	0.8	-	0.1	8.5	0.7	1.1	0.6	5.9	8.6	1.9	-	19.62	12.58	8.75	11.96	8.51	7.78	10.34	4.78	-
Jackson	-	0.1	-	-	-	0.1	-	0.0	-	-	0.1	-	-	-	0.3	-	0.1	-	-	4.76	-	-	-	3.02	-	1.31	-

Table 6: Water use, irrigated area and application depth by crop and irrigation water use analysis region, 2017 — Continued

County	Water use in thousands of acre-feet									Reported irrigated area in thousands of acres								Application depth in inches										
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	
Jefferson	-	0.5	-	0.5	-	0.5	0.2	0.1	-	-	-	2.2	-	2.1	-	2.1	0.8	0.1	-	-	2.67	-	2.94	-	3.11	3.42	8.74	-
Jewell	0.0	1.5	-	0.7	0.0	0.4	-	-	-	0.0	2.3	-	1.2	0.1	0.6	-	-	-	7.21	7.91	-	6.91	0.70	8.93	-	-	-	
Johnson	-	0.0	-	-	-	-	-	2.0	-	-	0.1	-	-	-	-	-	4.1	-	-	3.12	-	-	-	-	-	5.74	-	
Kearny	34.8	26.6	0.1	3.4	3.3	10.4	17.9	5.4	-	23.0	24.8	0.2	3.1	3.4	14.9	19.6	5.3	-	18.16	12.87	5.19	13.23	11.85	8.35	10.93	12.27	-	
Kingman	0.2	6.6	0.1	5.9	0.0	3.2	2.4	0.6	-	0.2	5.6	0.2	5.6	0.0	2.7	2.7	0.8	-	11.23	14.02	5.32	12.66	2.32	14.11	10.73	9.81	-	
Kiowa	4.2	29.0	0.2	15.7	0.3	5.1	8.8	3.6	-	3.1	20.5	0.3	12.3	0.8	4.1	7.8	3.7	-	16.17	16.93	5.78	15.34	4.41	14.82	13.59	11.52	-	
Labette	-	-	-	0.1	-	-	-	0.0	-	-	-	-	-	0.2	-	-	0.0	-	-	-	-	5.67	-	-	-	5.89	-	
Lane	-	3.9	0.1	0.4	0.3	3.5	4.1	0.1	-	-	4.1	0.4	0.4	0.5	5.7	6.9	0.2	-	-	11.54	3.27	9.97	6.65	7.37	7.17	4.85	-	
Leavenworth	-	0.1	-	0.1	-	0.1	-	0.1	-	-	0.6	-	0.2	-	0.4	-	0.2	-	-	2.43	-	3.96	-	2.19	-	7.95	-	
Lincoln	0.0	0.0	-	-	-	0.5	-	0.0	0.2	0.1	0.1	-	-	-	0.6	-	0.0	0.8	5.21	6.48	-	-	-	10.13	-	10.22	3.45	
Linn	-	0.1	-	-	-	-	-	0.0	-	-	0.2	-	-	-	-	-	0.1	-	-	3.27	-	-	-	-	-	5.60	-	
Logan	0.0	3.2	-	-	0.1	1.1	0.3	0.3	-	0.2	4.4	-	-	0.6	2.0	0.5	0.7	-	2.54	8.85	-	-	1.36	6.60	8.26	5.60	-	
Lyon	0.0	0.1	-	-	-	-	0.0	0.0	-	0.1	0.2	-	-	-	-	0.1	0.0	-	7.32	4.16	-	-	-	-	3.24	0.07	-	
Marion	0.0	0.2	-	0.6	-	1.0	0.2	0.1	-	0.1	0.5	-	1.0	-	1.7	0.3	0.3	-	2.06	5.85	-	7.83	-	6.83	7.24	5.32	-	
Marshall	-	0.8	-	0.5	-	0.5	0.0	0.0	-	-	1.4	-	1.2	-	1.3	0.0	0.0	-	-	6.97	-	4.81	-	4.55	5.31	12.82	-	
McPherson	0.1	9.5	0.1	8.0	0.0	9.2	5.3	0.4	0.1	0.3	9.9	0.1	10.0	0.1	10.7	7.1	0.5	0.1	3.79	11.53	9.06	9.61	0.80	10.26	8.91	9.63	14.01	
Meade	0.4	59.0	0.4	17.2	0.4	44.9	33.0	2.1	-	0.5	44.4	0.3	12.8	0.6	40.5	27.1	1.5	-	8.77	15.94	17.84	16.14	8.14	13.31	14.66	16.92	-	
Miami	-	0.0	-	0.0	-	-	-	0.2	-	-	0.1	-	0.3	-	-	-	0.3	-	-	2.23	-	1.83	-	-	-	6.87	-	
Mitchell	0.3	3.2	0.1	1.4	-	0.9	0.1	0.1	0.2	0.6	3.7	0.1	1.6	-	1.2	0.1	0.3	0.2	5.35	10.53	11.37	10.09	-	9.29	7.82	5.71	12.43	
Montgomery	-	0.0	-	0.1	-	0.2	-	0.1	-	-	0.2	-	0.3	-	0.8	-	0.2	-	-	2.00	-	3.27	-	3.20	-	4.22	-	
Morris	-	0.1	-	0.1	-	-	-	0.0	-	-	0.1	-	0.2	-	-	-	0.0	-	-	8.33	-	3.63	-	-	-	5.64	-	
Morton	0.1	13.3	0.2	-	1.0	12.5	8.1	0.6	-	0.1	14.6	0.4	-	1.7	15.5	11.0	1.3	-	5.56	10.94	7.80	-	7.11	9.63	8.78	5.50	-	

Table 6: Water use, irrigated area and application depth by crop and irrigation water use analysis region, 2017 — Continued

County	Water use in thousands of acre-feet									Reported irrigated area in thousands of acres								Application depth in inches									
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴
Nemaha	-	0.5	-	0.3	-	0.3	-	0.1	-	-	0.9	-	0.8	-	0.5	-	0.2	-	-	7.19	-	5.05	-	7.18	-	8.76	-
Neosho	-	0.1	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	5.42	-	-	-	-	-	-	-
Ness	0.1	1.1	0.1	0.1	0.3	1.3	0.3	0.1	-	0.1	1.1	0.1	0.2	0.4	1.6	0.7	0.2	-	11.96	12.18	9.20	8.73	8.39	9.82	4.71	7.11	-
Norton	0.2	7.1	0.2	1.6	0.2	1.9	1.2	0.1	-	0.6	8.0	0.3	2.0	0.5	2.5	1.9	0.1	-	5.23	10.55	6.33	9.45	4.81	9.07	7.50	8.98	-
Osage	-	0.0	-	0.1	-	0.0	-	0.0	0.0	-	0.1	-	0.2	-	0.1	-	0.1	0.0	-	2.52	-	2.57	-	1.88	-	5.54	2.60
Osborne	0.2	0.9	0.1	1.0	-	0.8	0.1	0.0	-	0.2	1.2	0.2	1.4	-	0.9	0.1	0.0	-	11.86	9.13	8.63	8.85	-	11.69	13.00	8.11	-
Ottawa	-	0.8	0.1	2.0	-	1.9	0.2	0.1	-	-	1.9	0.3	2.9	-	2.4	0.3	0.1	-	-	5.23	6.30	8.18	-	9.55	8.34	10.85	-
Pawnee	4.7	26.4	0.9	12.8	0.8	9.8	11.9	7.8	0.1	5.1	23.7	1.2	12.5	1.9	9.6	13.9	8.2	0.1	11.11	13.38	9.08	12.29	4.79	12.23	10.31	11.41	13.27
Phillips	0.2	2.3	-	1.2	-	1.2	0.4	0.1	-	0.2	2.9	-	1.7	-	1.8	0.9	0.2	-	8.81	9.58	-	8.06	-	8.10	5.58	5.08	-
Pottawatomie	0.0	3.1	-	2.3	-	1.9	0.6	0.2	-	0.1	5.7	-	6.0	-	5.1	1.2	0.4	-	4.06	6.53	-	4.61	-	4.46	5.60	4.40	-
Pratt	4.2	46.1	0.1	24.3	0.3	4.0	12.5	6.0	0.2	3.7	36.3	0.3	20.6	0.7	3.8	11.7	9.2	0.1	13.65	15.21	5.67	14.19	5.80	12.73	12.84	7.86	19.40
Rawlins	1.5	9.3	0.1	1.2	0.4	1.5	1.5	0.4	-	2.2	10.3	0.2	1.4	1.0	2.1	2.8	0.7	-	8.26	10.83	6.62	10.42	4.66	8.35	6.44	7.02	-
Reno	0.6	22.7	0.7	22.1	0.4	4.5	10.7	2.9	0.3	0.5	20.3	0.8	21.6	0.5	4.3	10.7	4.5	0.3	12.94	13.38	10.22	12.27	9.40	12.54	12.10	7.78	11.18
Republic	1.0	9.7	-	3.7	0.0	6.5	1.0	0.1	-	1.8	13.6	-	6.0	0.1	9.4	1.4	0.2	-	6.46	8.62	-	7.48	1.46	8.29	8.62	7.12	-
Rice	0.3	12.7	-	4.8	0.1	1.3	2.2	0.2	-	0.3	12.8	-	5.7	0.2	1.5	2.4	0.3	-	11.51	11.89	-	10.09	4.91	10.59	11.08	9.00	-
Riley	-	0.7	-	1.0	-	0.4	0.0	0.5	-	-	1.4	-	2.9	-	0.9	0.0	0.6	-	-	6.31	-	4.06	-	5.41	6.00	9.49	-
Rooks	0.6	0.2	-	0.1	0.0	0.2	0.2	0.1	-	0.6	0.5	-	0.3	0.1	0.3	0.4	0.2	-	10.72	4.97	-	5.81	0.52	7.04	5.95	7.74	-
Rush	0.7	3.4	0.8	1.0	0.1	2.4	2.0	0.2	0.0	0.7	3.4	1.1	1.2	0.1	2.2	2.2	0.2	0.0	10.84	12.10	8.41	9.98	9.93	12.90	11.00	11.00	18.39
Russell	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.1	-	-	0.0	-	-	2.92	-	-	2.58	-	-	4.83	-
Saline	0.0	0.6	0.1	1.2	-	2.3	0.4	0.7	-	0.0	0.6	0.2	1.7	-	2.9	0.5	0.6	-	8.10	12.41	6.48	8.78	-	9.30	10.52	13.44	-
Scott	0.5	7.3	0.4	0.1	0.3	8.7	14.7	0.1	0.1	0.5	10.0	0.5	0.1	0.5	14.8	20.2	0.1	0.1	13.74	8.72	10.73	8.73	8.58	7.08	8.73	8.28	9.87
Sedgwick	0.3	14.2	-	13.5	0.1	5.4	3.5	3.7	-	0.4	15.3	-	14.9	0.1	6.0	4.3	4.2	-	8.62	11.11	-	10.89	10.16	10.70	9.81	10.46	-

Table 6: Water use, irrigated area and application depth by crop and irrigation water use analysis region, 2017 — Continued

County	Water use in thousands of acre-feet									Reported irrigated area in thousands of acres								Application depth in inches									
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Combination ¹	Multiple ²	Other ³	Not Specified ⁴
Seward	5.3	44.6	1.5	9.6	0.6	32.0	50.7	3.2	-	3.1	31.3	1.3	7.6	0.7	30.0	45.3	4.7	-	20.73	17.07	14.34	15.28	10.11	12.81	13.45	8.33	-
Shawnee	-	2.2	-	1.7	-	0.7	0.2	0.3	-	-	8.0	-	5.7	-	2.8	0.5	0.5	-	-	3.35	-	3.62	-	2.92	5.40	6.14	-
Sheridan	0.5	28.6	0.4	3.8	0.4	12.4	5.2	0.7	0.0	0.4	39.5	0.9	5.2	1.2	19.9	8.6	1.6	0.1	12.86	8.70	5.19	8.80	3.89	7.45	7.16	5.69	6.72
Sherman	1.3	51.9	1.2	4.2	1.1	10.4	12.7	4.0	0.4	1.6	59.7	1.8	4.9	4.3	16.0	20.8	6.8	0.7	9.67	10.43	8.24	10.32	3.00	7.81	7.37	7.03	6.73
Smith	-	1.2	-	0.7	-	0.7	-	0.0	-	-	1.9	-	1.4	-	0.8	-	0.0	-	-	7.80	-	6.20	-	10.75	-	1.21	-
Stafford	5.1	41.7	0.5	23.8	1.3	5.3	10.0	4.4	0.6	4.9	33.9	0.7	20.8	2.7	5.3	9.2	5.6	0.4	12.50	14.77	9.12	13.70	5.96	11.93	12.95	9.51	16.08
Stanton	-	25.5	0.0	1.0	0.4	22.6	29.3	0.7	-	-	24.2	0.6	0.7	0.8	31.4	43.5	1.2	-	-	12.63	0.36	16.91	5.71	8.63	8.08	7.14	-
Stevens	0.9	78.2	0.7	3.1	1.8	32.4	51.6	4.3	0.1	0.5	68.6	1.2	2.9	2.1	32.8	59.5	6.4	0.1	21.13	13.67	7.24	13.14	10.20	11.85	10.41	8.14	10.94
Sumner	-	3.5	-	5.6	0.0	0.5	0.9	0.3	-	-	5.6	-	7.2	0.2	0.5	1.5	0.6	-	-	7.57	-	9.32	2.55	10.63	7.30	5.07	-
Thomas	0.0	40.8	0.4	5.5	0.5	17.5	7.7	1.1	0.1	0.1	48.4	1.2	7.6	1.3	29.3	12.4	2.2	0.1	3.81	10.12	3.74	8.80	4.58	7.20	7.46	5.99	13.00
Trego	0.1	2.8	0.2	0.2	-	0.1	0.8	0.0	0.2	0.2	3.3	0.3	0.4	-	0.3	1.5	0.1	0.4	9.98	10.18	8.88	6.66	-	5.83	6.24	3.37	6.61
Wabaunsee	0.0	1.6	-	1.8	-	0.2	0.3	0.0	-	0.0	3.8	-	4.7	-	0.5	1.0	0.1	-	2.65	5.17	-	4.65	-	5.43	4.16	6.38	-
Wallace	0.1	17.4	0.8	0.0	0.3	5.0	6.0	0.4	-	0.1	21.4	1.4	0.1	1.3	8.3	11.8	0.9	-	13.86	9.73	7.36	4.96	3.13	7.22	6.12	5.80	-
Washington	0.1	2.1	0.0	2.4	-	2.6	0.5	0.1	0.1	0.1	4.0	0.1	5.6	-	7.2	1.1	0.4	0.2	9.77	6.36	3.23	5.11	-	4.37	5.77	3.72	6.26
Wichita	0.3	7.3	0.2	0.2	0.6	13.3	11.0	0.2	-	0.2	9.3	0.3	0.2	1.8	22.9	20.9	0.4	-	18.03	9.47	6.35	11.14	3.69	6.97	6.33	7.24	-
Wilson	-	0.2	-	0.2	-	0.3	0.1	0.0	-	-	0.4	-	0.7	-	0.6	0.3	0.0	-	-	6.91	-	3.79	-	5.08	4.62	6.27	-
Woodson	-	0.1	-	0.0	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	-	7.73	-	4.58	-	-	-	-	-
Wyandotte	-	0.0	-	0.1	-	-	0.0	0.2	-	-	0.1	-	0.6	-	-	0.0	0.2	-	-	3.34	-	2.77	-	-	1.35	14.07	-
State Total	168	1,085	24	318	32	505	540	93	5	131	1,059.3	34	342	57	663	641	124	7	15.37	12.29	8.49	11.15	6.80	9.15	10.11	9.00	9.81

¹Combination of alfalfa, corn, grain sorghum (milo), soybeans and wheat

²“More than one type of crop”, “Double crop” or a combination of crops including a crop other than alfalfa, corn, grain sorghum, soybeans and wheat

³Oats, barley, rye, dry beans, sunflowers, golf course, truck farm, orchard, nursery, sod/turf grass, cotton, grapes and other

⁴Crop not specified on water use report

Table 7: State total water use, irrigated area and application depth by crop or combination of crops reported, 2017

Crop(s)	Water use in acre-feet	Irrigated area in acres	Application depth, in inches
Alfalfa	168,099	131,326	15.36
Corn	1,085,317	1,059,346	12.29
Grain Sorghum	24,044	33,986	8.49
Soybeans	318,136	342,468	11.15
Wheat	32,233	56,877	6.80
Oats	1,378	2,703	6.12
Barley	521	585	10.70
Rye	5,527	8,699	7.62
Dry Beans	4,182	6,233	8.05
Sunflowers	1,567	3,552	5.29
Golf Course	9,835	13,555	8.71
Truck Farm	1,759	2,240	9.42
Orchard	1,261	907	16.69
Nursery	571	838	8.18
Other	47,344	56,353	10.08
More than one type of crop	380,111	454,492	10.04
Double Crop	100,890	100,180	12.09
Alfalfa & Corn	15,386	15,838	11.66
Alfalfa & Grain Sorghum	2,567	2,701	11.40
Alfalfa & Soybeans	4,462	4,875	10.98
Alfalfa & Wheat	4,447	5,215	10.23
Alfalfa & other	5,563	5,537	12.06
Corn & Grain Sorghum	20,873	27,128	9.23
Corn & Soybeans	149,775	186,780	9.62
Corn & Wheat	192,531	262,609	8.80
Corn & Other	21,989	31,258	8.44
Grain Sorghum & Soybeans	3,246	5,018	7.76
Grain Sorghum & Wheat	7,721	15,491	5.98
Grain Sorghum & Other	417	693	7.23
Soybeans & Wheat	25,344	31,587	9.63
Soybeans & Other	4,654	5,334	10.47
Wheat & Other	3,960	7,310	6.50
Alfalfa, Corn & Grain Sorghum	1,455	1,258	13.88
Alfalfa, Corn & Soybeans	1,549	1,689	11.00

Table 7: State total water use, irrigated area and application depth by crop or combination of crops reported, 2017 — Continued

Crop(s)	Water use in acre-feet	Irrigated area in acres	Application depth, in inches
Alfalfa, Corn & Wheat	9,580	9,160	12.55
Alfalfa, Corn & Other	1,058	1,361	9.33
Alfalfa, Grain Sorghum & Soybeans	164	225	8.73
Alfalfa, Grain Sorghum & Wheat	4,024	6,458	7.48
Alfalfa, Grain Sorghum & Other	96	254	4.54
Alfalfa, Soybeans & Wheat	651	633	12.35
Alfalfa, Soybeans & Other	-	-	-
Alfalfa, Wheat & Other	54	332	1.96
Corn, Grain Sorghum & Soybeans	2,665	3,053	10.48
Corn, Grain Sorghum & Wheat	24,559	41,464	7.11
Corn, Grain Sorghum & Other	3,661	4,809	9.14
Corn, Soybeans & Wheat	26,142	31,463	9.97
Corn, Soybeans & Other	2,144	2,911	8.84
Corn, Wheat & Other	8,867	15,975	6.66
Grain Sorghum, Soybeans & Wheat	3,262	4,074	9.61
Grain Sorghum, Soybeans & Other	205	251	9.80
Grain Sorghum, Wheat & Other	91	244	4.48
Soybeans, Wheat & Other	1,063	2,388	5.34
Alfalfa, Corn, Grain Sorghum & Soybeans	295	564	6.28
Alfalfa, Corn, Grain Sorghum & Wheat	764	847	10.83
Alfalfa, Corn, Grain Sorghum & Other	-	-	-
Alfalfa, Corn, Soybeans & Wheat	237	226	12.58
Alfalfa, Corn, Soybeans & Other	818	471	20.84
Alfalfa, Corn, Wheat & Other	337	624	6.47
Alfalfa, Grain Sorghum, Soybeans & Wheat	43	98	5.27
Alfalfa, Grain Sorghum, Soybeans & Other	-	-	-
Alfalfa, Grain Sorghum, Wheat & Other	-	-	-
Alfalfa, Soybeans, Wheat & Other	-	-	-
Corn, Grain Sorghum, Soybeans & Wheat	3,358	4,185	9.63
Corn, Grain Sorghum, Soybeans & Other	-	-	-
Corn, Grain Sorghum, Wheat & Other	2,426	4,106	7.09
Corn, Soybeans, Wheat & Other	1,160	1,298	10.72
Grain Sorghum, Soybeans, Wheat & Other	-	-	-
Alfalfa, Corn, Grain Sorghum, Soybeans	-	-	-

Table 7: State total water use, irrigated area and application depth by crop or combination of crops reported, 2017 — Continued

Crop(s)	Water use in acre-feet	Irrigated area in acres	Application depth, in inches
Alfalfa, Corn, Grain Sorghum, Wheat	-	-	-
Alfalfa, Corn, Grain Sorghum Wheat & Other	-	-	-
Alfalfa, Corn, Soybeans, Wheat & Other	-	-	-
Alfalfa, Grain Sorghum, Soybeans, Wheat & Other	98	526	2.24
Corn, Grain Sorghum, Soybeans, Wheat & Other	446	963	5.56
Alfalfa, Corn, Grain Sorghum, Soybeans, Wheat & Other	-	-	-
Pasture	2,890	2,779	12.48
Sod/Turf Grass	1,661	2,178	9.15
Cotton	14,459	23,347	7.43
Grapes	2	9	2.54
Total	2,765,996	3,051,937	10.88

Table 8: Water use, irrigated area and application depth by system type and irrigation water use analysis region, 2017

Kansas irrigation water use analysis regions	Water use, in thousands of acre-feet									Reported irrigated area in thousands of acres									Application depth, in inches								
	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²
Western Kansas																											
GMD No. 1	5.2	5.4	8.3	94.3	0.0	0.4	0.4	0.0	-	6.8	8.2	11.3	148.3	0.1	1.0	0.6	0.0	-	9.15	7.99	8.81	7.63	6.27	5.24	7.63	21.00	-
Southwest Kansas																											
GMD No. 3	10.5	45.0	152.9	1,151.9	4.9	5.1	4.3	-	0.9	11.2	52.5	153.6	1,147.6	9.9	5.5	4.5	-	1.3	11.21	10.29	11.94	12.05	5.99	11.17	11.43	-	8.29
Northwest Kansas																											
GMD No. 4	1.0	3.9	15.2	270.5	-	0.9	1.3	0.0	0.1	1.2	6.4	20.3	360.4	-	1.1	1.5	0.0	0.1	10.40	7.36	9.03	9.01	-	9.34	9.85	12.72	10.15
Remainder of																											
Western Kansas	9.2	11.1	6.3	63.1	0.1	1.3	0.5	0.0	-	9.1	11.9	7.6	80.2	0.1	1.5	0.4	0.1	-	12.24	11.20	9.94	9.45	8.18	10.72	13.65	4.16	-
Equus Beds																											
GMD No. 2 ³	8.3	8.4	10.5	106.3	-	1.2	1.8	0.0	-	8.2	8.7	10.9	109.7	-	1.6	2.2	0.1	-	12.13	11.57	11.46	11.62	-	9.20	9.69	5.18	-
Big Bend																											
GMD No. 5	7.4	4.2	32.9	454.7	0.1	0.5	1.4	-	0.1	8.2	4.7	29.7	403.0	0.1	0.6	1.6	-	0.1	10.80	10.66	13.27	13.54	10.19	10.15	10.52	-	13.27
Remainder of																											
Central Kansas	21.4	11.6	28.6	121.4	-	4.5	0.2	0.2	0.7	23.2	17.2	47.7	174.6	-	5.9	0.3	0.3	0.9	11.03	8.08	7.18	8.34	-	9.12	6.39	5.70	9.30
All Eastern																											
Kansas	2.4	1.5	7.0	22.7	-	3.3	0.1	0.1	-	4.8	3.6	21.7	63.4	-	5.4	0.2	0.3	-	6.00	4.98	3.89	4.31	-	7.33	6.66	4.33	-
State Total	65.3	91.1	261.7	2,285.0	5.2	17.2	9.9	0.3	1.8	72.6	113.2	303.0	2,487.0	10.2	22.5	11.4	0.8	2.4	10.79	9.66	10.37	11.03	6.07	9.16	10.41	5.11	8.92

¹Subsurface drip or combination of subsurface drip and other systems

²Irrigation system type not specified on water use report

³GMD No. 2 was expanded in July 2017. For comparison purposes, water use data is for the current boundaries for all years

Table 9: Water use, irrigated area and application depth by irrigation system type and regional planning area, 2017

Kansas irrigation water use analysis regions	Water use, in thousands of acre-feet									Reported irrigated area in thousands of acres									Application depth, in inches								
	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²
Cimarron	3.3	23.7	62.1	555.9	1.1	3.7	2.5	-	0.9	2.7	23.0	71.0	529.7	2.8	3.8	2.8	-	1.3	14.90	12.35	10.50	12.59	4.51	11.72	10.89	-	8.29
Equus-Walnut	9.0	9.2	12.3	122.9	-	3.6	1.8	0.1	-	9.0	9.5	14.2	134.8	-	4.5	2.3	0.2	-	12.03	11.65	10.45	10.94	-	9.61	9.68	6.76	-
Great Bend Prairie	16.5	9.9	34.9	473.9	0.1	0.5	1.6	-	0.1	17.0	11.7	32.8	423.8	0.1	0.7	1.7	-	0.1	11.65	10.16	12.79	13.42	10.19	9.07	10.74	-	14.40
Kansas	5.3	5.9	14.2	38.4	-	3.0	0.1	0.1	0.4	9.1	10.7	35.2	86.1	-	5.1	0.2	0.2	0.6	6.98	6.65	4.83	5.35	-	7.04	5.06	3.99	8.13
Marais des Cygnes	0.0	0.1	0.4	1.1	-	0.6	-	-	-	0.1	0.1	1.5	4.4	-	0.4	-	-	-	3.34	21.24	2.96	3.10	-	17.27	-	-	-
Missouri	0.0	-	1.0	5.0	-	0.2	0.0	0.0	-	0.0	-	2.7	11.3	-	0.3	0.0	0.0	-	6.41	-	4.48	5.30	-	9.00	26.23	12.40	-
Neosho	0.1	0.3	1.7	1.6	-	0.2	0.0	0.0	-	0.3	0.9	3.5	4.7	-	0.4	0.1	0.2	-	5.16	3.62	5.93	4.05	-	6.18	3.31	3.29	-
Red Hills	0.4	0.3	4.4	37.7	-	0.2	0.0	-	-	0.5	0.4	4.3	37.6	-	0.2	0.1	-	-	9.00	7.98	12.22	12.06	-	9.81	0.32	-	-
Smoky Hill-Saline	2.3	1.4	3.8	14.9	-	1.0	0.1	0.0	0.0	2.4	1.7	4.9	23.9	-	1.5	0.0	0.1	0.0	11.75	9.58	9.29	7.47	-	7.88	14.03	3.16	3.52
Solomon-Republican	11.9	4.3	9.7	33.1	0.1	0.5	0.0	0.1	0.2	12.2	6.4	14.9	52.0	0.1	0.7	0.1	0.1	0.2	11.76	8.07	7.80	7.63	8.18	9.52	5.73	8.51	12.43
Upper Arkansas	8.8	25.3	92.0	612.2	3.9	1.5	1.8	-	-	10.0	32.9	84.2	636.7	7.1	1.7	1.7	-	-	10.60	9.21	13.11	11.54	6.58	10.14	12.31	-	-
Upper Republican	1.4	4.3	16.3	286.3	-	1.7	1.3	0.0	0.1	1.5	6.8	21.5	380.3	-	2.1	1.5	0.0	0.1	11.14	7.59	9.08	9.03	-	10.02	9.85	12.72	10.15
Upper Smoky Hill	6.0	6.4	8.9	101.1	0.0	0.4	0.7	0.0	-	7.6	8.9	12.1	159.0	0.1	1.0	0.9	0.0	-	9.44	8.60	8.84	7.63	6.27	5.24	9.72	21.00	-
Verdigris	0.3	0.1	0.1	0.8	-	0.1	-	0.0	-	0.4	0.1	0.3	2.6	-	0.2	-	0.0	-	8.65	5.98	3.68	3.57	-	5.76	-	0.92	-
State Total	65.3	91.1	261.7	2,284.8	5.2	17.2	9.9	0.3	1.8	72.6	113.2	303.0	2,486.7	10.2	22.5	11.4	0.8	2.4	10.79	9.66	10.37	11.03	6.07	9.16	10.41	5.11	8.92

¹Subsurface drip or combination of subsurface drip and other systems

²Irrigation system type not specified on water use report

Table 10: Water use, irrigated area and application depth by system type and county, 2017

Kansas irrigation water use analysis regions	Water use, in thousands of acre-feet									Reported irrigated area in thousands of acres									Application depth, in inches								
	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²
Allen	-	-	-	0.1	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	2.98	-	-	-	-	-
Anderson	0.0	-	0.1	0.5	-	0.0	-	-	-	0.1	-	0.2	2.0	-	0.1	-	-	-	3.59	-	3.80	2.77	-	2.38	-	-	-
Atchison	0.0	-	0.2	0.4	-	0.1	-	-	-	0.0	-	0.6	1.1	-	0.2	-	-	-	6.41	-	4.09	4.35	-	3.46	-	-	-
Barber	0.1	-	0.1	4.6	-	0.0	-	-	-	0.2	-	0.2	4.7	-	0.0	-	-	-	4.09	-	10.11	11.71	-	77.60	-	-	-
Barton	3.4	1.2	2.6	25.6	-	0.1	0.8	-	-	3.6	1.1	2.9	25.9	-	0.2	1.0	-	-	11.45	13.41	10.75	11.87	-	8.69	9.38	-	-
Bourbon	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	-	0.57	-	0.35	-	-	-
Brown	-	-	0.8	2.9	-	0.0	0.0	-	-	-	-	1.7	6.3	-	0.0	0.0	-	-	-	-	5.78	5.55	-	7.74	26.23	-	-
Butler	-	-	0.0	0.7	-	0.3	-	0.0	-	-	-	0.0	1.4	-	0.4	-	0.0	-	-	-	2.13	6.24	-	9.31	-	9.68	-
Chase	-	-	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	3.81	-	-	-	-	-	-
Chautauqua	-	-	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.58	-	0.92	-
Cherokee	-	0.3	0.0	0.3	-	-	-	0.0	-	-	0.8	0.1	1.1	-	-	-	0.1	-	-	3.86	2.22	2.86	-	-	-	3.69	-
Cheyenne	0.2	0.5	3.0	41.2	-	0.1	-	-	-	0.1	0.7	3.2	44.2	-	0.1	-	-	-	16.70	8.62	11.27	11.18	-	17.31	-	-	-
Clark	0.0	-	0.2	3.3	-	0.0	-	-	-	0.0	-	0.3	4.2	-	0.0	-	-	-	8.72	-	8.74	9.39	-	6.27	-	-	-
Clay	1.7	1.5	1.5	10.6	-	0.1	-	-	0.4	2.4	2.7	2.5	19.8	-	0.1	-	-	0.5	8.74	6.63	7.17	6.45	-	10.10	-	-	8.43
Cloud	1.7	1.7	1.3	9.8	-	0.0	-	-	-	2.5	2.9	2.5	19.1	-	0.0	-	-	-	8.27	6.84	6.22	6.18	-	8.12	-	-	-
Coffey	-	-	0.0	0.2	-	0.0	-	-	-	-	-	0.0	0.6	-	0.1	-	-	-	-	-	4.37	3.47	-	6.40	-	-	-
Comanche	0.3	0.2	0.6	6.6	-	0.0	-	-	-	0.3	0.1	0.5	6.1	-	0.0	-	-	-	12.65	15.55	14.63	13.00	-	25.28	-	-	-
Cowley	0.0	-	0.6	1.9	-	0.1	-	-	-	0.0	-	1.1	2.6	-	0.1	-	-	-	0.02	-	6.11	8.69	-	12.27	-	-	-
Crawford	-	0.0	0.2	0.2	-	0.0	-	-	-	-	0.2	0.8	0.9	-	0.1	-	-	-	-	2.44	3.39	2.93	-	5.46	-	-	-

Table 10: Water use, irrigated area and application depth by system type and county, 2017 — Continued

Kansas irrigation water use analysis regions	Water use, in thousands of acre-feet									Reported irrigated area in thousands of acres									Application depth, in inches								
	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²
Decatur	0.4	0.3	1.1	7.3	-	0.1	-	-	-	0.3	0.3	1.1	9.2	-	0.1	-	-	-	13.83	10.58	12.26	9.43	-	11.45	-	-	-
Dickinson	0.2	0.0	1.4	1.7	-	0.1	-	-	-	0.3	0.1	2.1	2.7	-	0.1	-	-	-	8.52	4.60	8.17	7.71	-	13.18	-	-	-
Doniphan	-	-	0.3	1.2	-	-	-	-	-	-	-	1.0	2.8	-	-	-	-	-	-	-	3.55	5.06	-	-	-	-	-
Douglas	-	0.0	0.3	0.7	-	0.1	0.0	-	-	-	0.1	0.6	2.2	-	0.2	0.0	-	-	-	0.88	5.64	3.98	-	6.44	0.05	-	-
Edwards	0.2	-	5.7	111.5	-	0.1	-	-	-	0.1	-	4.5	92.0	-	0.0	-	-	-	14.49	-	15.25	14.55	-	21.67	-	-	-
Elk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	8.00	-	-	-
Ellis	0.1	0.2	0.1	0.8	-	0.2	0.0	-	-	0.1	0.3	0.2	1.2	-	0.8	0.0	-	-	12.69	8.53	4.94	8.36	-	2.86	2.74	-	-
Ellsworth	-	-	-	0.7	-	0.0	-	-	-	-	-	-	1.2	-	0.0	-	-	-	-	-	-	6.96	-	4.00	-	-	-
Finney	3.9	7.1	16.3	185.9	0.8	0.5	1.0	-	-	4.2	8.5	14.2	176.8	0.9	0.8	0.7	-	-	11.30	10.12	13.82	12.62	10.54	8.06	17.90	-	-
Ford	0.4	1.5	6.3	74.8	-	0.3	-	-	-	0.4	1.9	6.1	74.0	-	0.3	-	-	-	11.88	9.42	12.53	12.12	-	12.80	-	-	-
Franklin	-	-	0.1	0.4	-	0.4	-	-	-	-	-	0.6	1.5	-	0.0	-	-	-	-	-	2.94	3.30	-	104.83	-	-	-
Gearv	0.0	0.1	0.3	2.2	-	0.1	-	-	-	0.1	0.2	0.5	4.1	-	0.1	-	-	-	11.36	6.79	8.18	6.42	-	16.07	-	-	-
Gove	0.8	1.3	1.2	13.4	-	0.1	-	-	-	0.8	1.3	1.7	17.2	-	0.2	-	-	-	11.67	12.63	8.39	9.34	-	5.78	-	-	-
Graham	0.2	0.3	1.4	11.0	-	0.1	-	-	-	0.1	0.6	1.6	13.3	-	0.2	-	-	-	22.67	6.25	10.65	9.86	-	6.12	-	-	-
Grant	0.3	2.2	15.4	67.5	1.2	0.4	-	-	-	0.5	6.0	15.5	71.8	2.7	0.7	-	-	-	8.52	4.51	11.89	11.29	5.25	6.74	-	-	-
Gray	1.0	0.8	31.9	111.5	-	0.0	0.2	-	-	1.4	1.0	32.8	117.3	-	0.1	0.1	-	-	8.80	9.44	11.70	11.40	-	8.48	15.45	-	-
Greeley	-	-	1.6	9.7	-	0.0	-	-	-	-	-	1.7	16.1	-	0.1	-	-	-	-	-	11.01	7.25	-	6.18	-	-	-
Greenwood	0.1	-	0.0	0.0	-	0.0	-	-	-	0.1	-	0.0	0.0	-	0.0	-	-	-	13.68	-	2.31	2.60	-	19.48	-	-	-
Hamilton	1.5	4.0	1.7	23.5	-	0.0	-	-	-	1.3	3.4	1.8	29.0	-	0.0	-	-	-	13.65	13.95	11.60	9.72	-	1.67	-	-	-

Table 10: Water use, irrigated area and application depth by system type and county, 2017 — Continued

Kansas irrigation water use analysis regions	Water use, in thousands of acre-feet									Reported irrigated area in thousands of acres								Application depth, in inches										
	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	
Harper	-	-	0.1	1.9	-	0.0	-	-	-	-	-	0.2	2.2	-	0.1	-	-	-	-	-	-	7.45	10.56	-	7.55	-	-	-
Harvey	2.3	2.3	1.8	26.6	-	0.3	0.9	-	-	2.3	2.5	1.9	28.0	-	0.2	0.8	-	-	11.77	11.35	10.98	11.39	-	14.78	12.49	-	-	-
Haskell	0.4	4.7	11.9	120.2	0.5	0.1	0.6	-	-	0.3	4.9	11.7	145.8	0.5	0.1	0.9	-	-	13.42	11.49	12.24	9.89	11.91	13.00	7.82	-	-	-
Hodgeman	3.6	4.6	1.2	12.9	-	0.1	0.1	-	-	3.2	5.7	1.8	15.9	-	0.0	0.1	-	-	13.67	9.73	7.93	9.72	-	20.72	15.22	-	-	-
Jackson	0.0	-	-	0.1	-	0.0	-	0.0	-	0.0	-	-	0.5	-	0.0	-	0.0	-	7.71	-	-	3.41	-	2.54	-	0.08	-	-
Jefferson	0.0	-	0.2	1.5	-	0.0	-	-	-	0.2	-	1.2	5.6	-	0.2	-	-	-	3.09	-	1.66	3.29	-	3.56	-	-	-	-
Jewell	0.3	0.3	1.7	0.4	-	-	-	-	-	0.4	0.4	2.7	0.7	-	-	-	-	-	7.88	9.34	7.57	6.71	-	-	-	-	-	-
Johnson	0.0	0.1	0.4	0.0	-	1.4	0.1	-	-	0.1	0.1	1.4	0.1	-	2.5	0.1	-	-	0.69	21.24	3.39	2.12	-	6.80	9.05	-	-	-
Kearny	1.2	6.4	15.8	78.3	-	0.1	-	-	-	1.5	8.2	12.8	71.7	-	0.1	-	-	-	9.68	9.43	14.85	13.11	-	11.30	-	-	-	-
Kingman	-	-	2.9	15.8	-	0.0	-	-	-	-	-	2.7	14.8	-	0.0	-	-	-	-	-	12.99	12.82	-	21.80	-	-	-	-
Kiowa	-	0.2	3.3	62.9	0.1	-	0.2	-	-	-	0.4	2.7	49.3	0.1	-	0.2	-	-	-	7.32	14.78	15.32	10.19	-	15.52	-	-	-
Labette	-	-	0.1	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	5.67	-	-	-	-	-	-
Lane	0.7	1.8	0.9	8.2	-	-	0.1	-	-	0.8	2.7	1.5	12.3	-	-	0.1	-	-	9.69	7.75	7.61	8.03	-	-	11.84	-	-	-
Leavenworth	-	-	0.1	0.2	-	0.1	-	-	-	-	-	0.3	0.8	-	0.2	-	-	-	-	-	2.19	2.60	-	7.95	-	-	-	-
Lincoln	-	-	-	0.8	-	0.0	-	-	0.0	-	-	-	1.5	-	0.0	-	-	0.0	-	-	-	6.27	-	10.22	-	-	3.52	-
Linn	0.0	-	0.0	0.1	-	0.0	-	-	-	0.0	-	0.0	0.2	-	0.0	-	-	-	3.06	-	9.82	3.27	-	3.18	-	-	-	-
Logan	0.1	-	0.6	4.4	-	0.0	0.0	-	-	0.1	-	1.0	7.3	-	0.0	0.0	-	-	15.80	-	7.00	7.32	-	2.80	11.53	-	-	-
Lyon	-	-	-	0.1	-	0.0	-	-	-	-	-	-	0.3	-	0.1	-	-	-	-	-	-	3.78	-	6.61	-	-	-	-
Marion	0.0	-	1.3	0.6	-	0.1	0.0	0.0	-	0.1	-	2.2	1.0	-	0.2	0.1	0.1	-	2.53	-	7.20	7.18	-	6.05	3.31	2.96	-	-

Table 10: Water use, irrigated area and application depth by system type and county, 2017 — Continued

Kansas irrigation water use analysis regions	Water use, in thousands of acre-feet									Reported irrigated area in thousands of acres							Application depth, in inches										
	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²
Marshall	-	0.1	0.4	1.3	-	0.0	-	0.0	-	-	0.2	1.1	2.6	-	0.0	-	0.0	-	-	3.50	4.72	5.93	-	8.28	-	16.19	-
McPherson	4.1	2.7	2.8	16.8	-	0.1	0.8	0.0	-	3.8	2.9	3.4	21.2	-	0.1	1.2	0.0	-	12.67	11.09	9.79	9.53	-	9.08	8.27	26.24	-
Meade	0.8	13.2	7.3	134.5	0.3	0.0	0.3	-	-	0.7	10.3	5.8	109.0	0.3	0.0	0.8	-	-	13.51	15.36	15.17	14.81	13.86	13.19	4.29	-	-
Miami	-	-	0.0	0.1	-	0.1	-	-	-	-	-	0.2	0.4	-	0.1	-	-	-	-	-	3.58	3.33	-	9.00	-	-	-
Mitchell	1.3	0.2	0.5	3.9	-	-	-	0.1	0.2	1.0	0.4	0.9	5.1	-	-	-	0.1	0.2	15.07	7.96	7.32	9.08	-	-	-	7.82	12.43
Montgomery	-	-	-	0.3	-	0.1	-	-	-	-	-	-	1.4	-	0.2	-	-	-	-	-	-	2.99	-	5.46	-	-	-
Morris	0.1	-	0.0	0.0	-	-	-	-	-	0.1	-	0.1	0.1	-	-	-	-	-	7.52	-	4.05	1.67	-	-	-	-	-
Morton	0.1	0.4	5.0	29.0	-	0.8	-	-	0.4	0.1	1.5	7.3	33.9	-	0.9	-	-	1.0	6.84	3.52	8.26	10.26	-	11.55	-	-	4.84
Nemaha	-	-	0.1	0.9	-	0.1	-	0.0	-	-	-	0.2	1.7	-	0.2	-	0.0	-	-	-	4.67	6.45	-	6.88	-	12.40	-
Neosho	-	-	-	0.1	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	5.42	-	-	-	-	-
Ness	0.9	0.1	-	2.1	-	-	-	0.0	-	1.3	0.1	-	2.5	-	-	-	0.0	-	8.55	7.31	-	9.95	-	-	-	6.74	-
Norton	1.9	1.0	0.9	7.8	0.1	0.4	-	-	-	2.0	1.4	1.2	10.3	0.1	0.5	-	-	-	11.43	8.20	9.25	9.10	8.18	10.32	-	-	-
Osage	-	-	0.0	0.1	-	0.0	-	-	-	-	-	0.2	0.3	-	0.1	-	-	-	-	-	1.48	3.27	-	5.54	-	-	-
Osborne	1.6	-	0.1	1.4	-	0.0	-	-	-	1.6	-	0.2	2.0	-	0.1	-	-	-	12.41	-	7.12	8.30	-	9.80	-	-	-
Ottawa	0.2	0.2	1.1	3.6	-	0.0	-	0.0	-	0.2	0.3	1.6	5.7	-	0.0	-	0.0	-	10.93	7.14	8.35	7.64	-	9.45	-	19.97	-
Pawnee	3.3	2.8	2.8	59.3	-	0.1	0.4	-	0.1	4.0	3.6	2.9	58.4	-	0.1	0.5	-	0.1	9.79	9.28	11.34	12.19	-	12.74	11.15	-	13.27
Phillips	0.8	0.3	0.4	3.5	-	0.0	-	-	-	0.8	0.4	0.5	5.8	-	0.0	-	-	-	12.43	9.48	10.06	7.25	-	1.19	-	-	-
Pottawatomie	0.8	0.6	1.4	5.2	-	0.1	-	-	-	1.3	1.3	3.7	12.0	-	0.3	-	-	-	7.07	5.14	4.68	5.23	-	3.63	-	-	-
Pratt	0.3	-	5.3	91.6	-	0.0	0.0	-	-	0.3	-	5.0	80.3	-	0.1	0.0	-	-	12.61	-	12.77	13.69	-	3.54	13.20	-	-

Table 10: Water use, irrigated area and application depth by system type and county, 2017 — Continued

Kansas irrigation water use analysis regions	Water use, in thousands of acre-feet									Reported irrigated area in thousands of acres							Application depth, in inches										
	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²
Rawlins	-	0.2	0.9	14.2	-	0.6	-	-	-	-	0.3	1.2	18.5	-	0.7	-	-	-	-	10.35	9.30	9.19	-	10.56	-	-	-
Reno	0.7	0.9	5.2	56.1	-	0.4	0.0	0.0	-	0.8	0.9	5.5	54.1	-	0.7	0.0	0.1	-	9.52	11.83	11.33	12.44	-	6.55	4.53	3.08	-
Republic	3.9	3.1	7.1	7.9	-	0.0	0.0	-	-	3.8	4.3	11.0	13.1	-	0.0	0.1	-	-	12.17	8.59	7.74	7.23	-	6.70	5.73	-	-
Rice	0.0	-	1.0	20.2	-	0.1	-	-	-	0.0	-	1.1	21.6	-	0.1	-	-	-	3.20	-	10.89	11.21	-	13.57	-	-	-
Riley	0.3	-	0.1	1.9	-	0.4	0.0	-	-	0.7	-	0.1	4.5	-	0.6	0.0	-	-	5.39	-	7.57	4.92	-	9.01	3.52	-	-
Rooks	0.0	-	0.1	1.3	-	0.0	-	-	-	0.1	-	0.3	2.0	-	0.0	-	-	-	3.86	-	3.51	7.62	-	12.54	-	-	-
Rush	4.4	1.0	0.8	3.9	-	0.0	0.0	-	0.0	4.0	1.0	1.3	4.3	-	0.1	0.0	-	0.0	12.95	11.99	7.50	10.99	-	4.67	14.56	-	18.39
Russell	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.1	-	0.0	-	-	-	-	-	-	2.58	-	3.96	-	-	-
Saline	0.3	0.2	0.0	3.8	-	0.7	0.1	0.0	-	0.3	0.2	0.1	4.9	-	0.6	0.0	0.0	-	9.96	11.25	7.07	9.35	-	15.03	15.37	1.31	-
Scott	2.7	3.0	2.0	24.1	-	0.0	0.3	0.0	-	4.4	4.3	2.6	35.0	-	0.1	0.3	0.0	-	7.35	8.19	9.43	8.26	-	7.99	13.83	21.00	-
Sedgwick	3.7	3.4	3.0	27.8	-	2.5	0.1	0.0	-	3.5	3.4	3.2	31.7	-	3.0	0.2	0.1	-	12.63	11.92	11.07	10.51	-	9.90	6.71	7.36	-
Seward	0.8	4.5	9.5	131.7	-	0.1	0.5	-	-	0.6	3.9	9.4	109.1	-	0.2	0.4	-	-	16.14	13.81	12.09	14.49	-	7.55	15.95	-	-
Shawnee	1.1	0.2	1.4	2.2	-	0.3	-	0.0	-	2.4	0.4	5.6	8.4	-	0.5	-	0.1	-	5.32	4.69	3.06	3.09	-	6.40	-	3.14	-
Sheridan	0.0	0.6	3.4	47.3	-	0.0	0.2	-	0.0	0.1	0.9	4.8	70.6	-	0.0	0.3	-	0.1	4.40	7.84	8.47	8.04	-	13.93	7.51	-	6.72
Sherman	0.3	1.2	2.1	82.4	-	0.3	0.9	-	-	0.3	2.5	2.8	109.4	-	0.3	1.0	-	-	9.74	5.73	9.09	9.04	-	10.77	10.11	-	-
Smith	1.1	0.2	0.2	1.0	-	0.0	-	-	-	1.2	0.6	0.3	1.9	-	0.0	-	-	-	10.72	4.41	8.73	6.70	-	1.21	-	-	-
Stafford	0.5	0.2	11.3	80.0	-	0.0	-	-	-	0.5	0.3	9.5	72.5	-	0.1	-	-	-	12.91	9.48	14.27	13.25	-	6.20	-	-	-
Stanton	0.3	3.0	1.3	70.3	1.8	0.7	0.8	-	0.4	0.6	5.6	1.5	87.5	4.8	0.4	0.8	-	0.2	6.12	6.47	10.36	9.64	4.38	19.17	12.10	-	20.70
Stevens	1.1	1.0	31.6	136.1	0.4	2.0	0.9	-	0.1	0.8	0.7	36.2	132.8	0.7	2.0	0.8	-	0.1	16.47	17.01	10.45	12.29	6.93	12.26	14.34	-	10.94

Table 10: Water use, irrigated area and application depth by system type and county, 2017 — Continued

Kansas irrigation water use analysis regions	Water use, in thousands of acre-feet									Reported irrigated area in thousands of acres									Application depth, in inches								
	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²	Flood	Center pivot and flood	Center pivot	Center pivot with drop nozzles	Center pivot with mobile drip	Sprinkler other than center pivot	Subsurface drip and combination ¹	Other	Not specified ²
Sumner	-	0.4	1.1	9.1	-	0.0	0.0	-	-	-	0.4	1.6	13.4	-	0.1	0.1	-	-	-	13.93	7.94	8.21	-	5.66	4.02	-	-
Thomas	0.2	0.8	2.9	68.9	-	0.4	0.2	0.0	0.1	0.2	0.9	4.5	95.9	-	0.4	0.2	0.0	0.1	10.03	9.92	7.80	8.62	-	9.94	11.31	12.72	13.00
Trego	0.1	0.2	1.3	2.9	-	0.0	0.0	0.0	-	0.1	0.2	1.0	5.0	-	0.0	0.0	0.1	-	10.24	13.18	14.58	7.05	-	2.34	14.70	4.06	-
Wabaunsee	0.2	0.3	0.7	2.9	-	0.0	0.0	-	-	0.2	0.4	1.6	7.8	-	0.0	0.0	-	-	8.66	6.96	5.06	4.52	-	16.99	0.01	-	-
Wallace	0.0	0.4	0.4	29.1	-	-	0.4	-	-	0.0	0.5	0.7	43.6	-	-	0.5	-	-	1.01	7.80	7.41	8.00	-	-	7.99	-	-
Washington	0.4	0.6	3.5	3.3	-	0.1	-	0.0	0.1	0.5	1.2	10.3	6.3	-	0.1	-	0.0	0.1	9.63	6.65	4.03	6.18	-	11.22	-	3.38	6.88
Wichita	1.9	0.4	3.5	26.5	0.0	0.4	0.0	-	-	1.8	0.6	5.2	47.0	0.1	0.9	0.0	-	-	12.85	7.76	8.05	6.76	6.27	4.94	2.61	-	-
Wilson	0.2	0.1	0.1	0.4	-	0.0	-	-	-	0.3	0.1	0.3	1.2	-	0.0	-	-	-	7.25	5.98	3.84	4.29	-	6.27	-	-	-
Woodson	-	-	-	0.1	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	6.59	-	-	-	-	-
Wyandotte	-	-	-	0.2	-	0.2	-	-	-	-	-	-	0.7	-	0.2	-	-	-	-	-	-	2.86	-	11.53	-	-	-
State Total	65.3	91.1	261.7	2,285.0	5.2	17.2	9.9	0.3	1.8	72.6	113.2	303.0	2,487.0	10.2	22.5	11.4	0.8	2.4	10.79	9.66	10.37	11.03	6.07	9.16	10.41	5.11	8.92

¹Subsurface drip or combination of subsurface drip and other systems

²Irrigation system type not specified on water use report

Table 11: Water use, irrigated area and application depth by ditch companies and irrigation districts in Kansas, 2017

Conveyance name	Regional planning area	County of source	Counties served	GMD	water use, in acre feet	reported irrigated area, in acres	application depth, in inches
Almena Canal	Solomon-Republican	Norton	Norton and Phillips	-	771	2,500	3.70
Farmers Ditch	Upper Arkansas	Kearny	Kearny and Finney	3	6,784	6,950	11.71
Frontier Ditch	Upper Arkansas	Hamilton	Hamilton	-	4,088	2,544	19.28
Garden City Ditch	Upper Arkansas	Kearny	Kearny and Finney	3	-	-	-
NF & SF Solomon River	Solomon-Republican	Mitchell	Mitchell, Cloud, and Ottawa	-	9,834	5,827	20.25
Great Eastern Ditch	Upper Arkansas	Kearny	Kearny and Finney	3	21,814	5,936	44.10
Courtland Canal	Solomon-Republican	Jewell	Jewell and Republic	-	38,276	39,660	11.58
Amazon Ditch	Upper Arkansas	Kearny	Kearny and Finney	-	17,094	10,220	20.07
Kirwin Canal	Solomon-Republican	Phillips	Phillips, Smith, and Osborne	-	17,602	8,936	23.64
Southside Ditch	Upper Arkansas	Kearny	Kearny	3	6,418	10,000	7.70
Osborne Canal	Solomon-Republican	Rooks	Rooks and Osborne	-	11,273	5,028	26.90
Statewide Total					133,954	97,601	16.47

Appendix C - Works Cited

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- Kenny, J.F., and Juracek, K.E. 2013. Irrigation trends in Kansas, 1991–2011: U.S. Geological Survey Fact Sheet 2013–3094, 4 p. Accessed July 30, 2018, at <http://pubs.usgs.gov/fs/2013/3094/>.
- National Agricultural Statistics Service. 2014. *2012 Census of Agriculture, United States Summary and State Data*: U.S. Department of Agriculture, v. 1, part 51, 695 p. Accessed August 2, 2018, at <http://www.agcensus.usda.gov/Publications/2012/>.
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- PRISM Climate Group. 2015. PRISM climate data: Oregon State University Northwest Alliance for Computational Science and Engineering database. Accessed July 5, 2018, at <http://prism.oregonstate.edu/>.
- U.S. Drought Monitor, National Drought Mitigation Center, U.S. Department of Agriculture and National Oceanic and Atmospheric Administration. 2018. Tabular data archive— United States drought monitor. Accessed July 30, 2018, at <http://droughtmonitor.unl.edu/Data/GISData.aspx>.

IMPORTANT LAW AFFECTING WATER USERS

K.S.A. 82a-722 requires the owner of a water right or permit to appropriate water for beneficial use, except for domestic use, to file a complete and accurate water use report on or before March 1, following the end of the previous calendar year.

Any owner of a water right or permit to appropriate water for beneficial use, who fails to timely file a complete and accurate water use report, is subject to a civil penalty not to exceed \$1,000.00 per water right. If the water right owner fails to file or cause to be filed an annual water use report by June 1 of the calendar year in which it is due, the chief engineer may issue an order indefinitely suspending all water use under such water right or permit. Any person filing a water use report knowing it contains false information shall be guilty of a class C misdemeanor.

Please be advised, if you are filing this water use report for the landowner of this water right and you fail to file the water use report by March 1, the landowner, will be held responsible for any fines or penalties and will receive future correspondence in regard to the delinquent water use report. If a complete and accurate water use report is not received in the office of the Chief Engineer by March 1, 2018, the landowner will be assessed a CIVIL PENALTY for each water right or permit as follows:

WATER USE REPORT RECEIVED	CIVIL PENALTY PER WATER RIGHT OR PERMIT
January 1 - March 1, 2018	NO PENALTY
March 2 - June 1, 2018	\$250.00 PER FILE NUMBER
AFTER JUNE 1, 2018	\$1,000.00 PER FILE NUMBER/SUSPENSION

Filing an annual water use report is a condition of maintaining your permit. Failing without cause to comply with provisions of the permit and its terms, conditions, and limitations can result in the forfeiture of your right to use water. If you no longer have an interest in the referenced files(s), please write or call the Division of Water Resources so that we can remove your name from our records and notify the proper person. If you have any questions, please contact the office nearest you.

- Manhattan Headquarters
1320 Research Park Drive
Manhattan, Kansas 66502
(785) 564-6638
- Topoka Field Office
6531 SE Forbes Ave, Suite B
Topoka, Kansas 66619
(785) 296-5733
- Stockton Field Office
820 S. Walnut St.
Stockton, Kansas 67869
(785) 425-6787
- Garden City Field Office
2508 Johns Street
Garden City, Kansas 67846
(620) 276-2901
- Stafford Field Office
300 S. Main Street
Stafford, Kansas 67578
(620) 234-5311

KANSAS DEPARTMENT OF AGRICULTURE
DIVISION OF WATER RESOURCES
1320 RESEARCH PARK DRIVE
MANHATTAN, KANSAS 66502

(DO NOT FOLD)



IF WATER WAS NOT USED DURING THE PAST YEAR FOR A CERTAIN POINT OF DIVERSION:

Please select the reason for non-use from the list below.

Report the corresponding letter for the reason of non-use on the form next to that point of diversion in the acres irrigated column and write out the reason for non-use to the right of the letter.

A) ADEQUATE MOISTURE (RAIN)

B) WATER NOT AVAILABLE FROM SOURCE

C) FEDERAL CONSERVATION RESERVE PROGRAM

D) STATES WATER RIGHT CONSERVATION PROGRAM

E) STAND-BY

F) PHYSICAL PROBLEMS WITH THE POINT OF DIVERSION

G) ALTERNATE SOURCE

H) OTHER - EXPLAIN ON FORM

CHANGE IN WATER USE CORRESPONDENT:

OWNER SHOULD CONTACT THIS OFFICE (785-564-6638) FOR A STANDARD DESIGNATION FORM (DWR FORM NO. 1-207.2),

OR ACCESS THE FORM ON OUR WEBSITE.

http://agriculture.ks.gov/divisions-programs/dwr

VISIT OUR WEBSITE:

FOR THE LATEST KANSAS AGRICULTURAL INFORMATION OF ALL KINDS, PLEASE LOG ON TO THE KANSAS DEPARTMENT OF AGRICULTURE WEBSITE: <http://agriculture.ks.gov>

FILE WATER USE ONLINE:

Annual water use can now be reported online to comply with the water reporting requirements of the Kansas Water Appropriation Act. Login using a PIN and Person ID found at the bottom left corner of the annual water use report. Directions are on the back of the card. To report go visit www.kswateruserreport.org

OWNERSHIP CHANGE:

NEW OWNER SHOULD SUBMIT A COPY OF A RECORDED DEED TO THIS OFFICE. PLEASE INCLUDE THE WATER RIGHT FILE NUMBER(S) ON THE UPPER RIGHT CORNER OF THE DOCUMENT.

CHANGE IN WATER USE CORRESPONDENT:

OWNER SHOULD CONTACT THIS OFFICE (785-564-6638) FOR A STANDARD DESIGNATION FORM (DWR FORM NO. 1-207.2),

OR ACCESS THE FORM ON OUR WEBSITE.

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ON-LINE REPORTING

Annual water use can be reported on-line to comply with the water use reporting requirements of the Kansas Water Appropriation Act. You can complete the on-line water use report by going to the following site:
www.kswateruserreport.org

1. Login using the PIN and Person ID. These numbers are printed in the lower left hand corner on the annual water use report form mailed to you.

2. Once logged in, follow the instructions inside the pages displayed. Particularly take notice of the links at the top of each page which are helpful to navigate through the different parts of the report that may be required for specific use made of water.

Please read the Instructions for completing the on-line report and Terms and Definitions. **Please only submit one form, (on-line or paper) not both.** If you need assistance please contact us at 785-564-6638 or you may call your local field office.