Chemical Composition of Eastern Kansas Limestone
by R.T. Runnels and J.A. Schleicher
Kansas Geological Survey, Bulletin 119, Part 3
Plate 2, Tables 13-19

Chemical analysis, percent*

Lab No.	Member	County	Thickness, ft.	Locality (a); sec. T. S., R. E.	Calc. CaCO3	Calc. MgCO3	Calc. CaCO3 equiv.	CaO	MgO	LOI (b)	SiO2	Al2O3 (c)	Fe2O3 (d)	K2O	Na2O	SO3	S (e)	P2O5	Total
Table 13, Topeka formation																			
5380	Coal Creek	Elk	6	NE 23-30-10	86.17	3.74	89.68	48.28	1.79	39.46	6.18	1.67	2.48	0.08	0.04	nil	nil	Trace	99.98
51311	Curzon	Doniphan	5	SE 36-1-19	70.80	14.56	88.09	39.79	6.96	38.76	8.54	2.23	4.24			0.07		0.06	100.65
51121	Curzon	Jefferson	13	19-8-18	87.45	4.23	94.16	49.42	2.02	41.43	3.52	0.08	2.20			0.56		0.03	99.95
49454	Curzon	Shawnee	4	16-11-16	85.19	3.33	88.82	47.91	1.59	39.08	9.04	0.87	1.93			nil		0.14	100.56
54369	Curzon	Douglas	3	11-12-17	91.38	0.61	92.04	51.27	0.79	40.50	4.66	1.62	1.15			Trace		0.06	100.05
49387	Curzon	Osage	5.8	14-18-14	92.40	2.01	94.59	51.84	0.96	41.62	3.45	0.75	0.66			Trace		0.06	99.34
49382	Curzon	Osage	6	27-15-15	93.90	0.98	93.59	52.75	0.47	41.18	3.61	0.81	1.22			Trace		0.11	100.15
53211	Hartford, Curzon	Shawnee	13	SW 4-13-16	76.44	7.32	85.86	43.03	3.50	37.78	10.12	2.06	2.64	0.25	0.12	0.11	0.07	0.10	99.71
51313	Hartford	Doniphan	5	SE 36-1-19	78.98	6.29	88.39	44.43	3.01	38.89	9.12	1.72	2.82			0.10	0.08	0.08	100.17
49445	Hartford	Shawnee	3	16-11-16	83.60	4.58	88.61	47.05	2.19	38.99	5.40	1.51	5.53			0.14		0.08	100.89
49383	Hartford	Osage	5	12-18-14	96.88	1.07	98.02	54.37	0.51	43.13	0.07	0.34	0.53			nil		0.07	99.59
49388	Hartford	Osage	3.5	14-18-14	54.29	28.33	96.80	30.77	13.54	42.59	2.88	3.89	5.01			0.13		0.20	99.01
49381	Hartford	Osage	5	14-18-14	97.18	1.11	97.89	54.56	0.53	43.07	0.82	0.25	0.67			nil		0.08	99.98
5381	Hartford	Elk	4.1	SW 12-30-10	31.36	2.13	3.86	17.62	1.02	15.30	61.21	2.28	2.07	0.29	0.11	nil	0.08	0.04	99.94
Table 14, Deer Creek formation																			
51296	Ervine Cr.	Doniphan	15	NW 2-2-20	88.35	4.81	94.00	49.64	2.53	41.36	3.63	1.35	1.41			0.12		0.05	100.09
51118	Ervine Cr.	Doniphan	14	NE 3-3-20	84.70	3.18	96.07	47.55	1.66	42.27	5.16	1.45	1.73			0.05	0.08	0.04	99.91
51316	Ervine Cr.	Atchison	14.5	SW 11-5-19	81.06	9.25	95.07	45.53	4.20	41.83	4.17	1.09	2.76			0.10	0.16	0.03	99.93
51133	Ervine Cr.	Jefferson	12	SE 5-9-18	88.81	7.13	93.95	49.88	3.41	41.34	2.47	0.73	1.56			0.04	0.04	0.07	99.50
49455	Ervine Cr.	Shawnee	10	SE 14-11-16	93.56	1.07	93.93	52.53	0.51	41.33	4.08	0.87	1.37			nil		0.08	100.77
49452	Ervine Cr.	Douglas	8	SW 31-11-18	95.06	1.13	95.22	53.35	0.54	41.90	2.70	0.55	1.69			Trace		0.07	100.80
53213	Ervine Cr.	Shawnee	6.9	NW 4-12-17	92.83	1.36	93.25	52.05	0.65	41.03	3.54	0.87	1.65			nil	Trace	0.03	99.82
53214	Ervine Cr.	Shawnee	8.8	SE 10-13-16	91.00	2.72	94.48	51.15	1.30	41.57	3.63	0.93	1.15			0.12	0.08	0.03	99.88
54223	Ervine Cr.	Osage	9.8	NW 32-14-17	93.02	2.15	95.50	52.12	1.03	42.02	2.77	0.85	1.32			Trace		Trace	100.11
51134	Ervine Cr., Rock Bluff	Jefferson	18	SE 32-7-20	82.33	7.28	90.68	46.28	3.48	39.90	6.42	3.79				0.12	0.16	0.06	100.05
49446	Rock Bluff	Douglas	3	SW 32-11-18	82.87	7.62	91.98	46.48	3.64	40.47	3.49	1.25	5.06			0.15		Trace	100.54
50554	Ozawkie	Douglas		36-11-17	95.07		95.18	53.27		41.88	2.11	0.71	0.89			nil	nil	Trace	99.02
54222	Ozawkie	Osage	11.7	NE 4-15-17	91.52	1.84	92.75	51.28	0.88	40.81	3.87	0.82	2.73			Trace		Trace	100.39
Table 15, Lecompton Formation																			
5382	Beil	Elk	9.5	21-30-11	64.86	4.14	71.02	36.38	1.98	31.25	22.38	4.26	2.77	0.36	0.13	nil	nil	0.03	99.54
53216	Spr. Branch	Douglas	6.8	NW 36-11-17	73.94	12.41	90.91	41.63	5.93	40.00	6.29	1.55	4.22			0.10	0.01	0.08	99.80
Table 16, Oread formation																			
51314	Plattsmouth	Doniphan	20	NW 24-2-21	84.83	3.45	90.11	47.58	1.65	39.65	8.10	1.14	1.14			nil	0.04	0.04	99.30
51315	Plattsmouth	Doniphan	16.5	SE 26-4-21	85.24	1.32	86.64	47.85	0.63	38.12	11.01	1.11	0.86			nil	0.02	0.07	99.65
51319	Plattsmouth	Atchison	12	NW 13-5-21	91.34	1.46	94.57	51.24	0.70	41.61	3.52	0.92	1.78			Trace		0.05	99.82
51120	Plattsmouth	Atchison	12	SW 7-6-21	81.76	3.64	86.68	46.27	1.74	38.14	10.96	1.27	1.28			0.51	0.22	0.08	100.25
51131	Plattsmouth	Leavenworth	15	SE 14-9-21	88.99	0.61	90.07	50.00	0.29	39.63	7.96	1.03	0.84			0.12		0.05	99.92
51276	Plattsmouth	Leavenworth	13	NW 6-11-21	84.79	4.54	91.25	47.64	2.17	40.15	6.62	2.19	1.53			0.02	0.12	0.09	100.41
51132	Plattsmouth	Jefferson	18	21-11-17	81.44	5.44	89.55	46.08	2.60	39.40	8.23	1.07	1.57			0.49		0.08	99.52
51438	Plattsmouth	Douglas	14	NE 1-12-19	81.55	1.53	84.95	45.69	0.73	37.38	13.94	0.92	1.83			Trace		Trace	100.49
52367	Plattsmouth	Douglas	8	SW 25-12-19	88.40	1.05	90.02	59.58	0.50	39.61	7.59	1.04	1.01			nil	nil	0.04	99.37
53217	Plattsmouth	Douglas	14.5	NE 32-12-18	90.79	0.65	92.30	50.94	0.31	40.61	5.89	0.87	1.07			Trace	0.04	0.06	99.72
53212	Plattsmouth	Douglas	11	SW 4-13-19	87.83	1.59	90.52	49.39	0.76	39.83	7.62	0.93	1.01			0.06	0.08	0.10	99.71
54370	Plattsmouth	Douglas	10.3	NE 22-14-18	89.83	2.03	91.64	50.44	0.97	40.32	6.41	1.44	0.44			0.13		0.02	100.17
54224	Plattsmouth	Osage	20.2	SW 3-18-16	8.32	4.50	93.73	49.59	2.15	41.24	3.89	1.04	1.32			0.16	0.20	Trace	99.39
52278	Plattsmouth	Coffey	13	NW 14-21-15	89.11	4.02	93.73	49.99	1.92	41.24	4.04	1.14	1.29			nil	0.12	0.05	99.67
52316	Plattsmouth	Coffey	12	SE 2-22-15	85.24	3.43	90.16	47.85	1.64	39.67	6.48	1.41	2.77			nil	nil	0.07	99.89
52205	Plattsmouth	Wilson	3	SW 23-27-13	92.97	1.99	93.91	52.09	0.95	14.32	3.64	1.50	1.21	0.13	0.01	nil		Trace	100.85
53174	Plattsmouth	Greenwood	7.1	NE 3-28-12	91.29	2.68	94.75	51.24	1.28	41.69	3.36	1.04	1.30			0.05	0.06	0.05	99.99
52295	Plattsmouth	Greenwood	7	SW 11-28-12	94.61	1.46	96.05	53.01	0.70	42.26	2.48	0.18	1.38			nil	nil	Trace	100.01
52361	Plattsmouth	Elk	9	SE 21-29-13	96.06	1.97	96.98	53.83	0.94	42.67	1.62	0.51	0.62			nil	Trace	0.01	100.20
5377	Plattsmouth	Elk	12	NE 3-30-12	94.32	1.15	95.66	52.89	0.55	42.09	2.63	0.74	0.67	0.03	0.03	nil	nil	0.03	99.66
52270	Plattsmouth	Chautauqua	20	33-33-11	93.40	3.22	97.66	52.33	1.54	42.97	1.15	0.39	1.55			nil	nil	Trace	99.93
51317	Leavenworth	Doniphan	1.5	NW 13-5-21	89.92	1.53	90.73	50.56	0.73	39.82	5.86	1.04	1.97			0.23	0.61	0.02	100.33
52200	Leavenworth	Wilson	1.4	SW 23-27-13	91.00	4.06	95.05	50.99	1.94	41.82	1.83	1.10	1.42	0.09	0.02	nil	0.14	Trace	99.35
51318	Toronto	Atchison	2.8	NW 13-5-21	82.03	6.34	89.98	45.96	3.03	39.59	3.69	2.03	5.50			nil		Trace	99.81
5110	Toronto	Leavenworth	8	7-11-21	76.05	10.52	91.39	42.72	5.03	40.21	6.08	0.89	4.71			0.06		0.05	99.75
52358	Toronto	Douglas	8	SW 25-12-19	78.78	7.03	87.84	44.19	3.36	38.65	8.26	1.32	3.97			nil	nil	0.04	99.79
4766	Toronto	Douglas	3	SE 36-12-19	68.89	19.64	96.50	38.60	9.39	42.46	3.22	0.61	5.10			Trace		nil	99.58
54372	Toronto	Duglas	3.6	NW 35-13-19	93.38	1.15	93.75	52.34	0.55	41.25	3.48	1.17	1.08			nil		0.02	99.89
54371	Toronto	Douglas	4.2	SE 19-14-20	94.77	1.13	95.16	53.11	0.54	41.87	3.16	0.82	0.54			nil		0.01	100.05
52328	Toronto	Woodson	7.2	NW 35-25-13	87.56	1.95	91.02	49.13	0.93	40.05	5.99	1.24	2.18			nil	0.23	0.06	99.58
52294	Toronto	Greenwood	9	NW 10-26-13	89.36	1.51	91.66	50.13	0.72	40.33	4.77	0.93	2.98			nil	nil	0.05	99.91
52204	Toronto	Wilson	4	23-27-13	89.63	2.28	91.52	50.22	1.09	40.27	5.65	1.76	1.24	0.18	0.03	nil		Trace	100.44
Table 17, Douglas Group																			
5151	Amazonia	Doniphan	Spot	SW 33-3-22	96.50	1.15	98.11	54.12	0.55	43.17	1.13	0.45	0.66					0.04	100.12
51119	Amazonia	Doniphan	10	SW 33-3-22	92.58	1.49	95.51	52.02	0.71	42.03	1.71	0.60	2.63			0.19		0.02	99.91
51312	Amazonia	Doniphan	9	NE 15-3-22	94.43	2.76	95.84	52.97	1.32	42.17	1.39	0.57	1.86			0.01		0.04	100.33
52346	Amazonia	Woodson	1	36-25-13															
52384	Haskell	Woodson	3	SE 28026015	92.93	1.84	96.43	52.20	0.88	42.43	2.15	0.72	1.37	0.04	0.07	nil	nil	0.10	99.96
52329	Haskell	Woodson	1.5	SW 29-26-15	93.18	1.90	96.43	52.33	0.91	42.43	1.95	0.54	1.39	0.04	0.06	0.09	0.05	0.06	99.71
52338	Haskell	Wilson	1	NW 5-27-14	91.38	2.07	93.89	51.27	0.99	41.31	3.92	1.21	1.27	0.12	0.07	Trace	Trace	0.06	100.22
52347	Haskell	Wilson	6	SW 19-28-14	87.49	2.22	91.45	49.08	1.06	40.24	5.24	1.62	2.05	0.16	0.07	nil	0.08	0.05	99.57
51291	Haskell	Wilson	4	19-28-14	86.76	2.30	88.91	48.71	1.10	39.12	6.90	1.94	1.96			0.04	nil	0.06	99.83
5374	Haskell	Elk	1.3	NE 21-31-13	94.02	2.57	95.64	52.75	1.23	42.08	1.70	0.71	1.44	0.03	0.04	nil	nil	0.06	100.04
52355	Westphalia	Coffey	10	NW 31-21-16	86.31	2.55	88.00	48.36	1.22	38.72	6.83	1.36	3.62			nil	Trace	Trace	100.11
52322	Westphalia	Woodson	3.5	NW 1-25-15	28.02			15.82	0.90	14.33	57.55	3.14	7.03	0.68	0.46	nil		0.09	100.00
52335	Westphalia	Wilson	3	NW 17-27-14	81.21	3.72	86.82	45.50	1.78	38.20	8.22	2.00	3.67	0.28	0.10	nil	0.10	Trace	99.77
52300	Westphalia	Wilson	5	SW 19-28-14	71.94	11.46	89.61	40.32	5.48	39.43	7.50	1.63	5.26	0.17	0.11	nil	nil	0.01	99.91
51293	Westphalia	Wilson	5	19-28-14	74.76	10.00	88.75	42.00	4.78	39.05	8.13	1.88	3.90			0.05	0.01	0.06	99.85
Table 18, Stanton formation																			
52317	South Bend	Woodson	6	NE 32-25-17	83.83	1.74	87.43	47.04	0.83	38.47	7.84	2.76	2.39	0.03	0.07	0.10	nil	0.07	99.60
5111	Stoner	Wyandotte	12	SW 36-10-23	91.50	2.79	95.04	51.35	1.30	41.82	3.15	0.88	1.32			0.06	0.01	0.03	99.91
5112	Stoner	Douglas	14	NE 4-13-21	93.93	1.71	96.59	52.79	0.82	42.50	2.11	0.52	0.63			0.08	0.06	0.04	99.49
52135	Stoner	Douglas	17	SE 18-13-21	95.09	1.86	96.09	53.29	0.89	42.28	2.17	0.73	0.56			Trace		0.01	99.93
53170	Stoner	Douglas	15.3	SE 15-13-21	93.70	1.51	94.07	52.51	0.72	41.39	3.23	0.97	0.88			Trace	0.05	0.01	99.71
53215	Stoner	Douglas	13.2	NW 20-13-21	88.26	4.66	95.39	49.49	2.23	41.97	3.01	1.46	1.35			nil	0.07	0.03	99.54
49281	Stoner	Johnson	7	NE 3-14-23	93.50	2.64	95.59	52.65	1.26	42.06	2.78	0.81	0.82			0.17		0.10	100.60
53187	Stoner	Johnson	12	NE 3-14-23	90.43	2.70	93.70	50.80	1.29	41.23	3.85	1.13	0.86			0.09	0.14	0.01	99.26
53178	Stoner	Johnson	15.3	NW 13-14-22	93.36	1.63	95.11	52.34	0.78	41.85	3.26	0.86	0.67			0.04	0.10	Trace	99.88
52271	Stoner	Miami	13	NW 35-15-21	92.61	2.36	94.75	51.89	1.13	41.69	3.43	0.82	1.04			nil	nil	Trace	100.00
5190	Stoner	Miami	14	NE 1-16-21	93.24	1.44	94.09	52.35	0.69	41.40	3.65	0.79	0.66			0.06	Trace	0.06	99.66
518	Stoner	Miami	14	NE 1-16-21	94.34	1.09	95.80	52.94	0.52	42.15	2.73	0.88	0.70			0.06	0.01	0.03	100.01
53186	Stoner	Franklin	11.5	SW 22-16-20	92.06	1.80	94.14	51.63	1.16	41.42	3.84	1.14	0.74			0.06	Trace	Trace	99.99
49223	Stoner	Franklin	12	SW 6-17-19	96.32	1.07	96.59	53.97	0.51	42.50	1.72	0.39	0.50			Trace		Trce	99.59
53175	Stoner	Franklin	10.5	NE 23-18-19	92.15	1.67	92.66	51.67	0.80	40.77	4.23	0.89	1.13			nil	0.06	0.03	99.52
53198	Stoner	Franklin	22	NW 33-18-21	93.97		93.86	52.70	Trace	41.30	5.22	0.17	0.71			Trace	nil	0.04	100.14
52369	Stoner	Anderson	9	SW 31-19-19	94.66	2.01	96.18	53.04	0.96	42.32	2.23	0.53	1.06			nil	nil	Trace	100.14
52364	Stoner	Anderson	23	SE 34-20-19	87.45	4.35	94.95	49.06	2.08	40.46	5.43	1.47	1.21			Trace	0.18	0.05	99.96
52336	Stoner	Woodson	4	SE 32-26-16	88.04	1.61	91.32	49.37	0.77	40.18	6.94	0.73	1.99			nil	nil	0.03	100.01
5191	Stoner	Wilson	40	NW 19-29-15	85.22	4.48	89.64	47.89	2.14	39.44	6.33	2.61	1.05			0.04	0.14	0.08	99.58
51292	Stoner	Wilson	4	SE 25-30-14	97.50	1.11	97.27	54.73	0.53	42.80	1.21	0.74	0.40			0.03	nil	0.06	100.50
52289	Stoner	Montgomery	10.5	NE 15-32-14	93.88	1.55	95.75	52.64	0.74	42.13	2.32	0.91	0.56			Trace	Trace	0.03	99.33
53193	Captain Cr.	Johnson	4.5	NE 7-12-24	95.18	1.07	96.36	53.37	0.51	42.40	2.17	0.40	0.80			Trace	Trace	0.03	99.68
49220	Captain Cr.	Franklin	14	SW 6-17-19	87.83	5.12	94.39	49.58	2.45	41.53	3.43	0.91	1.38			0.33		0.11	99.72
49221	Captain Cr.	Franklin	10	SW 6-17-19	89.93	4.37	95.52	50.90	2.09	42.03	2.31	0.54	1.46			0.51		0.12	99.96
53199	Captain Cr.	Franklin	10.3	SW 6-17-19	87.02	5.79	94.91	48.97	2.77	41.76	3.27	1.00	1.32			0.14	0.13	0.03	99.23
52351	Captain Cr.	Allen	16	SW 4-24-19	89.65	2.53	92.23	50.27	1.21	40.58	4.95	1.42	0.89			Trace	0.08	0.03	99.32
52305	Captain Cr.	Allen	6	NW 20-24-18	94.56	1.07	97.48	52.98	0.51	42.89	1.06	0.30	1.37			nil	nil	Trace	99.11
52288	Captain Cr.	Montgomery	12.5	NW 8-32-15	95.72	0.96	96.75	53.66	0.46	42.57	1.56	0.55	0.73			nil	nil	0.02	99.55
Table 19, Plattsburg formation																			
50350	Spring Hill	Leavenworth	18	SW 13-12-22	86.86	2.28	89.84	49.03	1.09	39.53	7.03	1.02	0.84			0.42		0.06	99.02
49280	Spring Hill	Leavenworth	6	SW 13-12-22	80.42	1.53	82.61	45.25	0.73	36.35	13.59	3.05	1.44			0.14		0.10	100.65
53167	Spring Hill	Johnson	12.2	SE 27-13-23	90.81	2.18	93.61	50.92	1.04	41.19	4.35	0.81	1.16			Trace	0.04	0.03	99.50
53188	Spring Hill	Johnson	11.1	SW 8-15-23	96.31	1.74	97.52	54.03	0.83	42.91	0.59	0.27	0.88			nil	0.06	0.05	99.56
53191	Spring Hill	Franklin	17.2	NW 12-17-19	85.12	4.08	89.66	47.73	1.95	39.45	6.70	2.08	1.27			Trace	0.11	0.03	99.18
52360	Spring Hill	Linn	22	NW 23-19-21	92.90	2.68	95.82	52.05	1.28	42.16	2.12	0.72	1.16			nil	0.07	Trace	99.49
5113	Spring Hill	Anderson	16	SW 12-20-19	95.13	2.49	98.27	53.37	1.19	43.24	0.99	0.58	0.71			0.01	0.05	0.04	100.13
49379	Spring Hill	Anderson	19.3	SW 29-20-21	98.27	0.90	97.73	55.06	0.43	43.00	0.68	0.64	0.49			nil		Trace	100.30
5192	Spring Hill	Wilson	50	NW 18-30-16	90.18	3.10	93.88	50.65	1.48	41.27	3.95	1.32	0.80			0.04	0.08	0.07	99.53
52348	Spring Hill	Wilson	65	NW 18-30-16	88.54	3.66	92.66	49.65	1.75	40.77	4.80	1.73	1.09	0.22	0.06	0.06	0.10	Trace	100.13
52284	Spring Hill	Montgomery	7	NW 28-31-15	97.54	0.65	97.23	54.65	0.31	42.78	1.10	0.36	0.61			nil	nil	nil	99.81
48162	Merriam	Wyandotte	3	23-11-23	95.66	0.42	96.09	53.60	0.20	42.28	1.30	0.85	1.80						100.02
49277	Merriam	Leavenworth	4.5	SW 13-12-22	49.28	31.09	89.02	28.18	14.46	39.17	10.89	2.71	3.28			0.61		0.10	99.80
48164	Merriam	Anderson	3	SW 29-20-21	94.95	0.50	97.11	53.20	0.24	42.73	1.26	0.67	0.94						99.04
52345	Merriam	Wilson	1.5	SW 18-29-16	76.38	3.41	82.50	43.01	1.63	36.30	11.57	3.90	2.66	0.62	0.17	0.16	0.13	0.08	100.10

Spectrochemical analysis, percent *

B	Zn	Ni	Mo	Cr	Ag	Ba	Pb	Sn	Cu	V	Mn	Ti	Sr	Lab. No.
Table 13, Topeka formation														
		0.0001		0.0003					0.0005	0.001	0.15	0.006		5380
							0.0005		0.001		0.6	0.001	0.023	51311
0.0005	0.0007	0.0005	0.0002	0.0003	0.00007	0.02	0.001		0.00003	0.002	0.023	0.065	0.048	51121
		0.0001							0.00003	0.0025	0.04	0.002		49454
														54369
									0.000015	0.0026	0.095	0.002	0.011	49387
														49382
		0.0005							0.0001	t	0.05	0.007		53211
0.0025		0.0005	0.00005				0.001		0.00004	0.0012	0.085	0.05	0.064	51313
		0.001			0.00005		0.015		0.0005	0.003	0.3	0.002		49445
														49383
														49388
									0.000025	0.002	0.21	0.002	0.067	49381
		0.001		0.015		0.002	0.0005	0.003	0.0005	0.04	0.03	0.005		5381
Table 14, Deer Creek formation														
		0.001		0.0003	0.00005			0.001	0.001	0.01	0.06	0.004		51296
		0.001			0.00005		0.0005		0.0002	0.003	0.2	0.002		51118
									0.000025	0.001	0.13	0.03		51316
	0.001								0.000025	0.0016	0.008	0.05	0.045	51133
		0.0004							0.00003	0.005	0.1	0.004		49455
		0.0005	0.0005		0.00001	0.01	0.0002		0.000025	0.0044	0.12	0.0015	0.029	49452
0.001		0.002		0.0003	0.00005		0.0015		0.0001	0.002	0.04	0.004		53213
		0.0005		0.0003			0.0003	0.0005	0.00005	0.0025	0.1	0.01		53214
		0.002		0.0005					0.0001	0.005	0.05	0.02		54223
									0.003	0.01	0.03	0.006		51134
0.001		0.001	0.001	0.001	0.00005	0.01	0.003	0.001	0.0001	0.005	0.5	0.015		49446
		0.001		0.0003			t		0.00002	0.0022	0.12	0.003		50554
		0.005		0.003					0.00005	0.04	0.045	0.005		54222
Table 15, Lecompton Formation														
0.003		0.005		0.001	0.0001				0.0001	0.001	0.25	0.008		5382
		0.0005			0.0001		0.0005	0.0005	0.001	0.002	0.1	0.1		53216
Table 16, Oread formation														
		0.0005		t					0.00002	0.0013	0.041	0.02		51314
		0.0004		0.0002			0.0003		0.00004	0.0014	0.021	0.02	0.037	51315
0.00005	0.0005	0.005	0.0005	0.0003	0.00004	0.015	0.0003		0.000025	0.0036	0.12	0.025	0.06	51319
0.0002		0.003	0.00007	t			0.002		0.00004	0.0016	0.017	0.01		51120
		0.001		0.001	0.00005		0.0005		0.0002	0.002	0.04	0.004		51131
		0.0007			0.0003		0.0005		0.00005		0.05	0.0015		51276
0.0025		0.0007	0.0003		0.00025		0.0025		0.00004	0.0014	0.026	0.02		51132
0.0005		0.0007		0.0003	0.00005	0.005	0.001		0.00009	0.0011	0.01	0.05	0.029	51438
		0.001							0.000013	0.0025	0.05	0.01		52367
									0.0001	0.0025	0.006	0.004	0.058	53217
		0.0005		0.0005	0.00003				0.0001	0.003	0.1	0.005		53212
														54370
		0.001		0.0005					0.00005	0.01	0.05	0.02		54224
		0.002	0.0002		0.0005		0.005	0.003	0.0001	0.0025	0.05	0.002		52278
		0.0005							0.000018	0.0025	0.03	0.005		52316
		0.0001		0.0003		0.002			0.0002	0.003	0.2	0.003		52205
		0.001		0.0005		0.01	0.0005		0.00005	0.0005	0.07	0.003		53174
		0.001	0.0005	0.0003	0.00005		0.0005		0.00002	0.005	0.005	0.01		52295
		0.0005							0.000013	0.015	0.05			52361
		0.00005							0.001	0.007	0.1		0.046	5377
		0.001			0.00005	0.1	0.0002		0.00002	0.015	0.25	t	0.013	52270
							0.0005		0.001		0.6	0.001	0.023	51317
		0.0002	0.0001	0.0004		0.02			0.005	0.005	0.3	0.004		52200
														51318
														5110
0.001		0.001							0.00002	0.01	0.15	0.009		52358
														4766
														54372
														54371
		0.001							0.00003	0.0025	0.2	0.02		52328
		0.001	0.0003		0.00005	0.01			0.00004	0.005	0.06	0.002	0.037	52294
									0.000025	0.003	0.3	0.002	0.072	52204
Table 17, Douglas Group														
														5151
		0.003				0.05			0.000013	0.002	0.14	0.001		51119
				0.0002					0.0005	0.002	0.25	0.001	0.0036	51312
0.01		0.003	0.0002	0.009	0.0001		0.002	0.0015	0.00007		0.4	0.014		52346
0.005		0.001	0.0001	0.01	0.00005		0.003	0.002	0.000035	0.002	0.3	0.015		52384
		0.001					0.005	0.0007	0.00004	0.001	0.1	0.015		52329
0.001		0.002			0.00005	0.15	0.008	0.003	0.000015	0.001	0.15	0.003	0.05	52338
0.0008		0.001			0.00005	0.02	0.0015	0.0015	0.000015	0.002	0.2	0.002	0.061	52347
														51291
		0.004			0.00005		0.0005	0.001	0.001	0.005	0.25	0.004		5374
0.001		0.0005					0.001		0.00003		0.04	0.005		52355
0.02		0.002		0.01	0.00001		0.002		0.000025	0.05	0.25	0.08		52322
		0.001							0.0002		0.25	0.009		52335
		0.0005			0.00005	0.02	0.0005		0.000015	0.001	0.3	0.04		52300
														51293
Table 18, Stanton formation														
		0.001	0.0003	0.0005	0.00005		0.002	0.003	0.00006	0.0025	0.2	0.07		52317
0.00005		0.00007					0.0008		0.00004	0.001	0.005	0.015		5111
		0.003	0.00005	0.0003		0.04	0.0006		0.000025	0.0013	0.075	0.015	0.03	5112
					0.00005				0.00005	0.005	0.04	0.002		52135
		0.0005		0.0005			0.0003	0.0003	0.00003	0.003	0.06	0.003	0.098	53170
		0.003			0.00005		0.002		0.0001	0.05	0.0005	0.01		53215
														49281
		0.001							0.0001	0.03	0.05	0.035		53187
0.001		0.001		0.0005					0.00003	0.005	0.05	0.01		53178
		0.001					0.0001		0.000025	0.005	0.05	0.02		52271
							t		0.00004	0.0013	0.006	0.06		5190
		0.0005							0.00002	0.003	0.055	0.002	0.086	518
		0.0005		0.0005					0.00005	0.0025	0.03	0.013		53186
t	0.0005	0.00005			0.00004		0.0001		0.00004	0.002	0.08	0.006		49223
0.001		0.002		0.002	0.00002	0.01			0.0001	0.0025	0.07	0.017	0.045	53175
		0.0002		0.0003					0.00003	0.0025	0.05	t	0.1	53198
		0.0005					0.001		0.000013	0.0025	0.05	0.007		52369
		0.001							0.00004	0.002	0.07	0.04		52364
0.00005		0.00007					0.0008		0.00004	0.001	0.005	0.015		52336
0.001	0.007	0.0001					0.002		0.000015	0.0067	0.015	0.006		5191
														51292
		0.0005	0.0005						0.000025	0.01	0.035	0.015		52289
		0.001	0.0003		0.00005		0.0005		0.001	0.002	0.05	0.003		53193
		0.0005					0.001	0.0005	0.0001	0.001	0.04	0.003		49220
		0.001					0.001	0.001	0.0005	0.002	0.2	0.001		49221
		0.0005			0.0001		0.0005		0.0001	0.002	0.02	0.002	0.078	53199
		0.0015		0.0005		0.02			0.00004	0.005	0.015	0.02	0.056	52351
		0.0005		0.002					0.000025	0.025	0.2	0.01	0.048	52305
		0.0002					0.0005		0.000015	0.002	0.03	0.004		52288
Table 19, Plattsburg formation														
				0.001					0.00001	0.003	0.03	0.004		50350
														49280
0.00005		0.0005		0.0005	0.0001	0.001	0.0005	t	0.0001	0.003	0.05	0.01		53167
		0.001		0.0003	0.00005				0.00002	0.01	0.1	0.002		53188
		0.005		0.001		0.02	0.002	0.005	0.0015	0.0005	0.007	0.01	0.0048	53191
		0.0008		0.0008	0.00005	0.02	0.0015	0.0007	0.00002	0.002	0.25	0.003		52360
		0.0005		0.0003		0.01			0.000025	0.005	0.01	0.01		5113
	0.02	0.003	0.00002	0.0003	0.00005		0.0004		0.00002	0.0044	0.067	0.002		49379
0.0003	0.0015	0.0003		0.0002	0.00005	0.02	0.0005		0.000025	0.0025	0.007	0.03		5192
		0.0008							0.0001	0.0025	0.2	0.001		52348
		0.0003						0.005	0.000025	0.025	0.035	0.001		52284
														48162
														49277
														48164
0.002		0.003		0.0003	0.00005		0.0025	0.0007	0.00007	0.0005	0.04	0.11		52345

(a) Record of precise locality is on file in office of State Geological Survey of Kansas, Lawrence
(b) Net loss of weight on ignition from 105 degrees C to 1000 degrees C.
(c) Includes MnO, ZrO2, V2O5, and Ti)2 when present.
(d) Total iron expressed as Fe2O3.
(e) Omitted in computing total, because included in L.O.I.

* In chemical analyses, blank indicates "not determined;" in spectrochemical analyses, blank indicates "not present in detectable amount," except that Sr was present but not determined in all samples tested.