



INTRODUCTION

Drainage area data are useful in determining hydrologic characteristics of stream basins such as the rates and volumes of runoff. Previous determination of the drainage areas of portions of the Vermillion River basin was done prior to the availability of U.S. Geological Survey 7 1/2 minute topographic maps. Thus, the original drainage area data lacked the degree of accuracy which the 7 1/2 minute topographic maps now make possible.

The Lake Thompson chain of lakes, located in the northern portion of the Vermillion River basin, is comprised of Spirit Lake, Lake Henry, Lake Preston, Lake Whitehead, and Lake Thompson. Spirit Lake discharges to Lake Henry, which discharges to Lake Thompson. Lake Preston discharges to Lake Whitehead, which also discharges to Lake Thompson. Prior to 1986, the Lake Thompson chain of lakes was considered to be a noncontributing portion of the Vermillion River basin. However, above-normal precipitation from 1982 through 1987 caused lake levels to rise, resulting in discharge from Lake Thompson to the East Fork Vermillion River. This increase in contributing drainage area to the Vermillion River basin created a need to more accurately determine the area of the basin.

PURPOSE AND SCOPE

This map report identifies drainage areas for both named and unnamed tributaries within the Vermillion River basin which have drainage areas larger than approximately 10 mi². The drainage areas upstream from all U.S. Geological Survey streamflow-gaging stations within the basin are also identified.

The drainage area boundaries were delineated by visual interpretation of contour information shown on U.S. Geological Survey 7 1/2 minute topographic maps. The area of each drainage area was determined by tracing the drainage boundary on the topographic maps with an electronic digitizer. The original topographic maps on which the drainage boundaries were delineated are on file in the U.S. Geological Survey office, Federal Building, Huron, South Dakota. The number, name, and area of each drainage area identified on the map are contained in table 1. Names in parentheses were added to differentiate among drainage areas with identical names. Any unnamed drainage areas were assigned names (township, school, lake, etc.) during the boundary delineation process explained above. The drainage areas upstream from U.S. Geological Survey streamflow-gaging stations within the Vermillion River basin are shown in table 2.

The area of the Vermillion River drainage basin is 2,655 mi². The area of drainage to the Lake Thompson chain of lakes, thought to be noncontributing prior to 1986, is 494 mi².

CONVERSION FACTORS

The following factors can be used to convert inch-pound units in this report to metric (International System) units:

Multiply inch-pound unit	By	To obtain metric unit
mile	1.609	kilometer
square mile (mi ²)	2.590	square kilometer

Table 1.--Drainage areas within the Vermillion River basin in South Dakota

[Names in parentheses were added to differentiate between tributaries with identical names; individual drainage areas may not add to totals because of independent rounding; T. equals Township]

Map number	Drainage-area name	Drainage area (mi ²)
1-19	West Fork Vermillion River (total)	402
1	West Fork Vermillion River	23.2
2-3	Grafton T. tributary (total)	29.4
2	Mathews T. tributary	12.8
3	Grafton T. tributary	16.6
4	Grafton T. tributary/Belleview T. tributary reach 2	5.28
5	Grafton T. tributary/Belleview T. tributary reach 1	1.80
6	Belleview T. tributary	19.6
7	Belleview T. tributary/Richland T. tributary reach 2	61.2
8	Belleview T. tributary/Richland T. tributary reach 1	25.9
9	Richland T. tributary	12.7
10	Richland T. tributary/Dolton T. tributary reach 2	61.8
11	Richland T. tributary/Dolton T. tributary reach 1	25.3
12	Dolton T. tributary	42.2
13	Dolton T. tributary/Rosefield T. tributary reach 2	14.1
14	Dolton T. tributary/Rosefield T. tributary reach 1	8.33
15	Rosefield T. tributary	24.4
16	Rosefield T. tributary/West Fork Vermillion River above gage reach 2	12.0
17	Rosefield T. tributary/West Fork Vermillion River above gage reach 1	10.2
18	West Fork Vermillion River below gage/Vermillion River reach 2	7.60
19	West Fork Vermillion River below gage/Vermillion River reach 1	16.7
20-54	East Fork Vermillion River (total)	990
20-28	East Fork Vermillion River above Little Vermillion River (total)	647
20-25	Lake Thompson (total)	494
20-21	Lake Henry (total)	174
20	Spirit Lake	82.3
21	Lake Henry	91.8
22-24	Lake Whitehead (total)	235
22	Lake Preston	84.2
23	County Ditch No. 4	33.7
24	Lake Whitehead	117
25	Lake Thompson	84.9
26	Davis Slough	12.3
27	East Fork Vermillion River above Ramona gage	2.39
28	East Fork Vermillion River	138

29-37	Little Vermillion River (total)	157
29	Little Vermillion River above gage	78.6
30	Little Vermillion River below gage/Clarno T. tributary reach 2	1.04
31	Little Vermillion River below gage/Clarno T. tributary reach 1	2.28
32	Clarno T. tributary	24.2
33	Clarno T. tributary/Brookfield T. tributary reach 2	12.8
34	Clarno T. tributary/Brookfield T. tributary reach 1	7.97
35	Brookfield T. tributary	14.5
36	Brookfield T. tributary/East Fork Vermillion River reach 2	25.82
37	Brookfield T. tributary/East Fork Vermillion River reach 1	10.1
38	Little Vermillion River/Montrose tributary reach 2	5.64
39	Little Vermillion River/Montrose tributary reach 1	.46
40	Montrose tributary	10.5
41	Montrose tributary/Lost Lake tributary reach 2	3.38
42	Montrose tributary/Lost Lake tributary reach 1	2.18
43	Lost Lake tributary	9.08
44	Lost Lake tributary/Greenland T. tributary reach 2	.40
45	Lost Lake tributary/Greenland T. tributary reach 1	.18
46	Greenland T. tributary	9.76
47	Greenland T. tributary/Battle Creek reach 2	10.8
48	Greenland T. tributary/Battle Creek reach 1	3.22
49	Battle Creek	66.5
50	Battle Creek/Parker tributary reach 2	16.5
51	Battle Creek/Parker tributary reach 1	29.9
52	Parker tributary	10.8
53	Parker tributary/Vermillion River reach 2	3.99
54	Parker tributary/Vermillion River reach 1	2.33
55	East Fork Vermillion River/Eloe Creek reach 2	1.58
56	East Fork Vermillion River/Eloe Creek reach 1	1.36
57	Eloe Creek	32.0
58	Eloe Creek/Camp Creek reach 2	.93
59	Eloe Creek/Camp Creek reach 1	.57
60	Camp Creek	22.0
61	Camp Creek/Hurley Creek reach 2	6.87
62	Camp Creek/Hurley Creek reach 1	9.18
63-65	Hurley Creek (total)	74.2
63-64	Mud Lake tributary (total)	35.7
63	Alberty Ditch	5.09
64	Mud Lake tributary	30.6
65	Hurley Creek	38.5
66	Hurley Creek/Middleton T. tributary reach 2	10.7
67	Hurley Creek/Middleton T. tributary reach 1	2.24
68	Middleton T. tributary	20.2
69	Middleton T. tributary/Long Creek reach 2	1.43
70	Middleton T. tributary/Long Creek reach 1	7.48
71-76	Long Creek (total)	194
71	Lennox tributary	20.5
72-75	Saddle Creek (total)	92.7
72-73	Snake Creek (total)	52.6
72	Grant T. Ditch No. 4	21.3
73	Snake Creek	31.4
74	Haram Creek	7.72
75	Saddle Creek	32.3
76	Long Creek	81.1
77	Long Creek/Mount Hope School tributary reach 2	.44
78	Long Creek/Mount Hope School tributary reach 1	1.02
79	Mount Hope School tributary	12.7
80	Mount Hope School tributary/Turkey Ridge Creek reach 2	5.98
81	Mount Hope School tributary/Turkey Ridge Creek reach 1	8.94
82-87	Turkey Ridge Creek (total)	174
82	Childstown T. tributary	10.8
83	Norway T. tributary	15.6
84	Swan Lake T. tributary	25.5
85	Viborg tributary	15.5
86	Mears Ditch	9.39
87	Turkey Ridge Creek	97.5
88	Turkey Ridge Creek/Bonnie Ditch reach 2	.06
89	Turkey Ridge Creek/Bonnie Ditch reach 1	.15
90	Bonnie Ditch	2.54
91	Bonnie Ditch/Nobel Ditch reach 2	.14
92	Bonnie Ditch/Nobel Ditch reach 1	.10
93	Nobel Ditch	3.46
94	Nobel Ditch/Blind Creek reach 2	1.98
95	Nobel Ditch/Blind Creek reach 1	5.25
96	Blind Creek	46.2
97	Blind Creek/Ash Creek reach 2	.05
98	Blind Creek/Ash Creek reach 1	.03
99	Ash Creek	23.1
100	Ash Creek/Frog Creek reach 2	2.38
101	Ash Creek/Frog Creek reach 1	7.52
102-105	Frog Creek (total)	74.5
102	Klepke Ditch	16.6
103	Flynn Dickerson Ditch	8.69
104	Spring Creek (North)	11.3
105	Frog Creek	38.0
106	Frog Creek/Norwegian Gulch reach 2	1.32
107	Frog Creek/Norwegian Gulch reach 1	.81
108	Norwegian Gulch	16.2
109	Norwegian Gulch/Wakonda gage reach 2	2.36
110	Norwegian Gulch/Wakonda gage reach 1	2.20
111	Wakonda gage/Glenwood T. tributary reach 2	1.60
112	Wakonda gage/Glenwood T. tributary reach 1	.57
113	Glenwood T. tributary	12.2
114	Glenwood T. tributary/Baptist Creek reach 2	10.4
115	Glenwood T. tributary/Baptist Creek reach 1	15.3
116-117	Baptist Creek (total)	31.8
116	Newdale School tributary	9.75
117	Baptist Creek	22.0
118	Baptist Creek/Garfield T. tributary reach 2	.18
119	Baptist Creek/Garfield T. tributary reach 1	4.06
120	Garfield T. tributary	12.6
121	Garfield T. tributary/Prairie Center T. tributary reach 2	12.6
122	Garfield T. tributary/Prairie Center T. tributary reach 1	6.31
123	Prairie Center T. tributary	12.5
124	Prairie Center T. tributary/Vermillion River gage reach 2	9.51
125	Prairie Center T. tributary/Vermillion River gage reach 1	2.75
126	Vermillion River gage/Spirit Mound tributary reach 2	1.71
127	Vermillion River gage/Spirit Mound tributary reach 1	.12
128	Spirit Mound tributary	22.1
129	Spirit Mound tributary/Clay Creek Ditch reach 2	1.96
130	Spirit Mound tributary/Clay Creek Ditch reach 1	2.07
131-135	Clay Creek Ditch (total)	236
131	Clay Creek	71.8
132	Smokey Run	18.5
133	Turkey Creek	71.4
134	Spring Creek (South)	18.8
135	Clay Creek Ditch	55.1
136	Clay Creek Ditch/Yankton Clay Ditch reach 2	.52
137	Clay Creek Ditch/Yankton Clay Ditch reach 1	.34
138-139	Yankton Clay Ditch (total)	82.6
138	Bruget School tributary	20.7
139	Yankton Clay Ditch	61.9
140	Yankton Clay Ditch/Missouri River reach 2	2.33
141	Yankton Clay Ditch/Missouri River reach 1	3.55

Table 2.--Drainage area upstream from streamflow-gaging stations in the Vermillion River basin

Map letter	Streamflow-gaging station number	Streamflow-gaging station name	Drainage area (square miles)
A	06478535	East Fork Vermillion River near Ramona, S. Dak.	509
B	06478540	Little Vermillion River near Salem, S. Dak.	78.6
C	06479060	West Fork Vermillion River near Parker, S. Dak.	377
D	06479000	Vermillion River near Wakonda, S. Dak.	2,170
E	06479010	Vermillion River near Vermillion, S. Dak.	2,302

EXPLANATION

- 131 DRAINAGE DIVIDE--Number refers to drainage basin or reach in table 1
- ▲ C STREAM-GAGING STATION--Letter refers to gaging station in table 2



Base from U.S. Geological Survey
1:500,000 base map

DRAINAGE AREAS IN THE VERMILLION RIVER BASIN IN EASTERN SOUTH DAKOTA

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