

# Appendix 1. Longitudinal-profile survey data

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Tables 1–1 through 1–37—Bed elevation, water-surface elevation, bankfull elevation, and survey comments for longitudinal profiles collected at U.S. Geological Survey streamgage stations:

- 1–1. 04033000 Middle Branch Ontonagon River near Paulding, Michigan
- 1–2. 04046000 Black River near Garnet, Michigan
- 1–3. 04096015 Galien River near Sawyer, Michigan
- 1–4. 04096340 St. Joseph River at Clarendon, Michigan
- 1–5. 04096400 St. Joseph River near Burlington, Michigan
- 1–6. 04096405 St. Joseph River at Burlington, Michigan
- 1–7. 04096515 South Branch Hog Creek near Allen, Michigan
- 1–8. 04096600 Coldwater River near Hodunk, Michigan
- 1–9. 04097170 Portage River at W Avenue near Vicksburg, Michigan
- 1–10. 04097370 Flowerfield Creek near Flowerfield, Michigan
- 1–11. 04097540 Prairie River near Nottawa, Michigan
- 1–12. 04102776 Middle Branch Black River near South Haven, Michigan
- 1–13. 04103010 Kalamazoo River near Marengo, Michigan
- 1–14. 04104945 Wanadoga Creek near Battle Creek, Michigan
- 1–15. 04105700 Augusta Creek near Augusta, Michigan
- 1–16. 04108600 Rabbit River near Hopkins, Michigan
- 1–17. 04111379 Red Cedar River near Williamston, Michigan
- 1–18. 04111500 Deer Creek near Dansville, Michigan
- 1–19. 04114498 Looking Glass River near Eagle, Michigan
- 1–20. 04117500 Thornapple River near Hastings, Michigan
- 1–21. 04122230 North Branch Pentwater River near Pentwater, Michigan
- 1–22. 04123000 Big Sable River near Freesoil, Michigan
- 1–23. 04124500 East Branch Pine River near Tustin, Michigan
- 1–24. 04125460 Pine River at High School Bridge near Hoxeyville, Michigan
- 1–25. 04128000 Sturgeon River near Wolverine, Michigan
- 1–26. 04129500 Pigeon River at Afton, Michigan
- 1–27. 04135700 South Branch Au Sable River near Luzerne, Michigan
- 1–28. 04146063 South Branch Flint River near Columbiaville, Michigan
- 1–29. 04150500 Cass River at Cass City, Michigan
- 1–30. 04159900 Mill Creek near Avoca, Michigan
- 1–31. 04160600 Belle River at Memphis, Michigan
- 1–32. 04160800 Sashabaw Creek near Drayton Plains, Michigan
- 1–33. 04161580 Stony Creek near Romeo, Michigan
- 1–34. 04161760 West Branch Stony Creek near Washington, Michigan
- 1–35. 04164050 North Branch Clinton River at 33 Mile Road near Romeo, Michigan
- 1–36. 04164150 North Branch Clinton River near Meade, Michigan
- 1–37. 04172500 Portage River at Tiplady Road near Pinckney, Michigan



Table 1–1. 04033000 Middle Branch Ontonagon River near Paulding, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	104.99	107.05		Cobble/gravel
3			109.61	Right bankfull (2)
10	105.45	107.01		Cobble/boulder
21	105.63	106.89		Cobble/boulder
32.5	104.97	106.83		Cobble/boulder
49.5	104.89	106.8		Cobble/boulder
61.5			108.25	Right bankfull (2)
62			109.14	Right bankfull (2)
62.5			109.33	Right bankfull (2)
71	104.72	106.78		Cobble/boulder
76			109.5	Left bankfull (2)
80	105.33	106.77		Cobble/boulder
90	104.92	106.59	111.06	Riffle cross section at 90 ft data
91.5	105.69	106.63		Cobble/boulder
93			111.89	Left bankfull (3)
98			111.01	Left bankfull (3)
99	105.87	106.59		Cobble/boulder
101			111.26	Left bankfull (3)
106.5	105.13	106.64		Cobble/boulder
112	103.76	106.6		Cobble/boulder
122			111.67	Right bankfull (2)
129	104.02	105.59		Cobble/boulder
138			111.35	Left bankfull (3)
144	103.47	106.59		Cobble/boulder
144.1	103.02	106.57	110.87	Pool cross section at 144 ft data
156			111.35	Right bankfull (2)
157	103.15	106.61		Cobble/boulder/sand
171	104.05	106.61		Sand/boulder
185	104.08	109.07		Sand/boulder
195	103.9	106.61		Sand/boulder
201			111.16	Right bankfull (2)
206			111.65	Right bankfull (2)
215	104.69	105.88		Sand/boulder
235	103.87	106.51		Sand/boulder
242	104.78	106.44		Sand/boulder
249	105	106.3		Sand/boulder
252			111.78	Right bankfull (2)
257	104.9	106.25		Sand/boulder
271	104.71	106.21		Cobble/boulder
282	104.84	106.21		Cobble/boulder
288			111.09	Left bankfull (2)
293	104.59	106.15		Cobble/boulder
295	104.17	106.17		Cobble/boulder

Table 1–1. 04033000 Middle Branch Ontonagon River near Paulding, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
302			110.6	Left bankfull (2)
303	103.57	106.2		Cobble/boulder
314	104.6	106.16		Cobble/sand
336	104.39	106.11		Cobble/sand
354	104.45	106.04		Cobble/sand
373	104.51	105.99		Cobble/gravel/sand
384			110.33	Left bankfull (2)
398	104.57	105.9		Cobble/gravel
414	104.84	105.82		Cobble/gravel
429	104.6	105.8		Cobble/boulder
444	104.43	105.65		Cobble/boulder
456	104.06	105.42		Cobble/boulder
468	103.85	105.29		Cobble/boulder
477	104.01	105.23		Cobble/boulder
493	103.7	104.97		Cobble/boulder
493.1	103.59	105	110.84	Riffle cross section at 493 ft data
501	104	105.8		Cobble/boulder
507	104	105.8		Cobble/boulder
520.5	103.52	104.62		Cobble/boulder
532	103.34	104.32		Cobble/boulder
547	103.35	104.29		Cobble/boulder
557	103.35	104.24		Cobble/boulder
585	103.34	103.83		Cobble/boulder
604	102.46	103.62		Cobble/boulder
620	102.58	104.64		Gravel/cobble/boulder
646	100.98	102.67		Gravel/cobble
675	101.39	103.68		Cobble/sand
698	101.11	102.66		Cobble/sand
726	100.73	103.63		Sand/gravel
763	101.49	102.71		Sand/gravel
796	101.31	103.63		Sand/gravel
833	101.67	103.63		Sand/gravel
865	100.08	102.6		Sand
875	99.99	103.59		Sand/gravel
883			108.46	Left bankfull (2)
883.5			106.07	Left bankfull (2)
900	98.6	103.58		Sand/gravel
903			109.96	Left bankfull (2)
903.5			110.46	Left bankfull (2)
914	98.96	103.64		Sand/gravel
935	99.18	103.63		Sand/gravel
942			110.6	Left bankfull (2)
963	99.11	103.63		Sand/gravel
973			110.43	Left bankfull (2)
985	99.55	103.66		Sand/gravel
1021	99.99	103.63		Sand/gravel
1034	99.44	103.64		Sand/gravel
1056	99.16	103.64	107.13	Sand/gravel, right bankfull (2)

Table 1–1. 04033000 Middle Branch Ontonagon River near Paulding, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
1094	99.05	103.15		Sand/gravel
1117	99.44	103.63		Sand/gravel
1123			107.54	Right bankfull (2)
1128	99.89	103.61		Sand/gravel/boulder
1137			107.79	Right bankfull (2)
1141	99.52	103.58		Sand/gravel
1159	99.67	103.63		Sand/gravel/boulder
1176	100.35	103.67		Sand/boulder/gravel, at upstream side of bridge
1194	100.52	103.74		Boulder/gravel/sand
1209	100.18	103.54		Sand/gravel/boulder
1228	100.55	103.55		Sand/gravel/boulder
1245	101.4	103.55		Sand/gravel/boulder
1252			108.19	Left bankfull (3)
1262	102.1	103.49		Boulder
1271	102.18	103.34		Boulder
1280	101.8	103.14		Boulder
1288	101.31	103.01		Boulder
1297	100.4	103.05		Boulder
1306			107.6	Left bankfull (3)
1315	100.19	103.11		Boulder
1335	100.87	103.15		Boulder/sand/gravel
1357	100.72	103.12		Cobble/gravel/sand
1375	100.72	103.07		Boulder/cobble/sand
1395	100.83	103.03		Boulder/cobble/sand
1396			106.39	Right bankfull (3)
1407			106.02	Right bankfull (3)
1414	101.13	103.03		Boulder/cobble/sand
1426	101.62	102.95		Boulder/cobble/sand
1429			106.96	Right bankfull (3)
1439	100.68	102.89	107.57	Riffle cross section at 1,439 ft data
1444	101.1	102.82		Boulder/cobble/sand

Table 1–2. 04046000 Black River near Garnet, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	101.9	102.51		Boulder
1	100.95	103		Riffle cross section at 1 ft data
5	101.62	102.3		Boulder
7	101.14	102.29		Boulder
12	100.54	102.35		Boulder
18	100.65	102.3		Cobble
24	101	102.28		Cobble/boulder
30			103.58	Left bankfull (2)
32	101.29	102.25		Cobble/boulder
40	101.36	102.12		Boulder/cobble
44	101.03	101.9		Boulder
46	100.96	101.82		Boulder
50.5			103.36	Left bankfull (2)
51	100.88	101.74		Boulder
53	101.58	101.78		Boulder, top of step
54	100.38	101.69		Boulder
62	100.78	101.74		Boulder
69	100.95	101.69		Boulder
73	101.21	101.53		Boulder, top of step
73.05	99.53	101.45		Riffle cross section at 73 ft data
74			102.62	Left bankfull (2)
75.5	100.73	101.52		Boulder
78	101.01	101.38		Boulder, top of step
83	100.61	101.21		Boulder
89.5	100.37	101.1		Boulder
93	100.76	101.08		Boulder, top of step
96	100.14	100.84		Boulder
97	100.12	100.84		Boulder
102			102.11	Right bankfull (2)
103	99.6	100.81		Boulder
112	99.3	100.83		Boulder
116	99.56	101.36		Boulder
118			101.93	Left bankfull (2)
127	99.26	100.72	102.41	Cobble/boulder, right bankfull (2)
131.5			101.95	Left bankfull (2)
136	99.3	100.67		Boulder
144			102.26	Right bankfull (2)
149	99.44	100.55		Boulder
150			102.58	Left bankfull (2)
154	98.99	100.32		Boulder, top of step
157			102.21	Left bankfull (2)
159	98.56	99.66		Boulder
163	98.61	99.61		Boulder
165.5			101.9	Left bankfull (2)
168	98.25	99.55		Boulder
170			100.97	Right bankfull (2)
171			101.72	Right bankfull (2)

Table 1–2. 04046000 Black River near Garnet, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
176	98.55	99.49		Boulder
179.5	98.71	99.3		Boulder
189	97.72	99.28		Boulder
191	97.55	99.16		Boulder
194	97.23	99.23		Boulder
195	97.37	99.18		Boulder, pool cross-section measured during longitudinal profile
201.5	98.2	99.16		Boulder
204.5			100.76	Left bankfull (2)
208	98.55	99.16		Boulder
210	97.87	98.85		Boulder
213	97.49	98.84		Boulder
219	98.17	98.74		Boulder
222	97.97	98.62		Boulder
227	97.79	98.22	100.24	Boulder, left bankfull (2)
250	97.25	97.95		Cobble
266	96.93	97.63		Cobble
267			99.72	Right bankfull (2)
280	96.85	97.53		Cobble/boulder
288	95.88	97.35		Cobble/boulder, top of pool
302	94.6	97.42		Cobble/sand
309	93.21	97.41		Cobble/sand
317	93.48	97.42		Silt/sand
329	94.3	98.1		Cobble/sand
334	95.52	97.4		Cobble
343	96.32	97.39		Cobble
359	96.63	97.25	98.87	Boulder, left bankfull (2)
361			98.81	Right bankfull (2)
369	96.03	97.1		Boulder
383	95.61	97.03		Boulder
387	96.44	96.9		Boulder
391	95.62	96.68		Boulder
397.5	95.86	96.47		Boulder/cobble
403	95.74	96.26		Boulder/cobble
404.5			97.91	Left bankfull (2)
405			98.14	Left bankfull (2)
409			98.32	Right bankfull (2)
413	95.45	95.98		Boulder/cobble
414			99.88	Left bankfull (2)
418			98.04	Right bankfull (2)
420	95.05	95.97		Cobble/boulder
426	94.98	95.62		Boulder, riffle cross section measured during longitudinal profile
426.05	93.76	97.06		Riffle cross section at 426 ft data
431			97.59	Right bankfull (2)
440	94.47	95.27		Cobble/boulder

Table 1–2. 04046000 Black River near Garnet, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
447	94.43	95.11		Boulder, top of step
450.5	94.2	94.7		Boulder
460	93.32	94.54		Cobble/boulder
468			96.45	Left bankfull (2)
470	93.3	94.5		Cobble/boulder
477	93.1	94.5		Cobble/boulder, pool
484.5	93.54	94.41		Boulder
491	92.84	94.04		Boulder
496	93.64	94		Boulder, top of step
507			95.6	Left bankfull (2)
509.5	92.76	93.58		Cobble/boulder
519	92.69	93.38		Boulder
522	93.05	93.31		Boulder, top of step
527	92.5	92.98		Boulder
529.5	92.25	92.87		Boulder
531			95.06	Left bankfull (2)
533.5	92.65	92.75		Boulder, top of step
544	91.7	92.56		Boulder
551	91.17	92.5		Cobble/boulder
560	92.13	92.32		Boulder, top of step
570	91.33	92		Boulder
577	91.63	91.73		Boulder
578			93.29	Right bankfull
579			93.78	Left bankfull (2)
585	90.46	91.53		Cobble/boulder
597.5	90.22	91.47		Boulder/cobble
600			93.05	Left bankfull (2)
602	91.23	91.38		Boulder, top of riffle



Table 1–3. 04096015 Galien River near Sawyer, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	104.5	106.05	107.37	Left bankfull, sand
4	103.4	106.08		Sand
12	103.56	106.05		Sand
20	103.54	106.1		Sand
24	104.16	106.1		Sand
25			108.6	Left bankfull (3)
30	102.96	106.11		Sand/clay
37	102.27	106.06		Sand/clay
44	107.83			Left bankfull (3)
46	102.46	106.14		Sand/clay
55			107.86	Left bankfull (3)
59	103.29	106.07		Sand
81	103.41	105.96		Sand
95	103.65	106.02	107.82	Left bankfull (3), sand
104	104	105.97		Sand
114	103.82	106		Sand
115			107.65	Left bankfull (3)
115.1			109.86	Left bankfull, top of bank
115.2			109.87	Right bankfull
130	102.87	106		Clay/sand
142	102.06	106.04		Clay/sand
172.5	101.45	106.04		Sand/clay
185	99.96	105.94		Clay/sand
201.4	101.31	105.98		Clay/sand
220	102.99	106.03		Sand/clay
238	102.82	106		Sand/clay
255			107.63	Right bankfull (2)
258.3	102.24	106.04		Sand/clay
271	103.65	106.03		Sand/clay
285	104.16	106.02		Sand
294	104.4	105.95		Sand
301	103.59	106.01	107.11	Left bankfull (3), sand/clay
320	102.76	106.08		Clay
320.1	102.87	106.22	109.6	Pool cross section at 320 ft data
331			107.84	Left bankfull (3)
332	103.13	106.11		Clay
352	102.99	106.05		Sand/clay
365	103.62	106.16		Sand/clay
378			106.66	Left bankfull (3)
384	104.34	106.09		Sand/clay
402	103.21	106.01		Sand/clay
412	103.28	106.07		Sand/clay
417			107.97	Right bankfull (3)

Table 1–3. 04096015 Galien River near Sawyer, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
428	103.64	106.03		Sand/clay
438			107.53	Right bankfull (3)
442.5	103.35	106		Sand/clay
456.5	102.28	105.92		Sand/clay
468	103.61	105.94		Sand
481.5	104.2	105.99		Sand
492	104.2	106.03		Sand
514	104.29	106.02		Sand
531	104.49	105.94		Sand
542.5	104.69	105.97		Riffle cross section measured during longitudinal profile, sand
542.55	104.65	106.08	109.55	Riffle cross section at 542.5 ft data
577	103.75	105.88		Sand
597	104.41	105.85		Sand
602			106.97	Right bankfull (3), point bar
610			108.22	Right bankfull (2)
616	103.62	105.92		Sand
626	103.14	105.94		Sand
645	102.87	105.95		Sand
662	103.49	105.82		Sand
677			108.49	Right bankfull (3)
684	104.53	105.88		Sand
699	104.69	105.81		Sand
712	104.02	105.82		Sand
720	104.18	105.81		Sand
723.5			109.05	Right bankfull (3)
740.5			108.41	Left bankfull (3)
741.5	104.41	105.79		Sand
741.55	104.51	105.9	108.44	Riffle cross section at 741.5 ft data
745.5			108.96	Right bankfull (3)
747.5	103.78	105.88		Sand/clay
749	103.14	105.86	109.22	Right bankfull (3), sand/clay
752	103.46	105.86		Sand/clay
754	102.55	105.7		Sand/clay
759	100.93	105.78	109.18	Right bankfull (2), clay/sand
771	101.11	105.84		Sand/clay
792	100.84	105.71		Sand/clay
817	103.89	105.64		Sand/clay
825	102.98	105.7	109.14	Right bankfull (2), sand/clay
826.5	103.98	105.86		Sand/clay
842.5	101.94	105.74		Sand/clay
856	102.46	105.72		Sand/clay
863			109.31	Left bankfull (2)
869			108.32	Right bankfull (3)
869.5	102.25	105.74		Sand/clay
888	102.82	105.74		Sand/clay
894.5			109.32	Left bankfull (2)

Table 1–3. 04096015 Galien River near Sawyer, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
900	103.3	105.67		Sand/clay
921	104.1	105.72		Sand/clay
930			108.68	Right bankfull (2)
947	104.27	105.71		Sand/clay
949			109.48	Left bankfull (2)
951			108.67	Right bankfull (2)
969	104.56	105.69		Sand/clay
977			108.43	Right bankfull (2)
983.5			109.11	Left bankfull (2)
985.5	104.31	105.66		Sand/clay
995	104.44	105.63		Sand
1023	104.17	105.6		Sand
1037	104.08	105.6		Sand
1048	104.12	105.61		Sand
1054.95	104.25	105.7	108.16	Riffle cross section at 1,055 ft data
1055	104.22	105.63		Riffle cross section measured during longitudinal profile, sand

Table 1–4. 04096340 St. Joseph River at Clarendon, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.96	104.49	106.12	Gravel
0.1	101.9	104.51	104.97	Riffle cross section at 0 ft data
27	102.03	104.46		Gravel
36	101.11	104.5		Silt
102.7	100.72	104.47		Silt
165			105.45	Left bankfull
168	102.26	104.52		Sand
202	101.84	104.47		Sand
233	102.05	104.46		Gravel
251	101.52	104.47		Sand
267	100.91	104.43		Gravel
267.1	100.3	104.46	105.32	Pool cross section at 267 ft data
300	101.69	104.48		Gravel
368	101.81	104.37		Sand
427	101.98	104.42		Sand
473	101.76	104.4		Sand
543	102.19	104.38		Sand
576	101.51	104.34		Sand
600	101.5	104.36		Sand
658	101.47	104.34		Gravel
688	101.74	104.34		Gravel
735	101.55	104.37		Sand
774	101.79	104.36	104.95	Right bankfull, gravel
825	102.08	104.36		Gravel
864	101.97	104.35		Gravel
900	102.31			Gravel
935	102.31	104.33		Gravel
977	102.03	104.36		Gravel
1051	101.92	104.32	105.3	Right bankfull, sand
1100	101.78	104.32		Sand
1152	101.91	104.31		Sand
1200	101.24	104.26		Gravel
1268	101.75	104.2		Sand
1283	102.45	104.17		Sand
1297	101.06	104.11		
1311	100.84	104.12		Gravel
1379	102.65	104.05		Sand
1422	102.43	104.01		Sand
1455	101.98	103.98		Sand
1479	101.84	104		Sand
1492			105.17	Right bankfull
1518	101.24	103.98		Gravel
1536	102.15	103.95		Sand

Table 1–4. 04096340 St. Joseph River at Clarendon, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
1554	102.71	103.92		Sand
1575	102.69	103.94	105.07	Right bankfull, sand

Table 1–5. 04096400 St. Joseph River near Burlington, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.68	103.49		Cobble/gravel
7			105.22	Right bankfull
26	102.3	103.46		Cobble/gravel
56	102.17	103.53		Sand/gravel
71	101.89	103.53		Sand/gravel
81	101.32	103.5		Sand
89			105.21	Right bankfull
115	101.13	103.45		Sand/gravel
133			105.35	Right bankfull
135	100.98	103.48		Sand
154	100.73	103.45		Gravel
180	100.5	103.47		Gravel
194	100.22	103.31		Gravel
223	100.99	103.4		Gravel
264	101.34	103.37		Gravel
296	101.58	103.38		Gravel/sand
300	101.67	103.41		Gravel
333	101.87	103.36		Sand/gravel
376	101.73	103.38		Sand/gravel
395	101.67	103.34		Gravel
423	101.44	103.33		Sand/gravel
435			105.01	Left bankfull (2)
476	101.29	103.25		Sand/gravel
510	101.13	103.41		Sand/gravel
525			104.7	Right bankfull (1)
543	101	103.31		Gravel
547			105.29	Right bankfull (1)
569	101	103.31		gravel
572			104.45	Left bankfull (1)
581	101	103.3		Gravel
609	100.6	103.33		Gravel, downstream of log
614			105.19	Left bankfull (1)
623	100.83	103.29		Sand/gravel
630			104.31	Left bankfull (2), lower
630.1			105.11	Left bankfull (2), higher
642	101.05	103.29		Sand/gravel
671	100.58	103.3		Sand
681			105.21	Left bankfull (1)
691	99.78	103.26		Sand
705	100.33	103.33		Gravel
722			104.87	Left bankfull (1)
726	100.28	103.28		Gravel
730			106.42	Right bankfull (1)

Table 1–5. 04096400 St. Joseph River near Burlington, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
746	100.76	103.29		Gravel
750	100.96	103.27		Gravel
753			106.4	Right bankfull (1)
765	100.48	103.21	104.87	Gravel, left bankfull (1)
777	105.8			Right bankfull (1)
781	100.57	103.22		Gravel
789			105.14	Left bankfull (1)
801	100.92	103.21		Gravel
821	99.99	103.18		Gravel
830	99.83	103.21		Gravel
841	99.5	103.2		Gravel
842.5			105.01	Right bankfull (1)
857			105	Right bankfull (1)
858	100.69	103.17		Gravel
873			105.08	Right bankfull (1)
879			105.48	Right bankfull (1)
888.5	100.34	103.19		Gravel
902	100.91	103.21		Gravel
915	101.38	103.17		Gravel, riffle cross-section measured during longitudinal profile
915.05	101.24	103.18	105.14	Riffle cross section at 915 ft data
927	101.16	103.12		Gravel
945.5	100.08	103.13		Gravel
963	100.98	103.15		Gravel
980	101.25	103.17		Gravel
1000	100.24	103.16		Sand
1023	100.58	103.13		Gravel
1047.5	101.26	103.17		Gravel, riffle cross section measured during longitudinal profile
1047.55	101.23	103.11	105.1	Riffle cross section at 1047.5 ft data
1071	100.06	103.17		Gravel
1083	99.97	103.13		Gravel
1100	99.85	103.07	105.08	Left bankfull (1), gravel
1124.5	100.43	103.09		Gravel
1147	100.44	103.09		Gravel
1159			105.03	Left bankfull (1)
1167			104.4	Right bankfull (1)
1175	99.71	103.11		Gravel
1192	99.78	103.1		Gravel
1206	99.33	103.1	104.44	Right bankfull (1), gravel
1225	99.96	103.09		Gravel
1255			104.7	Left bankfull (1)
1276			104.48	Right bankfull (1)
1276.5	100.58	103.11		Gravel
1306	100.94	103.09		Gravel

Table 1–5. 04096400 St. Joseph River near Burlington, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
1332	100.99	103.03		Gravel
1367	101.32	102.98		Gravel
1395	101.07	102.95		Gravel
1401			104.47	Left bankfull (1)
1413.5	100.64	102.97		Gravel
1448	100.23	102.95		Gravel
1464	99.22	102.97		Gravel
1466.5			104.48	Left bankfull (1)
1470	99.18	102.96		Gravel
1476.5	98.93	102.9		Gravel
1487			104.28	Left bankfull (1)
1497			104.06	Left bankfull (1)
1496			104.04	Right bankfull (1)
1499.5	100.04	102.88		Gravel
1528	99.92	102.84	104.38	Right bankfull (1)
1532.5	99.98	102.88		Gravel
1554	99.62	102.87		Gravel
1588	100.46	102.87		Sand/gravel
1612	100.42	102.84		Gravel
1638	99.86	102.82		Gravel, pool cross section measured during longitudinal profile
1638.1	99.92	102.79	104.79	Pool cross section at 1,638 ft data
1654	99.86	102.81		Gravel
1674.5			103.5	Right bankfull (1)
1678	100.12	102.78		Gravel
1702	100.09	102.85		Gravel
1730	100.34	102.79		Gravel
1758			104.39	Left bankfull (1)
1760	100.78	102.81		Gravel
1808	101.01	102.79		Sand/gravel
1809			104.36	Left bankfull (1)
1821			104.23	Right bankfull (1)
1861.5	101.14	102.76		Sand/gravel
1907			104.38	Left bankfull (1)
1914.95	101.05	102.7	104.28	Riffle cross section at 1,915 ft data
1915	101.27	102.74		Gravel, riffle cross section measured during longitudinal profile



Table 1–6. 04096405 St. Joseph River at Burlington, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	91.72	93.51		Cobble, head of riffle
0.1			94.46	Right bankfull, on broad flat
28	91.68			Cobble
55.1	91.87			Gravel/cobble
84.3	92.01	93.45		Gravel/cobble
124	91.87			Gravel/cobble
125			94.6	Left bankfull, on broad flat
165	91.57	93.34		Gravel/cobble, mid-run
202	91.82			Gravel/cobble
223	90.96			Gravel, head of pool
238.5	89.02			Sand/gravel
239			94.37	Right bankfull, on island flat
287.5	89			Sand/gravel, pool
321	90.01	93.31		Gravel
354	90.71			Gravel, head of run
378	91.04			Gravel
412	91.69	93.07		Gravel/cobble, riffle cross-section measured during longitudinal profile
412.1	91.24	93.06	94.49	Riffle cross section at 412 ft data
430	91.03			Gravel/cobble
431			93.88	Right bankfull, berm on flat
449.5	90.78			Gravel/cobble, mid-riffle
478.5	90.36	93.03		Gravel/cobble
509.5	90.95	92.91		Gravel, riffle
550	90.23	92.98		Gravel, run
603	90.66	92.8		Gravel, run
633.5	90.02	92.8		Gravel, head of pool
645.5	88.57	92.75		Gravel
661			92.14	Left bankfull
668	87.74	92.82	94.12	Pool cross section at 668 ft data
688	88.52	92.7		Gravel
703	90.66	92.84		Gravel, end of pool
751	90.54	92.82		Gravel, run
815.5	89.8	92.76		Gravel
850	89.73	92.73		Gravel, just upstream of bridge
895	90.22	92.76		Gravel
924	90.86	92.72		
954	90.67	92.69		Sand/gravel
955			93.91	Left bankfull
991.5	90.62	92.65		Sand
1061	90.61	92.67		Sand/gravel
1062			94.13	Left bankfull
1067			94.91	Right top of bank
1140	90.64	92.68		Sand

Table 1-6. 04096405 St. Joseph River at Burlington, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
1185	90.22	92.66		Sand
1200	90.17	92.66	94.15	Sand

Table 1–7. 04096515 South Branch Hog Creek near Allen, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	100.25	102.11		Sand/gravel, downstream of bridge
25			103.42	Right bankfull
25.1			104.27	Right bankfull
27	101.01	102.05		Sand/gravel
47	100.96	102.04		
68	100.27	102.01		Sand/gravel
75			103.48	Left bankfull
93	100.11	102.03		Sand/gravel
101			103.29	Left bankfull
103	100.91	102		Gravel/sand, head of riffle
116	101.11	102.01		Gravel
144	100.91	102.01		Gravel
160	100.9	102		Gravel/sand
182	100.92	102.02		Gravel/sand
198	100.73	102.01		Gravel/sand
222			104.34	Left bankfull
236	100.62	102.02	103.95	Left bankfull
236.5			103.64	Left bankfull
240			104.62	Left bankfull
248			104.76	Left bankfull
261	100.69	102.02		Gravel
270	100.66	102.02		Gravel/sand
292	100.4	102	104.18	Gravel/sand, left bankfull
316			103.02	Right bankfull
319	100.55	102.03		Gravel
351	100.47	102.05		Gravel
385	100.5	102.02		Gravel
420	100.27	101.99		Gravel
454	100.12	102.02		Gravel, head of pool
472			103.62	Right bankfull
478	99.87	101.97		Gravel, middle of pool
490.5	100.18	101.98		Gravel
502	100.18	102		Gravel
505			103.48	Right bankfull
542	100.34	101.96		Gravel
544			103	Right bankfull
600	100.38	101.94	103	Riffle cross section measured during longitudinal profile
600.1	100.37	101.81	104.08	Riffle cross section at 600 ft data
617	100.26	101.97		Gravel/sand
628	99.85	101.95		head of pool
634			104.65	Right bankfull
652	99.57	101.95		Gravel, pool
672	99.84	101.93		Gravel

Table 1–7. 04096515 South Branch Hog Creek near Allen, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
686	100.42	101.94		Gravel
691			103.96	Right bankfull
700	100.47	101.95		Gravel
731	100.55	101.89		Gravel
743	100.59	101.91		Gravel
761	100.01	101.91	103.24	Right bankfull (1)
761.5			104.06	Right bankfull
774	99.98	101.92		Gravel
793	100.56	101.78	104.16	Riffle cross section at 793 ft data
794	100.63	101.87		Gravel, riffle cross-section measured during longitudinal profile
808	99.95	101.88		Gravel, head of pool
808.1	99.69	101.8	103.86	Pool cross section at 808 ft data
819	99.62	101.92		Gravel
840	100.14	101.86		Gravel, riffle
858			104.9	Right bankfull
865			103.65	Right bankfull
884	100.57	101.87		Gravel
900			104.98	Left bankfull
906	100.28	101.88		Gravel
945	100.24	101.87		Gravel
950			103.98	Right bankfull
962	100.44	101.86		Gravel
962.1	100.46	101.74	104.11	Riffle cross section at 962 ft data
977	100.72	101.82		Gravel
1024	100.62	101.84		Gravel
1057	100.62		103.57	Right bankfull

Table 1–8. 04096600 Coldwater River near Hodunk, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	105.43	106.35	108.27	Left bankfull (2), cobble
11	105.64	106.33		Cobble
48			107.99	Right bankfull (1)
50	104.95	106.13		Gravel
54			107.79	Left bankfull (1)
81	103.76	106.26	107.8	Cobble, pool cross-section at 81 ft data
82			107.92	Right bankfull (2), on trail on right bank
121			107.21	Left bankfull (1)
141	104.16	106.26		Cobble
188	103.7	106.09		Cobble
243	104.48	105.9		Cobble
249			107.65	Left bankfull (1)
249.1	104.57	105.99	107.56	Riffle cross section at 249 ft data
251	104.54	106.02		Cobble
389			107.38	Right bankfull (1)
445			107.2	Left bankfull (2)
470	103.84	105.14		Cobble
568	101.31	104.75		Cobble
580			109.24	Right bankfull (2)
583			107.63	Left bankfull (1)
611			106.01	Left bankfull (1)
618			107.88	Right bankfull (1)
651	102.49	104.65		Cobble
737	102.51	104.72		Cobble
777	101.94	104.68		Gravel
833	100.51	104.71		Gravel
869	100.61	104.71		Gravel
907	100.36	104.68		Gravel
915	108.06			Left bankfull (3), on steep bank
929.5	100.95	104.27		Gravel
934			106.73	Right bankfull (1)
984			105.5	Right bankfull (3), on point bar
986	102.69	104.59		Cobble
995.5	103.11	104.62	107.48	Riffle cross section at 995.5 ft data
1038	103.61	104.06		Cobble
1078	102.03	103.93		Cobble
1162	102.47	103.91		Cobble
1212.5	101.91	103.91		Cobble
1236			105.93	Right bankfull (2)
1247	102.58	103.83		Cobble
1274			107.42	Left bankfull (2)

Table 1–8. 04096600 Coldwater River near Hodunk, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
1291	102.26	103.54		Riffle cross section during longitudinal profile
1291.1	102.03	103.3	106.39	Riffle cross section at 1,291 ft data
1329	101.17	103.19	105.65	Left bankfull (1)

Table 1–9. 04097170 Portage River at W Avenue near Vicksburg, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.38	103.77	104.71	Left bankfull (1), sand/gravel
0.1	102.34	103.75	104.8	Riffle cross section at 0 ft data
14	102.38	103.74		Sand/gravel
29	102.17	103.73		Cobble/gravel
43	101.67	103.73		Cobble/gravel
45	101.64	103.74	104.51	Gravel/Left bankfull (1)
45.1	101.76	103.73	104.87	Pool cross section at 45 ft data
59	101.66	103.7		Cobble/gravel
75	101.56	103.72		Gravel
78			104.71	Right bankfull (1)
94	101.76	103.74		Gravel
108			104.83	Right bankfull (1)
111	101.93	103.75		Gravel
130	102.14	103.75		Gravel
149	102.01	103.75		Gravel
152			104.93	Left bankfull (1)
171	101.84	103.74		Gravel
192	102.02	103.76		Gravel
216	102.18	103.75		Gravel
220			104.62	Left bankfull (1)
240	101.89	103.73		Gravel
259	101.89	103.73		Gravel
278	101.89	103.68		Gravel
296	101.63	103.73		Gravel
316	101.73	103.73		Gravel
345	101.7	103.7		Gravel
374	101.93	103.73		Gravel
389			104.83	Left bankfull (1)
393	101.88	103.72		Gravel
415	101.96	103.72		Gravel
422			104.67	Left bankfull (1)
429	101.96	103.74		Gravel
493	102.35	103.69		Gravel
504.5	102.14	103.68		Gravel
524	102.19	103.71		Silt/gravel
543	101.89	103.67		Gravel
556	102.15	103.65		Gravel
569	102.27	103.63		Gravel
586	102.36	103.62		Gravel
589			104.54	Right bankfull (2)
605	102.34	103.58		Gravel
613			104.49	Right bankfull (1)
636	102.27	103.56		Gravel

Table 1–9. 04097170 Portage River at W Avenue near Vicksburg, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
658	102.16	103.44		Gravel
664			104.7	Right bankfull (1)
670	102.47	103.53		Gravel
670.1	102.11	103.58	104.8	Riffle cross section at 670 ft data
680	102.22	103.54		Gravel
694	102.38	103.52		Gravel
701	102.49	103.51		Gravel
714	102.3	103.51		Cobble
729	102.19	103.49		Cobble/gravel
730			104.2	Right bankfull (2)
752	102.56	103.48		Riffle cross section measured during longitudinal profile
752.1	102.23	103.5	104.48	Riffle cross section at 752 ft data
773	102.55	103.47		Gravel/cobble
804	102.51	103.47		Cobble/gravel
817			104.71	Left bankfull (1)
827	102.21	103.47		Gravel/cobble
842	102.2	103.48		Gravel/cobble
866	102.23	103.49		Gravel/cobble
888	102.17	103.44		Gravel
891			104.04	Left bankfull (1)
906.5	102.1	103.46		Silt/gravel
927	102.14	103.43		Silt/gravel
948	102.08	103.37		Silt/gravel
968	101.88	103.4		Silt/gravel
986			104.22	Right bankfull (1)
987	101.55	103.36		Gravel
1007.5	101.59	103.42		Gravel
1010			104.53	Right bankfull (1)
1030	101.61	103.43		Gravel/cobble
1045	101.66	103.46		Gravel/cobble
1089	101.77	103.35		Gravel
1098			104.78	Right bankfull (1)
1109	101.75	103.35		Gravel
1114			104.44	Right bankfull (1)
1135.5	101.77	103.35		Gravel
1160	101.66	103.35		Gravel
1189	101.91	103.35		Gravel
1200	101.84	103.33		Gravel
1219			104.43	Left bankfull (1)
1222	101.89	103.37		Gravel
1251	102.14	103.41		Gravel
1264	102.22	103.25		Gravel
1291	101.97	103.25		Gravel



Table 1–9. 04097170 Portage River at W Avenue near Vicksburg, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
1314	101.73	103.18		Gravel
1322	101.89	103.16		Gravel, upstream end of bridge
1368	101.84	103.13		Gravel, downstream end of bridge
1403	101.51	103.1		Gravel
1411			103.94	Left bankfull (1)
1438	101.54	102.99		Gravel
1456	101.39	103.02		Gravel
1483	101.45	103.02		Gravel/sand
1494			104.54	Right bankfull (1)
1500	101.65	103.01		Gravel

Table 1–10. 04097370 Flowerfield Creek near Flowerfield, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	99.87	101.07	101.98	Left bankfull (2), sand
8	99.97			Sand
8.1	99.32	100.95	101.8	Riffle cross section at 8 ft data
12	99.94	101.14		Sand
16			101.62	Left bankfull (2)
20	99.51	101.01		Sand
30	99.64	100.95		Sand
34	99.69	101.01		Sand
42	99.42	100.98		Sand
44	99.58	100.99		Sand
51			102.51	Left bankfull (1)
57	99.01	100.98		Sand/gravel
66	99.17	101.02		Sand/gravel
75	99.02	100.98		Sand/gravel
76			101.93	Right bankfull (2)
81	99.12	100.97		Sand
89	99.32	101		Sand
94	99.74	101.02		Sand
97.5			102.17	Right bankfull (1)
101	99.96	101		Sand
102			103.18	Left bankfull (1)
103			103.04	Left bankfull (1)
107	99.98	101.02		Sand
107.1	99.98	100.9		Riffle cross section at 107 ft data
118.5	99.95	100.99		Sand
129	99.43	101		Sand
135			101.98	Right bankfull (1)
139	99.3	100.98		Sand
148	98.96	100.85		silt
155			101.76	Right bankfull (1)
158	98.98	100.98		Silt/sand
158.1	97.01	100.75	104.16	Pool cross section at 158 ft data
161	99.01	100.93		Gravel
163			102.42	Left bankfull (2)
170	99.25	100.91		Gravel
174	99.3	100.91		Gravel
188.5	98.85	100.85		Sand
202	99.6	101.09		Sand
212.5	99.27	100.88		Silt
222	98.68	100.93		Sand/gravel
227	98.96	100.86		Sand
233	98.98	100.88		Sand
241	99.19	100.89		Sand
251	99.23	100.89		Sand

Table 1–10. 04097370 Flowerfield Creek near Flowerfield, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
266	99.23	100.85		Sand
262			102.08	Right bankfull (2)
262.5			102.12	Right bankfull (2)
275	99.23	100.89		Gravel
288	99.51	100.84		Sand/gravel
299	99.45	100.86		Sand
315.5	99.52	100.82		Sand
334	99.28	100.7		Sand
339			101.33	Left bankfull (2)
359	98.95	100.75	101.22	Left bankfull (2), gravel
371.5	99.25	100.82		Sand
378	99.18	100.8		Sand, upstream of bridge
402	99.83	100.69		Sand, downstream of bridge
410	99.85	100.63		on top of large asphalt blocks
416.5	99.91	100.48		on top of large rocks
422.5	98.56	100.43		Gravel
433	99.05	100.47		Sand
458			101.2	Right bankfull (2)
461	99.24	100.68		Gravel
471	98.93	100.4	101.21	Left bankfull (1), gravel
480	98.58	100.37		Sand
489	98.38	100.36		fine sand
500	98.21	99.63		Sand
504.5	98.14	99.64		Sand
509	97.81	99.63		Pool upstream of log-jam, sand
525	96.68	98.98		Sand/gravel
527	97.07	99.67		Sand/gravel
531			100.59	Right bankfull (2)
535.5	97.48	99.58		Sand
542			101.27	Left bankfull (2)
544	97.3	99.58		Sand/gravel
549			100.44	Right bankfull (2), on inside of bend
550	97.45	99.53		Gravel/sand
556			100.74	Left bankfull (2)
559	97.47	99.65		Sand
564	97.96	99.55		Sand
576	98.39	99.53		Sand
593.5	97.88	99.55		Sand
596			100.45	Right bankfull (1)
612.5	98.39	99.52		Sand/gravel
619			100.06	Right bankfull (1)
631	98.35	99.57		Sand
658.5	97.92	99.51		Sand/gravel
659			100.45	Right bankfull (1)
665			100.21	Left bankfull (1)
670	97.64	99.5	100.6	Gravel, left bankfull (1)

Table 1–10. 04097370 Flowerfield Creek near Flowerfield, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
682	98.03	99.49		Gravel
685			100.44	Right bankfull (1)
696	97.84	99.5		Gravel
710.5	98.31	99.45		Gravel
730	97.45	99.49		Gravel
748	97.78	99.44		Gravel
787.5	98.05	99.47		Gravel
795	97.68	99.44		Gravel
803	97.42	99.38		Gravel
813			100.15	Left bankfull (1)
815	97.67	99.39		Gravel
817			100.66	Right bankfull (1)
839			100.11	Right bankfull (1)
840	97.61	99.4	101.17	Sand
856	97.69	99.25		Gravel/sand
862			99.15	Left bankfull (1)

Table 1–11. 04097540 Prairie River near Nottawa, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0.2	91.19	93.49	95.19	Right bankfull, sand
24	91.17	93.6		Sand
43	91.22	93.46		Coarse sand
46	91.51			Coarse sand
70	90.57	93.47		Coarse sand
73	90.3	93.5		Coarse sand, log scour
96	91.11	93.45		Coarse sand
103	89.83	93.49		Gravel, log scour pool
105	90.67	93.43		Coarse sand
108	90.35	93.43		Gravel, log scour pool
149	91.11	93.39		Sand
159	91.08	93.36		Sand
159.2	91.41	93.3	94.55	Riffle cross section at 159 ft data
190	91.57	93.33		Coarse sand
185			94.98	Right bankfull
222	91.21	93.22	94.89	Left bankfull, coarse sand
257	91.15	93.29		Small gravel
283	91.15	93.25		Coarse sand
308	90.83	93.25		Coarse sand
362	90.74	93.22		Coarse sand
375	90.5	93.2		Coarse sand
395	90.86	93.18		Coarse sand
410	89.9	93.2		Coarse sand
465	90.52	93.2		Coarse sand
487	89.98	93.08		Coarse sand
510	90.48	93.12		Coarse sand
541	90.27	93.08		Coarse sand
572	90.31	93.19		Coarse sand
600	89.67	93.16		Gravel
622	89.84	93.16		Gravel
640	89.73	93.18		Gravel
655	90.03	93.15		Coarse sand
658	90.06	93	93.71	Pool cross section at 658 ft data
673	90.15	93.18		Coarse sand
693	90.68	93.16		Coarse sand
723	91.05	93.15		Coarse sand
745	90.9	93.16		Gravel
752			93.76	Lower terrace on left bank
774	90.9	93.16		Gravel
807	91.16	93.1		Gravel
847	91.32	93.11		Gravel
872	91.01	93.1		Gravel
900	90.95	93.09		Gravel

Table 1–11. 04097540 Prairie River near Nottawa, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
946	90.12	93.11		Gravel, upstream edge of bridge
994	90.04	93.01		Gravel
1016	90.06	93.01		Sand/gravel
1042	89.43	92.99		Sand/gravel
1063	88.8	92.8		Gravel
1078	89.46	92.96		Cobble
1083	89.57	92.99		Sand/gravel
1130	90.39	92.93		Gravel
1155	89.43			
1180	89.52	92.85		Gravel
1230	89.56	92.85		Gravel
1260	90.54	92.87		Gravel
1300	90.6	92.87	94.77	Left bankfull, gravel

Table 1–12. 04102776 Middle Branch Black River near South Haven, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	101.77	103.43	106.63	Right bankfull (2), sand
9			106.21	Left bankfull (2)
9.1	100.62	103.41	105.8	Riffle cross section at 9 ft data
11	101.7	103.49		Sand
22.5	100.64	103.43		Sand
25			106.89	Left bankfull (2)
25.1			104.35	Right bankfull (2)
25.2			106.39	Right bankfull (2)
29	100.33	103.43	106.64	Left bankfull (2), sand
34	100.44	103.4		Sand
41	101	103.39		Sand
44	100.51	103.38		Sand
46	100.55	103.4		Sand
48.5	99.61	103.39		Sand
53.5			106.4	Left bankfull (2)
59	99.86	103.38		Sand
62.5	99.91	103.31		Sand
76	99.92	103.33		Sand
80			104.51	Right bankfull (2)
85			106.28	Right bankfull (2)
85.5	100.9	103.33		Sand
92	100.45	103.31		Sand
101	100.57	103.3		Sand
106			106.54	Left bankfull (2)
108	100.12	103.32		Sand
110			105.06	Right bankfull (2)
111.5			106.46	Right bankfull (2)
116	100.62	103.26		Sand
126	101.38	103.28		Sand
135.5	101.21	103.3		Sand
155			106.3	Right bankfull (2)
161	101.44	103.28		Sand
171	101.09	103.27		Sand
197	101.6	103.3		Sand
217	101.62	103.28		Sand
219			106.51	Right bankfull (2)
222			106.17	Left bankfull (2)
236	101.75	103.25	106.14	Left bankfull (2), sand
241.5			106.24	Right bankfull (2)
248.5	102.14	103.25		Sand
260			106.61	Left bankfull (2)
261.6	100.94	103.24		Sand
269			104.97	Left bankfull (2)

Table 1–12. 04102776 Middle Branch Black River near South Haven, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
272	100.66	103.24		Sand
282.5	100.75	103.19		Sand
287.5			106.71	Right bankfull (2)
292	99.67	103.17		Sand
298			106.12	Left bankfull (2)
305.5	100.67	103.19		Sand
314.5	101.1	103.16		Sand
324.5			106.78	Right bankfull (2)
329	101.25	103.13	104.27	Left bankfull (2), sand
335	101.45	103.09		Sand
347	101.69	103.16		Sand
347.1	101.14	103.14	105.95	Riffle cross section at 347 ft data
351			105.89	Left bankfull (2)
359	100.9	103.16		Sand
362			106.02	Left bankfull (2)
369	100.95	103.13		Sand
372.3			106.33	Right bankfull (2)
384	100.93	103.17		Sand
396			106.12	Right bankfull (2)
398	100.25	103.11		Sand
409	101.17	103.19		Sand
420.5	100.83	103.11		Sand
431	100.17	103.1		Silt
431.5			105.45	Left bankfull (2)
434			105.4	Left bankfull (2)
437.5	99.77	103.05		Silt
441.5	99.1	103.09		Silt
450	99.16	103.07		Sand
456	100.32	103.12		Sand
460	100.09	103.1		Sand
465	99.51	103.08		Sand
466			105.79	Left bankfull (2)
470	99.26	103.12		Sand
474	99.51	103.13		Sand
477	98.13	103.04		Sand
478			105.73	Left bankfull (2)
479.5			105.65	Right bankfull (2)
482	98.79	103.1		Sand
492	99.22	103.08		Sand
497	99.62	103.11		Sand
498			106.08	Left bankfull (2)
508.8	100.94	103.1		Sand
520	99.57	103.07		Sand
529	98.93	103.09		Sand
534			105.98	Right bankfull (2)



Table 1–12. 04102776 Middle Branch Black River near South Haven, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
535	98.67	103.12		Sand
544.8	99.72	103.07		Sand
550			106.56	Left bankfull (2)
563			106.62	Right bankfull (2)
564.5	100.42	103.08		Sand
583.5	101.12	103.04		Sand
589			106.16	Left bankfull (2)
590			106	Right bankfull (2)
595.5	99.94	103.02		Sand
612.5			105.49	Right bankfull (2)
615.5	98.61	103.01		Sand
620.5	98.95	103.07		Sand
628	98.34	103.08		Sand
637	99.45	103.07		Sand
648.5	99.72	103.11	105.57	Right bankfull (2), sand
663			105.99	Left bankfull (2)
667	100.1	103		Sand
667.1	99.93	103.01	105.75	Pool cross section at 667 ft data
671			105.66	Right bankfull (2)
675.5			106.14	Left bankfull (2)
676	101.37	102.93		Sand
685	101.48	102.97		Sand
693			105.55	Right bankfull (2)
715	101.85	103.01		Sand
715.1	101.32	103.03	105.08	Riffle cross section at 715 ft data
720	101.85	105.11		Left bankfull (2)

Table 1–13. 04103010 Kalamazoo River near Marengo, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	88.73	91.87		
1	88.73	91.87		
18	88.66	91.88		
37	89.31	91.77		
51	89.33	91.88		
62	89.13	91.98		
76	88.61	91.77		
88	88.35	91.85		
95	88.17	91.82		
111	88.56	91.8		
136	88.4	91.88		
152	88.58	91.78		
165	89.04	91.84		
186	89.1	91.8		
204	89.31	91.82		
242	89.29	91.83		
253			92.66	Left bench
278	89.37	91.91		
300	89.21	91.89		
312	88.61	91.79		
330	89.36	91.67		
347	89.31	91.93		
361	89.2	91.97	92.71	Right bankfull
376	89.38	91.94		
426	89.02	91.98		
446	88.77	91.98		
469	88.59	91.99		
493	88.81	91.99		
500			92.82	Right bankfull
529	89.4	92.08		
572	89.74	92.05		
590	89.66	92		
653	89.69	92.05		
717	89.54	92.11		
734	89.06	92.08		
734.1	89.53	92.15	93.16	Pool cross section at 734 ft data
750	89.4	92.14		
788	90.78	92.18		
817	90.18	92.22		
847	90.36	92.21		
857	89.94	92.28		
882	90.06	92.35		
889			93.24	Right bankfull

Table 1–13. 04103010 Kalamazoo River near Marengo, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
900	90.78	92.3		
919	91.21	92.34		
936	91.12	92.48		
949	91.23	92.39	93.31	Riffle cross section at 949 ft data
974	91.32	92.56		
976			93.13	Left bankfull
982			93.43	Left bankfull
1016	90.85	92.55		
1045	90.33	92.54		
1082	90.82	92.68		
1119	90.64		93.32	Right bankfull
1140	90.64	92.64		
1165	90.68	92.76		
1200	90.68	92.68		
1230	89.73			
1260	89.6	92.85		
1290	89.27	92.89		
1300	90.07	92.87	93.81	Right bankfull

Table 1–14. 04104945 Wanadoga Creek near Battle Creek, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	87.75	88.45		Sand, riffle
35	86.58	88.43		Pool
40	86.33	88.43		Pool
60	86.45	88.45		
72	86.38	88.4		Gravel
95	86.15	88.44		Sand/gravel, pool
104	86.15	88.45		Sand/gravel, pool
136	86.09	88.43		Sand
140			89.09	Right bankfull, on bench
154	85.89	88.47		Gravel
178	85.75	88.45		Gravel
191	85.68	88.43		
			195	Right bankfull, on bench
			205	Left bankfull, slope break
211	86.8	88.45		Run
234	87.52	88.45		Gravel, riffle
259	86.6	88.49		Gravel
268	85.66	88.43	89.42	Left bankfull, bench on slope break
272	85.1	88.45		Pool
279	84.7	88.44		Gravel, pool
291	84.69	88.46		Pool
299	84.58	88.46		
312	85.2	88.45		
325	85.59	88.49		Gravel
345	86.76	88.49		Gravel/cobble, riffle
362	87	88.44		Coarse gravel, riffle under bridge
403	87.6	88.49		Cobble, riffle upstream end of bridge
424	87.47	88.5		Head of riffle
452	87.09	88.48		Silt and wood debris
467	86.96	88.47		
498	87.26	88.48		Silt/sand downstream of wood debris
509	87.05	88.53		Silt over gravel
532	86.41	88.5		Gravel
542	86.67	88.51		
562	86.9	88.5		Silt, pool
573	86.31	88.49		Pool
598	86.87	88.51		
650	86.57	88.51		
675	86.34	88.51		
694	86.53	88.49		
708	85.43	88.4	89.04	Pool cross section at 708 ft data
733	86.2	88.51		Sand/silt pool
759	86.06	88.5		Pool

Table 1–14. 04104945 Wanadoga Creek near Battle Creek, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
791	85.96	88.47	89.32	Silt, pool, right bankfull (in vegetation and silt/sand)
819	86.17	88.51		
860	86.96	88.62		
885	86.1	88.56	88.85	Left bankfull, on depositional bench
924	86.4	88.57		
946	85.8	88.57		
1018	85.64	88.53		
1043	86.19	88.55		
1055			88.95	
1083	86.49	88.51		
1113	85.71	88.55		Silt
1125	85.01	88.55		Silt
1156.3	85.86	88.51		
1175	85.57	88.52		
1189	86.38	88.52		
1235	86.67	88.51		
1261	86.95	88.53		
1305	87.39	88.44		
1339	87.26	88.49		
1372			89.23	Left bankfull, on bench with change in vegetation
1399	87.15	88.51		
1418	87.2			
1450	87.09	88.51		
1496	87.05	88.5		
1498			89.37	Left bankfull
1500	87.51	88.53		
1518	87.58	88.54		
1550.9	87.32	88.51	88.85	Riffle cross section at 1,551 ft data
1551	87.65	88.53		

Table 1–15. 04105700 Augusta Creek near Augusta, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.88	104.39		
28	102.88			
41	102.75			
50	102.59		104.31	Left bankfull
59	102.78	103.86		
73	102.79			Run
82	102.37			
91	102.1		104.62	Left bankfull
103	101.94			In back eddy
110	102.25			
115	102.15		104.2	Left bankfull
123	102.09			
135	102.56	103.73		Glide
161	102.36	103.71		Riffle cross section measured during longitudinal profile
161.5	102.43	103.75	104.29	Riffle cross section at 91 ft data
168	101.92			
182	102.11			Run
196	102.55			
225	101.89			
234	102.14			
260	102.22	103.62		Run/pool
299	101.94			
328	101.96	103.31	103.52	Right bankfull
366	101.65		103.37	Right bankfull
381	102.15			
410	101.72	103.08	103.46	Right bankfull
431			103.52	Left bankfull
479	100.59			
526	101.14	102.86		
535	101.51			
557	101.54	102.89		
588	101.79	102.84	103.47	Right bankfull
615	101.42		103.22	Left bankfull
645	101.33		103.26	Right bankfull
676	101.12			
703	101.12	102.77		
703.5	100.88	102.63	103.1	
717	100.88			
731	100.72	102.53		
740	101.06			
760	101.44			
772	101.01			
789	100.93			

Table 1–15. 04105700 Augusta Creek near Augusta, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
799	100.78			
808	101.04			
816	100.44		103	Left bankfull
826	99.57			
835	100.17			
850	100.49			
862	100.95			
872	100.92	102.27	102.96	Right bankfull

Table 1–16. 04108600 Rabbit River near Hopkins, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	101.84	103.4	106.87	Sand/gravel, Left bankfull (1)
0.1	101.28	103.36	106.11	Riffle cross section at 0 ft data
0.25			106.91	Left bankfull (1)
7	101.51	103.38		Sand/gravel
41	101.51	103.38		Sand/gravel
50	101.39	103.33		Sand/gravel, on upstream side of fallen tree
79	101.14	103.22		Gravel/sand
91.5	100.91	103.25		Clay over gravel
103	100.99	103.29		Clay over gravel
108			107.74	Left bankfull (1)
115	100.88	103.24		Sand/gravel
127	101.65	103.23		Sand/gravel
134	101.37	103.23		Sand/gravel
140	101.13	103.21		Sand/some gravel
150	101.26	103.22		Sand/gravel
161			107.83	Right bankfull (1)
167	101.29	103.19		Sand/gravel
172.5			107.26	Left bankfull (1)
180.5	101.33	103.19		Sand/gravel
186.5	101.28	103.2		Sand/gravel
199			107.36	Right bankfull (1)
201	100.96	103.18		Clay/some gravel/sand
217.5	101.09	103.19		Sand/gravel
227	100.59	103.19		Sand/gravel
240	101.08	103.18		Sand/gravel
257	101.16	103.2		Sand/gravel
270	100.99	103.17		Sand/gravel
272			107.39	Right bankfull (1)
282.8			106.8	Left bankfull (2)
292	101.16	103.18		Sand/gravel
298			107.36	Right bankfull (1)
302	101.02	103.19		Clay/some sand
308	101.06	103.16		Sand/gravel
324	101.52	103.16		Sand/gravel
335	101.76	103.15		Sand/gravel
344			107.4	Right bankfull (1)
346	101.53	103.16		Sand/gravel
363.5	100.98	103.15		Sand/some gravel, on upstream side of woody debris
378	101.37	103.17		Coarse sand
401	100.89	103.15		Coarse sand
420	100.91	103.15		Coarse sand
446	100.24	103.16		Hard pan clay
459	100.39	103.13		Sand/gravel



Table 1–16. 04108600 Rabbit River near Hopkins, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
469	100.06	103.11		Sand/gravel
483	99.65	103.09		Sand/gravel
489	99.12	103.03		Sand/gravel
505	98.4	102.96		Sand/gravel
514.8	98.83	102.97		Sand/gravel
522	99.27	102.97		Sand/gravel
523			107	Right bankfull (1)
535	98.88	103		Sand/gravel
556	99.64	103		Hard pan clay
578	99.88	102.98		Sand/gravel
586.5	100.47	102.96		Hard pan clay
590	99.98	102.94	107.12	Pool cross section at 590 ft data
597.5	99.89	102.97		Sand/gravel
613	99.81	103.01		Sand/gravel
628	100.03	102.97		Sand/gravel
644	100.47	102.98		Sand/gravel
657.5	101.33	102.99		Coarse sand
679	101.51	102.97		Sand/gravel
713			107.54	Left bankfull (1)
716	101.13	102.97		Sand/gravel
735.5	101.09	102.93		Hard pan clay/gravel
761.5	101.38	102.9		Hard pan clay/gravel
777			107.12	Left bankfull (1)
781	100.76	102.88		Sand/gravel
796	100.73	102.88		Sand/gravel
816	100.65	102.9		Sand
817			106.78	Right bankfull (1)
828	100.42	102.86		Sand/gravel
840	100.7	102.88		Sand/gravel
844			107.09	Left bankfull (1)
856	100.89	102.87		Sand
875	101.21	102.83		Sand/gravel
887	100.84	102.85		Sand/gravel
894			106.93	Left bankfull (1)
898	100.9	102.85		Sand/gravel
914.5			106.48	Right bankfull (1)
915	101	102.82	106.32	Sand/gravel, right bankfull (1)
930	101.12	102.82		Sand/gravel

Table 1–17. 04111379 Red Cedar River near Williamston, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.35	103.42		Cobble/gravel
11	101.74	103.42		Sand/gravel
16			106.32	Right bankfull (1)
51	101.36	103.38		Sand
86.5	101.42	103.38		Coarse sand
94			106.05	Right bankfull (1)
125	101.32	103.38		Silt/sand
149	100.23	103.37		Sand/gravel
173	101.11	103.39		Sand/gravel
185	101.65	103.38		Sand/gravel
243			105.95	Left bankfull (1)
262	101.06	103.31		Coarse sand
282			105.84	Right bankfull (1)
298	99.98	103.32		Sand
326	100.56	103.32		Sand/gravel
362	100.08	103.32		Gravel
372	101.12	103.3		Gravel
378	101.44	103.3		Sand/gravel, upstream of log
388			105.47	Right bankfull (1)
392	99.85	103.29		Sand
404.5	101.4	103.32		Sand/gravel
407			106.42	Left bankfull (1)
423	101.25	103.29		Sand/gravel
456	101.93	103.28		Sand/gravel
504	101.82	103.28		Coarse sand
537			106.08	Left bankfull (1)
539.5	101.56	103.26		Sand/gravel/cobble
539.6	101.88	103.33	105.98	Riffle cross section at 539.5 ft data
545			106.1	Right bankfull (2), on rising bank
555	101.89	103.27		Cobble/gravel
572	101.41	103.27		Cobble/gravel
591	101.21	103.23		Gravel/cobble
602			105.97	Right bankfull (1)
607	102.16	103.27		Cobble/gravel
627	101.51	103.25		Cobble/gravel
645	100.74	103.25		Sand/gravel
654.5			105.48	Left bankfull (1), closer to river
659			105.65	Left bankfull (1)
668	101.33	103.26		Sand
709	101.37	103.26		Sand
728	101.92	103.22		Sand
735.5			106.07	Right bankfull (1)
773			105.93	Left bankfull (1)

Table 1–17. 04111379 Red Cedar River near Williamston, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
778	102.35	103.18		Sand
810	101.98	103.18		Sand
848	100.32	103.13		Sand and woody debris
862	101.34	103.11		Sand
887	100.76	103.11		Sand
907	99.68	103.08		Sand/gravel
932.5	100.73	103.09		Sand
938			106.2	Right bankfull (1)
967	101.06	103.08		Sand
980.5	100.73	103.09		Gravel/cobble
990			105.57	Right bankfull (2)
1015	100.99	103.05		Cobble/gravel
1015.1	100.72	103.11	105.81	Pool cross section at 1,015 ft data
1047	101.23	103.08		Cobble/gravel
1116			105.7	Right bankfull (1)
1116.5	101.82	103.03	105.38	Gravel/cobble, right bankfull (2)

Table 1–18. 04111500 Deer Creek near Dansville, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	101.89	102.18	106.43	Left bankfull (2), gravel/sand
0.5			106.97	Left bankfull (3), in thick vegetation
11	101.65	102.19		Sand/gravel
21	101.32	102.15		Gravel
28	99.4	102.16		Sand/silt
38	99.17	102.16		Silt/sand
47	100.39	102.15		Silt/sand
52	100.43	102.13	107.33	Right bankfull (1), sand
59	100.49	102.15	106.99	Right bankfull (1), sand/gravel
66	100.36	102.18		Sand
85	101.05	102.14		Sand
87			109.42	Left bankfull (2), near road
97	101.08	102.14		Sand
105.5	101.34	102.14		Sand/gravel
106	101.31	102.11	107.11	Riffle cross section at 106 ft data
118	101.4	102.1		Sand/gravel
118.5			106.44	Right bankfull (1), on higher flat
119			105.51	Right bankfull (1), on wide flat
119.5			109.29	Right bankfull (2), on intermediate terrace
128	101	102.13		Sand/gravel
143	100.96	102.12		Sand/gravel
157	101.13	102.16		Sand
173	101.22	102.14		Sand
190	101.54	102.14		Sand
203.5			105.41	Left bankfull (2), on landward side of large tree
204			105.14	Left bankfull (2), on wide flat
209			108.62	Right bankfull (2), on intermediate terrace
212	100.99	102.13		Sand
218	99.89	102.09		Sand
225	100	102.17		Silt/sand
243	100.64	102.09		Silt/sand
243.1	100.35	102.08	107.25	Pool cross section at 243 ft data
258	101.21	102.11		Sand
282	101.64	102.06		Sand
284.5			106.49	Right bankfull (1), on small bench
285			106.33	Left bankfull (1), on small bench
296	101.53	102.02		Sand
307	101.37	102.05		Sand/gravel
324	101.41	102		Sand
338	101.39	101.99		Sand/gravel
353			105.92	Right bankfull (2), on small bench
358	101.47	101.99		Sand
360	101.37	101.97	107.71	Left bankfull (2), on intermediate terrace, gravel

Table 1–18. 04111500 Deer Creek near Dansville, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
372	101.42	101.96		Sand
402	101.36	101.97		Sand
414	101.14	101.92		Sand/gravel
423			109.64	Left bankfull (1), on intermediate terrace
434	100.95	101.89		Sand/gravel
442	100.69	101.91		Sand/gravel
458	100.85	101.92		Sand/gravel
468.5	101.21	101.92		Sand/gravel
472	101	101.82	104.49	Right bankfull (2), on small bench, sand/gravel

Table 1–19. 04114498 Looking Glass River near Eagle, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	103.46	104.52		Gravel
9	103.59	104.39		Gravel and aquatic vegetation
17	103.55	104.35		Gravel and aquatic vegetation
28	104.01	104.25		Gravel and aquatic vegetation
29			108.48	Left bankfull (1)
33	103.26	104.22		Gravel
41	103.29	104.25		Gravel
53	103.06	104.26		Gravel
55	104.09	104.15		On top of placed boulder
61	103.25	104.05		At bottom of placed boulder, gravel
70	103.12	104.08		Gravel
74			106.53	Right bankfull (2)
80	102.99	104.04		Gravel
97	102.9	104.04		Gravel
102			107.76	Left bankfull
105			106.29	Right bankfull (2)
107	102.99	104.09		Gravel
122	102.98	103.94		Gravel
140	102.84	103.95		Gravel
154	102.54	103.96		Gravel
168	102.63	103.95		Gravel
180	102.78	103.94		Gravel
192	102.37	103.92		Gravel
196	102.08	103.9		Gravel
202.5			107.39	Left bankfull (1), on wide flood plain area
212	101.83	103.73		Gravel
225	102.29	103.92		Gravel and sand
238	102.25	103.89		Gravel
239			106.85	Left bankfull (1), on wide flood plain area
251	102.28	103.93		Gravel
269	102.24	103.9		Gravel
278	101.86	103.91		Gravel
289	102.06	103.88		Gravel
301	102.09	103.83	106.7	Pool cross-section at 300 ft data
302	102.3	103.89		Gravel
316	102.54	103.89		Gravel
328	102.37	103.89		Gravel
331	101.99	103.91		Gravel
340	102.12	103.92		Gravel
349	102.21	103.91		Gravel
359	102.88	103.77		Gravel
372	102.06	103.82		Gravel
381			106.88	Left bankfull (1), on wide flood plain area

Table 1–19. 04114498 Looking Glass River near Eagle, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
384	102.11	103.82		Gravel
395	102.24	103.84		Gravel
402			106.67	Right bankfull (2)
405	102.86	103.76		Gravel
424	102.58	103.8		Gravel
438	102.41	103.77		Gravel
459	102.68	103.74		Gravel
468	102.81	103.73		Gravel
468.1	102.65	103.58	107.02	Riffle cross section at 468 ft data
469.5			106.28	Left bankfull (1), on wide flood plain area
484	102.76	103.68		Gravel
518	102.75	103.67		Gravel
544	102.83	103.6		Gravel
566.5			107.05	Left bankfull (1), on wide flood plain area
573	102.36	103.62		Gravel
584	102.52	103.59		Gravel
600	102.43	103.5		Gravel
607	102.74	103.51		Gravel
633	102.62	103.42		Gravel
639			106.3	Right bankfull (2)
641.5	101.79	103.43		Gravel
653	101.67	103.41		Gravel
664	101.97	103.39		Gravel
681.5	101.58	103.4		Sand/gravel
699	101.8	103.36		Sand/gravel
716	101.6	103.38		Sand/gravel
721			105.3	Right bankfull (1), on wide flood plain area
728	102.02	103.39		Sand/gravel
737			105.87	Right bankfull (1), on wide flood plain area
765	102.13	103.33		Sand/gravel
791.5	101.68	103.32		Sand/gravel
813			105.53	Right bankfull (1), on wide flood plain area
814	101.76	103.32		Sand/gravel
838	101.88	103.28		Sand/gravel
859	102.14	103.28		Sand/gravel
889	102.29	103.25		Sand/gravel
918	102.4	103.24	105.53	Gravel/sand, right bankfull (1), on wide flood plain area
918.1	102.28	103.11	106.16	Riffle cross section at 918 ft data
949	101.91	103.22		Sand/gravel
979.5	101.42	103.2		Sand/gravel
998.5	101.63	103.21		Sand/gravel
1022	101.93	103.22		Sand/gravel

Table 1–19. 04114498 Looking Glass River near Eagle, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
1039			105.43	Right bankfull (1), on wide flood plain area
1066	101.93	103.2		Sand/gravel
1116	101.83	103.2		Sand/gravel
1128	101.75	103.23		Sand/gravel
1159	101.75	103.13		Sand/gravel
1178	101.92	103.15		Sand/gravel
1193	101.9	103.12		Sand/gravel
1212			104.52	Right bankfull (2), on wide flood plain area
1216	102.06	103.16		Sand/gravel
1247	102.09	103.11		Sand/gravel
1280	102.11	103.11	104.8	Sand/gravel, left bankfull (2), on wide flood plain area
1305	101.88	103.1		Sand/gravel
1332	101.9	103.02		Sand/gravel
1352			105.02	Right bankfull (1), on wide flood plain area
1354	101.99	102.97		Sand/gravel/vegetation
1354.1	101.8	102.94	105.64	Riffle cross section at 1,354 ft data
1357			105.31	Left bankfull (1), on wide flood plain area
1375	102.03	102.94		Sand/gravel/vegetation
1391	101.89	102.92		Sand/gravel/vegetation
1428	101.6	102.91		Sand/gravel
1454	101.54	102.92		Sand/gravel/vegetation
1462			105.17	Right bankfull (2), on wide flood plain area
1469	101.41	102.91		Sand/gravel/vegetation
1471			105.64	Left bankfull (1), on wide flood plain area
1482	101.09	102.89		Sand/gravel
1500	101.41	102.89		Sand/gravel
1511.5	101.34	102.86		Sand/gravel
1530	101.18	102.87		Sand/gravel
1555	101.45	102.87		Sand/gravel
1584	101.16	102.88		Sand/gravel
1589			106.26	Right bankfull (2), on wide flood plain area
1604	101.11	102.78		Sand/gravel
1632.5	101.24	102.87		Sand/gravel
1637			105.17	Left bankfull (1), on grassy flood plain area
1660	101.4	102.84		Sand/gravel
1685			105.82	Right bankfull (2), on wide flood plain area
1687	101.2	102.85		Sand/gravel
1704	101.27	102.83		Sand/gravel



Table 1–19. 04114498 Looking Glass River near Eagle, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
1721	100.73	102.83		Sand/gravel
1735	101.03	102.85		Sand/gravel
1750			105.89	Right bankfull (2), on wide flood plain area
1762			105.03	Left bankfull (1), on wide flood plain area
1765	101.3	102.8		Sand/gravel
1787	101.29	102.8		Sand/gravel
1812	101.23	102.81		Sand/gravel
1844	100.95	102.81		Sand/gravel
1868	101.05	102.81		Sand/gravel
1870			105.56	Right bankfull (2), on wide flood plain area
1883	101.35	102.77		Sand/gravel
1904	101.25	102.76		Sand/gravel
1925	101.14	102.76		Sand/gravel
1943	101.34	102.75		Sand/gravel, at upstream end of bridge
1977	99.83	102.72		Sand/gravel, at downstream end of bridge
1993	100.4	102.75		Sand/gravel
2015	100.69	102.73		Sand/gravel
2028			105.51	Left bankfull (1), on wide flood plain area
2039	100.8	102.72		Sand/gravel
2074	100.8	102.68		Sand/gravel
2108			104.98	Left bankfull (1), on wide flood plain area
2112	101.26	102.7		Sand/gravel
2142	101.46	102.69		Sand/gravel
2173	100.82	102.54		Sand/gravel

Table 1–20. 04117500 Thornapple River near Hastings, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	103.72	104.72		Cobble
27	103.16			Cobble
68	103.41	104.73		Gravel
97	103.39	104.57		Cobble
130	103.29	104.5		Gravel
171	103.46	104.4		Gravel
209	102.99	104.39		Embedded gravel
246	103.25	104.41		Gravel
307	102.93	104.35		Cobble
337	103.52	104.24	106.54	Right bankfull, coarse sand and gravel
402	103.38	104.13		Cobble
461	103.09	104.04		Cobble
510	103.12	103.96	105.61	Right bankfull, cobble
586	102.96	103.86	106.16	Left bankfull, boulder
612	102.22	103.81		Cobble
656	102.17	103.81		Cobble
723	101.74	103.19		Cobble
764	101.43	103.56		Cobble
823	102.03	103.53	104.45	Left bankfull, cobble
859	101.03	103.44	100.61	Low terrace, cobble
881	101.94	103.29		Gravel
922	102.12	103.27		Cobble
977	102.05	103.2		Cobble
1017	101.82	103.03		Cobble
1052	101.88	103.04		Cobble
1071	101.78	103		Cobble
1081	101.66	102.99		Cobble
1111	101.4	102.95		Boulder
1159	99.45	103		Cobble
1186	100.86	102.91		Cobble
1266	99.96	102.88		Cobble
1313	100.26	102.86		Cobble
1344	100.54	102.95		Cobble/boulder
1351	101.35	102.8		Cobble
1404	100.67	102.79		Cobble
1454	101.58	102.63		Gravel
1516	101.6	102.54		Cobble
1567	101.63	102.27		Riffle cross-section at 1,567 data, gravel
1613	101.45	102.08		Cobble

Table 1–20. 04117500 Thornapple River near Hastings, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
1671	100.93	101.88	103.98	Left bankfull flat, gravel
1724	100.54	101.6		Gravel
1784	100.67	101.63		Gravel
1846	100.48	101.48		Gravel
1888	99.79	101.32	103.49	Left bankfull
1949	99.6	101.02	102.17	Right bankfull flat
2012	98.7	100.81		Gravel
2051	97.92	100.84		Gravel
2080	97.67	100.89		Gravel
2240	97.86	100.83		Cobble
2408	97.2	100.82		Gravel
3008	99.81	100.21	103.82	Right bankfull flat, cobble

Table 1–21. 04122230 North Branch Pentwater River near Pentwater, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	100.86	103.19		Sand
16	100.61	102.28		Sand
20			103.43	Right bankfull (1), on higher flat
47	100.87	102.17		Sand
81	100.85	102.17		Sand
91.5			104.06	Left bankfull (1), on top of silt flat
120	100.38	102.12		Sand
138	98.95	102.07		Sand
172	99.63	102.02		Sand
207	100.49	102.01		Sand
230	100.7	102.06		Sand
232			103.12	Right bankfull (1)
260	101	101.99		Sand
291	99.28	101.98		Sand
337	99.55	102.01		Sand
378	99.53	101.93		Sand
400	99.61	101.98		Sand
409	99.55	101.91		Sand
413	98.66	101.92		Sand
434	99.22	101.93		Sand
447	100.04	101.94		Coarse sand
462	99.17	101.97		Coarse sand
479	99.51	101.92		Sand
499.5	99.47	101.89		Sand
511	98.93	101.88		Sand
519.5	99.35	101.93		Sand
531	99.42	101.92		Sand
539	98.87	101.88		Coarse sand
455			102.6	Right bankfull (1)
494			102.57	Right bankfull (1)
511			102.72	Left bankfull (1), on flat
511.5			102.72	Left bankfull (1), on flat
511.6			102.95	Left bankfull (1), on highest flat
548	99.36	101.89		Sand
582	99.02	101.87		Sand
601	98.57	101.84		Sand
613.5	98.6	101.83		Sand
640.5	98.82	101.82		Sand
661	98.43	101.76		Sand
667			102.95	Left bankfull (1)
683			102.62	Right bankfull (1), on grassy flat
716	99.17	101.73		Sand
738.5			102.77	Left bankfull (1)

Table 1–21. 04122230 North Branch Pentwater River near Pentwater, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
739	99.68	101.7		Sand
759	99.61	101.74		Sand/gravel
786	99.65	101.69		Sand/gravel
800.5	98.48			Sand, log scour hole
806			102.49	Left bankfull (1)
812	98.76	101.66		Sand, log scour hole
827	99.08	101.64		Sand
845	98.7	101.65		Sand
864	98.45	101.65		Sand
873	97.84	101.65		Sand, log scour hole
897.5	99.18	101.62		Sand
900	99.03	101.66		Sand
916			102.09	Left bankfull (1)
919	97.9	101.6		Sand, log scour hole
942	98.57	101.62		Sand
950			102.26	Right bankfull (1)
957	98.79	101.61		Sand
968	98.53	101.56		Sand
984	98.82	101.54		Sand
1005	98.49	101.53		Sand
1021	98.55	101.5		Sand
1045	98.52	101.46		Sand
1060	98.66	101.45		Sand
1061			101.84	Right bankfull (1), on grassy flat
1061.5			102.08	Right bankfull (1), on same flat
1082	98.74	101.41		Sand
1109	99.33	101.41		Sand
1140	99.46	101.41		Sand
1149	99.15	101.45		Sand
1166	99.78	101.43		Sand
1164.3			103.58	Left bankfull (1), on grassy flat near bridge
1164.4			103.09	Left bankfull (3)
1164.5			102.42	Left bankfull (3), at edge of bank
1183	100.04	101.46		Sand

Table 1–22. 04123000 Big Sable River near Freesoil, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	99.2	101.12		Sand
11	99.34	101.12		Sand
39	98.89	101.1		Sand
58	97.71	101.09		Sand
65			102.24	Right bankfull (2)
69	97.24	101.06		Sand
79	97.3	101.09		Gravel/sand
91	97.49	101.09		Gravel
112	97.86	101.04		Gravel
134			102.87	Left bankfull (2), on higher flat
140	96.48	101.04		Gravel
166			101.71	Right bankfull (2)
168	97.91	101.04		Sand
195	97.27	101.07		Gravel/cobble
207	97.36	100.98		Gravel/sand
222	97.56	100.98		Gravel/sand
237	97.5	100.97		Sand/gravel
239			102.01	Right bankfull (3), on sandy, slough bank
250	97.88	100.94		Gravel/sand
259	98.74	100.95		Gravel/sand
278	98.2	100.96		Gravel/sand
288	97.37	100.92		Gravel
294.5			101.76	Left bankfull (2)
299.5	96.9	100.96		Gravel
316	96.88	100.95		Gravel/sand
338.5	97.99	100.85		Sand/gravel
342	97.78	100.78		Sand/gravel
378			102.19	Right bankfull (3)
399			102.15	Left bankfull (2)
405	96.93	100.43		Sand
423	97.35	100.39		Sand
451	97.41	100.42		Sand
452			102.21	Left bankfull (3)
453			101.54	Left bankfull (2)
503	98.05	100.44		Sand
526	98.12	100.46		Sand
547	96.57	100.43		Sand/gravel
565	97.42	100.45		Sand/gravel
569			102.24	Right bankfull (1)
580			101.74	Right bankfull (2)
611	97.09	100.37		Gravel
624	97.19	100.34		Sand/gravel
630	101.9			Right bankfull (2)

Table 1–22. 04123000 Big Sable River near Freesoil, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
635	96.45	100.37		Sand/gravel
656	96.97	100.34		Coarse sand
676			102.51	Right bankfull (2)
686	97.71	100.35	102.65	Sand, right bankfull (2)
687	97.84	100.34		Gravel/sand
709	96.86	100.32	101.76	Sand/gravel, left bankfull (2)
733	96.83	100.3		Sand
749	96.95	100.31		Sand/gravel
792	97.57	100.3		Sand
813	97.54	100.3		Sand
848	97.81	100.3		Sand/gravel
868.5	97.71	100.27		Sand/gravel
889	97.75	100.27		Sand/gravel
910	97.69	100.26		Gravel/boulder
937	97.16	100.22		Sand/gravel
954	96.89	100.22	102.16	Sand/gravel, left bankfull (1)
985	97.42	100.22		Sand
1013	96.04	100.18		Sand/gravel
1023	96.06	100.16		Sand/gravel
1024			101.02	Right bankfull (3)
1042	96.65	100.16		Sand
1063	97.3	100.18		Sand
1087			102.38	Left bankfull (1)
1088	97.81	100.21		Sand
1108	96.47	100.17		Sand
1117	96.87	99.21		Sand
1126	96.27	100.15		Cobble/gravel
1137	97.11	100.11		Gravel/cobble
1138			101.62	Left bankfull (1)
1153	96.83	100.03		Gravel/cobble
1174	96.77	99.5		Cobble/gravel
1197	97.05	100.06		Sand/gravel
1220	97.12	100.1		Sand/gravel
1243	96.98	100.08		Sand
1265	96.55	100.1		Sand
1280	96.36	100.08		Sand/gravel
1300			101.02	Left bankfull (2)
1304	96.86	100.08		Sand
1325	96.98	100.12		Sand
1352	97.61	100.11		Sand
1378			101.72	Right bankfull (2)
1401	98.01	100.11		Sand

Table 1–23. 04124500 East Branch Pine River near Tustin, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	100.76	101.26	103.65	Gravel, left bankfull (2)
5	99.51	101.37		Gravel
22	99.39	101.33		Gravel
40	100.3	101.32		Gravel
49.5			103.76	Right bankfull (2)
55.5	99.75	101.28		Gravel
61	99.52	101.28		Hard pan clay/gravel
69			103.27	Right bankfull (2)
74	100.27	101.21		Cobble/gravel
98.5	99.92	101.07		Cobble/gravel
101			103.15	Right bankfull (2)
112	99.35	101.06		Cobble/gravel
118	98.74	100		Cobble/gravel
133	97.98	101.03		Boulder/gravel/cobble
144	97.64	101		Cobble/gravel
153	98.45	100.99		Cobble/gravel
162	98.91	101		Cobble/gravel
165			103.66	Left bankfull (2)
165.5			102.55	Left bankfull (2)
180	99.85	100.98		Cobble/gravel
200	99.37	100.92		Cobble/gravel/sand
215	99.1	100.92		Cobble/gravel/sand
228	99.64	100.75		Cobble/boulder, top of rock riffle
234			103.03	Left bankfull (2)
239	99.58	100.54		Cobble/boulder
251	99.43	100.09		Cobble/boulder
257.5	98.97	99.79		Cobble/boulder
279	98.88	100.02		Cobble/boulder
286			101.69	Right bankfull (2), on soft ground
287			102.89	Right bankfull (2), on soft ground
289	98.22	99.98		Cobble/gravel
308	97.32	100.02		Sand/gravel
324	97.43	99.99		Cobble/gravel
341	98.16	99.96		Cobble/gravel
352			102.66	Right bankfull (2)
355	97.59	99.89		Cobble/gravel
365.5	98.23	99.9		Gravel/sand
379	98.32	99.88		Gravel/sand
393	99.01	99.88		Gravel/sand
405	97.59	98.64		Cobble/gravel
417	97.28	98.61		Cobble/gravel
428	95.2	97.6		Cobble/boulder
435	95.88	98.61		Boulder



Table 1–23. 04124500 East Branch Pine River near Tustin, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
447	97.29	98.35		Boulder
455	96.51	98.33		Cobble/boulder
459			100.78	Left bankfull (2)
462.5	96.03	98.33		Cobble/boulder
469.5	95.96	98.29		Gravel/cobble
477	95.9	98.34		Gravel/cobble
494.5	95.7	98.32		Cobble/gravel
519.5	96.03	98.33		Cobble/gravel
538			100.22	Right bankfull (2)
539			100.49	Right bankfull (2)
540	96.94	98.26		Cobble/gravel
556	96.12	98.26		Cobble/gravel
571	97.4	98.06	100.15	Cobble/gravel, right bankfull (3)

Table 1–24. 04125460 Pine River at High School Bridge near Hoxeyville, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	98.16	103.86	109.03	Bankfull
5	97.94	103.84		
14	98.47	103.87		
21	99.53			
28	99.67	103.87		
39	99.84	103.84		
47	99.96	103.81		
54	99.85	103.85		
68	99.94	103.84		
82	100.26	103.81		
87	100.58	103.78		
93	100.86	103.76		
99	100.84	103.74		
103	100.7	103.7		
110	101.06	103.76		
120	100.78	103.75		
125	100.68	103.73		
130	100.97	103.77		
135	100.93	103.73		
140	101.14	103.74		
147	101.33	103.73		
157	100.91	103.76		
167	101.12	103.72		
175	101.16	103.71		
177			106.98	Bankfull
181	100.99	103.61		
186	100.88	103.61		
193	100.64	103.67		
197	100.76	103.66		
205	100.71	103.66		
210	100.71	103.67		
218	101.07	103.64		
220			106.62	Bankfull
226	101.11	103.61		
234	101.09	103.59		
240	101.51	103.61		
243			106.46	Bankfull
250	101.14	103.54		
255			106.23	Bankfull
256	101.42	103.52		
282	101.41	103.46		
292	101.48	103.38		
303	101.18	103.38		

Table 1–24. 04125460 Pine River at High School Bridge near Hoxeyville, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
318	101.33	103.23		
323			106.93	Bankfull
333	101.09	103.09		
336			109.14	Bankfull
341	100.91	103.21		
354	100.67	103.17		
364	100.81	103.11	106.6	Bankfull
383	99.6	103.1		
395	99.19	103.19		
410	99.06	103.16		
435	99.69	103.09		
446	99.25	103.15		
451	99.25	103.15		
459	99.47	103.17		
466	100.27	103.14		
486	101.31	103.11	107.13	Bankfull
497	100.56	102.96		
512	100.58	102.98		
519	100.72	102.97		
536	101.27	102.92		
545	101.35	102.7		
558	100.51	102.51		
565	100.66	102.66		
572	100.92	102.42		
583	100.64	102.44	105.75	Bankfull
591	99.59	102.39		
600	99.44	102.24		
603	99.24	102.34		
609	99.14	102.34		
619	97.85	102.29		
625	99.26	102.36		
635	99.74	102.24		
647	99.87	102.27		
657	100.48	102.18		
669	99.81	102.21		
680	99.49	102.19	106.32	Bankfull
686			106.64	Bankfull
690	99	102.25		
700	98.96	102.26		
710	99.13	102.23		
720	99.28	102.28		
731	99.02	102.22		
739	98.16	102.41		

Table 1–24. 04125460 Pine River at High School Bridge near Hoxeyville, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
742	97.14	102.24		
746	96.91	102.21		
750	96.53	102.23		
751	96.13	102.23		
755	96.03	102.23		
762	95.14	102.24		
766	95.93	102.23		
770	95.86	102.21		
777	96.91	102.16		
788	95.76	102.21		
794	96.32	102.22		
799	98.97	102.17		
816	99.21	102.11		
819	98.49	102.14		
820	98.35	102.15		
827	99.33	102.08		
837	99.53	102.03	104.94	Bankfull
848	99.34	102.04		
859	99.38	101.88	104.51	Bankfull
873			104.74	Bankfull
877	99.68	101.68		
886	100.04	101.84		
908	100.12	101.62		
925	98.69	101.49		
941	98.52	101.52		
958	98.72	101.42		
975			104.78	Bankfull
1000	97.73	101.23		
1022	97.51	101.21		
1032	96.48	101.18		
1045	95.4	101.2		

Table 1–25. 04128000 Sturgeon River near Wolverine, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
-20			102.22	Bankfull near discontinued streamflow-gaging station
0	99.34	101.04		Top of riffle
13	99.57	101.37		Riffle
24	99.24	101.19		Riffle
38	98.52	101.02		Riffle
53	98.94	101.14		Riffle
112	98.47	100.47		Riffle
138	98.88	100.58		Top of pool
195	97.76	100.51		Bottom of pool
263			101.29	Left bankfull
267	98.36	100.46		Top of riffle
349	97.98	99.88		Riffle
423	97.88	99.71		Riffle
445	96.98	99.73		Riffle cross section measured during longitudinal profile
472	97.45	99.35		Bottom of pool
500	96.82	99.17		Riffle
529	96.22	99.12		Riffle
562	94.05	99.65		Pool
590	95.88	99.33		Pool cross section measured during longitudinal profile
643	97.38	98.78	100.54	Right bankfull
696	96.36	98.96		Riffle
790	96.13	97.63		Riffle
876	95.36	97.46		Riffle
950	95.21	97.21		Top of pool
990	96	97.3		Bottom of pool
1020	95.95	97.25		Top of riffle

Table 1–26. 04129500 Pigeon River at Afton, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.44	103.23	105.21	Cobble/gravel, right bankfull (1), on wide flat
0.01	102.37	103.29	105.24	Riffle cross section at 0 ft data
21	102.26	103.06		Cobble/gravel
34			104.81	Right bankfull (1)
46	102.08	103		Cobble/gravel
68	101.88	102.86		Cobble/gravel
87	101.51	102.89		Cobble/gravel
98	101.75	102.91		Cobble/gravel
125	101.69	102.83		Cobble/gravel
136			104.55	Left bankfull (1), on wide flat
141	101.79	102.75		Cobble/gravel
181	101.91	102.7		Cobble/gravel
189	101.25	102.63		Cobble/gravel
198	100.88	102.66		Cobble/gravel
205			104.06	Right bankfull (1), on wide flat
206	100.91	102.68		Cobble/gravel
213	100.43	102.69		Sand/gravel
223	100.62	102.58		Cobble/gravel
235			104.58	Right bankfull (1), on wide flat
246	100.4	102.4		Cobble/gravel
258	100.93	102.5		Cobble/gravel
268			103.63	Left bankfull (1)
275	100.96	102.36		Cobble
291	101.42	102.32		Cobble
294			103.93	Right bankfull (1)
316	101.71	102.12		Cobble
316.1	100.79	102.29	103.45	Riffle cross section at 316 ft data
328	101.52	102.01		Gravel/sand/cobble
335			103.75	Right bankfull (1)
353	100.4	101.65		gravel/Sand/cobble
366	99.65	101.67		Clay/gravel/Sand/cobble
377	99.71	101.66		Clay/gravel/Sand/cobble
398	99.38	101.73		Cobble/gravel
404			103.14	Right bankfull (1)
424	99.76	101.67		Cobble/gravel
448	99.62	101.68		Cobble/gravel
474	99.89	101.65		Cobble/gravel
494	99.55	101.67		Cobble/gravel
522	98.81	101.67		Cobble
535			104.09	Left bankfull (2)
542	98.3	101.66		Cobble
550	97.37	101.65		Cobble
558	97.01	101.67		Cobble

Table 1–26. 04129500 Pigeon River at Afton, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
566	97.46	101.7		Gravel
583	96.83	101.65		Gravel
594	98.25	101.65		Gravel
596			102.99	Left bankfull (3), in wood debris and grapevine
596.5			103.55	Right bankfull (2)
603	99.1	101.66		Gravel
616			103.4	Left bankfull (2)
617	99.29	101.65		Cobble
627	100.53	101.63		Cobble
636	100.51	101.53		Cobble
642	97.81	101.57		Cobble
643	98.29	101.57	103.55	Cobble/gravel, right bankfull (1)
661	99.72	101.42		Cobble
668	98.2	101.26		Cobble
675	98.09	101.27		Gravel
683	98.04	101.29		Cobble
688	98.93	101.31		Cobble
694	99.71	101.2		Cobble
701			102.73	Right bankfull (3), on very narrow flat
703			105.67	Right bankfull (2), on high but wide flat
707	99.59	101.06		Cobble
714			102.74	Left bankfull (2), in high grass on bend
718	99.5	100.85		Cobble
727			102.45	Right bankfull (3), on very narrow flat
729	99.21	100.88		Cobble
736	97.59	100.97		Cobble
749	96.42	101.04		Cobble
755	98.52	100.98		Cobble
763	98.29	100.97		Cobble/sand
770	97.76	99.93		Cobble
776			102.23	Left bankfull (2), in high grass
778	98.1	100.91		Cobble
798	99.41	100.81		Cobble
813	99.77	100.75		Cobble
832			101.7	Right bankfull (1), on wide flat
836	99.88	100.48		Cobble
860	99.76	100.34		Cobble
878	98.66	99.16		Cobble
885	97.86	100.1		Cobble
905	98.24	100.08		Cobble
919	98	100.08		Cobble
929	97.68	100.05		Cobble
945	97.7	100.02		Cobble

Table 1–26. 04129500 Pigeon River at Afton, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
955	97.36	100.04		Cobble
967	97.21	100.03		Cobble
975	97.11	100.01		Cobble
992.5			101.97	Left bankfull (2)
988	97.18	100.06		Cobble
1000	97.86	100.08		Cobble
1008			101.6	Right bankfull (2)
1010	97.44	100.05	102.07	Pool cross-section at 1,010 ft data
1021	98.48	100.04		Cobble
1030.5			101.75	Left bankfull (2)
1031	99.11	100		Cobble
1048.4	98.5	99.89	101.99	Riffle cross section at 1,048.5 ft data
1048.5	98.77	99.93		Cobble



Table 1–27. 04135700 South Branch Au Sable River near Luzerne, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.78	104.18		Cobble/gravel
55	103.3	104.15		Cobble/gravel
81	103.3	104.07		Cobble/gravel
100			105.09	Left bankfull (2)
102			105.28	Left bankfull (2), next to foot path
102.5			106.48	Left bankfull (3), on intermediate terrace
112	102.43	103.96		Cobble/gravel
141	102.09	103.9		Cobble/gravel
156			105.26	Left bankfull (2)
168	101.27	103.92		Cobble/gravel
195	100.61	103.88		Cobble/gravel
219	100.09	103.91		Cobble/gravel
237	100.26	103.96		Cobble/gravel
250	100.3	103.96		Cobble/gravel
264.5	100.84	103.96		Cobble/gravel
269.5			105.3	Left bankfull (2)
284	100.49	103.93		Cobble/gravel
285	100.26	103.91	104.87	Pool cross-section at 285 ft data
304.5	100.88	103.98		Cobble/gravel
330	101.01	103.93		Cobble/gravel
356	102.09	103.87		Cobble/gravel
386	102	103.82		Cobble/gravel
411.5	102.31	103.76		Cobble/gravel
413.5			105.33	Left bankfull (2)
423	102.08	103.65		Cobble
442			105.28	Left bankfull (2)
450	101.57	103.42		Cobble
480	101.41	103.45		Cobble
519	100.86	103.5		Cobble
549	101.03	103.57		Cobble
585	100.99	103.45		Cobble
590			104.58	Left bankfull (3)
600			105.51	Left bankfull (3)
633	101.4	103.33		Cobble
693	101.52	103.21		Cobble
719	102.08	103.16		Cobble
726			105.06	Left bankfull (1)
732.5	101.62	103.1	104.62	Riffle cross section at 732.5 ft data
785	101.85	103.01		Cobble
854	101.4	102.8		Cobble
905	101.26	102.7		Cobble
926	99.97	102.69		Gravel
928			103.9	Left bankfull (3)

Table 1–27. 04135700 South Branch Au Sable River near Luzerne, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
944	100.58	102.66		Cobble
969			104.27	Right bankfull (1)
987	100.17	102.61		Cobble/gravel
1018	99.48	102.64		Cobble/gravel
1056	100.35	102.57		Cobble/gravel
1065			103.3	Left bankfull (3)
1085			103.87	Left bankfull (2)
1102			104.37	Left bankfull (2)
1108	99.28	102.64		Cobble
1128			103.66	Left bankfull (2)
1130	99.12	102.62		Cobble
1139	98.58	102.65		Cobble
1146			103.51	Left bankfull (2)
1155	99.81	102.41		Cobble/gravel
1200	100.69	102.32		Cobble
1202			103.95	Left bankfull (1)
1233	100.72	102.29		Cobble/gravel
1255	100.03	102.33		Cobble/gravel
1280	99.88	102.33		Cobble/gravel
1305			103.41	Left bankfull (1)
1321	99.21	102.22		Cobble/gravel
1347	99.81	102.21		Gravel/cobble
1381	100.55	102.14		Gravel/cobble
1404	100.47	102.11		Cobble/gravel
1441	100.75	101.97		Cobble/gravel
1463	100.66	101.85	103.71	Cobble/gravel, left bankfull (1)

Table 1–28. 04146063 South Branch Flint River near Columbiaville, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	100.87	102.39		Gravel
23	101.18	102.48	104.8	Gravel, left bankfull (2), on small grassy flat
23.5			105.27	Left bankfull (2), at base of high terrace toe
33	100.57	102.35		Gravel
59	100.64	102.35		Gravel
76	100.32	102.36		Gravel
81	100.24	102.35		Gravel
99.5	100.87	102.33		Gravel
120	100.72	102.32		Sand
134	101.27	102.3		Sand/cobble
150	100.67	102.31		Sand/cobble
161			105.55	Right bankfull (1), on wide flat
179	101.16	102.29		Sand/cobble
179.1	101.17	102.28	104.46	Riffle cross section at 179 ft data
209			105.12	Right bankfull (1), on wide flat
220.5	101.11	102.25		Sand/gravel/cobble
231			105.02	Left bankfull (1), on flat
245	100.83	102.23		Sand/cobble
277	100.92	102.23		Sand/gravel
294	100.2	102.19		Gravel/cobble
322	101.08	102.2		Cobble/gravel
347	100.25	102.21		Cobble/gravel
375.5	100.67	102.23		Cobble/gravel
400	101.04	102.21		Gravel/cobble
431	100.5	102.12		Cobble/gravel
443			105.72	Right bankfull (1), on wide flood plain with sand deposition
458.5	100.22	102.16		Cobble/gravel
481	100.16	102.11		Cobble/gravel
491			106.11	Right bankfull (1), on wide flood plain with sand deposition
514	100.52	102.1		Gravel/cobble
534	100.42	102.07		Cobble/gravel
576	99.58	102.08		Cobble/gravel
610	98.35	102.08		Cobble/gravel
632	99.36	102.12		Gravel
665	100.11	102.11		Cobble/gravel
667			105.48	Left bankfull (1), on small flat at terrace toe with sand deposition
693	100.24	102.1		Cobble/gravel
729	99.57	102.07		Cobble/gravel
744	98.44	102.06		Cobble/gravel
761	99.05	102.06		Cobble/gravel
775	99.66	102.06		Cobble/gravel
788	98.54	102.06		Cobble/gravel
791	97.61	101.99		Cobble/gravel

Table 1–28. 04146063 South Branch Flint River near Columbiaville, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
816	98.09	102.07		Gravel/sand
827	99.57	102.05		Coarse sand, downstream of woody debris
847	98.71	102.05		Coarse sand, downstream of woody debris
874	97.49	102.03		Coarse sand
900	96.98	102.08		Upstream of large debris jam on left-bank side of river
915	98.42	102.02		Cobble/gravel, at log debris on left-bank side of river
922	98.62	102.02		Cobble/gravel
953	98.54	102.03		Gravel
972	99.18	101.99		Gravel
1016	99.35	102.04		Gravel
1047	99.68	102.03		Gravel
1078	99.92	102.02		Gravel
1097			105.79	Right bankfull (1)
1101	98.56	102.03		Gravel/cobble
1115	99.6	102.02		Cobble/gravel
1130	99.98	102.02		Cobble/gravel
1150	100.14	102.02		Cobble/gravel
1174	99.91	102.02		Cobble/gravel
1180			104.93	Right bankfull
1196	99.55	101.97		Cobble/gravel
1200	99.51	101.97		Cobble
1233	99.57	101.91		Cobble
1252	99.08	101.93		Cobble/gravel
1270	98.02	101.96		Cobble
1278	97.63	101.97		Cobble
1286			105.26	Right bankfull (1)
1300	99.08	101.91	105.7	Pool cross-section at 1,300 ft data
1302	98.55	101.95		Cobble
1317	99.34	101.96		Cobble/sand
1321			105.93	Left bankfull (1), on sand deposition
1330	99.29	101.97		Cobble/gravel
1343	98.45	101.92		Cobble/gravel
1356	98.29	101.96		Cobble/gravel
1395	99.2	101.97		Cobble/gravel
1400	100.12	101.95		Gravel/cobble
1437	100.63	101.96		Cobble/gravel
1459	100.73	101.89		Cobble/gravel
1493	100.39	101.85	104.74	Left bankfull, cobble/gravel

Table 1–29. 04150500 Cass River at Cass City, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	104.05	104.9		Cobble
0.1	103.65	104.83	108.88	Riffle cross section at 0 ft data
13			108.45	Left bankfull (3), on lower flat
33	103.83	104.83		Cobble
44	102.84	104.83	108	Pool cross section at 44 ft data
75	102.93	104.85		Coarse sand/cobble
111	103.21	104.85		Coarse sand/cobble
128	103.58	104.83		Cobble
158	103.79	104.81		Cobble
226	103.55	104.81		Cobble
243	104.08	104.71		Cobble
245			107.3	Left bankfull (3), on lower flat
265	103.55	104.81		Cobble
393	104.16	104.56		Cobble
433	103.74	104.46		smaller cobble
448	103.48	104.26		smaller cobble
468	103.08	104.25		smaller cobble
485			108.48	Right bankfull (3), on lower flat
485.5			109.55	Right bankfull (2), on higher flat
514	102.68	104.24		smaller cobble
534	102.38	104.26		Coarse sand
605	103.22	104.18		Gravel/cobble
635	102.46	104.14		Cobble/gravel
668	102.27	104.05		Cobble/gravel
697	101.88	104.08		Cobble
728	102.29	104.05		Cobble
738	101.66	104.06		Cobble
792	102.37	104.03		Cobble
842	102.34	104.02		Cobble, just upstream of foot-bridge
872	102.81	104		Top of placed cobble, just downstream of footbridge
888	101.55	103.79		Cobble/black with silt
915	101.4	103.81		Cobble/black with silt
944	101.93	103.81		Cobble/boulder
976	102.17	103.82		Cobble
990	101.36	103.82		Gravel/cobble
1015	102.09	103.82		Cobble
1067	101.69	103.8		Cobble
1093	102.62	103.8		Cobble
1133			109.57	Right bankfull, on higher flat
1147	101.99	103.8		Cobble
1187	102.04	103.86		Cobble
1211	101.81	103.79		Cobble
1235			108.06	Left bankfull, on higher flat

Table 1–29. 04150500 Cass River at Cass City, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
1249	102	103.79		Cobble
1283	102.01	103.79		Cobble
1303			108.35	Right bankfull at waste-water treatment plant
1344	101.98	103.8		Cobble
1382	101.49	103.79		Cobble/boulder
1414	101.08	103.78		Cobble/gravel
1445	101.45	103.81	106.75	Cobble, left bankfull, on terrace very close to road
1471	101.13	103.8		Cobble/coarse sand
1526	101.29	103.79		Cobble
1560	101.81	103.82		Cobble
1601	101.38	103.78		Cobble
1626	101.09	103.8		Cobble/gravel
1653	100.93	103.8		Gravel
1667			109.39	Left bankfull
1705	101.1	103.82		Cobble
1730	100.23	103.76		Gravel/cobble
1733	99.14	103.8		Coarse sand/gravel/cobble
1749	99.43	103.79		Coarse sand/some gravel/cobble
1766	100.88	103.8		Cobble
1811	101.97	103.81		Cobble
1830	100.62	103.81		Coarse sand/cobble
1853	100.44	103.82		Coarse sand/cobble
1876	100.43	103.81		Coarse sand/cobble
1915	101.35	103.81		Cobble
1956	101.7	103.79		Cobble
2005			107.74	Left bankfull
2025	101.11	103.79		Cobble/boulder, on bend
2043	102.48	103.76		Top of cobble/boulder riffle
2048	101.82	103.59		At large cobble/boulder rock dam
2055	102.1	103.16		Just downstream of large cobble/rock dam
2072	102.02	103.11		Cobble
2114	101.59	103.14		Cobble
2137	101.95	103.08		Cobble/boulder
2188	101.75	103.08		Cobble
2214			107.53	Right bankfull
2223	101.36	103.09		Coarse sand/cobble
2256	101.43	103.07		Cobble
2287	101.77	103.06		Cobble
2330	101.52	103.04		Cobble
2358	100.18	103.04		Gravel/cobble/boulder
2368			107.66	Right bankfull
2374	101.22	103.06		Cobble
2405	102.47	102.97		Cobble

Table 1–30. 04159900 Mill Creek near Avoca, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	101.42	101.44		Top of riffle
10	100.1	101.38		Pool
28	99.44	101.42		Pool
49	100.82	101.42		Pool
62	99.54	101.43		Pool
84	100.52	101.31		Riffle
122	100.71	101.16		Riffle
140	100.64	101.13		Riffle
170	100.43	101.13		Riffle
183	100.07	100.95		Riffle cross section measured during longitudinal profile
183.1	100.28	100.38	106.89	Riffle cross section at 183 ft data
209	98.95	100.83		Pool
239	98.38	100.86		Pool cross section measured during longitudinal profile
239.1	98.34	100.88	105.36	Pool cross section at 239 ft data
284			104.72	Left bankfull
300	98.24	100.83		Pool
361	99.64	100.92		Run
422	99.94	100.93		Run
425			104.23	Left bankfull
474	100.13	101.01		Run
546	99.93	100.91	106.05	Run, right bankfull
547			105.66	Right bankfull
575	99.89	101		Pool
600	98.61	100.97		Pool, at bridge
630			105.94	bankfull, near streamgage
652	99.54	100.96		Pool
700	99.13	100.94		Pool
757	99.76	100.97		Pool
778			106.52	Right bankfull
822	99.57	100.99		Pool
884	99.88	100.99	105.51	Run, left bankfull
940	99.98	101.02		Run
996	100.22	100.94		Run
1030	99.89	100.88	105.63	Run, right bankfull
1066	99.46	101.03	105.2	Run, right bankfull
1092	99.22	101.05		Pool
1099	97.87	100.9		Pool
1140	96.97	100.92		Pool
1170	96.04	101.08		Pool
1210	96.66	101.06		Pool
1255	99.52	101.15	105.36	Run, right bankfull
1308	100.4	101.02		Top
1320	100.59	100.98	105.2	Riffle, right bankfull

Table 1–30. 04159900 Mill Creek near Avoca, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
1378	100.02	100.88		Riffle
1404	99.21	100.84		Pool
1433	100.15	100.76	105.74	Riffle, right bankfull
1433			104.16	Left bankfull (low)
1485	98.79	100.71		Pool
1550	97.26	100.56		Pool
1605	98.48	100.69	104.38	Pool, right bankfull (low)
1640	105.35			Right bankfull
1680	99.67	100.62	104.69	Pool, right bankfull (low)
1708	100.21	100.57		Top of riffle



Table 1–31. 04160600 Belle River at Memphis, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	COMMENT
0	100.78	101.48		Top of riffle
56	99.21	100.91		Top of pool
76	98.98	100.66		Pool
100	98.59	100.65	104.69	Pool, right bankfull
120			104.41	Left bankfull
154	97.99	100.63		Pool
214	97.99	100.61	104.4	Pool, left bankfull
267	98.79	100.59		Glide
291	99.81	100.59	104.03	Riffle, left bankfull
332	99.34			Pool
377	97.46	100.06		Pool
410	95.96	100.12		Pool
490	98.28	100		Run
530	99.34	100.04		Top of riffle
580	98.18	99.88		Riffle cross section measured during longitudinal profile
580.1	98.19	100.04	104.7	Riffle cross section at 580 ft data
608	98.8	99.52		Riffle
623	97.14	99.54		Run
660	95.99	99.41		Pool cross section measured during longitudinal profile
660.1	96.22	99.11	104.21	Pool cross section at 660 ft data
699	96.3	99.31		Pool
720			102.91	Left bankfull
755	97.48	99.27		Run
790	97.02	99	102.02	Run, left bankfull
802	98.1	98.95		Run
852	97	98.92		Run
888	96.87	98.93		Run
916	97.21	98.9	101.07	Run, right bankfull (low)
950	95.75	98.94		Pool
976	96.29	98.92		Pool
1037	98.17	98.78		Riffle
1070	97.98	98.58		Riffle
1100	96.34	98.19		Run
1120	95.5	98.14	101.26	Pool, right bankfull (good)
1149	97.15	98.17	101.31	Run, right bankfull
1192	96.45	98.11		Pool
1227			100.23	Right bankfull, on sand depositional flat
1299	94.99	97.95	99.76	Run, right bankfull (low)
1366			101.65	Right bankfull
1395	95.46	98.06		Run
1430	97.42	97.99		Top of riffle

Table 1–32. 04160800 Sashabaw Creek near Drayton Plains, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.19	102.53		Gravel
6			103.51	Left bankfull (3)
16	101.94	102.48		Gravel
41	101.85	102.43	103.04	Left bankfull (2), sand/gravel
54	101.79	102.42	103.22	Left bankfull (1), sand/gravel
69	101.64	102.4		Sand/gravel
79	101.34	102.41		Sand/gravel
93	101.78	102.38		Sand/gravel
105	101.59	102.36		Sand/gravel
115			103.13	Left bankfull (1)
128	100.98	102.38		Sand/gravel
139	100.94	102.3		Sand/gravel
142	100.91	102.33		Sand
156	101.56	102.32		Sand
166	100.82	102.28	102.85	Left bankfull (2), sand/gravel
183	101.26	102.27		Sand, upstream of island
194	101.05	102.27		Sand
206	100.9	102.24		Sand/gravel
220	101.5	102.22		Sand/gravel
231	100.77	102.23		Sand/gravel
241	100.62	102.22		Sand/gravel
250	100.57	102.21		Sand/gravel
257	100.96	102.22		Sand
259	100.25	102.25		Downstream of island
266	101.04	102.21		Sand/gravel
274	101.32	102.21		Sand/gravel
284	100.85	102.2		Sand/gravel
278			102.8	Left bankfull (3)
294			102.87	Bankfull on mid-channel point bar
295	101.11	102.11		Sand/gravel
310	101.01	102.2		Sand/gravel
322	101.18	102.16		Sand/gravel
325			102.92	Left bankfull (3)
336	101.3	102.18		Sand/gravel
354	101.4	102.15		Sand/gravel
362			103.29	Right bankfull (1)
366	101.25	102.16	103.58	Riffle cross section at 366 ft data
370	101.12	102.16		Sand/gravel
380	100.67	102.16		Sand/gravel
393	100.25	102.16		Sand/silt
393.5	100.28	102.14	103.77	Pool cross section at 393 ft data
399			103.25	Right bankfull (1)
409	100.03	102.15		Sand/gravel

Table 1–32. 04160800 Sashabaw Creek near Drayton Plains, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
420	100.54	102.16		Sand/gravel
430	100.94	102.14		Sand/gravel
434			103.09	Right bankfull (2)
438	101.19	102.14		Sand/gravel
466	101.25	102.12	103.17	Right bankfull (1), sand/gravel
482	101.27	102.15		Sand/gravel
498	101.16	102.08		Sand/gravel
510	101.04	102.08		Sand/gravel
528			102.93	Left bankfull (2)
537	100.9	102.08		Sand/gravel
552	100.91	102.07		Gravel
570	100.55	102.07		Sand/gravel
577	101.06	102.04		Gravel/sand
580	101.07	102.04		

Table 1–33. 04161580 Stony Creek near Romeo, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.32			On top of sand bar
2			103.01	Left bankfull (1)
3	101.22	101.5		Sand/gravel
10	100.79	101.47		Sand/gravel
21	100.36	101.42		Sand/gravel
28	100.44	101.41		Cobble/sand
33			102.49	Right bankfull (1)
41.5	99.59	101.43		Sand/cobble
50.5	99.9	101.4		Cobble/gravel/sand
56	100.32	101.41		Gravel/sand
65.5	100.45	101.36		Cobble/gravel/sand
83	100.27	101.31		Cobble/gravel/sand
93	100.45	101.25		Cobble/gravel/sand
95			102.51	Right bankfull (1)
99			102.53	Left bankfull (1)
103	100.2	100.96		Cobble/gravel
112	99.65	100.93		Cobble/gravel
114	99.11	100.88		Cobble/gravel, in woody debris pool
115.5	99.64	100.84		Cobble/gravel, next to debris
128	99.86	100.84		Cobble/gravel
138	100.22	100.78		Cobble/gravel
150			102.13	Right bankfull (1)
151	99.66	100.63		Cobble/gravel
159	99.64	100.62		Cobble/gravel
174	99.39	100.53		Cobble/gravel
187	99.75	100.51		Cobble/gravel
195	99.26	100.29		Cobble/gravel
204	99.5	100.25		Cobble/gravel
211.8			101.29	Left bankfull (2), on ill-defined flat
214			102.27	Left bankfull (2), higher up on bank
214.5			101.59	Right bankfull (1)
222.5	99.79	100.37		Cobble/gravel
226	99.79	100.39	101.83	Riffle cross section measured during longitudinal profile, right bankfull
226.1	99.75	100.39	101.8	Riffle cross section at 226 ft data
229	100.05	100.3		Cobble/gravel
242	99.57	100.23		Cobble/gravel
255	99.37	100.17		Cobble/gravel
266	99.29	100.19		Cobble/gravel
275	98.74	100.14		Cobble/Sand/gravel
283.5	99.25	100.09		Cobble/gravel
291	99.13	100.08		Cobble/gravel
297	99.31	100.06		Cobble/gravel
307	99.12	100.02		Cobble/gravel

Table 1–33. 04161580 Stony Creek near Romeo, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
315	98.77	99.97		Cobble/gravel
320	99.05	99.94		Cobble/gravel
329.7	99.3	99.92		Cobble/gravel
333	99.36	99.87		Cobble/gravel
337	98.94	99.66		Cobble/gravel
341.5			102.01	Left bankfull (2), on high bank
343	98.72	99.68		Cobble/gravel
350	98.12	99.63		Cobble/gravel
357.5	98.6	99.66		Cobble/gravel
360	98.46	99.59	101.98	Pool cross section measured during longitudinal profile, measured both Left and Right bankfull
360.1	98.46	99.59	101.98	Pool cross section at 360 ft data
361			100.57	Right bankfull (2), on top of sand bar
365	98.29	99.58		Cobble/gravel
370	98.8	99.61		Cobble/gravel
378			100.55	Left bankfull (1), on small flat
379	98.27	99.53		Cobble/gravel
386	98.72	99.53		Cobble/gravel
391.5	98.82	99.53		Cobble/gravel
408	98.59	99.51		Cobble/gravel
416	98.05	99.48		Cobble/gravel
425	98.03	99.37		Cobble/gravel/sand
429			100.35	Right bankfull (1), on small flat
429.2			100.7	Right bankfull (2), further landward on same flat
439	97.76	99.48		Cobble/gravel
443	97.78	99.46		Cobble/gravel
454	98.51	99.47		Cobble/gravel
463	98.81	99.47		Cobble/gravel
471			100.68	Left bankfull (3), on very small flat
477	98.43	99.29		Cobble/gravel
484	98.5	99.28		Cobble/gravel
498	98.65	99.25		Cobble/gravel
506	98.64	99.24		Cobble/gravel
508			100.01	Right bankfull (1)
514	98.64	99.24	100.79	Left bankfull (3), at base of steep terrace

Table 1–34. 04161760 West Branch Stony Creek near Washington, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	105	105.6	107.62	Gravel, riffle, left bankfull (1)
11	104.47	105.56		Sand/gravel
15	104.85	105.45	107.36	Riffle cross section at 15 ft data
29	104.7	105.4		Gravel
39	104.28	105.33	107.37	Sand/gravel, right bankfull (1)
46	103.44	105.36		Sand/gravel
69	104.14	105.3		Sand/gravel
73			107.42	Right bankfull (1)
76	104.42	105.25		Sand/gravel
107	103.84	105.22		Gravel
115	103.19	105.2		Gravel
131			107.17	Left bankfull (1)
134	103.65	105.16		Sand/gravel
147	104.05	105.15		Sand/gravel
165	104.3	105.07		Sand/gravel
178	103.5	105.1		Sand/gravel
188	103.08	105.04		Sand
202	104.09	105.06		Sand
214.5	103.33	104.99		Gravel
221	102.35	104.65		Gravel, just upstream of debris jam
225	102.06	104.44		Gravel, just downstream of debris jam
230	102.34	104.46		Gravel
234	103.75	104.31		Gravel
247	102.81	104.27		Gravel
253	103.39	104.2		Gravel
258			106.03	Right bankfull (2), on forested flat
264	102.3	104.18		Gravel
283			105.95	Left bankfull (2), on forested flat
283.5	102.01	104.14	105.82	Pool cross section at 283.5 ft data
287	101.96	104.14		Gravel
300	103.02	104.14		Gravel
322	103.26	103.94		Gravel
343	102.74	103.93		Gravel
348			105.66	Left bankfull (1), on vegetated flat
372	103.26	103.84		Gravel
385	103.26	103.82		Gravel
397.5			105.36	Left bankfull (1), on vegetated flat
400	102.92	103.62		Gravel
411			105.38	Right bankfull (1), on vegetated flat
414	102.03	103.63		Gravel
420	101.49	103.63		Gravel
424	101.73	103.62		Gravel
435	102.66	103.56		Gravel

Table 1–34. 04161760 West Branch Stony Creek near Washington, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
437.5			105.31	Left bankfull (2), among debris on bank
438			104.7	Left bankfull (3), on grassy flat
447	102.4	103.5		Gravel
458			104.94	Right bankfull (3), in thick vegetation
465	102.75	103.25		Gravel

Table 1–35. 04164050 North Branch Clinton River at 33 Mile Road near Romeo, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	87.69	88.21		Top of riffle, cobble
28	87.52	87.96	88.72	Cobble, left bankfull
52	87.07	87.81		
78	86.25	87.67		Cobble
100	84.44	87.56		Cobble
118	83.57	87.54		Cobble
144	83.33	87.56		Cobble
190	86.29	87.65		Cobble
240	86.12	87.7		Cobble
271	83.39	87.47		Cobble
343	82.19			At upstream side of bridge
379	80.44			At downstream side of bridge
454	85.22	87.65		Cobble
477	86.35	87.64		Cobble
484			88.61	Right bankfull, island
516	86.65	87.61	89.15	Cobble, right bankfull on island
540	86.51	87.6		Sand
558	86.29	87.59		Cobble
591	86.21	87.5		Gravel
616	86.67	87.57	88.51	Gravel, right bankfull on island
659	86.92	87.44		head of riffle, cobble
690	86.41	87.31		Cobble
698	86.23	87.09	88.47	Cobble, right bankfull
706	86.4	87.03		Cobble
738	85.47	86.37		Cobble, bottom of riffle
773	85.04	86.31		Cobble, pool cross section measured during longitudinal profile
792	85.31	86.31		Cobble, end of pool
820	84.97	86.26	87.31	Cobble, right bankfull
855	85.39	86.22		Cobble, head of riffle, riffle cross-section measured during longitudinal profile
887	85.37	86.14	86.99	Cobble, bottom of riffle, left bankfull
916	85.51	86.02	87.96	Cobble, head of riffle, high Left bankfull
958	85.43	86.07		Cobble
983	85.25	85.97		At irrigation inlet
1028	85.01	85.91	87.24	Right bankfull
1098	85.39	85.91	86.91	Head of riffle, right bankfull (low)
1098			87.84	Right bankfull (high)



Table 1–36. 04164150 North Branch Clinton River near Meade, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	102.63	103.75	107.27	Gravel, right bankfull (1)
13	101.79	103.7		Gravel
28	102.81	103.67		Gravel
41	102.04	103.55		Gravel
53	102.08	103.64		Gravel
62	101.14	103.64		Gravel, log jam scour pool
83	100.59	103.59		Gravel
94	99.96	103.59		Gravel
111	100.86	103.58		Gravel
132			107.29	Left bankfull (1)
137	100.95	103.58		Gravel
155.5	101.44	103.54		Gravel
173	101.95	103.55		Gravel
192	100.96	103.52		Gravel
212	100.99	103.54		Gravel
235	102.1	103.51	108.15	Gravel, right bankfull (1)
248	101.08	103.53		Gravel
257	101	103.5		Gravel, scour hole
285	102.2	103.5		Gravel
300			107.79	Right bankfull (1)
334	102.62	103.44		Gravel, riffle
376	101.99	103.39		Gravel
399	101.18	103.4		Gravel
426	100.59	103.37		Gravel
435			107.57	Left bankfull (1)
455	100.78	103.4		Gravel
480	101.09	103.39		Gravel
514	100.24	103.39		Gravel, log jam scour pool
542.5	100.66	103.38		Gravel
557	101.85	103.37	108.7	Gravel, right bankfull (1)
576	102.6	103.28		Gravel
634	101.24	103.26		Gravel, log jam scour pool
653	102.37	103.25		Gravel
678	102.18	103.15		Gravel, top of island at split
698	98.8	102.92		Gravel, log jam scour pool
710	99.82	102.92		Gravel
721	100.84	102.9		Gravel
729	102.07	102.88		Sand/gravel
761	100.38	102.78		Sand/gravel
769			107.3	Right bankfull (1)
782.5	101.98	102.68		Gravel
791			106.71	Left bankfull (2) on island
824	101.71	102.61		Gravel
882	101.72	102.4		Gravel
896			106.6	Left bankfull (2)
931	101.61	102.37		Gravel
995	101	102.1		Gravel

Table 1–36. 04164150 North Branch Clinton River near Meade, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
1024	101.22	102.08		Gravel
1025	100.21	102.41	107.65	Pool cross-section at 1,025' data
1041	99.86	102.13		Gravel
1079	99.42	102.08		Gravel
1120			107.46	Right bankfull (3)
1123	101.08	102.08		Gravel
1165	101.02	102.02		Gravel
1200	100.97	101.69		Gravel
1205	100.39	101.82	107.65	Riffle cross-section at 1,405' data
1237	100.04	101.74		Gravel
1276	100.18	101.74		Gravel
1305.5	99.71	101.69		Gravel
1327	99.78	101.72		Gravel
1333.5			107.54	Left bankfull (1)
1345	99.65	101.74		Gravel
1387	100.07	101.73		Gravel
1405	100.44	101.64	107.37	Gravel, right bankfull (1)

Table 1–37. 04172500 Portage River at Tiplady Road near Pinckney, Michigan.

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

Distance from top of profile (ft)	Bed elevation (ft)	Water-surface elevation (ft)	Bankfull elevation (ft)	Comment
0	100.2	101.02		Sand/gravel
10.5			102.98	Right bankfull (1), on wide flat
19.5	99.85	100.97		Sand/gravel
39	99.67	100.97		Loose sand/gravel
52	99	100.95		In log scour hole, loose Sand/gravel
67	98.73	100.93		In log scour hole, loose Sand/gravel
87.5	98.65	100.96		Loose sand
103	99.16	100.96		Loose sand
119	98.98	100.92		Gravel/sand
129	98.49	100.89		Gravel/sand
152	98.16	100.91		Gravel/sand
154			102.76	Right bankfull (1), has sand deposition
156			103.07	Right bankfull (1), has sand deposition
160	98.01	100.91		Sand/gravel
173	97.96	100.91		Gravel/sand
186	98.67	100.91		Gravel/sand
205.5	98.91	100.87		Sand/gravel
215			102.56	Right bankfull (2), in tall grass
225	99.18	100.88		Sand
245	99.26	100.89		Sand
277	99.69	100.87		Sand
290			103.17	Left bankfull (1), on wide flat
312	99.73	100.89		Sand
350	99.07	100.85		Sand/small gravel
375	99.04	100.8		Sand/small gravel
387	97.57	100.8		Gravel
400	97.66	100.79		Gravel
403	97.55	100.8		Sand/gravel
414.5	97.63	100.81		Sand/gravel
420			102.57	Right bankfull (1)
426	98.1	100.82		Gravel
438	97.72	100.8		Gravel
459	98.7	100.8		Sand/gravel
482	98.47	100.78		Sand/gravel
497	98.37	100.77		Sand/gravel
511	98.2	100.76		Sand/gravel
522	98.41	100.75		Sand/gravel
525			102.53	Right bankfull (1), on wide grassy flat
526	97.53	100.75		Gravel
534	97.66	100.74	102.62	Pool cross section at 534 ft data
535	97.75	100.79		Gravel
548	98.28	100.76		Gravel
561	98.54	100.72		Gravel

Table 1–37. 04172500 Portage River at Tiplady Road near Pinckney, Michigan.—Continued

[ft, foot; elevations are relative to streamgage datum; bankfull ratings: (1) excellent, (2) fair, (3) poor]

<b>Distance from top of profile (ft)</b>	<b>Bed elevation (ft)</b>	<b>Water-surface elevation (ft)</b>	<b>Bankfull elevation (ft)</b>	<b>Comment</b>
574	98.96	100.71	102.65	Riffle cross section at 574 ft data
578	98.99	100.73		Gravel/sand
580			102.68	Left bankfull (1), on wide flood plain
594	99.45	100.74		Sand/gravel