

Figure 1.—Flint River watershed drainage.

Flint River Assessment

Upper South Branch

1. Horseshoe Lake
2. South Branch
3. Whigville Creek
4. Winns Pond

Middle South Branch

5. Pine Creek
6. Hunters Creek
7. Mill Creek
8. Lapeer Lake
9. South Branch Farmers Creek
10. Farmers Creek
11. Plum Creek

Lower South Branch

12. Elm Creek
13. Cedar Creek
14. Bottom Creek
15. Bottom Creek Impoundment
16. Gravel Creek
17. Indian Creek
18. Fostoria Drain
19. Squaw Creek
20. Crystal Creek
21. North Branch

Upper Flint

22. Henry Drain
23. Holloway Reservoir
24. Hasler Creek
25. Powers-Cullen Drain
26. Butternut Creek
27. C. S. Mott Lake
28. Lake Louise
29. Kearsley Creek
30. Duck Creek
31. Goodrich Mill Pond
32. Atlas Mill Pond
33. Black Creek
34. Kearsley Reservoir
35. Hamilton Impoundment
36. Gilkey Creek
37. Thread Creek
38. Thread Lake
39. Swartz Creek
40. West Branch Swartz Creek
41. Kimball Drain

Middle Flint

42. Mud Creek
43. Cole Creek
44. Brent Creek
45. Brent Run Creek

Lower Flint

46. Pine Run Creek
47. Runnels Drain
48. Silver Creek
49. Misteguay Creek

Figure 2.—Major tributaries and landmarks in the Flint River watershed.

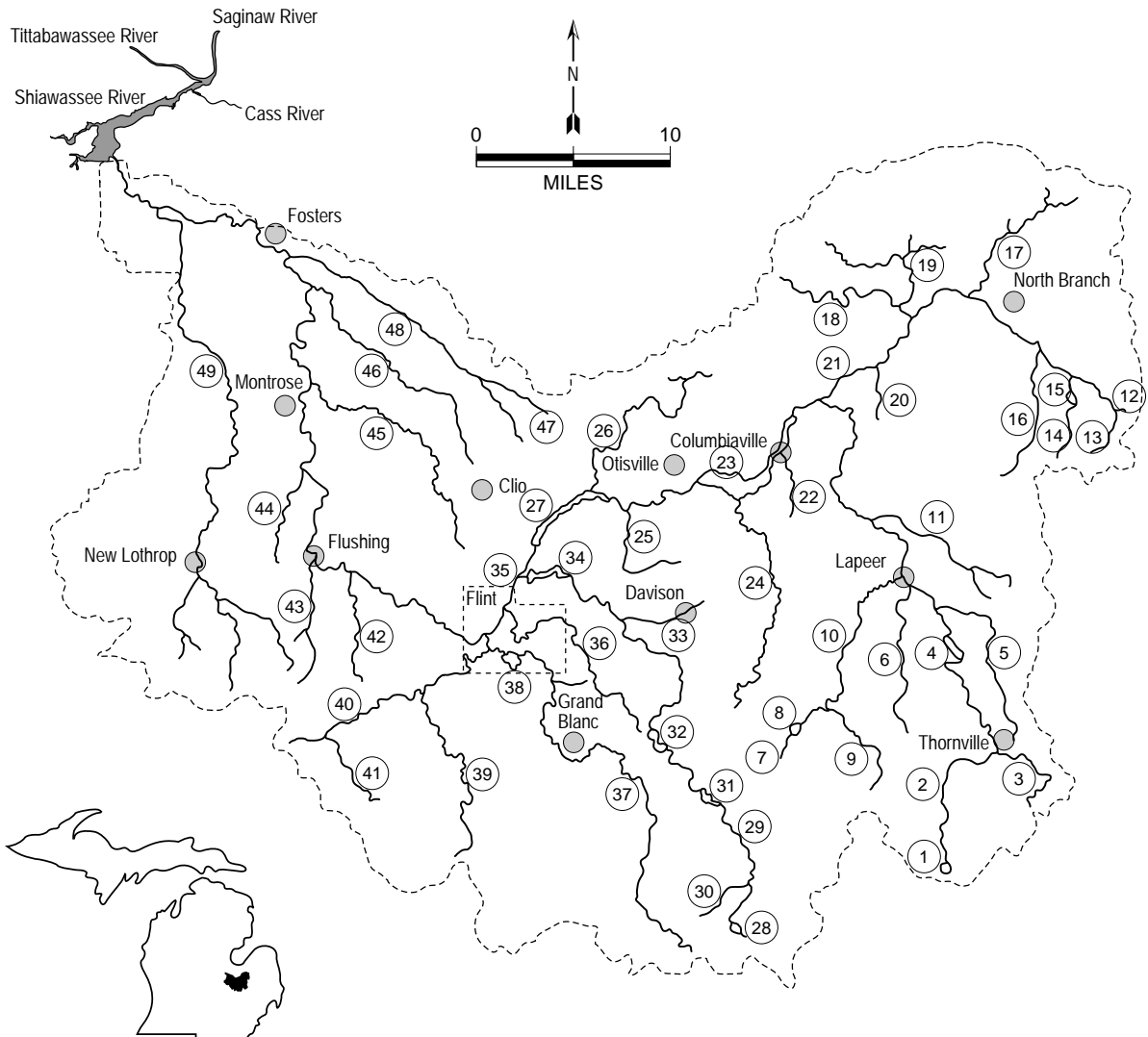


Figure 2.

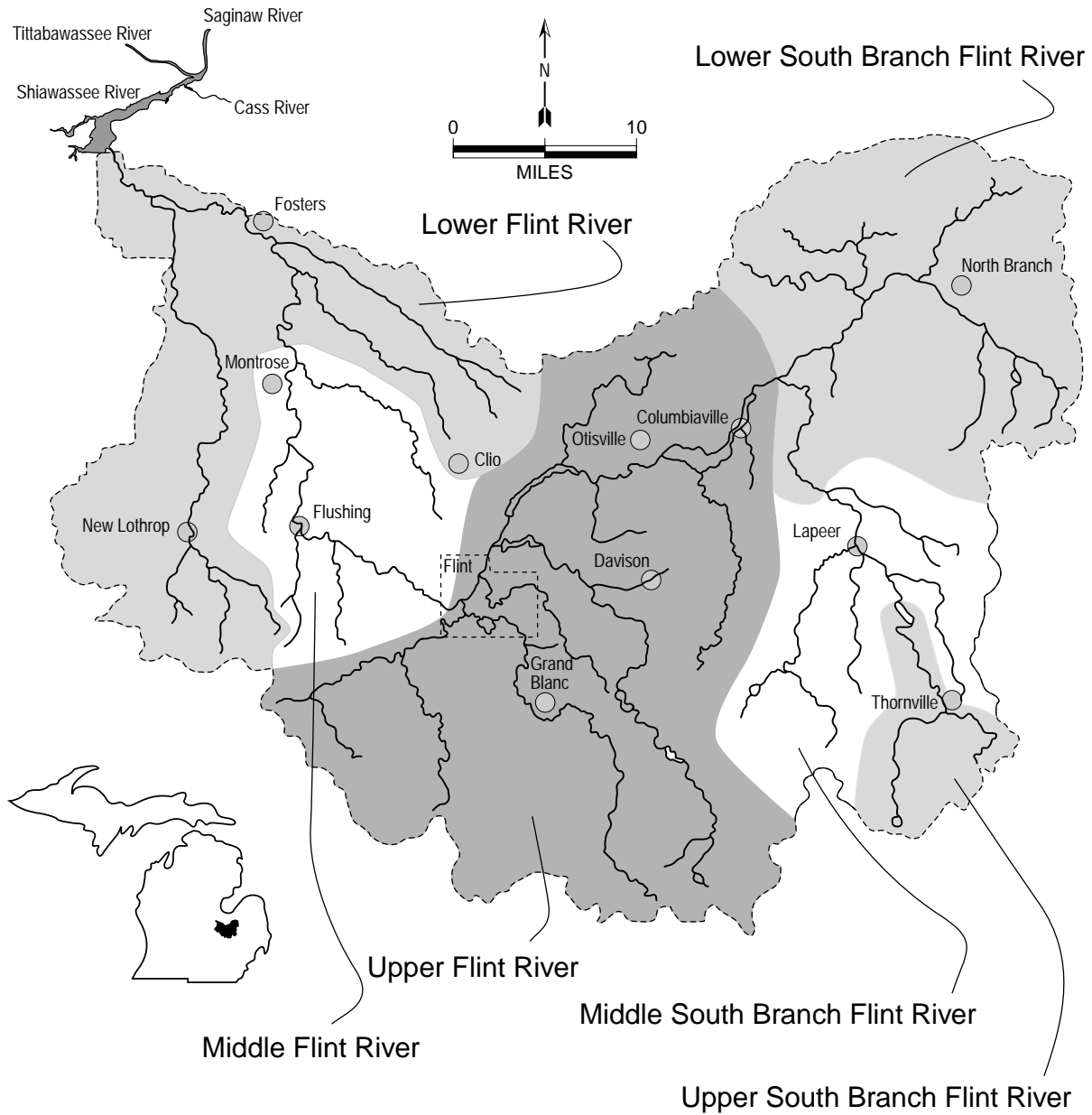


Figure 3.—Flint River basin valley segments.

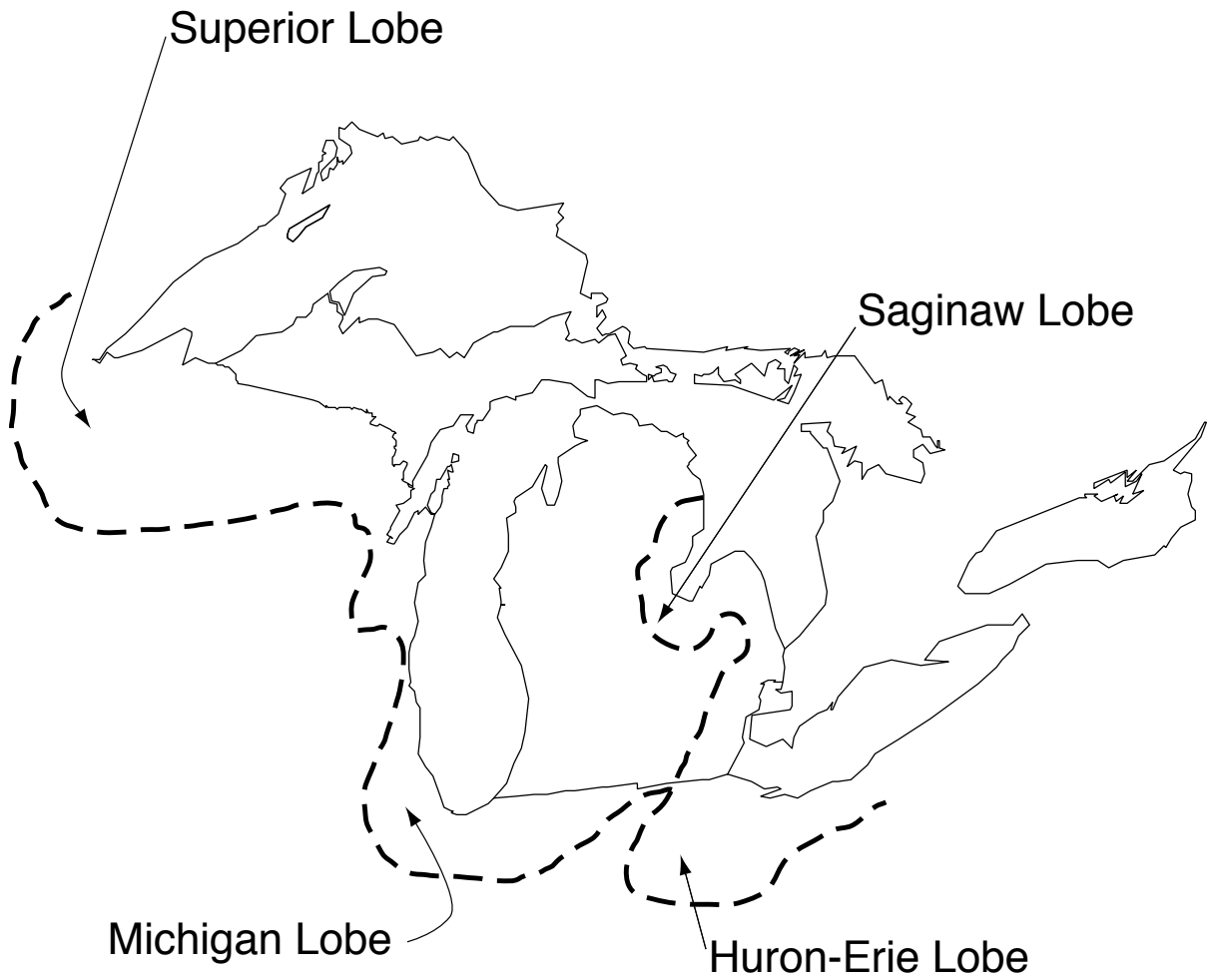


Figure 4.—Diagram of Wisconsinan Glacier with major lobes. Information from Farrand, 1988.

Flint River Assessment

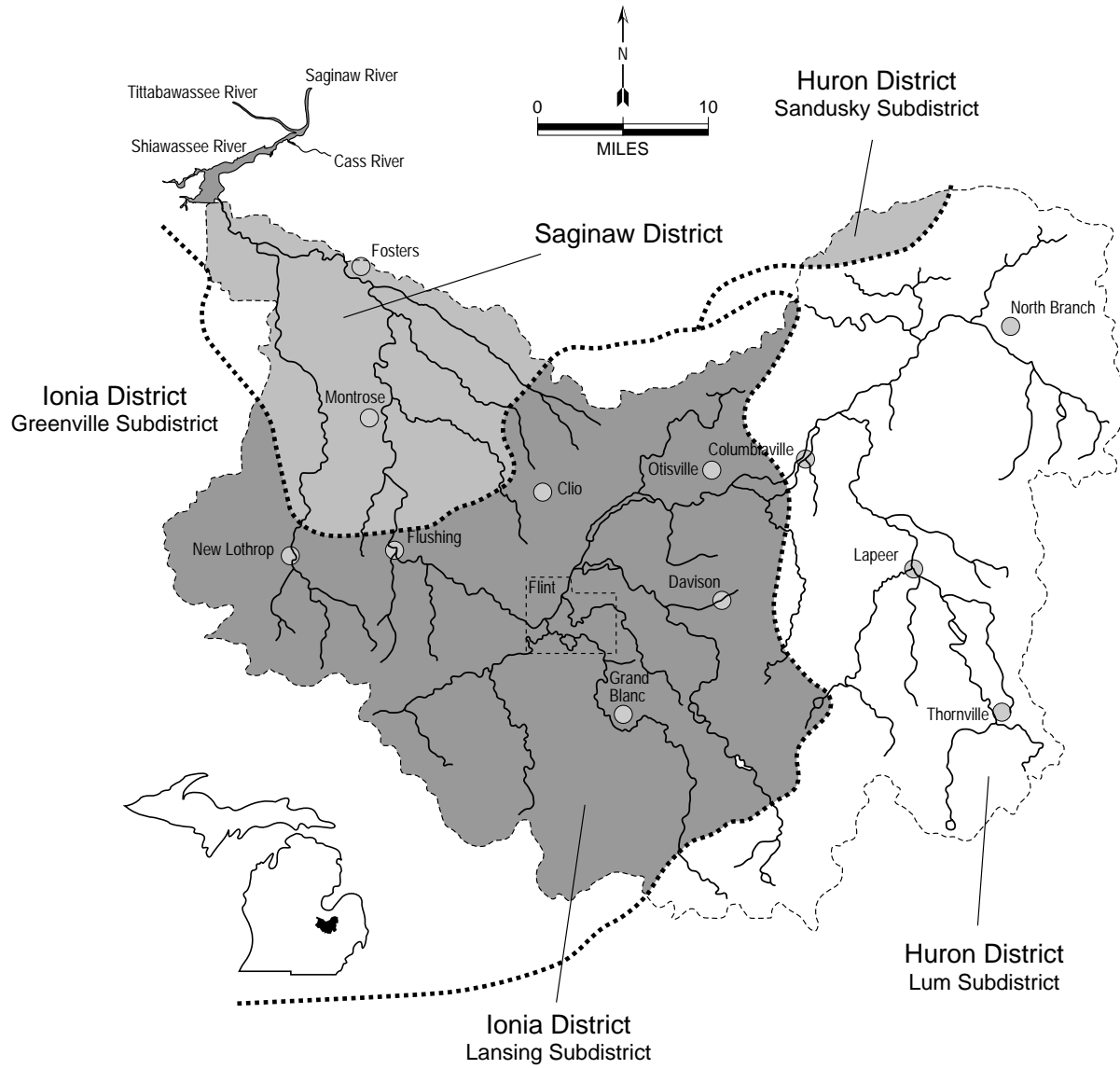


Figure 5.—Regional Landscape Ecosystem boundaries of the Flint River basin. Data from Albert 1994.

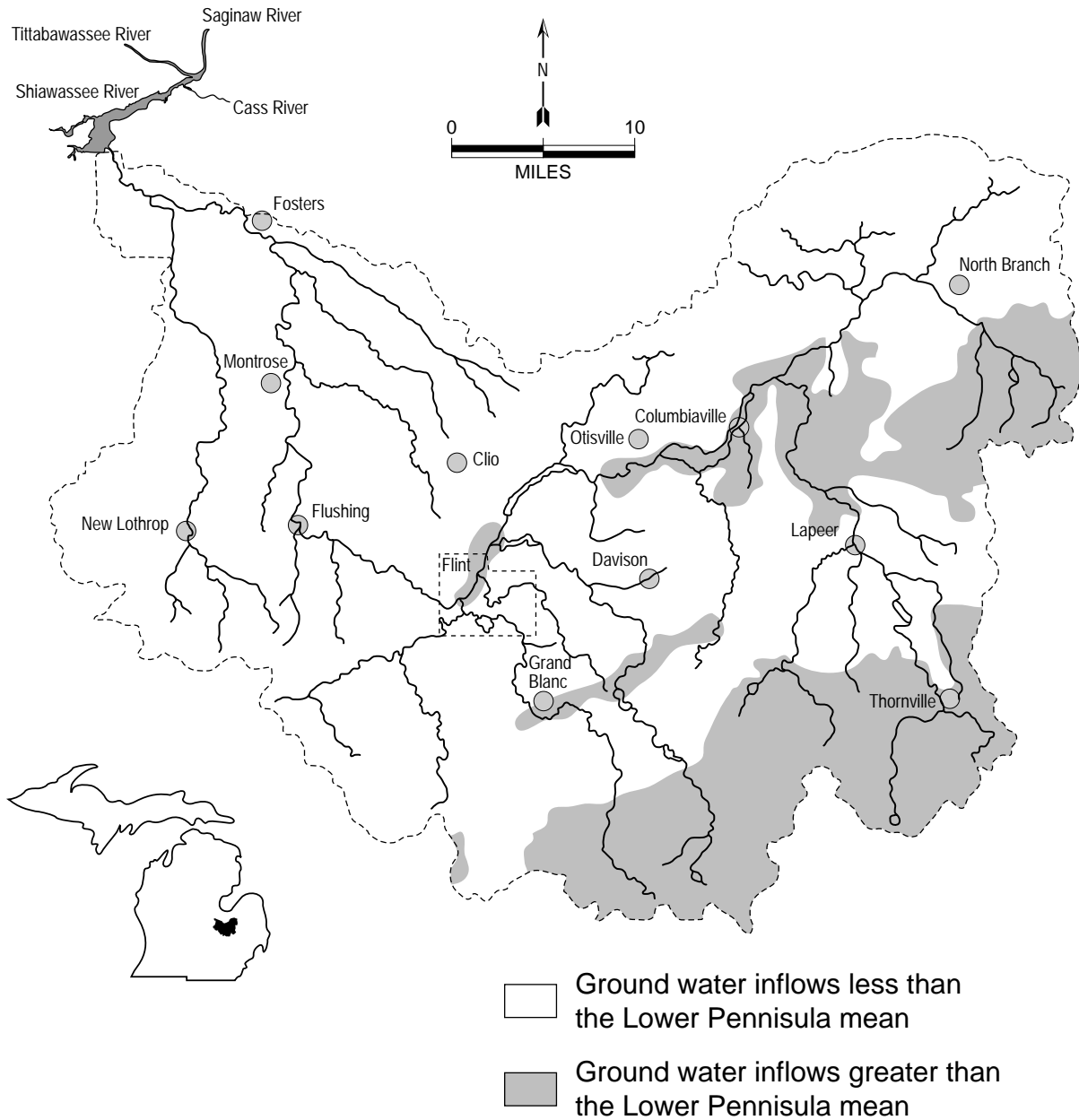
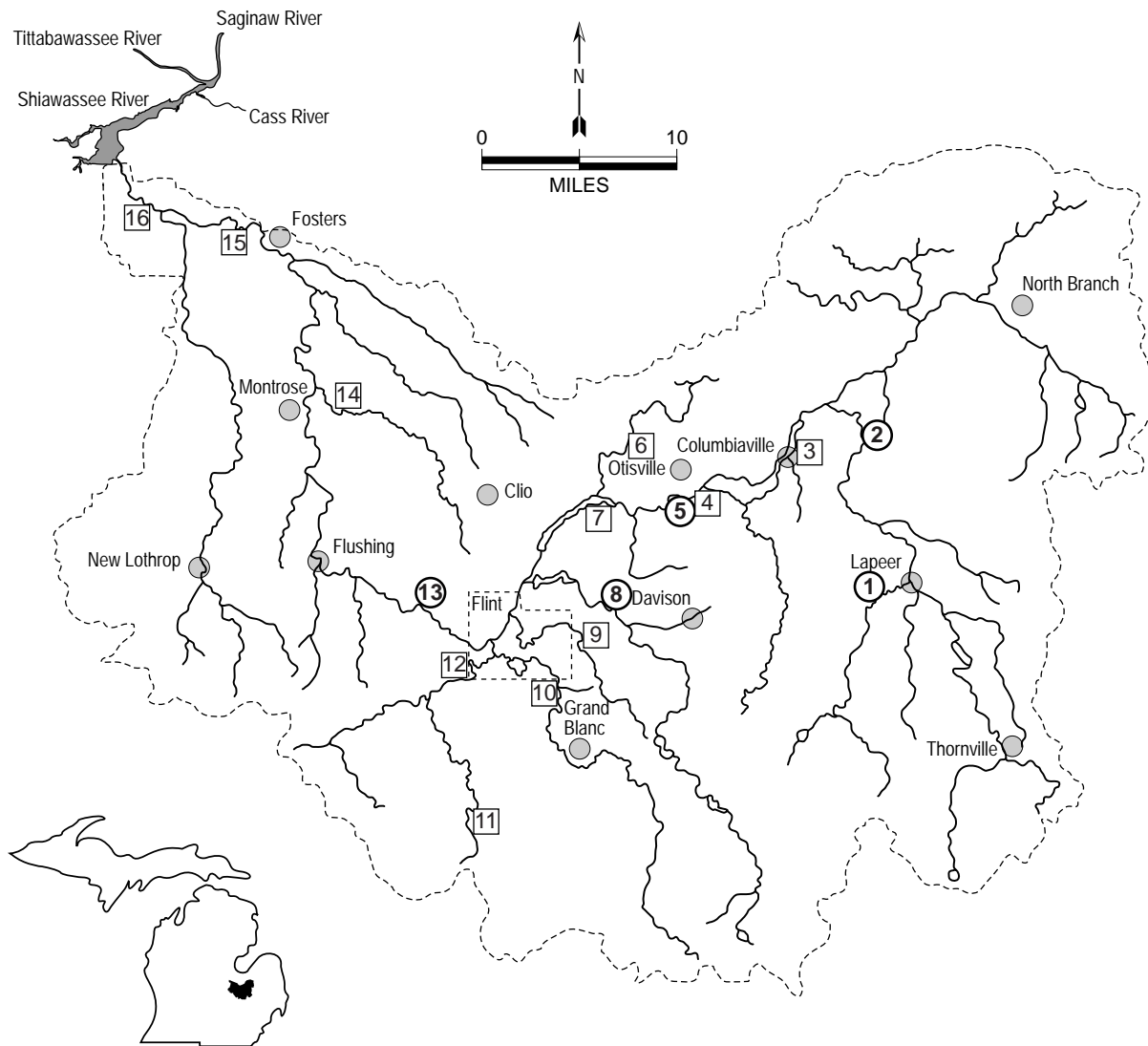


Figure 6.—Flint River basin groundwater inflow.

Flint River Assessment



- | | |
|---|-----------------------------------|
| 1. Farmers Creek (04146000) | 9. Gilkey Creek (04148160) |
| 2. South Branch Flint River (04146063) | 10. Thread Creek (04148440) |
| 3. Flint River (04146500) | 11. Swartz Creek (04148200) |
| 4. Holloway Reservoir (04147000) | 12. Swartz Creek (04148300) |
| 5. Flint River (04147500) | 13. Flint River (04148500) |
| 6. Butternutt Creek (04147990) | 14. Brent Run (04147200) |
| 7. Flint River (04148000) | 15. Flint River (04149000) |
| 8. Kearsley Creek (04148140) | 16. Flint River (04149500) |

Figure 7.—Approximate locations of Flint River basin United States Geological Survey (USGS) gauging stations. USGS identification number in parentheses. Bold circle indicates active gauging station, all others are retired stations.

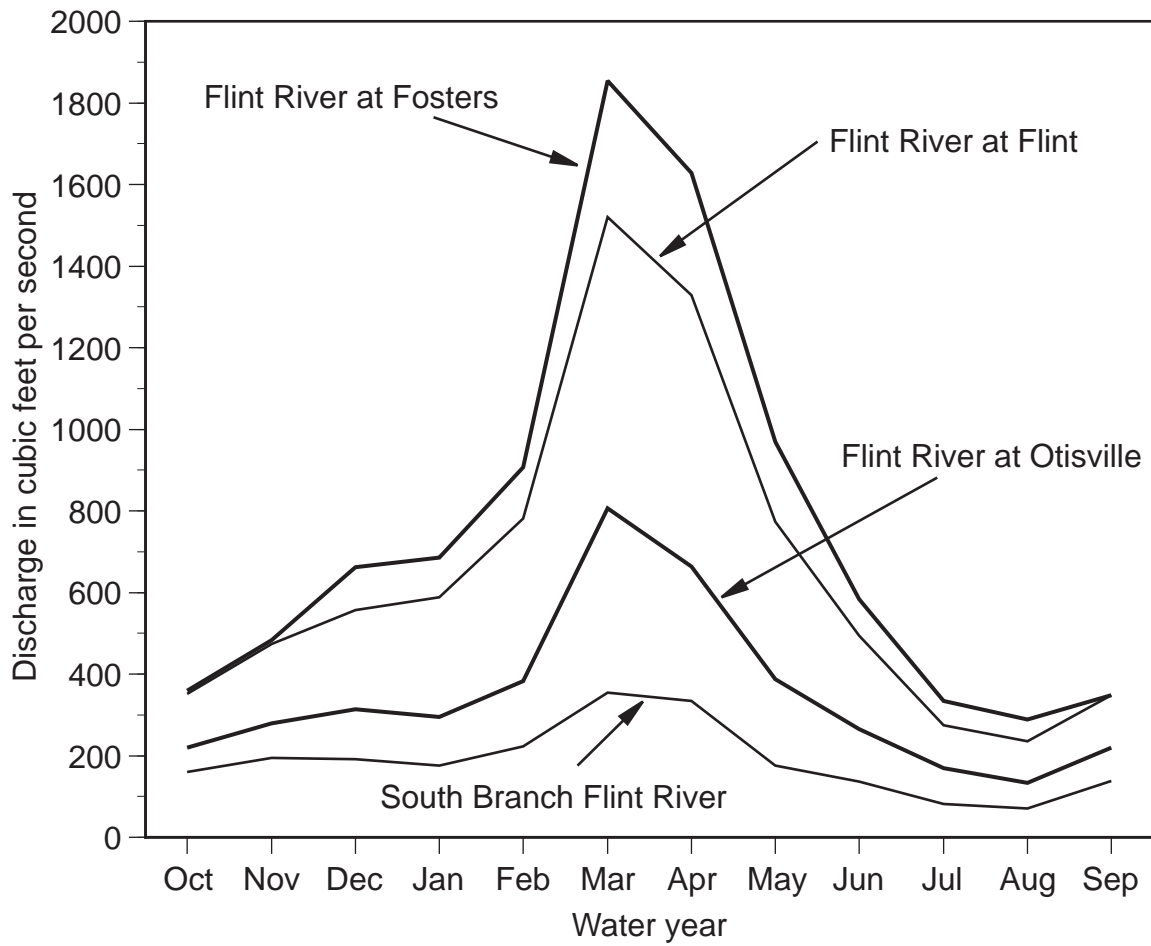


Figure 8.—Mean monthly discharge at four locations on the Flint River. Data source United States Geological Survey gauges for period of record (Table 2).

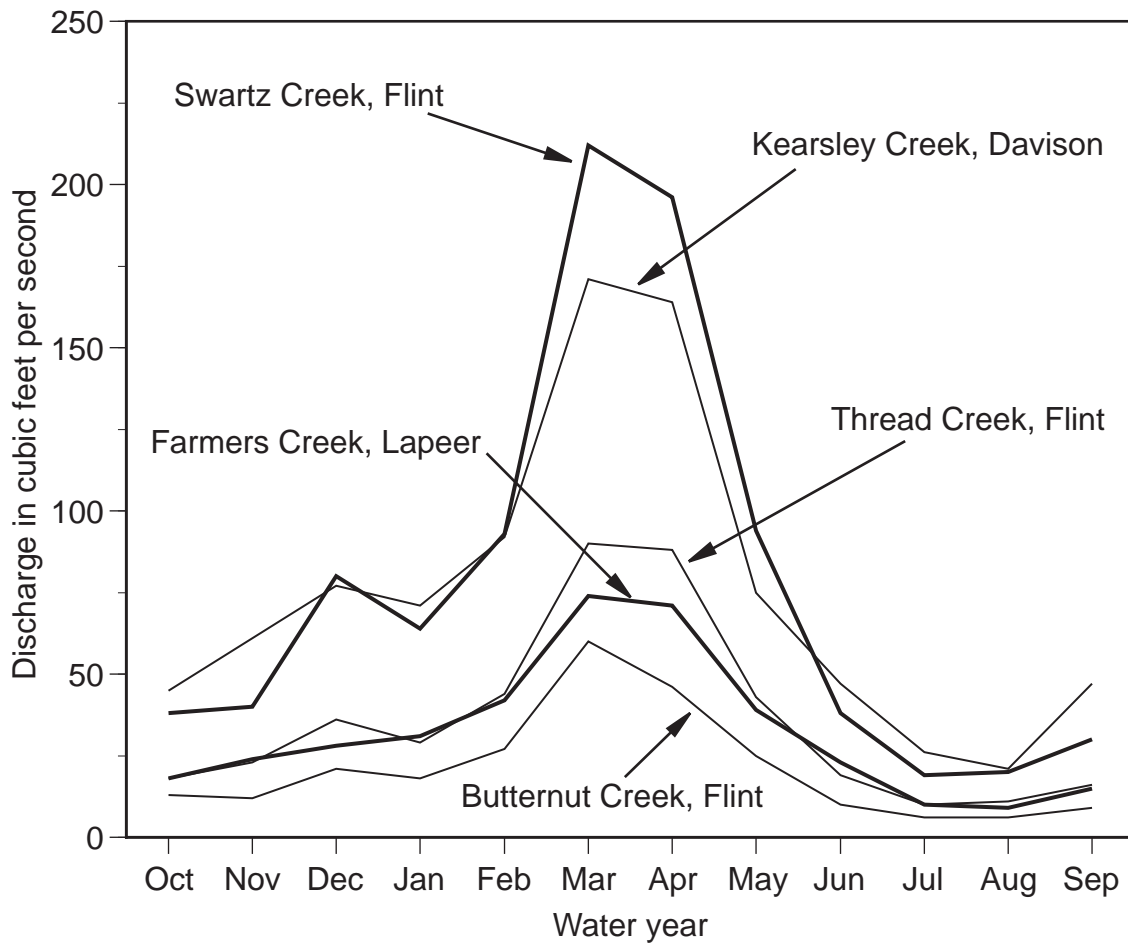


Figure 9.—Mean monthly discharge for Flint River tributaries. Data from United States Geological Survey for period of record (Table 2).

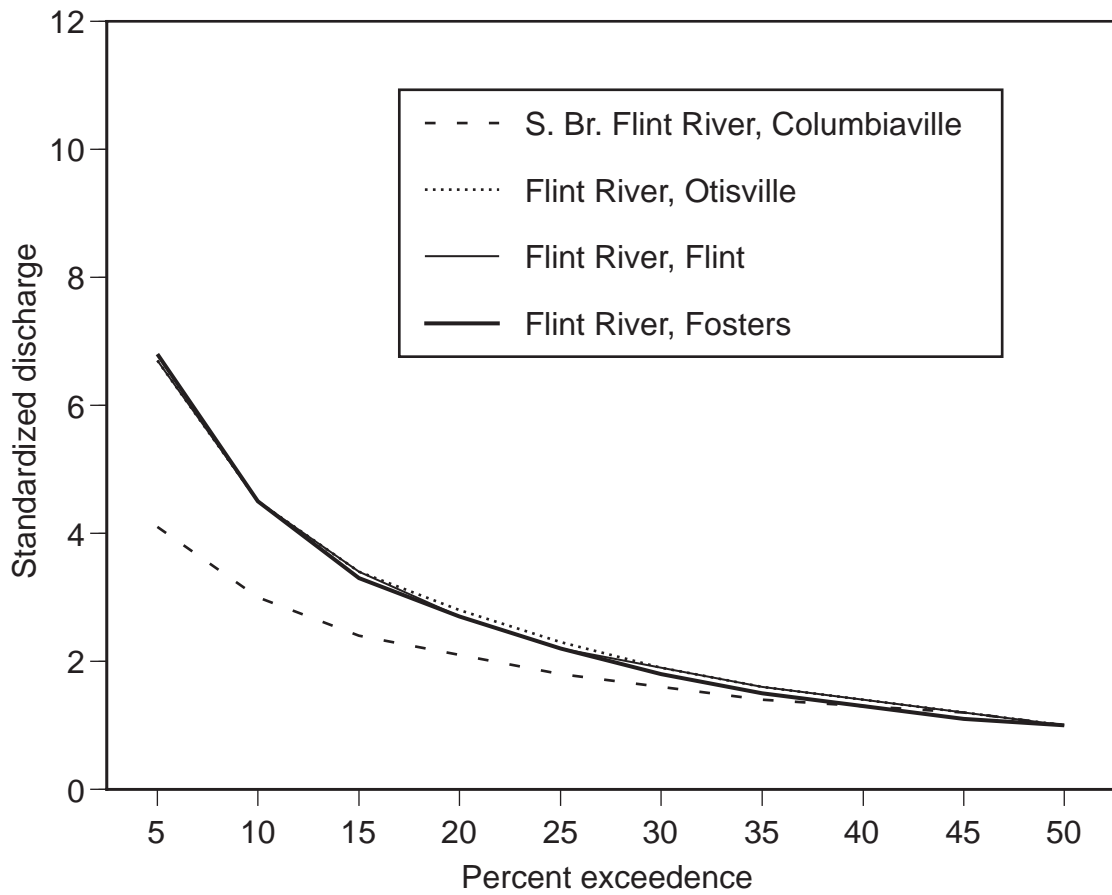


Figure 10.—Standardized high flow exceedence curves for the South Branch and mainstem Flint rivers. (Standardized discharge = discharge (Q)/median discharge(50% Q)). Exceedence curves represent the probability of a discharge exceeding a given value. Data from United States Geological Survey gauges for period of record (Table 2).

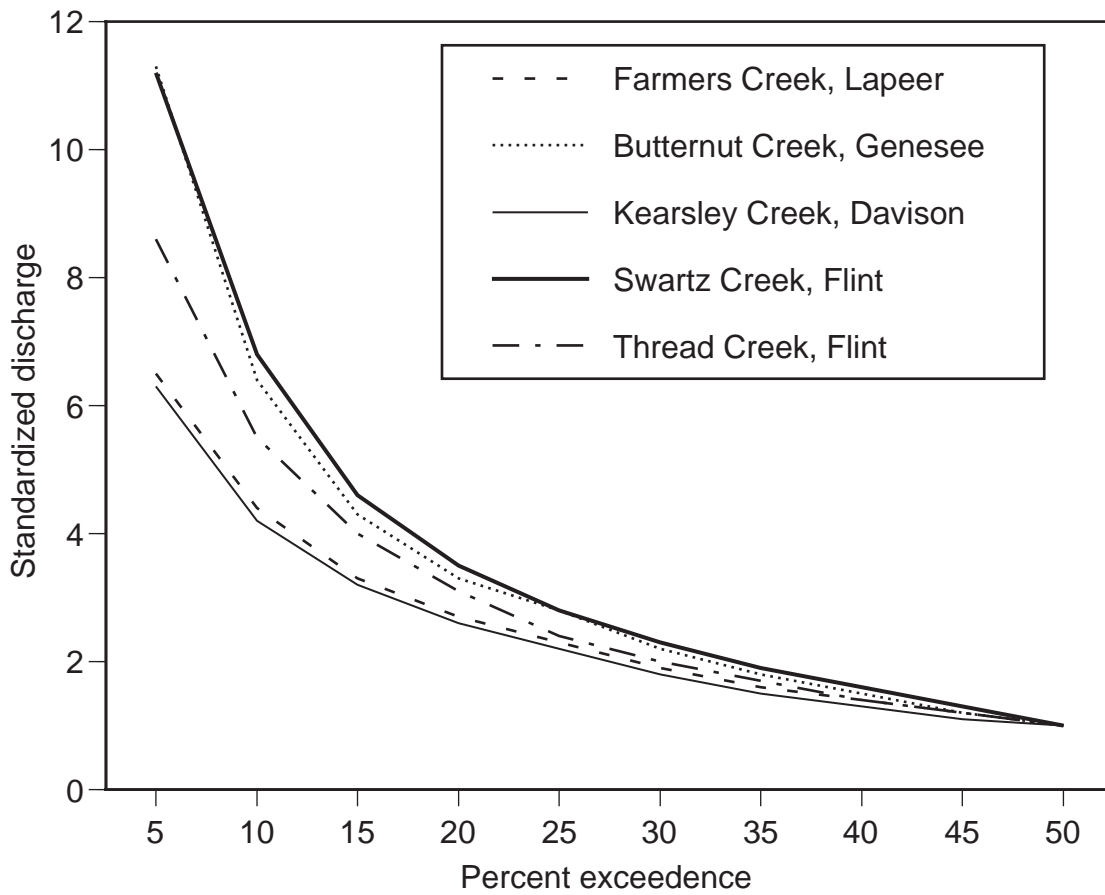


Figure 11.—Standardized high flow exceedence curves for Flint River tributaries. (Standardized discharge = discharge (Q)/median discharge(50% Q)). Exceedence curves represent the probability of a discharge exceeding a given value. Data from United States Geological Survey gauges for period of record (Table 2).

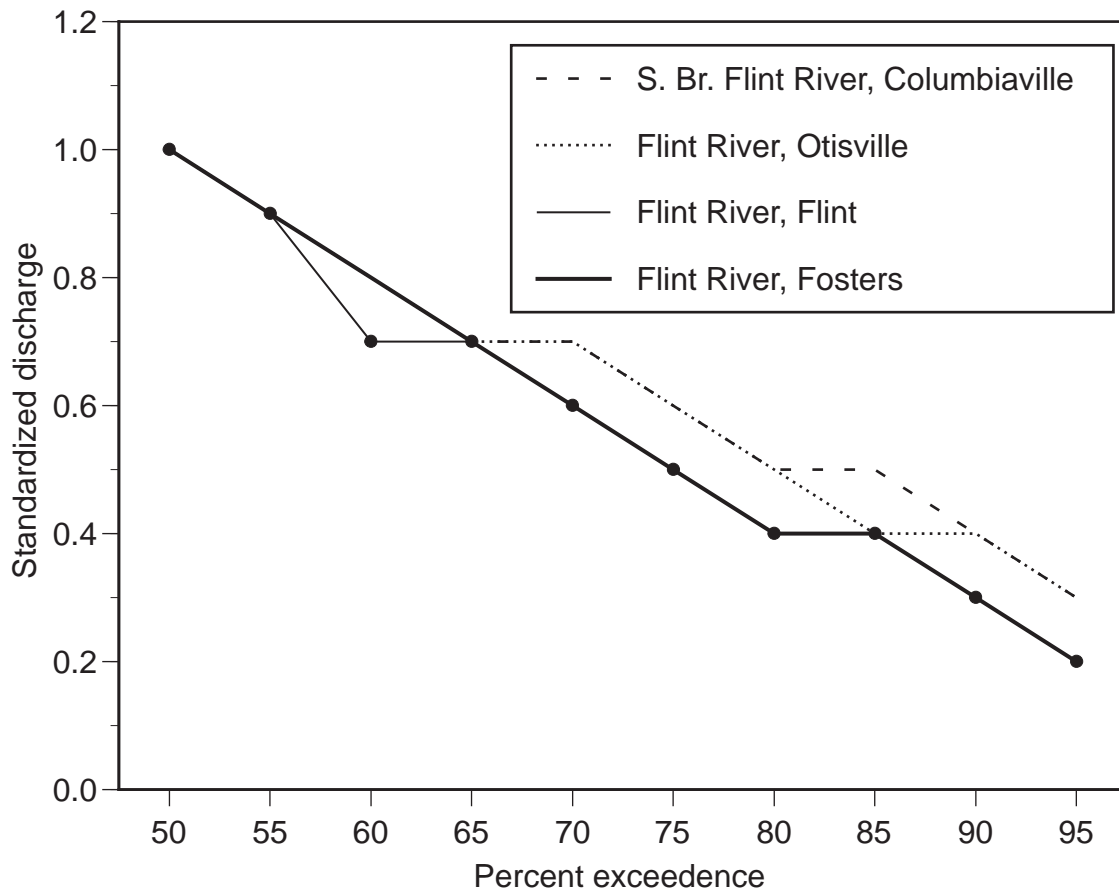


Figure 12.—Standardized low flow exceedence curves for the South Branch and mainstem Flint rivers. Standardized discharge is the discharge (Q)/median (50% Q) discharge. Exceedence curves represent the probability of a discharge exceeding a given value. Data from United States Geological Survey gauges for period of record (Table 2).

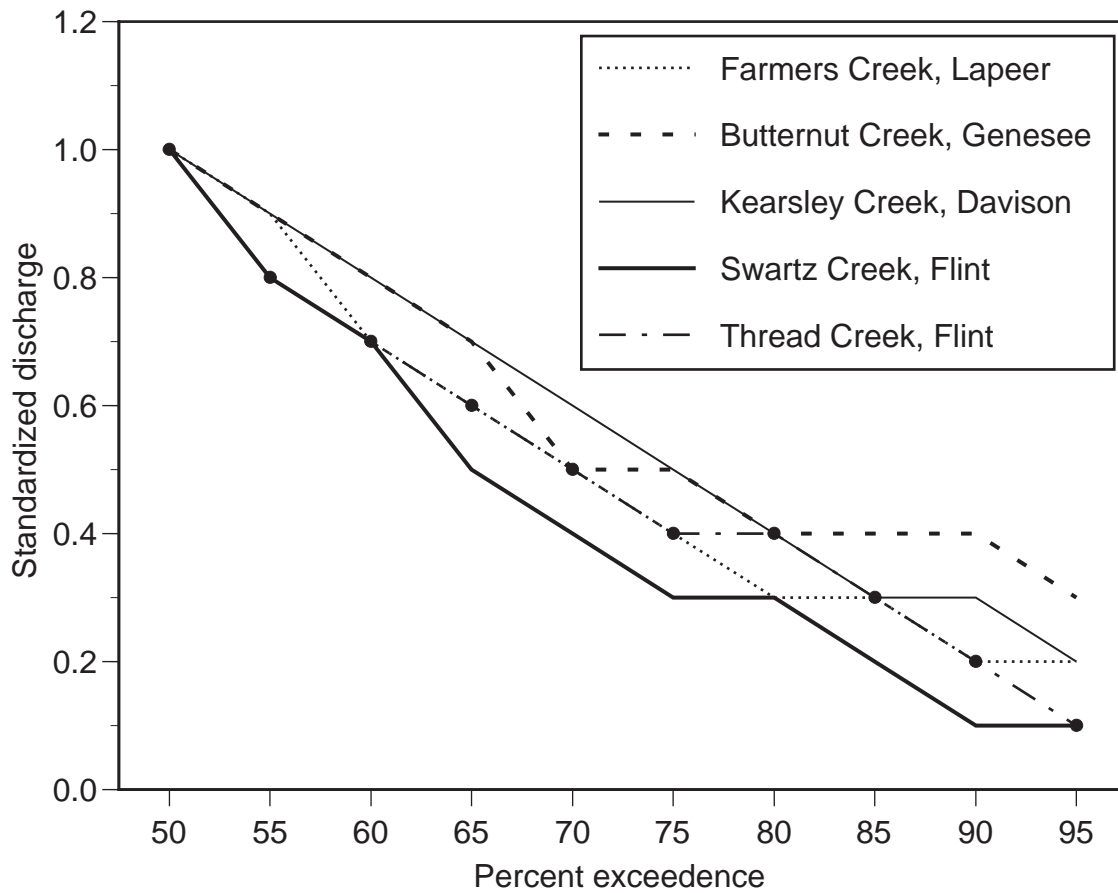


Figure 13.—Standardized low flow exceedance curves for Flint River tributaries. Standardized discharge is the discharge (Q)/median (50% Q) discharge. Exceedance curves represent the probability of a discharge exceeding a given value. Data from United States Geological Survey gauges for period of record (Table 2).

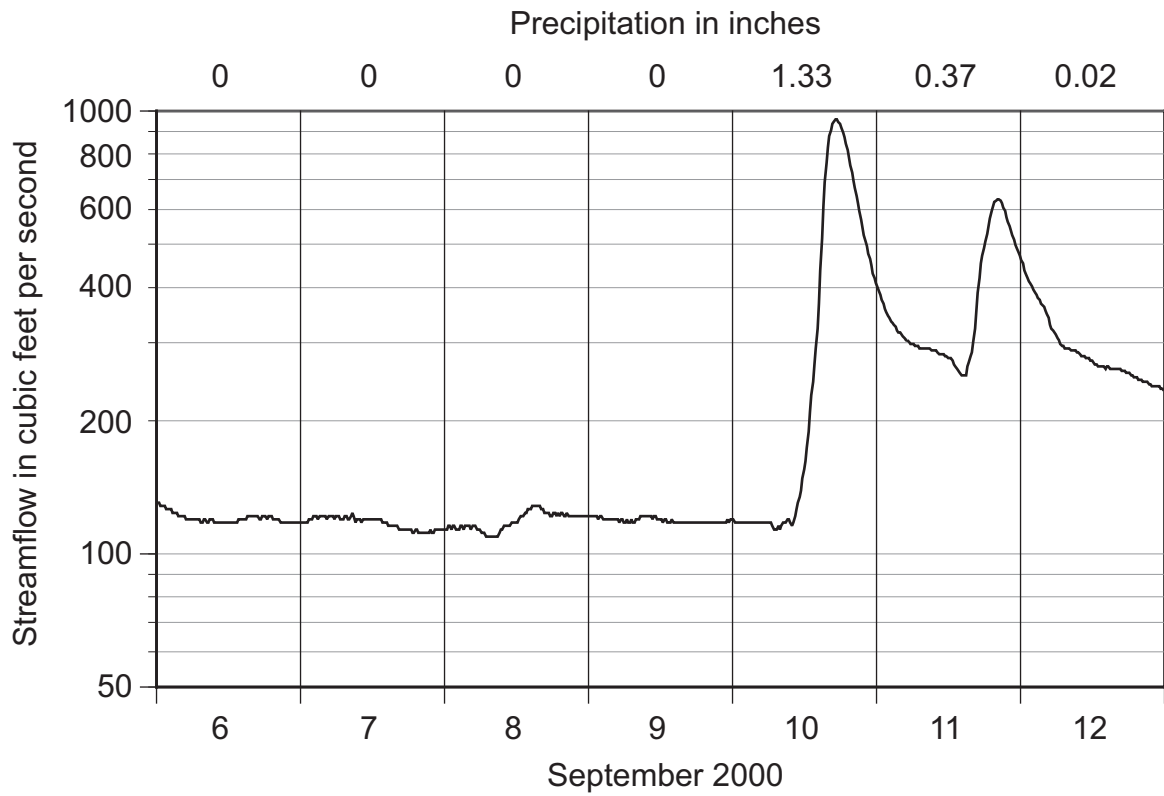


Figure 14.—Flint River daily flow at the Flint gauging station before and after a rain event. Data from United States Geological Survey.

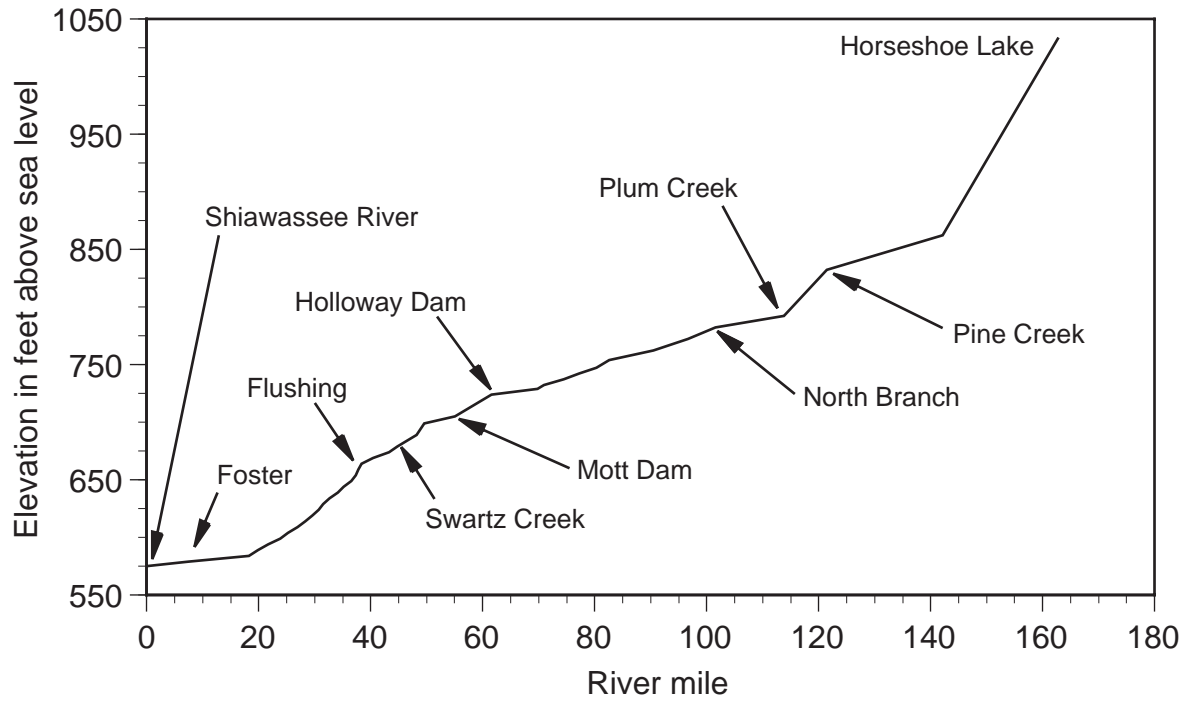


Figure 15.—Flint River stream elevation.

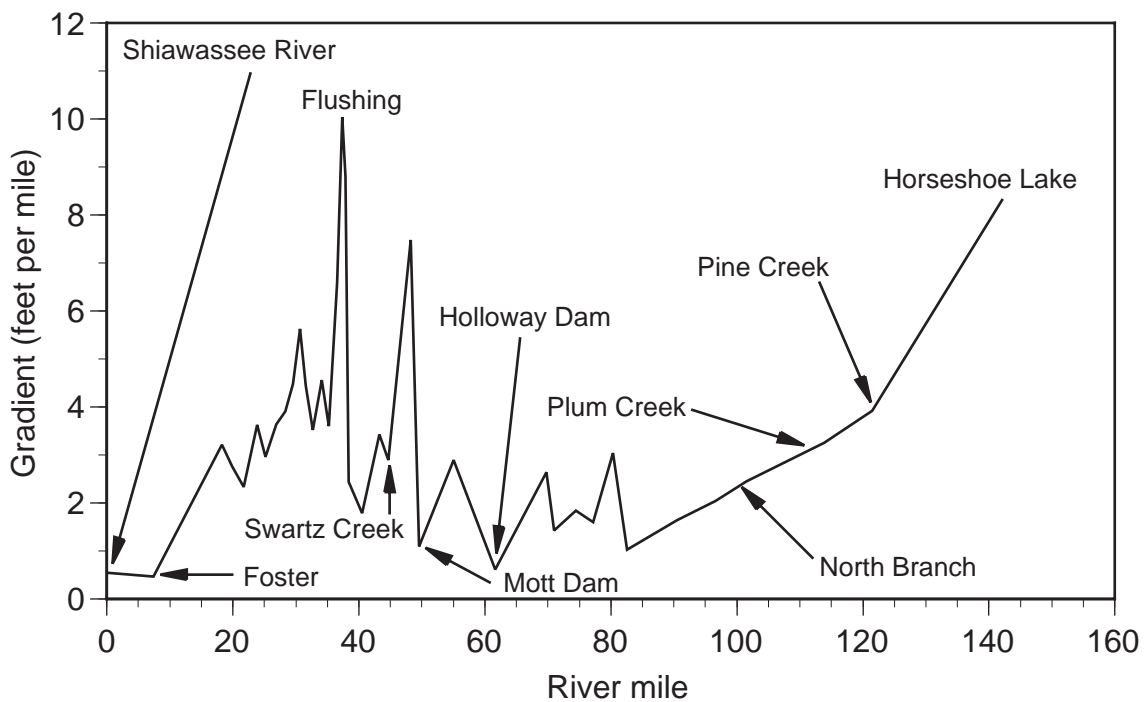
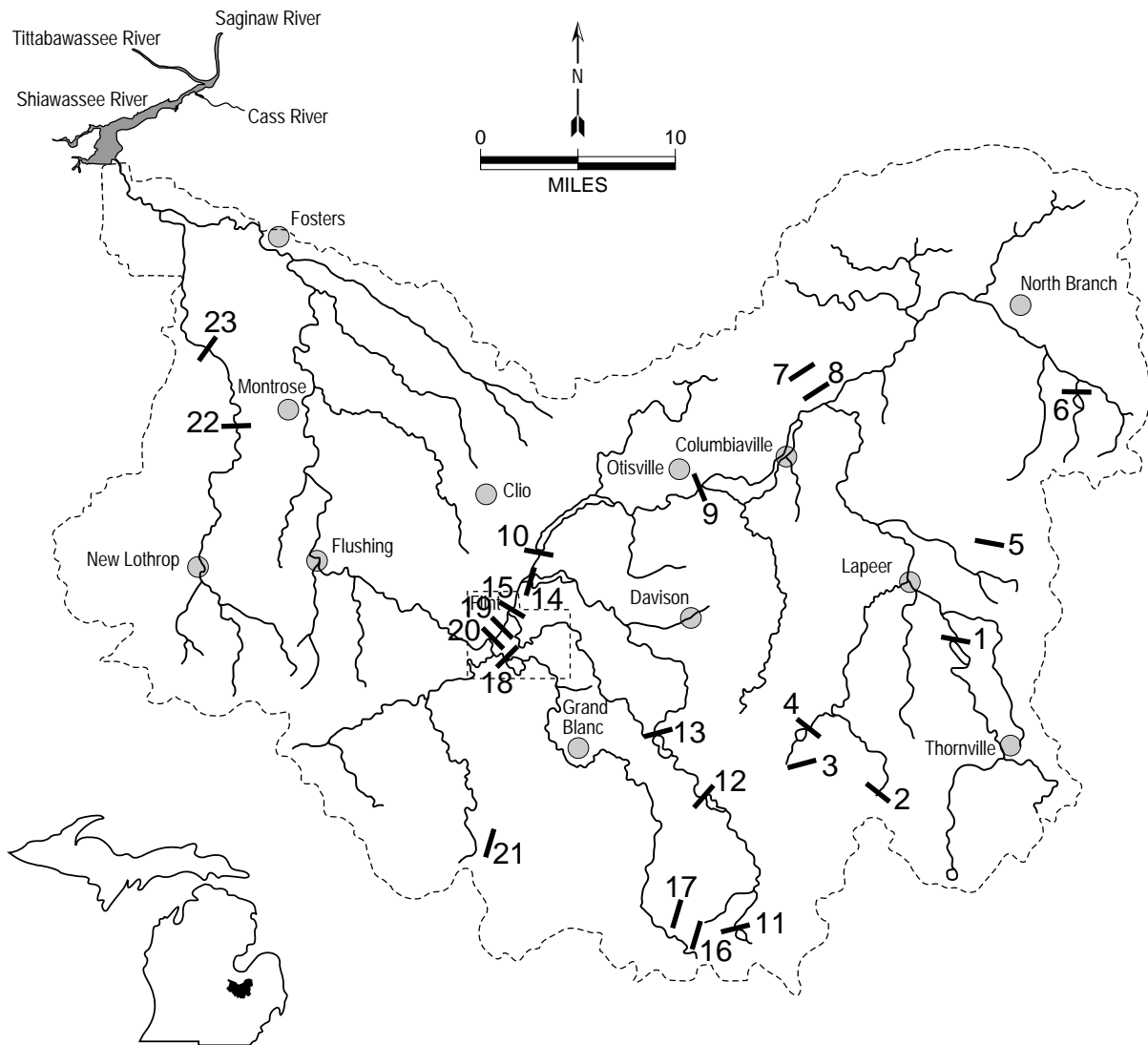


Figure 16.—Flint River gradient.



- | | |
|------------------------|----------------------------|
| 1. Winns Pond Dam | 13. Atlas Dam |
| 2. Metamora Dam | 14. Kearsley Dam |
| 3. Minnawana Dam | 15. Utah Dam |
| 4. White Sands Dam | 16. Heron Lake Dam |
| 5. Long Lake Dam | 17. Perrysville Dam |
| 6. Bottom Creek Dam | 18. Thread Lake Dam |
| 7. Hemmingway Lake Dam | 19. Hamilton Dam |
| 8. Tau Beta Dam | 20. Fiber Dam |
| 9. Earl Holloway Dam | 21. Crystal Lake Dam |
| 10. C. S. Mott Dam | 22. Mistequay Creek 2A Dam |
| 11. Lake Louise Dam | 23. Mistequay Creek 3A Dam |
| 12. Goodrich Dam | |

Figure 17.—Approximate location of principal dams in the Flint River watershed.

Flint River Assessment

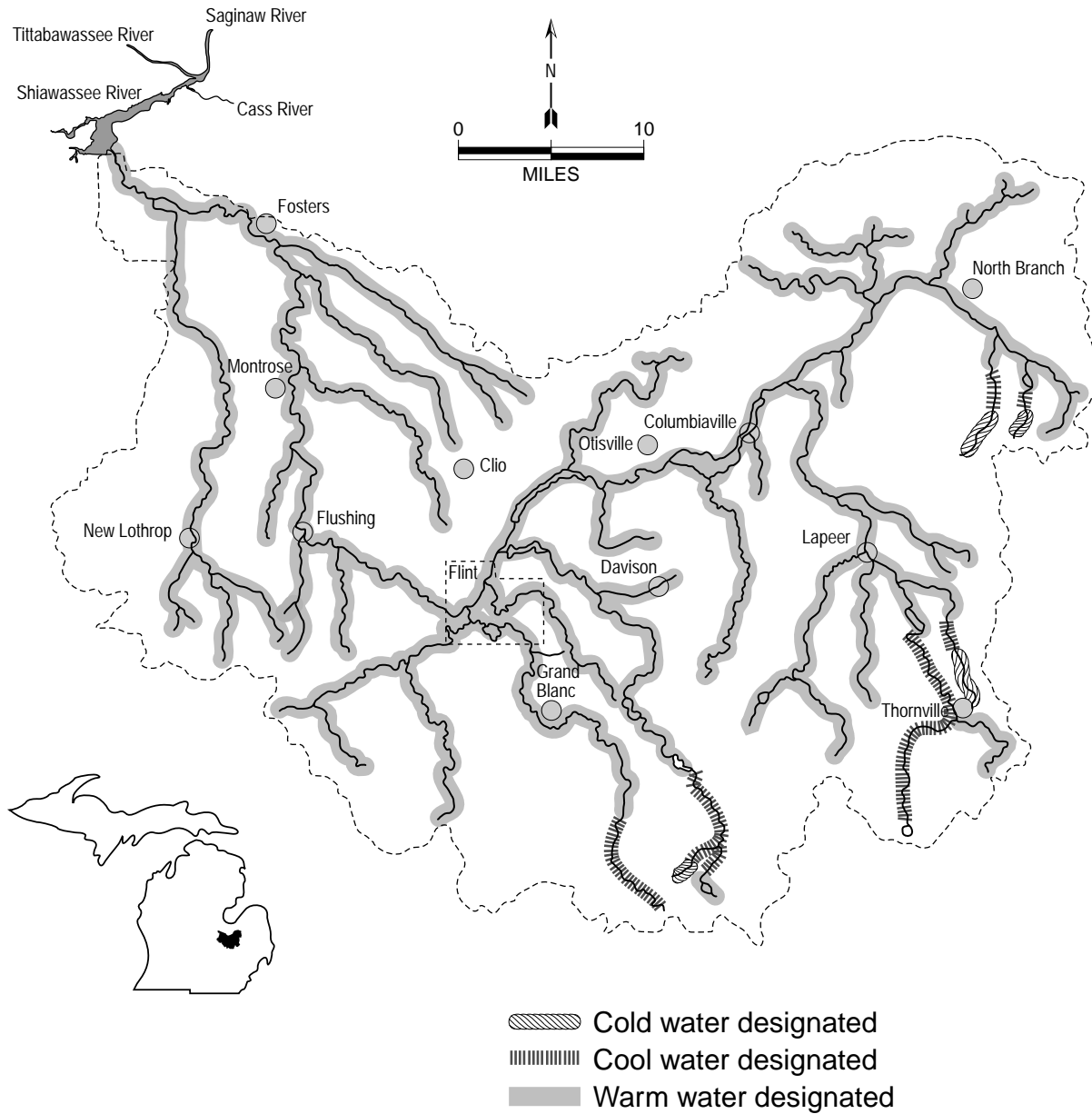


Figure 18.—Flint River basin thermal habitat classification.

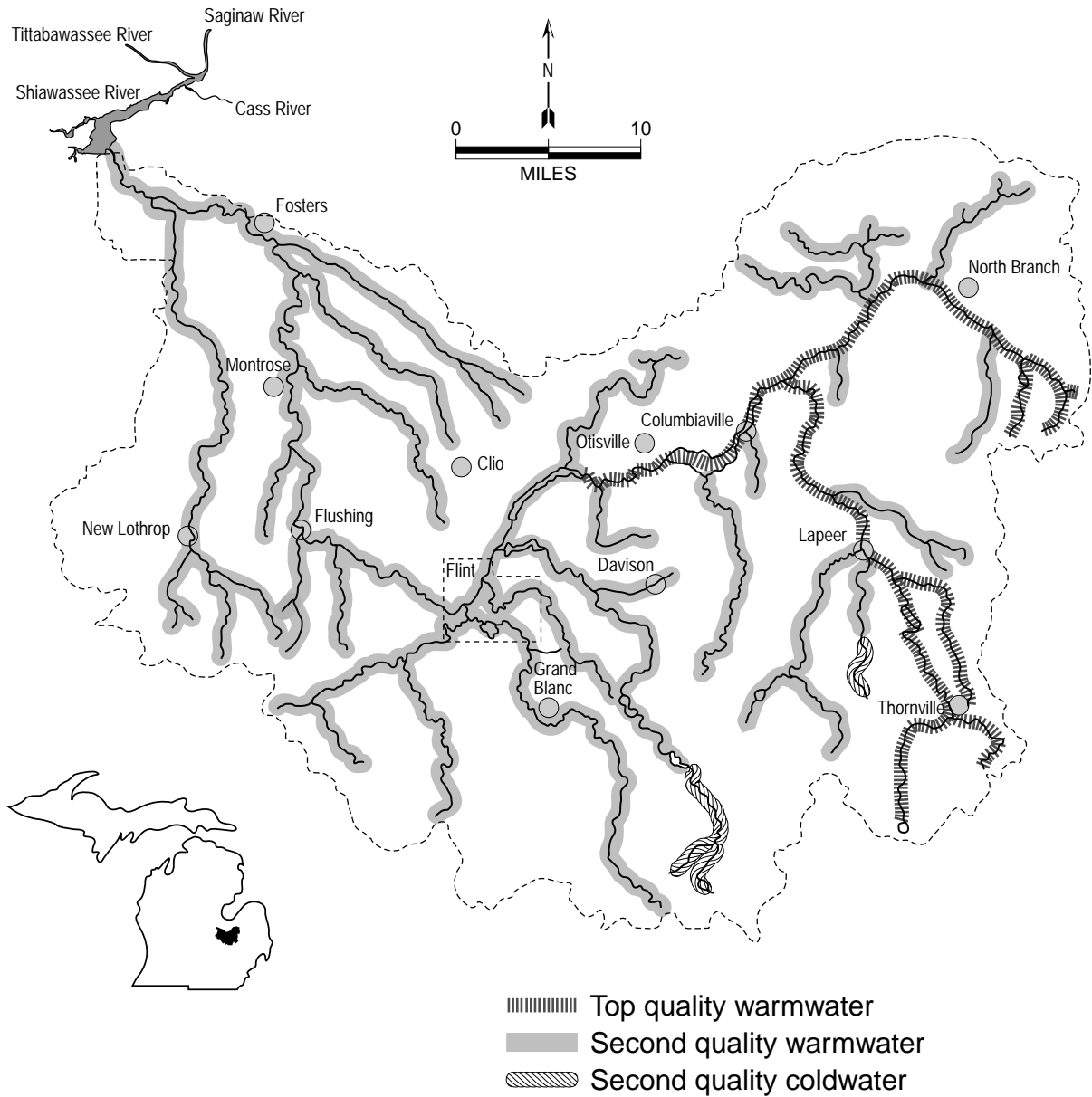


Figure 19.—Michigan stream classification, 1967. Data from Michigan Department of Natural resources, Fisheries Division.

Flint River Assessment

| | Water | Site Location | County | T | R | Sec. |
|-----|---------------------|----------------------------|---------------|----------|----------|-------------|
| 1. | South Branch | Oakwood Road | Oakland | 05N | 10E | 10 |
| 2. | South Branch | Wilder Road | Lapeer | 06N | 10E | 01,02 |
| 3. | South Branch | Greenwood Road | Lapeer | 07N | 10E | 14,23 |
| 4. | Pine Creek | Hunters Creek Road | Lapeer | 07N | 11E | 31 |
| 5. | Pine Creek | Five Lakes Road | Lapeer | 07N | 11E | 30 |
| 6. | Pine Creek | Newark Road | Lapeer | 07N | 10E | 25 |
| 7. | Pine Creek | Peppermill Road | Lapeer | 07N | 10E | 13 |
| 8. | Hunters Creek | Newark Road | Lapeer | 07N | 10E | 28 |
| 9. | Hunters Creek | Terrill Road | Lapeer | 07N | 10E | 17 |
| 10. | Mill Creek | Pratt Road | Lapeer | 06N | 09E | 10 |
| 11. | Farmers Creek | Baldwin Road | Lapeer | 06N | 10E | 18 |
| 12. | Farmers Creek | Merwin Road | Lapeer | 07N | 09E | 26 |
| 13. | Plum Creek | Fish Lake Road | Lapeer | 08N | 10E | 25 |
| 14. | Plum Creek | Valentine Road | Lapeer | 08N | 10E | 19 |
| 15. | South Branch | Norway Lake Road | Lapeer | 08N | 09E | 01 |
| 16. | North Branch | Castle Road | Lapeer | 10N | 10E | 34 |
| 17. | North Branch | Barnes Road | Lapeer | 09N | 10E | 13 |
| 18. | Cedar Creek | Willis Road | Lapeer | 09N | 12E | 31 |
| 19. | Cedar Creek | Cedar Creek Road | Lapeer | 09N | 11E | 23 |
| 20. | Bottom Creek | Jefferson Road | Lapeer | 09N | 11E | 33 |
| 21. | Bottom Creek | Gravel Creek Road | Lapeer | 09N | 11E | 20 |
| 22. | Crystal Creek | Barnes Lake Road | Lapeer | 09N | 10E | 20 |
| 23. | Flint River | M-15 | Genesee | 08N | 08E | 10 |
| 24. | Henry Drain | Mt. Morris Road | Lapeer | 08N | 09E | 04 |
| 25. | Henry Drain | Stanley Road | Lapeer | 08N | 09E | 09 |
| 26. | Hasler Creek | Lippincott Road | Lapeer | 07N | 09E | 20 |
| 27. | Powers-Cullen Drain | Carpenter Road | Genesee | 08N | 08E | 30 |
| 28. | Butternut Creek | Irish Road | Genesee | 09N | 08E | 19,20 |
| 29. | Kearsley Creek | Kipp Road | Genesee | 06N | 08E | 26,35 |
| 30. | Kearsley Creek | Atherton Road | Genesee | 07N | 08E | 22,27 |
| 31. | Gilkey Creek | East Court Street | Genesee | 07N | 07E | 07 |
| 32. | Thread Creek | Baldwin Road | Genesee | 06N | 08E | 29,32 |
| 33. | Thread Creek | Bristol Road | Genesee | 07N | 07E | 28,33 |
| 34. | Swartz Creek | Miller Road | Genesee | 07N | 06E | 27 |
| 35. | Flint River | Hamilton Impoundment | Genesee | 06N | 06E | many |
| 36. | Flint River | Grand Traverse to Flushing | Genesee | 07N | 5,6E | many |
| 37. | Flint River | M-57 | Genesee | 09N | 05E | 15,22 |
| 38. | Mud Creek | Potter Road | Genesee | 07N | 05E | 01,36 |
| 39. | Cole Creek | Potter Road | Genesee | 07N | 05E | 02,35 |
| 40. | Brent Creek | Stanley Road | Genesee | 08N | 05E | 08,17 |
| 41. | Brent Run Creek | Wilson Road | Genesee | 09N | 06E | 29 |
| 42. | Flint River | Morseville Road | Saginaw | 10N | 05E | 22 |
| 43. | Pine Run Creek | Webster Road | Genesee | 09N | 06E | 08 |
| 44. | Misteguay Creek | Byron Road | Shiawassee | 09N | 04E | 36 |

Figure 20.—Flint River basin 1997 fish sampling locations. Data from Leonardi (1997).

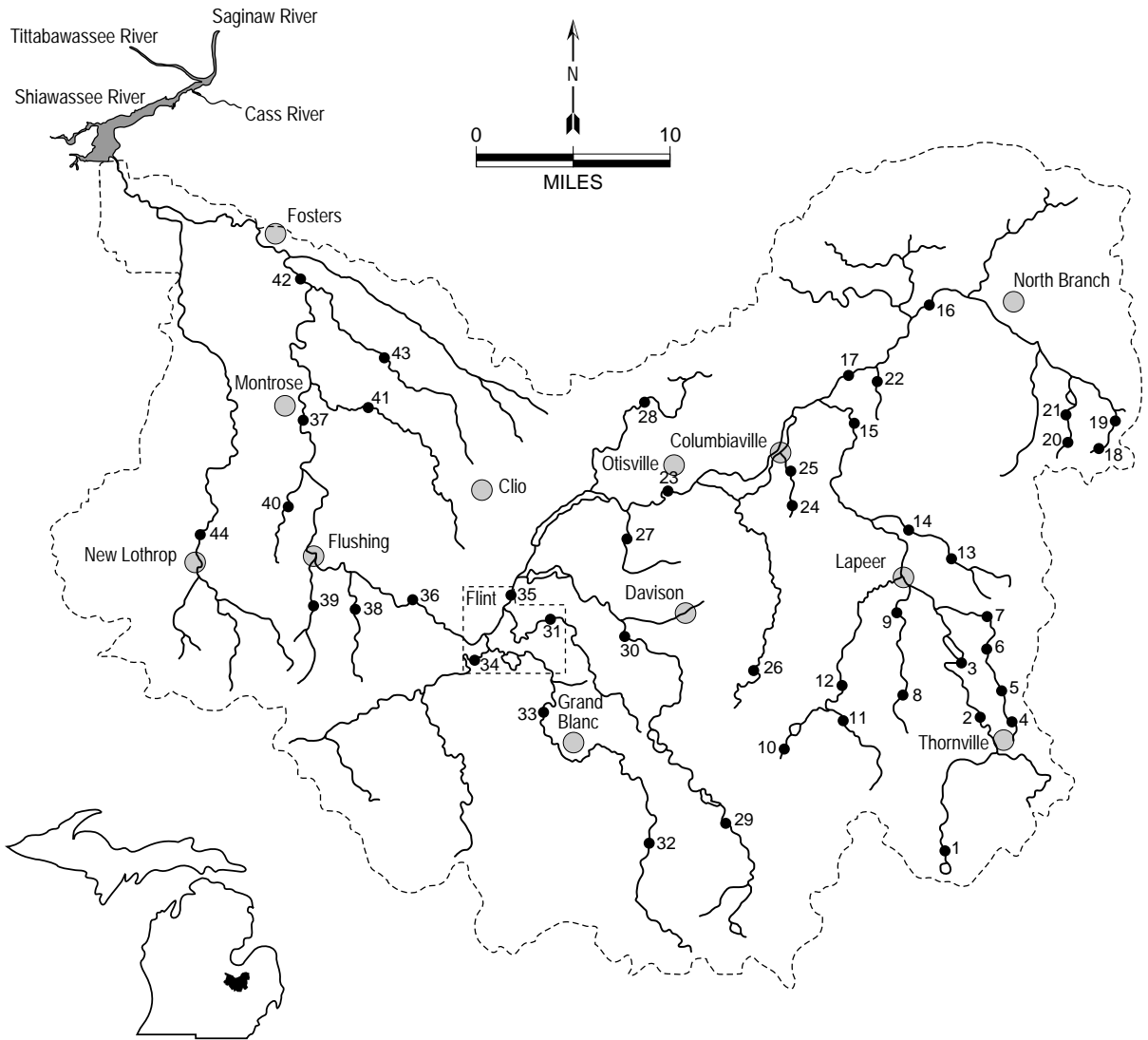


Figure 20.

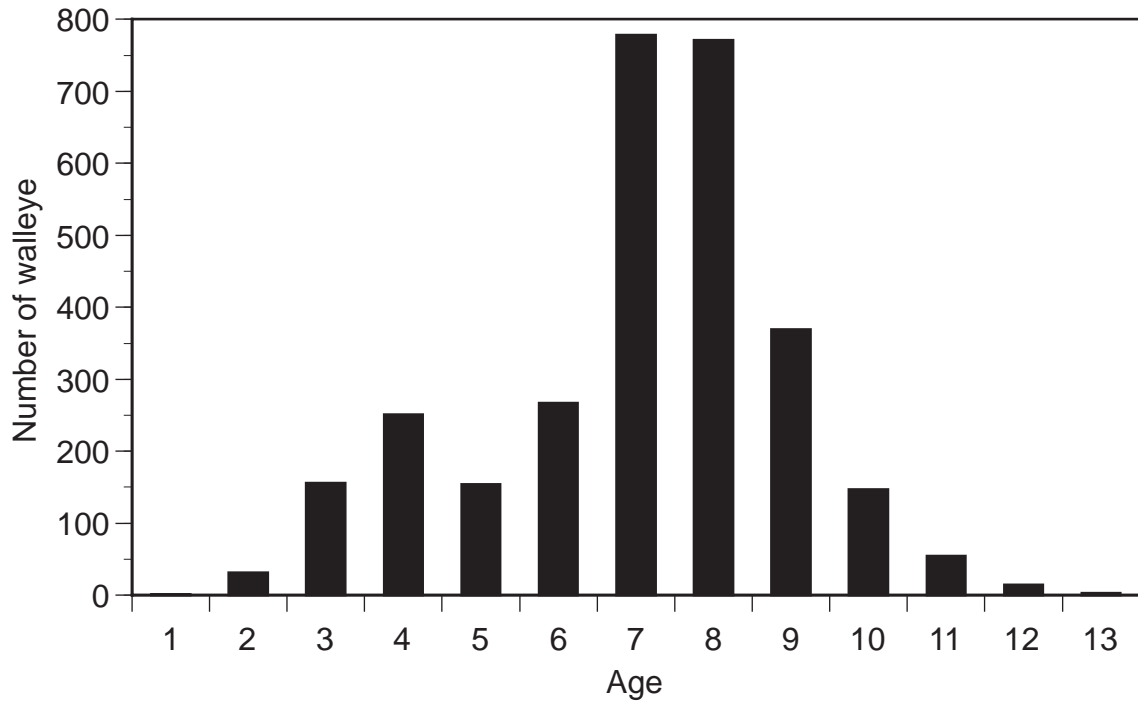


Figure 21.—Age distribution of Flint River spawning walleye, March 1998. Data from Leonardi (unpublished).

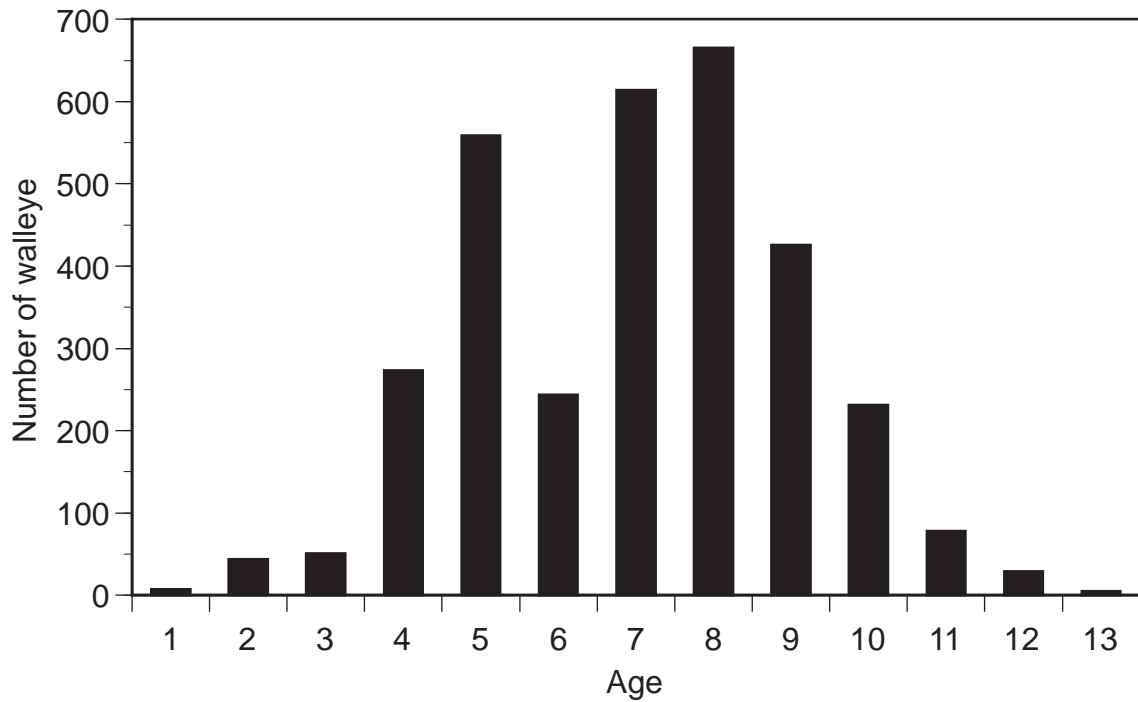


Figure 22.—Age distribution of Flint River spawning walleye, March 1999. Data from Leonardi (unpublished).

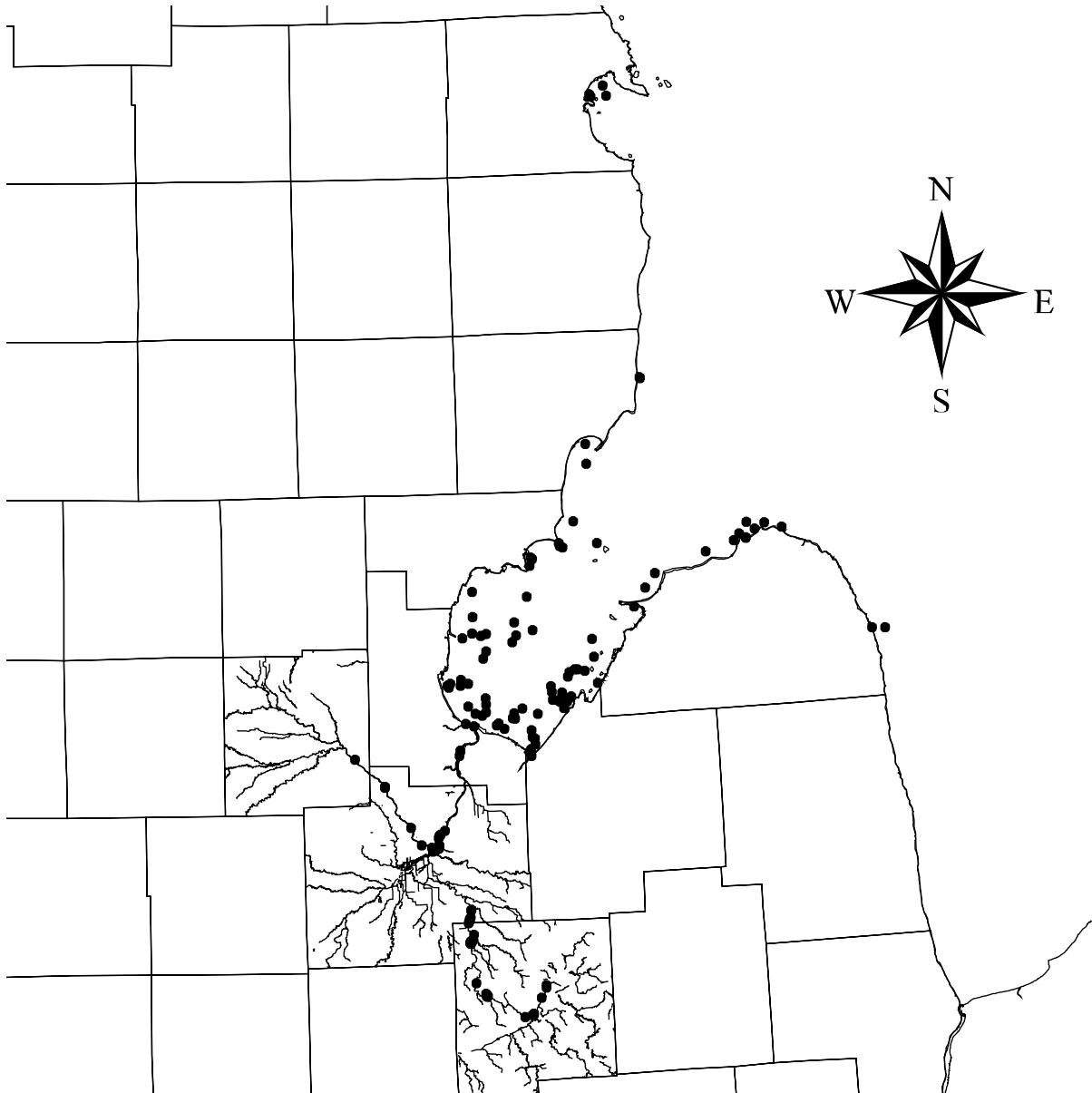


Figure 23.-Angler tag recoveries from Flint River tagged walleye, March 15, 1998 to January, 26, 2000. Data from Robert Haas, Michigan Department of Natural Resources, Fisheries Division.

Flint River Assessment

| Water | Site Location | County | T | R | Sec. |
|------------------------|--------------------------|---------------|----------|----------|-------------|
| 1 South Branch | Oakwood Road | Oakland | 05N | 10E | 10 |
| 2 South Branch | Wilder Road | Lapeer | 06N | 10E | 01 |
| 3 South Branch | Greenwood Road | Lapeer | 07N | 10E | 23 |
| 4 South Branch | Mayfield Road | Lapeer | 08N | 10E | 29 |
| 5 Pine Creek | Hunters Creek Road | Lapeer | 07N | 11E | 31 |
| 6 Pine Creek | Peppermill Road | Lapeer | 07N | 10E | 13 |
| 7 Hunters Creek | Newark Road | Lapeer | 07N | 10E | 28 |
| 8 Hunters Creek | Turrill Road | Lapeer | 07N | 10E | 17 |
| 9 Mill Creek | Pratt Road | Lapeer | 06N | 09E | 10 |
| 10 Farmers Creek | Baldwin Road | Lapeer | 06N | 10E | 18 |
| 11 Farmers Creek | Mitchell Road | Lapeer | 07N | 09E | 35 |
| 12 Farmers Creek | Merwin Road | Lapeer | 07N | 09E | 26 |
| 13 Farmers Creek | Lippincott Road | Lapeer | 07N | 09E | 24 |
| 14 Plum Creek | Fish Lake Road | Lapeer | 08N | 10E | 25 |
| 15 Plum Creek | Valentine Road | Lapeer | 08N | 10E | 20 |
| 16 South Branch | Norway Lake Road | Lapeer | 08N | 09E | 01 |
| 17 North Branch | M-90 | Lapeer | 09N | 11E | 06 |
| 18 North Branch | Castle Road | Lapeer | 10N | 10E | 34 |
| 19 Elm Creek | Patrick Road | Lapeer | 09N | 11E | 01 |
| 20 Cedar Creek | Willis Road | Lapeer | 09N | 12E | 31 |
| 21 Cedar Creek | Cedar Creek Road | Lapeer | 09N | 11E | 23 |
| 22 Bottom Creek | Jefferson Road | Lapeer | 09N | 11E | 33 |
| 23 Bottom Creek | Gravel Creek Road | Lapeer | 09N | 11E | 20 |
| 24 Crystal Creek | Barnes Lake Road | Lapeer | 09N | 10E | 20 |
| 25 Flint River | M-15 | Genesee | 08N | 08E | 10 |
| 26 Flint River | Gale Road | Genesee | 08N | 08E | 16 |
| 27 Henry Drain | Mt. Morris Road | Lapeer | 08N | 09E | 09 |
| 28 Hasler Creek | Lippincott Road | Lapeer | 07N | 09E | 19 |
| 29 Powers-Cullen Drain | Carpenter Road | Genesee | 08N | 08E | 30 |
| 30 Butternut Creek | Irish Road | Genesee | 09N | 08E | 20 |
| 31 Butternut Creek | Vassar Road | Genesee | 09N | 07E | 36 |
| 32 Kearsley Creek | Kipp Road | Genesee | 06N | 08E | 35 |
| 33 Kearsley Creek | Atherton Road | Genesee | 07N | 08E | 27 |
| 34 Gilkey Creek | East Court Street | Genesee | 07N | 07E | 08 |
| 35 Thread Creek | Baldwin Road | Genesee | 06N | 08E | 32 |
| 36 Thread Creek | Bristol Road | Genesee | 07N | 07E | 33 |
| 37 Swartz Creek | Grand Blanc Road | Genesee | 06N | 06E | 23 |
| 38 Swartz Creek | Miller Road & US 23 | Genesee | 07N | 06E | 27 |
| 39 Flint River | Mill Road | Genesee | 07N | 06E | 04 |
| 40 Flint River | Linden/Flushing Roads | Genesee | 07N | 06E | 05 |
| 41 Flint River | Riverview Park, Flushing | Genesee | 08N | 05E | 27 |
| 42 Flint River | Mt. Morris Road | Genesee | 08N | 05E | 03 |
| 43 Flint River | Vienna Road | Genesee | 09N | 05E | 21 |
| 44 Flint River | Ragnone WWTP Outfall | Genesee | 09N | 05E | 15 |
| 45 Mud Creek | Potter Road | Genesee | 07N | 05E | 01 |
| 46 Cole Creek | McKinley Road | Genesee | 08N | 05E | 35 |
| 47 Brent Run Creek | Stanley Road | Genesee | 08N | 06E | 14 |
| 48 Brent Run Creek | Webster Road | Genesee | 09N | 06E | 29 |
| 49 Flint River | E. Burt Road | Saginaw | 10N | 05E | 27 |
| 50 Flint River | Morseville Road | Saginaw | 10N | 05E | 21 |
| 51 Flint River | Sheridan Road | Saginaw | 10N | 04E | 01 |
| 52 Pine Run Creek | Webster Road | Genesee | 09N | 06E | 08 |
| 53 Silver Creek | Moorish Road | Saginaw | 10N | 05E | 13 |
| 54 Misteguay Creek | Johnstone Road | Shiawassee | 09N | 04E | 36 |

Figure 24.—Flint River basin aquatic invertebrate sample locations. Data from Alexander (1997) and M. Walterhouse (MDEQ, SWQD, unpublished data).

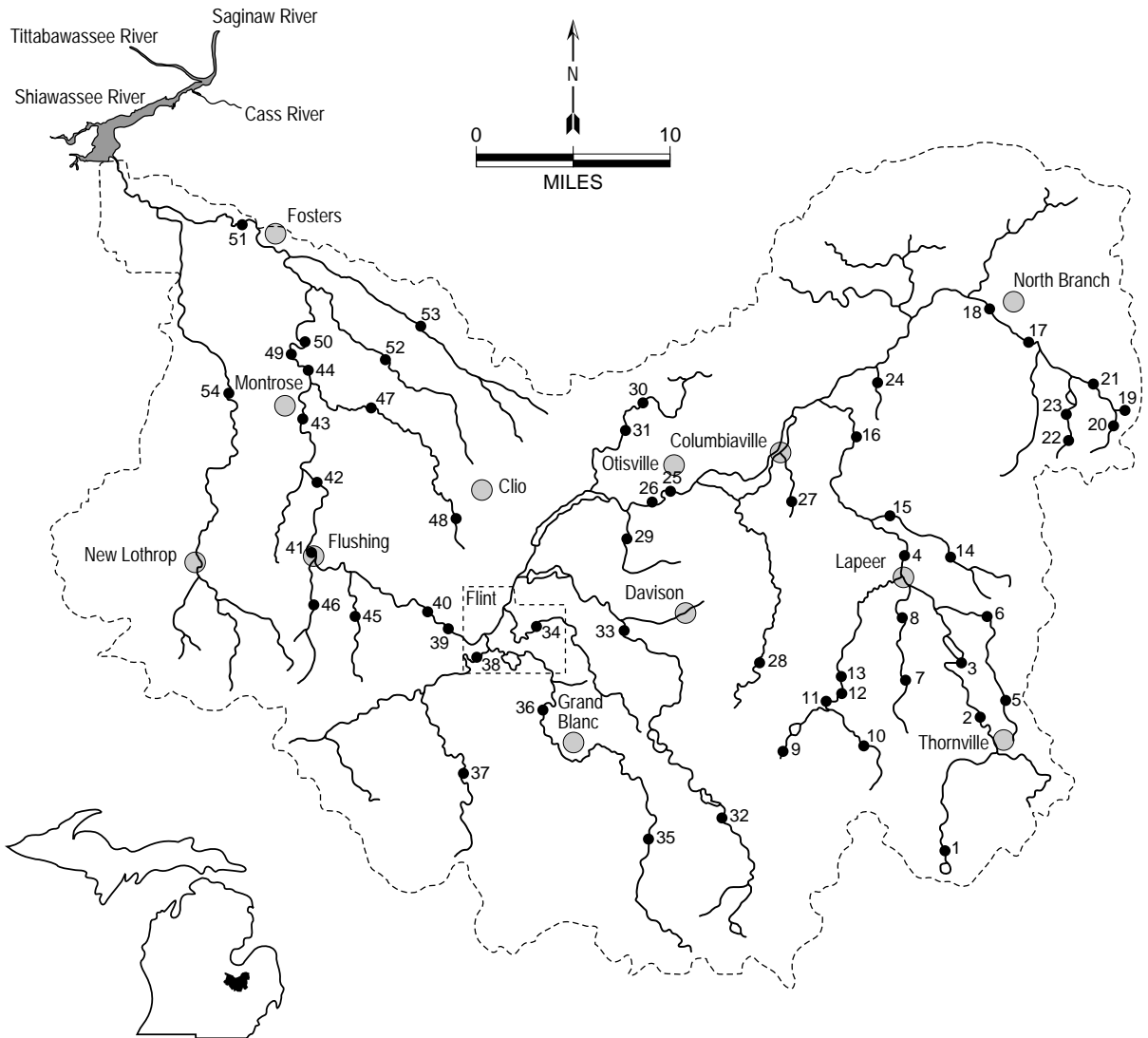
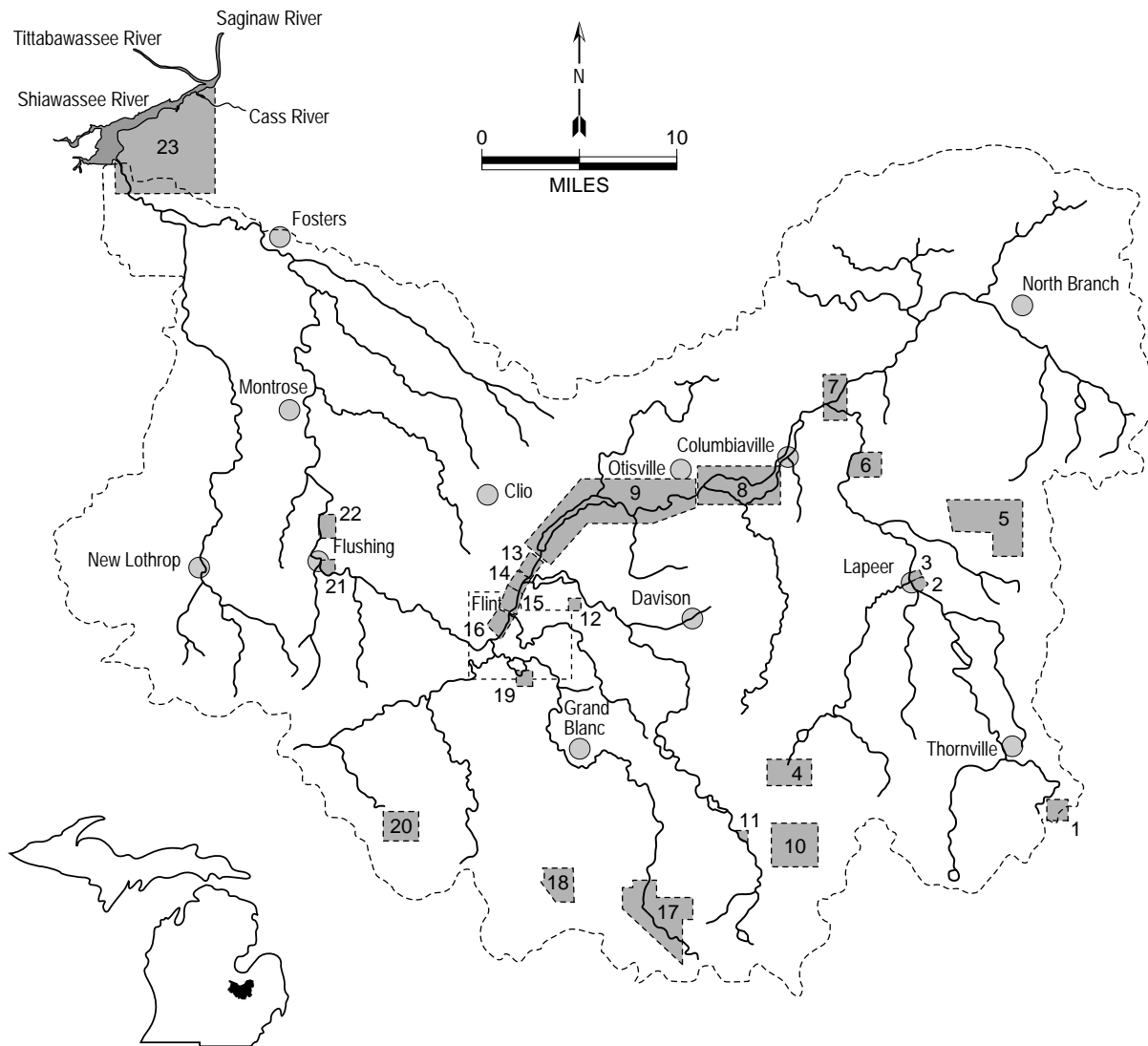


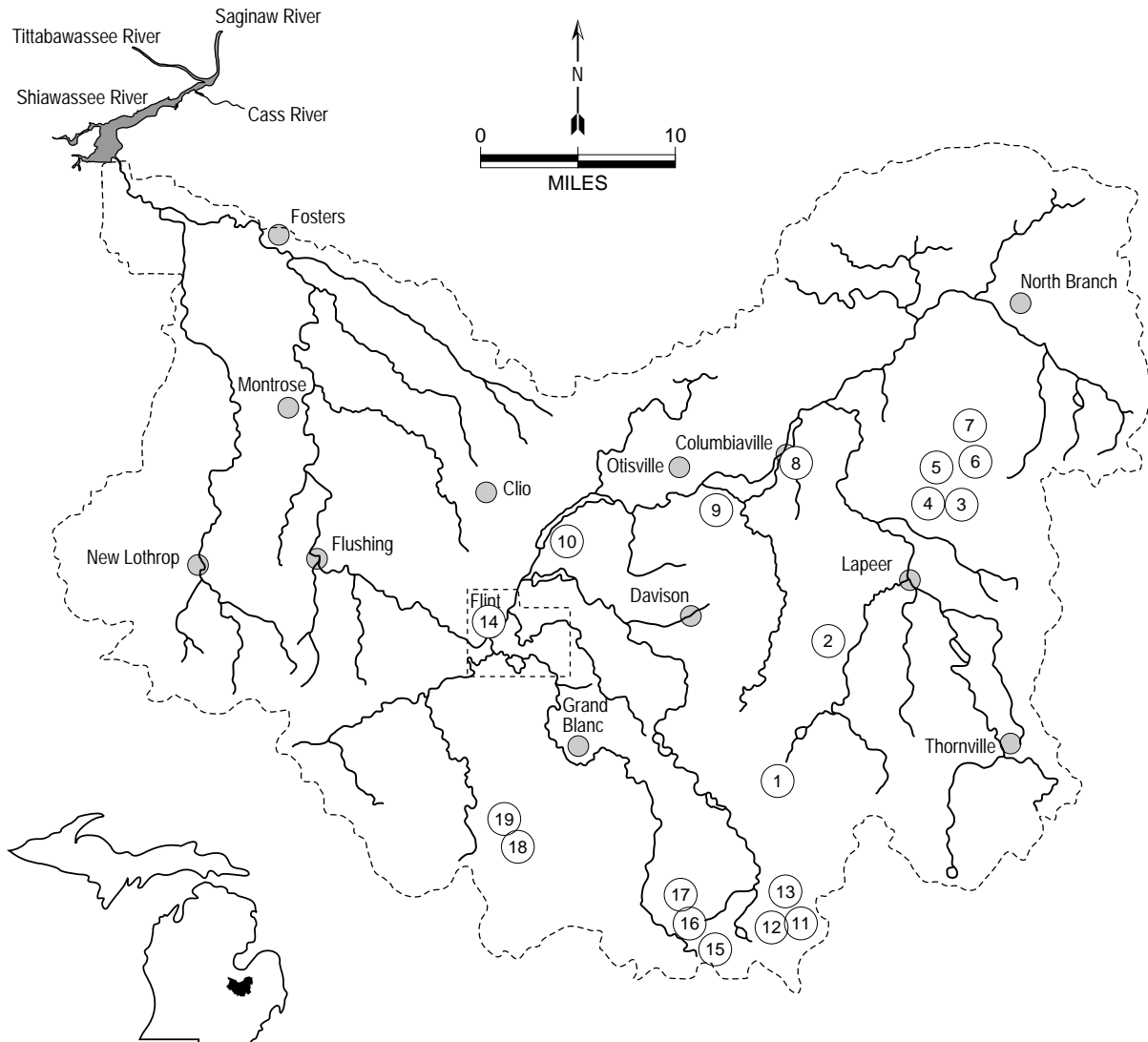
Figure 24.

Flint River Assessment



- | | |
|---|---|
| 1. Seven Ponds Nature Center | 13. Riverside Park |
| 2. Annrook Park | 14. Whaley Park |
| 3. Rotary Park | 15. Vietnam Veterans Park |
| 4. Metamora-Hadley Recreation Area | 16. Riverbank Park |
| 5. Lapeer State Game Area, Parcel 1 | 17. Holly Recreation Area, Parcel 1 |
| 6. Lapeer State Game Area, Parcel 2 | 18. Holly Recreation Area, Parcel 2 |
| 7. Lapeer State Game Area, Parcel 3 | 19. McKinley Park |
| 8. Holloway Reservoir Regional Park | 20. Seven Lakes State Park |
| 9. Genesee Recreation Area | 21. Riverview Park |
| 10. Ortonville Recreation Area | 22. Flushing County Park |
| 11. Narrin Park | 23. Shiawassee National Wildlife Refuge |
| 12. For-Mar Nature Preserve and Arboretum | |

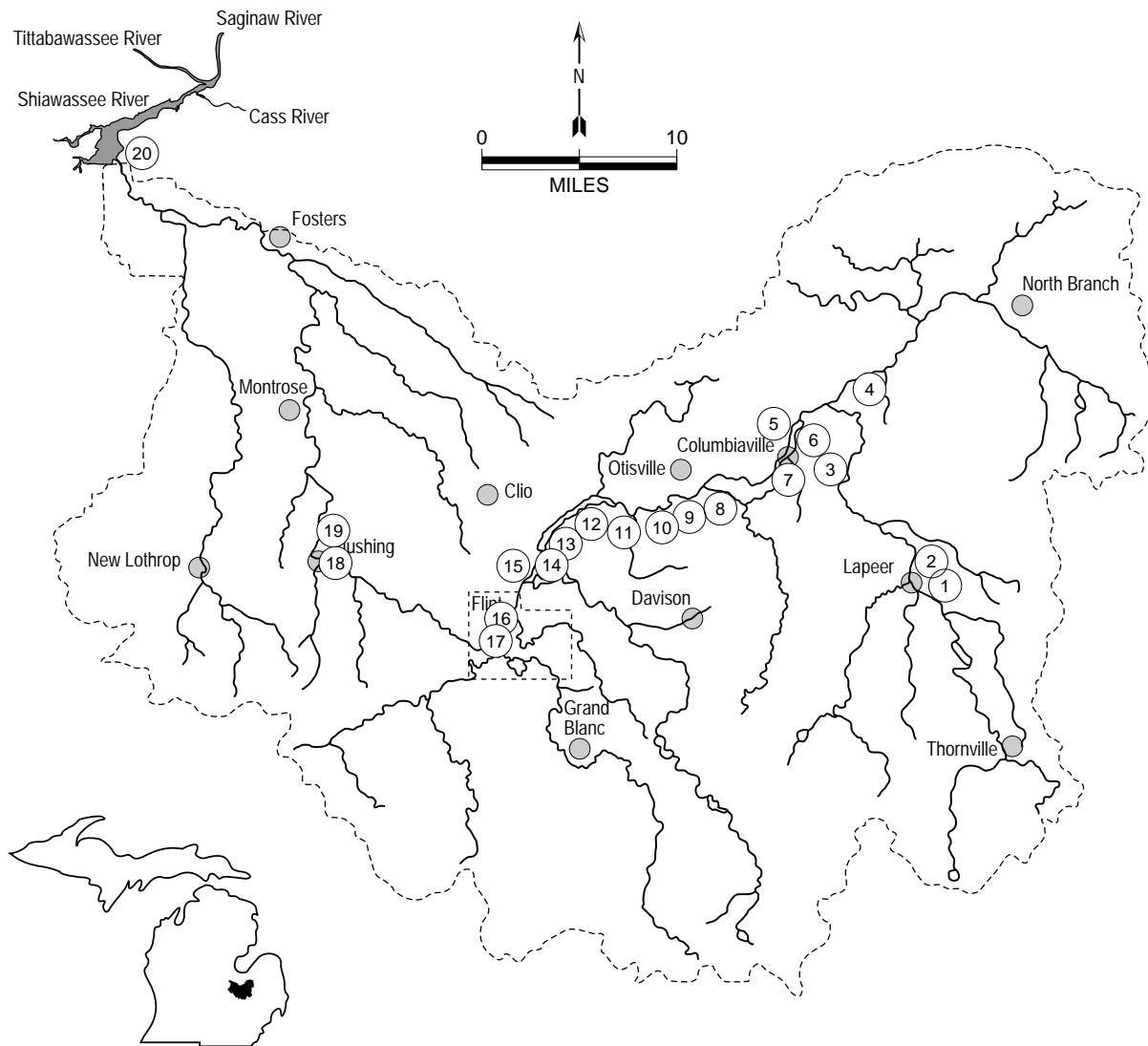
Figure 25.—Areas of recreational access and use in the Flint River basin.



| Name | Launch Code | Barrier Free | Ownership |
|--|-------------|--------------|---------------|
| 1. Lake Minnewana | 3 | No | State |
| 2. Lake Nepessing | 2 | Yes | State |
| 3. Long Lake | 3 | No | State |
| 4. Fish Lake | 4 | No | State |
| 5. Watts Lake | 3 | No | State |
| 6. Cedar Lake | 3 | No | State |
| 7. Twin Lake | 3 | No | State |
| 8. Columbiaville Park | 3 | No | Township |
| 9. Holloway Reservoir Walleye Pike Boat Launch | 1 | Yes | County |
| 10. Mott Lake Bluegill Boat Launch | 1 | Yes | County |
| 11. Davidson Lake | 3 | No | State |
| 12. Big Fish Lake | 1 | Yes | State |
| 13. Algoe Lake | 3 | No | State |
| 14. Vietnam Veteran's Park, Cussans Landing | 1 | Yes | City of Flint |
| 15. Wildwood Lake | 3 | No | State |
| 16. Heron Lake | 2 | Yes | State |
| 17. Crotched Lake | 3 | No | State |
| 18. Big Seven Lake | 1 | Yes | State |
| 19. Dickinson Lake | 1 | Yes | State |

Figure 26.—Public boat launches in the Flint River watershed. Launch code: 1 = hard surface ramp, good for most trailerable boats, 2 = hard surface ramp, limited water depth for large boats, 3 = gravel surface ramp, good for small boats, 4 = carry down access for small boats.

Flint River Assessment



- | | |
|--|---|
| 1. South Branch at East Annrook Park | 11. Flint River at Irish Road |
| 2. South Branch at Rotary Park | 12. Mott Lake at Genesee Road |
| 3. South Branch at Norway Lake Road | 13. Mott Lake Bluegill Boat Launch |
| 4. North Branch at Barnes Lake Road | 14. Stepping Stone Falls |
| 5. Mt. Morris Road Fishing Site | 15. Flint River at Bray Road |
| 6. Stanley Road Fishing Site | 16. Vietnam Veteran's Park |
| 7. Columbiaville Park | 17. Riverbank Park |
| 8. Holloway Reservoir Walleye Pike Boat Launch | 18. Riverview Park |
| 9. Holloway Dam Canoe Launch Site | 19. Flushing County Park |
| 10. Flint River at M-15 | 20. Shiawassee National Wildlife Refuge |

Figure 27.—Canoe access sites on the Flint River.