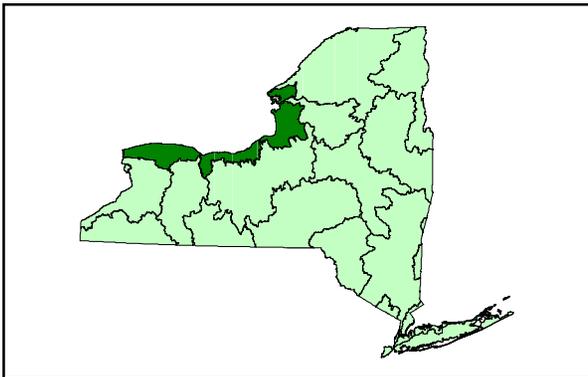
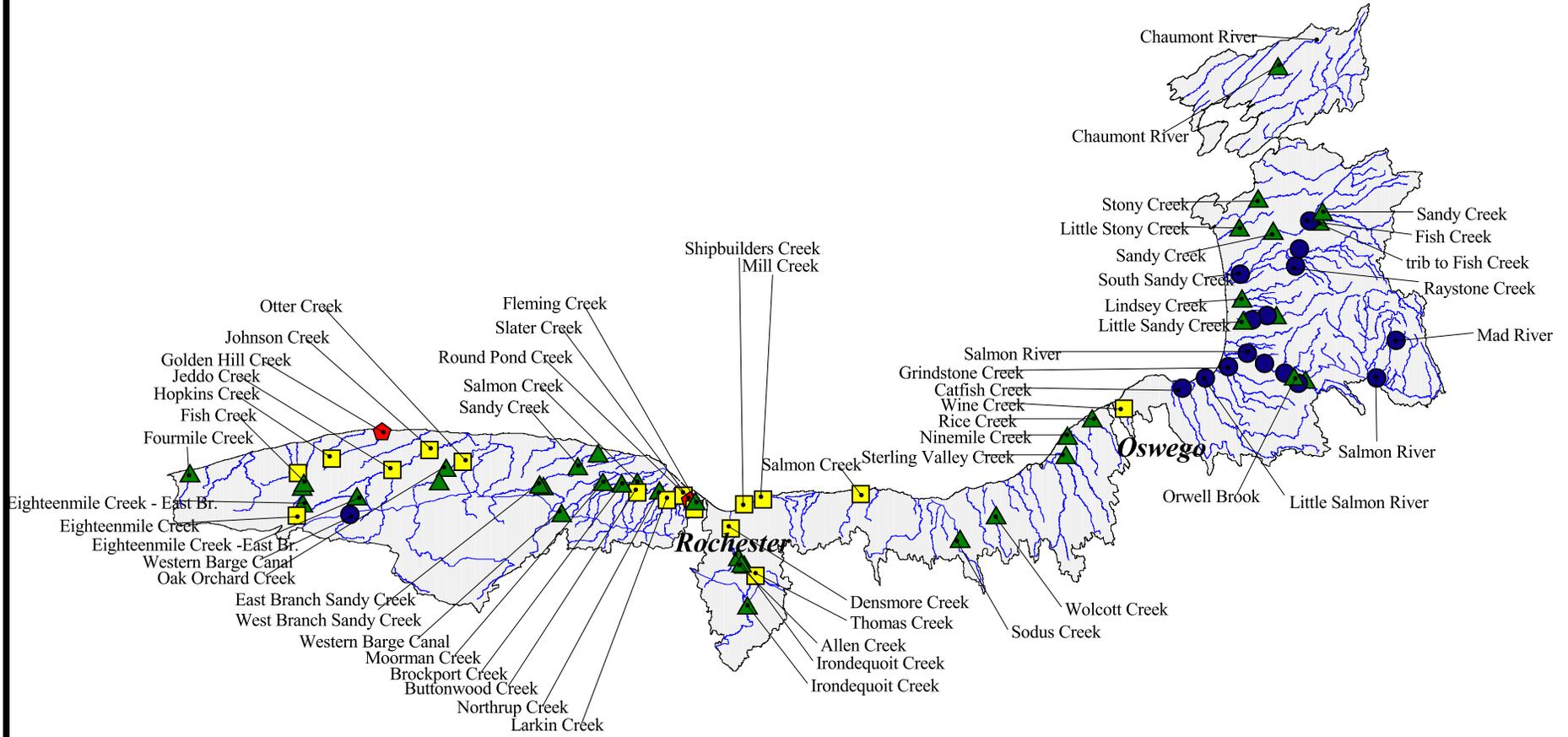


Lake Ontario Drainage Basin

49



Water Quality Assessment based on Resident Macroinvertebrates

- non-impacted
- ▲ slightly impacted
- moderately impacted
- ◆ severely impacted

LAKE ONTARIO DRAINAGE BASIN SAMPLING SITES, 1972-2002

| <u>STATION</u> | <u>LOCATION</u> | | | | | <u>YEAR SAMPLED</u> |
|----------------------------------|---|----|----|----|----|---------------------|
| ALLEN CREEK (ALEN) | | | | | | |
| 01 | Penfield, below Allen Creek Development bridge | | | | | 99 |
| BARGE CANAL, WEST (WCAN) | | | | | | |
| 02a | Lockport, west of locks | | 81 | | | |
| 03 | Gasport, off Telegraph Rd. | 75 | 81 | 90 | 95 | 99 |
| 04 | Below Middleport, below guard gate | 75 | 81 | | | |
| 05 | Below Medina, above Culvert Rd | 75 | 81 | | | |
| 06 | Below Knowlesville, above guard gate | 75 | 81 | | | |
| 07 | Hulberton, 1 km above lift bridge | 75 | 81 | | | |
| 08 | Below Holley, off Canal Rd. | 75 | 81 | 90 | 95 | 99 |
| 09 | Below Brockport, below Gallup Rd bridge | 75 | 81 | | | |
| 10 | Below South Greece, below Elmgrove Rd. bridge | 75 | 81 | | | |
| BROCKPORT CREEK (BROK) | | | | | | |
| 01 | West of Hilton, above Rte. 18 bridge | | | | | 99 |
| BUTTONWOOD CREEK (BUTN) | | | | | | |
| 01 | Parma Center, above Rte. 259 bridge | | | | | 99 |
| CATFISH CREEK (CATF) | | | | | | |
| 01 | Demster, above Co Rte 6 bridge | | | | | 01 |
| CHAUMONT RIVER (CHMO) | | | | | | |
| 04 | LaFargeville, above Rte. 180 bridge | | 89 | | | |
| 08 | Below LaFargeville, Zang Rd. bridge | | 89 | | 96 | 02 |
| 11 | Depauville, below Rte 179 bridge | | 89 | | | |
| DENSMORE CREEK (DENS) | | | | | | |
| 01 | Newport, above Bavshore Dr. bridge | | | | | 99 |
| EIGHTEENMILE CREEK (EMIL) | | | | | | |
| 00 | Below Gasport, East Branch, below Quaker Rd. bridge | | | | | 00 |
| 01 | Wrights Corners, East Branch, below Rte. 104 bridge | | | 90 | | 00 |
| 01A | Below Lockport, below Stone Rd. bridge | | | | | 00 |
| 02 | Corwin, below Jacques Rd. | | 89 | 90 | 95 | 00 |
| 03 | Newfane, below McKee Rd. bridge | | | 90 | | |
| FISH CREEK (FICR) | | | | | | |
| 01 | Oak Orchard on the Ridge, above E. Scott Rd. bridge | | | | | 99 |
| FISH CREEK (FYSH) | | | | | | |
| 01 | Rodman, above Rte 97 bridge | | | | 97 | |

LAKE ONTARIO DRAINAGE BASIN SAMPLING SITES, 1972-2002

| <u>STATION</u> | <u>LOCATION</u> | <u>YEAR SAMPLED</u> | |
|-----------------------------------|--|---------------------|-------|
| FISH CREEK (FYSH) | | | |
| 03 | Rodman, above Creek Rd. | 97 | |
| 01A (Tributary) | Rodman, above Brown Rd. bridge | 97 | |
| FLEMING CREEK (FLEM) | | | |
| 01 | Greece, below Britton Rd. bridge | | 00 |
| 02 | Greece, above Latta Rd. bridge | | 00 |
| FOURMILE CREEK (FOMI) | | | |
| 01 | Porter, Rte. 18 bridge | | 00 |
| GOLDEN HILL CREEK (GHIL) | | | |
| 01 | Somerset, Park Rd. picnic area | | 00 |
| GRINDSTONE CREEK (GRND) | | | |
| 01 | Daysville Corner, above Rte. 3 bridge | | 01 |
| HOPKINS CREEK (HOPK) | | | |
| 01 | Burt, above culvert | | 00 |
| IRONDEQUOIT CREEK (IRON) | | | |
| 04 | Bushnell Basin, below Park Rd. bridge | | 99 |
| 07 | Penfield, below Panorama Terrace bridge | 95 | 99 |
| 08 | Rochester, off Blossom Rd. | 96 | |
| JEDDO CREEK (JEDO) | | | |
| 01 | North Ridgeway, below Mill Rd. bridge | | 99 00 |
| JOHNSON CREEK (JOHN) | | | |
| 01 | Below Lyndonville, above Blood Rd. bridge | 95 96 | 99 |
| LARKIN CREEK (LARK) | | | |
| 01 | North Greece, above Latta Rd. bridge | | 99 |
| LINDSEY CREEK (LIND) | | | |
| 01 | The Elms, below Weaver Rd. bridge | | 01 |
| LITTLE SALMON RIVER (LSAM) | | | |
| 01 | Texas, above Rte. 16 bridge | 95 | 01 02 |
| LITTLE SANDY CREEK (LSAN) | | | |
| 01 | Lacona, above Rte. 22 bridge | | 97 |
| 02 | Sandy Creek, below Rte. 11 bridge | | 97 |
| 03 | Below Sandy Creek, below Norton Rd. bridge | | 97 |
| 04 | Sandy Pond Corners, below Rte. 3 bridge | | 01 |
| LITTLE STONY CREEK (LSTN) | | | |
| 01 | Scotts Corners, above Rte. 152 bridge | 96 | |

LAKE ONTARIO DRAINAGE BASIN SAMPLING SITES, 1972-2002

| <u>STATION</u> | <u>LOCATION</u> | <u>YEAR SAMPLED</u> | | | |
|--------------------------|--|---------------------|----|----|-------------|
| MAD RIVER (MAD) | | | | | |
| 01 | Otto Mills, below Otto Mills Dr. bridge | | | | 01 |
| MILL CREEK (MILO) | | | | | |
| 01 | Webster, below Lake Rd. foot bridge | | | | 99 |
| MOORMAN CREEK (MORM) | | | | | |
| 01 | Above Walker, above Rte. 18 bridge | | | | 99 |
| NINEMILE CREEK (NIMI) | | | | | |
| 01 | Sterling, above Irwin Rd. Bridge | | | 95 | |
| NORTHRUP CREEK (NRUP) | | | | | |
| 01 | North Greece, above North Greece Rd. bridge | | | | 99 |
| OAK ORCHARD CREEK (ORCH) | | | | | |
| 00 | Shelby, above Martin Rd. bridge | | | | 99 |
| 01 | Ridgeway, below Town Line Rd. bridge | 89 | 90 | 95 | |
| 02 | Oak Orchard on-the-Ridge, above Rte 104 bridge | | | | 99 |
| ORWELL BROOK (ORWL) | | | | | |
| 01 | Altmar, above Rte. 52 bridge | | | | 01 |
| OTTER CREEK (OTER) | | | | | |
| 01 | Waterport, above Rte. 31 bridge | | | | 99 |
| RAYSTONE CREEK (RAYS) | | | | | |
| 01 | Giddingsville, above LeMay Rd bridge | | | | 02 |
| RICE CREEK (RICE) | | | | | |
| 01 | Fruit Valley, above Rte 104 bridge | | | | 01 |
| ROUND POND CREEK (RPON) | | | | | |
| 01 | Greece, below Island Cottage Rd. bridge | | | | 99 |
| SALMON CREEK (SAMC) | | | | | |
| 01 | Hilton, below Rte. 259 bridge | | | | 99 |
| SALMON CREEK (SALC) | | | | | |
| 01 | Pultneyville, above Rte. 21 bridge | | | | 01 |
| SALMON RIVER (SALM) | | | | | |
| 01 | Redfield, above Waterbury Rd. bridge | | | 96 | 99 |
| 02 | Above Altmar, DEC Fishing Access Rte. 22 | | | 96 | 99 |
| 03 | Altmar, below Rte. 52 bridge | | | 96 | 99 |
| 04 | Pineville, above Rte. 48 bridge | | | 96 | 99 |
| 05 | Pulaski, above Lehigh Rd. bridge | 89 | 90 | 95 | 96 99 00 01 |
| 06 | Pulaski, off Riverview Dr. | | | 96 | 99 |

LAKE ONTARIO DRAINAGE BASIN SAMPLING SITES, 1972-2002

| <u>STATION</u> | <u>LOCATION</u> | <u>YEAR SAMPLED</u> | |
|---------------------------------------|--|---------------------|-------|
| SANDY CREEK - JEFFERSON COUNTY (SAND) | | | |
| 00 | Rodman, above Main St. bridge | 97 | |
| 01 | N. of Adams, below Creek Rd. bridge | 97 | 02 |
| 02 | Thomas Settlement, above Rte. 84 bridge | 97 | |
| 03 | North Landing, above Rte. 3 bridge | 96 97 | 02 |
| SANDY CREEK - MONROE COUNTY (SNDY) | | | |
| 01 | Hamlin, below Brick Schoolhouse Rd. | 95 | |
| 02 | North Hamlin, above Rte. 19 bridge | | 99 |
| SANDY CREEK, EAST BRANCH (SNDY) | | | |
| E | Murray, below Groth Rd. bridge | | 99 |
| SANDY CREEK, WEST BRANCH (SNDY) | | | |
| W | Murray, Rte. 33 bridge | | 99 |
| SHIPBUILDERS CREEK (SHIP) | | | |
| 01 | Webster, Forest Lawn Dr. | | 99 |
| SLATER CREEK (SLTR) | | | |
| 01 | Greece, below Dewey Ave. Bridge | | 99 |
| SODUS CREEK (SDUS) | | | |
| 01 | Glenmark, below Glenmark Rd. bridge | | 01 |
| SOUTH SANDY CREEK (SSAN) | | | |
| 00 | Allendale, below Rte 189 bridge | | 02 |
| 01 | Ellisburg, above Joslyn St. bridge | 96 | 02 |
| STERLING CREEK (STRL) | | | |
| 01 | Above Grays Corners, above Sutterby Rd. bridge | | 01 02 |
| STERLING VALLEY CREEK (SVAL) | | | |
| 01 | N. of Sterling Valley, above Rte. 122 bridge | | 01 |
| STONY CREEK (STNE) | | | |
| 01 | Smithville, above Rte. 75 bridge | 96 | |
| THOMAS CREEK (THOM) | | | |
| 01 | East Rochester, above Baird Rd. bridge | | 99 00 |
| WINE CREEK (WINE) | | | |
| 01 | Oswego, Town Line Rd. | 95 | |
| WOLCOTT CREEK (WOLC) | | | |
| 01 | Wolcott, Furnace Rd. | 95 | 01 |

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE LAKE ONTARIO DRAINAGE BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

| <u>Site/Reach</u> | <u>Water Quality Assessment</u> | <u>Change from 1992</u> |
|---|---------------------------------|-------------------------|
| Allen Creek, Penfield | slightly impacted | no prior data |
| Barge Canal, Western, Gasport | non- impacted | IMPROVED |
| Barge Canal, Western, below Holley | slightly impacted | DECLINED |
| Brockport Creek, West of Hilton | slightly impacted | no prior data |
| Buttonwood Creek, Parma Center | moderately impacted | no prior data |
| Catfish Creek, Demster | non-impacted | no prior data |
| Chaumont River, below LaFargeville | moderately impacted | DECLINED |
| Densmore Creek, Newport | moderately impacted | no prior data |
| Eighteenmile Creek, East Br., Gasport | slightly impacted | no prior data |
| Eighteenmile Creek, East Br., Wrights Corners | slightly impacted | no change |
| Eighteenmile Creek, below Lockport | moderately impacted | no prior data |
| Eighteenmile Creek, Corwin | slightly impacted | IMPROVED |
| Fish Creek, Oak Orchard on the Ridge | slightly impacted | no prior data |
| Fish Creek, Rodman, above Rt. 97 | slightly impacted | no prior data |
| Fish Creek, Trib, Rodman, above Brown Rd | slightly impacted | no prior data |
| Fish Creek, Rodman, at Creek Rd | non-impacted | no prior data |
| Fleming Creek, Greece, Britton Rd | moderately impacted | no prior data |
| Fleming Creek, Greece, Latta Rd | slightly impacted | no prior data |
| Fourmile Creek, Porter | severely impacted | no prior data |
| Golden Hill Creek, Somerset | severely impacted | no prior data |
| Grindstone Creek , Daysville Corner | non-impacted | no prior data |
| Hopkins Creek, Burt | moderately impacted | no prior data |
| Irondequoit Creek, Bushnell Basin | slightly impacted | no prior data |
| Irondequoit Creek, Penfield | slightly impacted | no prior data |
| Irondequoit Creek, Rochester | slightly impacted | no prior data |
| Jeddo Creek, North Ridgeway | moderately impacted | no prior data |
| Johnson Creek, below Lyndonville | moderately impacted | no prior data |
| Larkin Creek, North Greece | moderately impacted | no prior data |
| Lindsey Creek, The Elms | slightly impacted | no prior data |
| Little Salmon River, Texas | slightly impacted | no prior data |
| Little Sandy Creek, Lacona | non-impacted | no prior data |
| Little Sandy Creek, Sandy Creek | non-impacted | no prior data |
| Little Sandy Cr., below Sandy Creek | non-impacted | no prior data |

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE LAKE ONTARIO DRAINAGE BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

| <u>Site/Reach</u> | <u>Water Quality Assessment</u> | <u>Change from 1992</u> |
|---|---------------------------------|-------------------------|
| Little Sandy Creek, Sandy Pond Corners | slightly impacted | no prior data |
| Little Stony Creek, Scotts Corners | slightly impacted | no prior data |
| Mad River, Otto Mills | non-impacted | no prior data |
| Mill Creek, Webster | moderately impacted | no prior data |
| Moorman Creek, above Walker | slightly impacted | no prior data |
| Ninemile Creek, Sterling | slightly impacted | no prior data |
| Northrup Creek, North Greece | slightly impacted | no prior data |
| Oak Orchard Creek, Shelby | slightly impacted | no prior data |
| Oak Orchard Creek, Ridgeway | slightly impacted | no change |
| Oak Orchard Creek, Oak Orchard on the Ridge | slightly impacted | no prior data |
| Orwell Brook, Altmar | slightly impacted | no prior data |
| Otter Creek, Waterport | moderately impacted | no prior data |
| Raystone Creek , Giddingsville | non-impacted | no prior data |
| Rice Creek, Fruit Valley | slightly impacted | no prior data |
| Round Pond Creek, Greece | moderately impacted | no prior data |
| Salmon Creek, Hilton | slightly impacted | no prior data |
| Salmon Creek, Pultneyville | moderately impacted | no prior data |
| Salmon River, Redfield | non-impacted | no change |
| Salmon River, above Altmar | slightly impacted | no prior data |
| Salmon River, Altmar | non-impacted | no prior data |
| Salmon River, Pineville | non-impacted | no prior data |
| Salmon River, Pulaski, above Lehigh Rd. | non-impacted | no change |
| Salmon River, Pulaski, off Riverview Dr. | non-impacted | no prior data |
| Sandy Creek, Rodman | slightly impacted | no prior data |
| Sandy Creek, north of Adams | slightly impacted | no prior data |
| Sandy Creek, Thomas Settlement | slightly impacted | no prior data |
| Sandy Creek, North Landing | slightly impacted | no change |
| Sandy Creek, Hamlin, Brick Schoolhouse Rd | slightly impacted | no prior data |
| Sandy Creek, Hamlin, Rte 19 | slightly impacted | no prior data |
| Sandy Creek, East Branch, Murray | slightly impacted | no prior data |
| Sandy Creek, West Branch, Murray | slightly impacted | no prior data |
| Shipbuilders Creek , Webster | moderately impacted | no prior data |

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE LAKE ONTARIO DRAINAGE BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

| <u>Site/Reach</u> | <u>Water Quality Assessment</u> | <u>Change from 1992</u> |
|--|---------------------------------|-------------------------|
| Slater Creek, Greece | severely impacted | no prior data |
| Sodus Creek, Glenmark | slightly impacted | no prior data |
| South Sandy Creek, Allendale | non-impacted | no prior data |
| South Sandy Creek, Ellisburg | non-impacted | no prior data |
| Sterling Creek, above Grays Corners | slightly impacted | no prior data |
| Sterling Valley Creek, Sterling Valley | slightly impacted | no prior data |
| Stony Creek, Smithville | slightly impacted | no prior data |
| Thomas Creek, East Rochester | moderately impacted | no prior data |
| Wine Creek, Oswego | moderately impacted | no prior data |
| Wolcott Creek, Wolcott | slightly impacted | no prior data |

REPORTS OF MACROINVERTEBRATE SURVEYS WITHIN THE LAKE ONTARIO WATERSHED

| STREAM | YEAR OF SURVEY | REPORT |
|--------------------------|----------------|---------------|
| Chaumont River | 1989 | SBU, 1990 |
| Eighteenmile Creek | 1990 | SBU, 1990 |
| Irondequoit Creek/Tribs. | 1995 | DFW |
| Johnson Creek | 1976 | AVON |
| Jedo Creek | 1976 | AVON |
| Little Sandy Creek | 1997 | SBU,1998 |
| Rochester Embayment | 2000 | CAASA |
| Salmon River | 1996 | SBU,1997 |
| Salmon River | 1999 | HALLOCK, 2003 |
| Sandy Creek | 1997 | SBU,1998 |
| Watershed Streams | 1989-1990 | RIBS,1992 |

| | |
|---------|--|
| AVON | Avon Pollution Investigations Unit, Div. of Fish & Wildlife, NYS DEC |
| CAASA | Center for Applied Aquatic Science & Aquaculture, SUNY Brockport |
| DFW | Division of Fish & Wildlife |
| DOH | New York State Department of Health |
| HALLOCK | John L. Hallock, SUNY ESF Master of Science thesis |
| RIBS | Rotating Intensive Basin Studies, Statewide Waters Assessment Section, NYS DEC |
| SBU | Stream Biomonitoring Unit, Division of Water, NYS DEC |

Allen Creek

This stream was sampled in Penfield approximately 0.2 miles upstream of its confluence with Irondequoit Creek. The watershed is mostly residential, and also includes the Oak Hill Country Club. Based on sampling in 1999, water quality was field-assessed as slightly impacted. The stream was characterized by filamentous algae, blue-green algae, purple loosestrife, and many crayfish. The sample was laboratory-sorted to order and based on this it was determined that the field assessment was appropriate. No prior data are available for this stream.

Barge Canal

Monitoring of the Western Barge Canal has been focused on sites at Gasport and Holley. These sites have been monitored in 1975, 1981, 1990, 1995, and 1999. The Gasport site is currently assessed as non-impacted, representing an improvement compared to previous assessments. This site exhibited moderate impact in 1975 sampling, and has improved steadily since, displaying faunas of several species of mayflies and caddisflies.

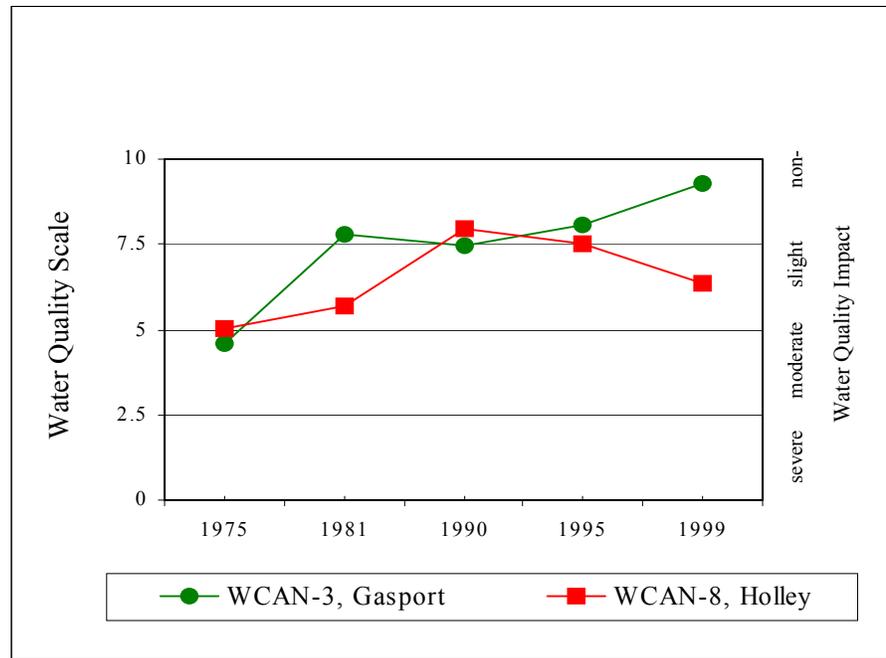


Figure 3-1. Water quality in the Western Barge Canal at Gasport and Holley, 1975-1999.

Diminished municipal/industrial inputs upstream is the likely cause of improvement. The Barge Canal at Holley is currently assessed as slightly impacted, representing an apparent decline from non-impacted conditions documented in 1990 and 1995 (Figure 3-1). The influx of zebra mussels, first observed on the 1990 multiplate samples, have apparently changed the ecosystem dynamics of the Barge Canal, and may be responsible for some of the changes observed at these sites.

Brockport Creek

Water quality was assessed as slightly impacted, based on 1999 invertebrate sampling near Hilton. Nonpoint source nutrient enrichment was the primary factor affecting the fauna.

Buttonwood Creek

A site east of Hilton was sampled in 1999. Although the indices pointed to moderately impacted water quality, this was thought to primarily reflect poor habitat. A few clean-water species were present, although no mayflies were found. ISD denoted nutrient enrichment as a stressor.

Catfish Creek

Non-impacted water quality was assessed for this creek, based on macroinvertebrate sampling in Demster in 2001. The fauna included a diversity of clean-water mayflies, stoneflies, and caddisflies. No prior data were available for the stream.

Chaumont River

Water quality in the Chaumont River in 1989 was assessed as slightly impacted, from LaFargeville to Depauville. Sampling in 1996 and 2002 at the Depauville site yielded an assessment of moderate impact, a decline from 1989. The habitat was less than ideal, consisting of a minor riffle draining a pooled area. The invertebrate fauna was dominated by caddisflies and riffle beetles, and livestock waste was the primary stressor.

Densmore Creek

Moderate impact was assessed for the site in Newport, based on 1999 invertebrate sampling. Impact Source Determination denoted sewage wastes as the primary factor affecting the fauna.

Eighteenmile Creek

Water quality in the East Branch of Eighteenmile Creek was assessed as slightly-impacted in 2000, similar to the 1989 assessment. Nonpoint source nutrient enrichment was the likely cause of impact. Moderately impacted water quality was assessed for the site below Lockport, based on 2000 macroinvertebrate sampling. Impact Source Determination indicated that toxic inputs were the primary cause of impact. No prior data were available for this site.

Water quality at Corwin had been assessed as moderately impacted in 1989 and 1990. In 2000 macroinvertebrate sampling it was assessed as slightly-impacted by municipal/industrial inputs, representing an apparent improvement. The appearance of the pollution-sensitive riffle beetle *Optioservus* was an indicator of improved water quality. Further sampling is recommended to verify the trend at this site.



Figure 3-2. The pollution-sensitive riffle beetle *Optioservus*, an indicator of improved water quality, was collected in Eighteenmile Creek at Corwin in 2000.

Fish Creek (Jefferson County)

Three Fish Creek sites, including one tributary, were sampled near Rodman in 1997 (Bode et al., 1998) to determine if the nearby North Country Landfill impacted water quality. The most downstream site near the confluence with Sandy Creek was assessed as non-impacted. The upstream site and tributary site were assessed as slightly impacted, likely reflecting headwater conditions. No impacts attributable to the landfill were evident.

Fish Creek (Orleans County)

Slight impact from nonpoint source nutrient enrichment was assessed for this tributary of Oak Orchard Creek, based on 1999 invertebrate sampling. The fauna was diverse but was dominated by midges, and contained many facultative organisms.

Fleming Creek

Fleming Creek in Greece is a small tributary of Slater Creek. The stream is reported by to receive sewage overflows from houses in the area during storm events. Two sites were sampled in 2000. The Britton Road site was assessed as moderately impacted, with the fauna dominated by tolerant midges, worms, sowbugs, and black flies. The impact was attributed to organic waste inputs. The Latta Road site, approximately 1.5 miles downstream, was assessed as slightly impacted.

Fourmile Creek

Based on 2000 macroinvertebrate sampling at Fourmile Creek Park near Towers Corners, water quality was assessed as severely impacted. The fauna was dominated by flatworms and scuds, and ISD denoted municipal/industrial wastes as the primary stressor. The sampling site was at a golf course, and there are also known stormwater discharges. No prior data were available for this stream.

Golden Hill Creek

Based on 2000 macroinvertebrate sampling in Somerset, water quality was assessed as severely impacted, likely by organic wastes. Slow current speed may also be a factor. The fauna was heavily dominated by snails and sowbugs, with no mayflies, stoneflies, or caddisflies. A fish kill on March 27 in the year of sampling from a chlorine discharge may have had residual effects on the macroinvertebrate fauna.

Grindstone Creek

This stream was sampled at Daysville Center in 2001 and was assessed as non-impacted. Clean-water mayflies, stoneflies, and caddisflies were well-represented. No prior data were available for this site.

Hopkins Creek

Moderately impacted water quality was assessed for the Burt site, based on 2000 macroinvertebrate sampling. Impact Source Determination indicated that municipal/industrial inputs were the primary cause of impact.

Irondequoit Creek

Slight impact was assessed for the Bushnell Basin to Penfield reach, based on 1999 invertebrate sampling at two sites. Impact Source Determination indicated influences of nonpoint nutrient enrichment and possible municipal and/or industrial inputs. Sampling in 1995 at Penfield and in 1996 at a downstream Rochester site showed similar assessments.

Jeddo Creek

Moderately impacted water quality was indicated by the 1999 sample from North Ridgeway. Municipal and/or industrial inputs were the likely sources of impact. The fauna was dominated by

filtering caddisflies, and species richness was very low. Sampling in 2000, a high-flow year, yielded an assessment of slight impact, likely due to greater dilution of any point source inputs.

Johnson Creek

Sampling in 1995 yielded an assessment of slightly impacted for the site below Lyndonville. Moderate impact was assessed in 1996 and 1999 invertebrate sampling. Nonpoint source nutrient enrichment was indicated to be the primary cause of impact. Crayfish collected in 1995 showed elevated levels of DDE (4,4') in their tissues.

Larkin Creek

Moderately impacted water quality was indicated by the 1999 sample taken near North Greece. Nonpoint source nutrient enrichment was the primary factor affecting the invertebrate fauna. The fauna was dominated by riffle beetles.

Lindsey Creek

This stream was sampled at The Elms in 2001 and was assessed as slightly impacted. The macroinvertebrate fauna was dominated by riffle beetles and filter-feeding caddisflies, indicative of nonpoint source nutrient enrichment. No prior data were available for this site.

Little Salmon River

Although excellent water quality was documented for this stream in 1995, sampling in 2001, a low-flow summer, resulted in an assessment of slightly impacted. Minor nonpoint source nutrient enrichment is indicated by the fauna.

Little Sandy Creek

Three sites were sampled on Little Sandy Creek in 1997: in Lacona, in Sandy Creek, and below Sandy Creek. All sites were assessed as non-impacted, based on fish and invertebrate sampling. Stoneflies were numerous in the stream. The biota indicated possible nutrient and organic additions in the villages of Lacona and Sandy Creek, but the effect on the fauna was considered minor. Sampling downstream at Sandy Pond Corners in 2001 yielded an assessment of slightly impacted by nonpoint source nutrient enrichment.

Little Stony Creek

The 1996 sampling site was County Road 152 at Scotts Corners. The habitat was considered adequate, but the invertebrate fauna contained many tolerant species. Indices were in the range of slightly impacted conditions. Impact Source Determination showed that nonpoint sources of nutrients and/or pesticides were likely responsible for the impact.



Figure 3-3. *Acroneuria abnormis*, a pollution-sensitive stonefly found in Little Sandy Creek.

Mad River

Water quality was assessed as non-impacted for the Mad River at Otto Mills, based on macroinvertebrate sampling in 2001. The fauna included many clean-water mayflies, stoneflies, and caddisflies, and the habitat was considered excellent.

Mill Creek

Moderately impacted water quality was assessed for this site in Webster, based on 1999 invertebrate sampling. Sandy stream criteria were used to evaluate the data. Impact Source Determination denoted municipal and/or industrial sources as affecting the fauna. Poor habitat is also a factor at this site.

Moorman Creek

Water quality was assessed as slightly impacted, based on 1999 invertebrate sampling above Walker. Nonpoint source nutrient enrichment and siltation were strongly indicated.

Ninemile Creek

Macroinvertebrate sampling at Sterling in 1995 yielded an assessment of slightly impacted. Impact Source Determination denoted municipal/industrial sources as the probable stressor.

Northrup Creek

Water quality was assessed as slightly impacted, based on 1999 invertebrate sampling above Long Pond. Nonpoint source nutrient enrichment was strongly indicated to be the primary factor affecting the invertebrate fauna.

Oak Orchard Creek

Macroinvertebrate sampling at Ridgeway in 1989 and 1990 yielded assessments of non-impacted to slightly impacted. Sampling in May, 1989, yielded an assessment of moderate impact that is now considered spurious, as it resulted from a spring bloom of worm populations known to be unrelated to poor water quality. In 1995 the site was assessed as slightly impacted. The assessment of moderate impact for the site in Shelby in 1999 is uncertain, and is probably caused by the moss substrate. This assessment was adjusted to slightly impacted. Additional sampling at another nearby site should be conducted. Slight impact is assessed for the site in Oak Orchard, based on 1999 sampling, although the impairment is very minor. Impact Source Determination showed the highest similarity to natural communities, although nonpoint source nutrient enrichment was also noted.

Orwell Creek

Based on macroinvertebrate sampling at Altmar in 2001, water quality was assessed as slightly impacted. The fauna was dominated by caddisflies and mayflies. Impact Source Determination denoted nonpoint source nutrient enrichment as the primary stress. No prior data were available for this site.

Otter Creek

Moderate impact was assessed for the site in Waterport, based on 1999 invertebrate sampling. Nonpoint source nutrient enrichment is the primary cause of impact. The fauna was heavily dominated by algal-feeding beetles.

Raystone Creek

Non-impacted water quality is assessed for Raystone Creek, based on macroinvertebrate sampling at Giddingsville in 2002. The fauna included many species of clean-water mayflies, stoneflies, and caddisflies.

Rice Creek

Rice Creek was assessed as slightly impacted in 2001, based on sampling at Fruit Valley. ISD denoted nonpoint source nutrient enrichment as the likely stressor, although the bedrock substrate and ponded area upstream also likely contribute effects. No prior data were available for the stream.

Round Pond Creek

Moderately impacted water quality was indicated by the 1999 sample taken at Island Cottage Road, Greece. The fauna most closely resembled those affected by toxic contaminants.

Salmon Creek (Monroe County)

Slightly impacted water quality was assessed for the site at Hilton, based on 1999 invertebrate sampling. Nonpoint source nutrient enrichment was the likely cause of impact. The fauna was heavily dominated by algal-feeding beetles.

Salmon Creek (Wayne County)

Macroinvertebrate sampling at Pultneyville in 2001 yielded a water quality assessment of moderately impacted, possibly by toxic stressors. Low summer flows likely affected the sample. The watershed at this site is heavily agricultural.

Salmon River

The Salmon River continues to exhibit excellent water quality and diverse macroinvertebrate communities. A multi-site survey in 1996 documented non-impacted conditions from Redfield to Pulaski, with the exception of some impoundment effects above Altmar. Beginning in 1997, summer releases were increased from the Salmon River Reservoir. A 1999 re-survey of the 6 sites sampled in 1996 found very similar conditions (Figure 3-4). The long-term monitoring site at the Lehigh Road upstream of Pulaski was assessed as slightly impacted in 1989, but has been assessed as non-impacted for all years from 1990 to 2001.

Sandy Creek (Jefferson County)

Sandy Creek was sampled from Rodman to North Landing in a 1997 macroinvertebrate survey, with all sites being assessed as slightly impacted, mostly by nutrient enrichment, organic loadings, and siltation. The North Landing site had previously been assessed as slightly impacted in 1996.

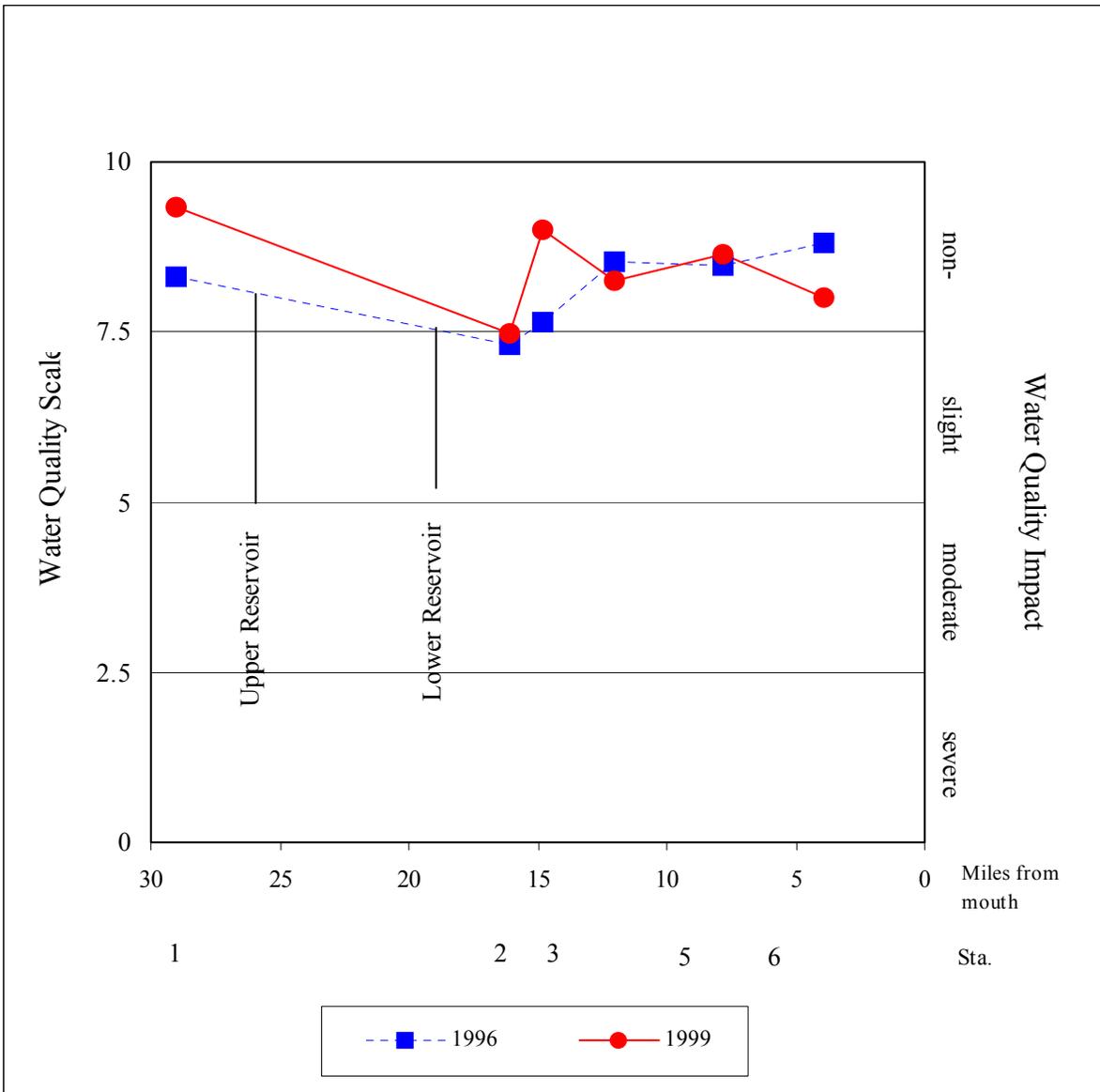


Figure 3-4. Salmon River water quality, 1996 and 1999.

Sandy Creek (Monroe County)

Sandy Creek was sampled in Hamlin in 1995, and was determined to be slightly impacted by nonpoint source nutrient enrichment. The site near North Hamlin was field-assessed as non-impacted in 1999. The sample was laboratory-sorted to order and based on this it was determined that the field assessment was appropriate. The East Branch and West Branch of Sandy Creek were sampled in Murray in 1999, and were both field-assessed as slightly impacted. The samples were laboratory-sorted to order and based on this it was determined that the field assessments were appropriate.

Shipbuilders Creek

Slightly impacted water quality was assessed for the site in Webster, based on 1999 invertebrate sampling. Sandy stream criteria were used to evaluate the data. Impact Source Determination indicated municipal and/or industrial inputs may be involved, but poor habitat is also a likely factor.

Slater Creek

Severely impacted water quality was assessed for the site in Greece, based on 1999 invertebrate sampling. Sewage effluent was strongly indicated as the primary cause of impact, and a strong sewage smell was present at the site. The invertebrate fauna was dominated by sewage-tolerant worms, midges, snails, and sowbugs. No mayflies, stoneflies, or caddisflies were found at this site.

Sodus Creek

Based on macroinvertebrate sampling at Glenmark in 2001, water quality was assessed as slightly impacted. Impact Source Determination denoted nonpoint source nutrient enrichment at the primary stressor. Poor habitat is also a factor at this site.

South Sandy Creek

Water quality in South Sandy Creek is currently assessed as non-impacted. Sites in Allendale and Ellisburg were assessed as non-impacted in 2002 sampling. The macroinvertebrate faunas were dominated by clean-water mayflies. For the Ellisburg sample, the species richness metric was set aside as being non-representative, likely caused by the predominantly bedrock substrate. The Ellisburg site was previously assessed as non-impacted in 1996 macroinvertebrate sampling as a field-assessed screening sample. The fauna was diverse, with mayflies, stoneflies, caddisflies, beetles, and hellgrammites.

Sterling Creek

Water quality was assessed as slightly impacted by nonpoint source nutrient enrichment and siltation, based on macroinvertebrate sampling above Grays Corners in 2001. The substrate was heavily coated with growths of diatoms.

Sterling Valley Creek

Based on macroinvertebrate sampling north of Sterling Valley in 2001, water quality was assessed as slightly impacted by nonpoint source nutrient enrichment. The fauna was dominated by mayflies and caddisflies.

Stony Creek

The sampling site in 1999 was at County Road 75 at Smithville. Most of the stream had a sandy bottom, but a short riffle was found and sampled. The invertebrate fauna consisted mostly of caddisflies and midges, and the indices were in the range of slight impact, from nonpoint nutrient additions. Habitat is likely a partial factor in this assessment.

Thomas Creek

Moderate impact was assessed for the site in East Rochester, based on invertebrate sampling in both 1999 and 2000. Impact Source Determination strongly indicated toxicity as the primary factor affecting the fauna. Crayfish collected at this site in 2000 exhibited elevated levels of PAHs in their tissues.

Wine Creek

This creek was assessed as moderately impacted in 1995 macroinvertebrate sampling near the mouth at Oswego. Sandy stream criteria were used to evaluate the data. The stream is very small, with low current speeds and a bedrock substrate, limiting the fauna. Tolerant midges dominated the fauna.

Wolcott Creek

Water quality was assessed as slightly impacted in 1995 macroinvertebrate sampling at Wolcott. The stream is small, with low current speeds, likely limiting the fauna. Sampling at this site in 2001 also yielded an assessment of slightly impacted. Impact Source Determination denoted nonpoint and toxic stressors.