The following table provides a brief overview of the impairment conclusions for the Lake Erie Lakewide Management Plan. More detailed information can be accessed in Section 4 of the LaMP 2000. **It should be noted that when an impaired beneficial use is identified in a particular basin in this summary table, it means that impairment is occurring somewhere in that basin, not necessarily throughout the entire basin referenced.**

**Summary of Beneficial Use Impairment Conclusions, Lake Erie LaMP, April 2000**

<table>
<thead>
<tr>
<th>Use Impairment</th>
<th>Impairment Conclusions</th>
<th>Type of Impairment</th>
<th>Causes of Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish &amp; Wildlife Consumption Restrictions</td>
<td>Impaired</td>
<td><strong>FISH</strong> - sport fish consumption advisories in open and tributary waters of all basins; <strong>WILDLIFE</strong> - human consumption advisories for snapping turtles (including eggs) and waterfowl in NY waters, eastern basin</td>
<td><strong>FISH</strong> - PCBs, mercury, lead, chlordane, and dioxins; <strong>WILDLIFE</strong> - PCBs, chlordane, DDE, DDT and mirex</td>
</tr>
<tr>
<td>Tainting of Fish &amp; Wildlife Flavor</td>
<td>Not Impaired</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>Degradation of Fish Populations</td>
<td>Impaired</td>
<td>unmet fish population objectives; loss of spawning/nursery area; loss of population diversity; rare, threatened, endangered and special concern species; reduced predatory function; unnaturally high fish community instability; inefficient use of food web energy</td>
<td>habitat loss and degradation; non-indigenous species (exotics); loss of forage fish availability; overexploitation; loss of native stocks/species, particularly keystone predators</td>
</tr>
<tr>
<td>Degradation of Wildlife Populations</td>
<td>Impaired</td>
<td>unmet wildlife population objectives; population fragmentation, isolation, and instability; loss or reduction in species indicative of quality habitat; loss of source populations; rare, endangered, threatened, and special concern species; accelerated rates of parasitism/predation; competition between wildlife/nonwildlife uses of a given habitat; changes to ground temperature and moisture conditions in forested areas; loss of travel lanes; loss of range/area-sensitive species (e.g. - amphibians &amp; reptiles, rails, bitterns, sedge wrens, bald eagle)</td>
<td>fire suppression; logging; destruction and draining of wetlands; high water levels, storms; dredging/channel modifications, water taking, streambank/shoreline filling, hardening &amp; backstops; sediment/chemical/contaminant/nutrient loadings; navigation/boating activities; exotics</td>
</tr>
<tr>
<td>Fish Tumors or Other Deformities</td>
<td>Impaired</td>
<td>incidence rates of fish tumors or other deformities exceed rates at least impacted sites within the LE basin; presence of neoplastic or preneoplastic liver tumors in brown bullheads</td>
<td>PAHs (brown bullhead), unknown (other species)</td>
</tr>
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<tr>
<td>Animal Deformities or Reproduction Problems</td>
<td>Impaired</td>
<td>Exposure above effect levels in bald eagle, herring gull, common tern &amp; Eastern spiny softshell turtle; deformity impairments in mudpuppy; Likely impairment in mink, river otter, snapping turtle, and frogs and toads</td>
<td>PCBs and other organochlorines, dieldrin (eagles), DDE, PAHs (mudpuppy), nitrates (frogs and toads)</td>
</tr>
<tr>
<td>Degradation of Benthos</td>
<td>Impaired</td>
<td>Degraded benthic community (composition and interactions among components) compared to reference conditions; Dominant species indicate degraded environment; Keystone species absent or nearly gone</td>
<td>contaminated sediments, non-indigenous species or exotics, loss and degradation of habitat, particularly in wetlands</td>
</tr>
<tr>
<td>Restrictions on Dredging Activities</td>
<td>Impaired</td>
<td>dredged materials require confined disposal in certain tributary mouths and harbors of all basins</td>
<td>PCBs, heavy metals</td>
</tr>
<tr>
<td>Eutrophication of Undesirable Algae</td>
<td>Impaired</td>
<td>Maumee Bay, lake effect zones of Maumee/Ottawa Rivers, western basin; nearshore and river mouth areas of Canadian eastern basin (excessive Cladophora; P levels above Canadian guidelines in tributaries). Potentially impaired-lake effect zones of certain Ohio tributaries (degraded fish communities), western and central basins; Rondeau Bay and nearby nearshore and river mouth areas, Canadian central basin</td>
<td>Phosphorus</td>
</tr>
<tr>
<td>Restrictions on Drinking Water Consumption or Taste &amp; Odor Problems</td>
<td>Not Impaired</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>Recreational Water Quality Impairments</td>
<td>Impaired</td>
<td>Exceedances of bacterial guidelines established to protect human health</td>
<td>E. coli and/or fecal coliform, PAHs**, PCBs**</td>
</tr>
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<tr>
<td>Degradation of Aesthetics</td>
<td>Impaired</td>
<td>high turbidity, obnoxious odors; decaying <em>Cladophora</em> on the shoreline; seasonal fish die-offs because alewife/other exotics are not acclimated to colder winter water temperatures; hindrances to recreational use due to floating garbage and debris/zebra mussels.</td>
<td>Excessive <em>Cladophora</em>, point/non-point source storm water runoff, excessive floating garbage and debris, dead fish, excessive zebra mussels on shoreline areas.</td>
</tr>
<tr>
<td>Added Costs to Agriculture or Industry</td>
<td>Not Impaired</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>Degradation of Phytoplankton &amp; Zooplankton Populations</td>
<td>Impaired</td>
<td><strong>PHYTOPLANKTON</strong> eastern basin-total standing crop and photosynthesis are below the potential set by P loading in the nearshore; loss of keystone species; loss of trophic transfer to <em>Diporeia</em>; <strong>ZOOPLANKTON</strong> eastern basin-loss of dominant cold-water species; Eastern and west-central basins-reduction in mean size points to potential impaired trophic transfer; west central basin - Bythotrephes acts as an energy sink, western and central basin lake effect zones- habitat loss and degradation</td>
<td>Zebra and quagga mussel grazing; high planktivory</td>
</tr>
<tr>
<td>Loss of Fish Habitat</td>
<td>Impaired</td>
<td>unmet fish habitat objectives; loss of habitat diversity &amp; integrity; loss of spawning/nursery areas; barriers to migration; changes in stream temperature, water quality, and hydrology; high turbidity, loss of aquatic vegetation, changes to benthic species composition.</td>
<td>destruction and draining of wetlands; dams, dikes, dredging/channel modifications, water taking, stream bank/shoreline filling and hardening, sediment/chemical contaminant/nutrient loadings; navigatory recreational boating activities; exotics, <em>Cladophora</em> fouling (eastern basin nearshore)</td>
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<tr>
<td>Loss of Wildlife Habitat</td>
<td>Impaired</td>
<td>unmet wildlife habitat objectives; habitat fragmentation and loss of niches; loss of diversity and integrity; population demands exceed available habitat (e.g.- colonial waders that use the Lake Erie Islands); loss of stopover habitat along migratory corridors (birds, butterflies, bats); loss of cover for protection from predation; loss of or accelerated succession patterns; loss of area available for habitat expansion; loss of buffer functions between one habitat type and another; loss or reduction in quantity/quality of nesting/denning areas; loss or reduction in quantity/quality of food sources</td>
<td>fire suppression; logging; destruction and draining of wetlands; high water levels, storm surges; dredging/channel modifications, water taking, streambank/shoreline filling, hardening &amp; backstopping; sediment/chemical contaminant/nutrient loadings; navigation/boating activities; exotics</td>
</tr>
</tbody>
</table>

*Commercial fishermen in Ontario are prohibited from selling carp that are 32 cm or larger, due to PCBs.*

**PAHs are the basis for a human contact advisory in the Black River Ohio Area of Concern and PCBs are the basis for a human contact advisory in the Ottawa River (Maumee Area of Concern). These advisories were issued by the Ohio Department of Health and mean that it is not safe to go into the water in these areas.