

COMMISSION APPROVES LIST/DELIST CRITERIA FOR GREAT LAKES AREAS OF CONCERN

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FOCUS On International Joint Commission Activities

At its Executive Session in February, the International Joint Commission approved the following guidelines for listing and delisting Areas of Concern in the Great Lakes Basin Ecosystem. These guidelines are the result of months of work coordinated by the Great Lakes Water Quality Board and input from more than 200 interested citizens and scientists, in response to a request for comments in a previous issue of Focus. The Commission views the agreement on these guidelines as a significant milestone and wishes to thank all those who participated in this valuable process.

The intent of these listing/delisting guidelines is to serve as indicators of use impairment for Great Lakes Areas of Concern and will be used to assist the International Joint Commission (IJC) and its Boards in: 1) making recommendations for new Areas of Concern; and 2) reviewing all stages of remedial action plans (RAPs). These guidelines are intended to establish a consistent "set of yardsticks" that can be uniformly applied throughout the Great Lakes basin. Further, these guidelines are intended to help ensure that the RAP program is properly focused and pragmatic so that it clearly identifies key actions needed to restore uses in order to get maximum benefit out of limited resources.

Annex 2 of the 1987 Protocol to the Great Lakes Water Quality Agreement defines Areas of Concern as geographic areas that fail to meet the general or specific objectives of the Agreement where such failure has caused or is likely to cause impairment of beneficial use of the area's ability to support aquatic life. Impairment of beneficial use is defined as a change in the chemical, physical, or biological integrity of the Great Lakes system sufficient to cause any of the 14 use impairments in Table 1 or other related uses covered by Article IV such as the microbial objective for waters used for body contact recreational activities.

The listing guidelines presented in Table 1 are intended to be used by the IJC and its Boards in making recommendations for new Areas of Concern. Specifically, these listing guidelines should be used in conjunction with the Protocol for Recommending Areas of Concern. It must be recognized that RAPs are intended to address use impairments of local, geographical extent and cause, rather than lakewide or basinwide phenomena. An example of application of these listing guidelines is that if an area within or directly affecting the waters of the Great Lakes, connecting channels or the international section of the St. Lawrence River has a health advisory on fish due to contamination from a local watershed, it could be recommended for identification as an Area of Concern. An exception to this would occur when a health advisory on fish in a localized area is no different from the health advisory for the whole lake and this area is not contributing to a whole lake problem, then it would not be recommended for identification as an Area of Concern. The intent here is that such

whole lake problems will be addressed with lakewide management plans identified in Annex 2 of the Agreement.

When a geographic area is being considered for listing as an Area of Concern, the Parties and jurisdictions should reach agreement, in writing, on the definition of the problem (i.e. use impairments) based on the guidelines in Table 1. Supporting documentation will be included. The use impairments identified will be issues addressed in a RAP. If additional impaired uses are discovered during the development of the RAP, the Parties and jurisdictions will revise, in writing, the definition of the problem based on the impaired use guidelines in Table 1.

Once a new Area of Concern has been identified and listed, a RAP would be developed following the guidelines in the 1987 Protocol to the Great Lakes Water Quality Agreement. As stated in the Agreement, RAPs shall embody a systematic and comprehensive ecosystem approach to restoring beneficial uses in Areas of Concern.

As part of the IJC's overall responsibility to review and evaluate the adequacy of RAPs, the IJC will make recommendations to the Parties regarding whether or not data and information presented in Stage 3 RAPs confirm restoration of impaired beneficial uses. A determination will be made following the process identified in Figure 1. Specifically, once the Party submits a Stage 3 RAP, the IJC will perform its independent review and determine whether or not: a) the delisting guidelines identified in Table 1 have been met for the use impairments identified in the Stage 1 RAP (implicit in problem definition is use of all available state, provincial, and federal standards, criteria and guidelines, and Great Lakes Water Quality Agreement objectives as indirect evidence of use impairment); b) the existing site-specific goals in the RAP relative to the 14 use impairments have been addressed; c) the level and extent of remediation is consistent with the corresponding lakewide management plan; and d) the results of implementation of the RAP represent an important step toward virtual elimination of persistent toxic substances. If the answers to each of the questions in Figure 1 were yes, the IJC would recommend delisting the Area of Concern. Conversely, if the answers to any of the questions in Figure 1 were no, the IJC would recommend revision of the RAP.

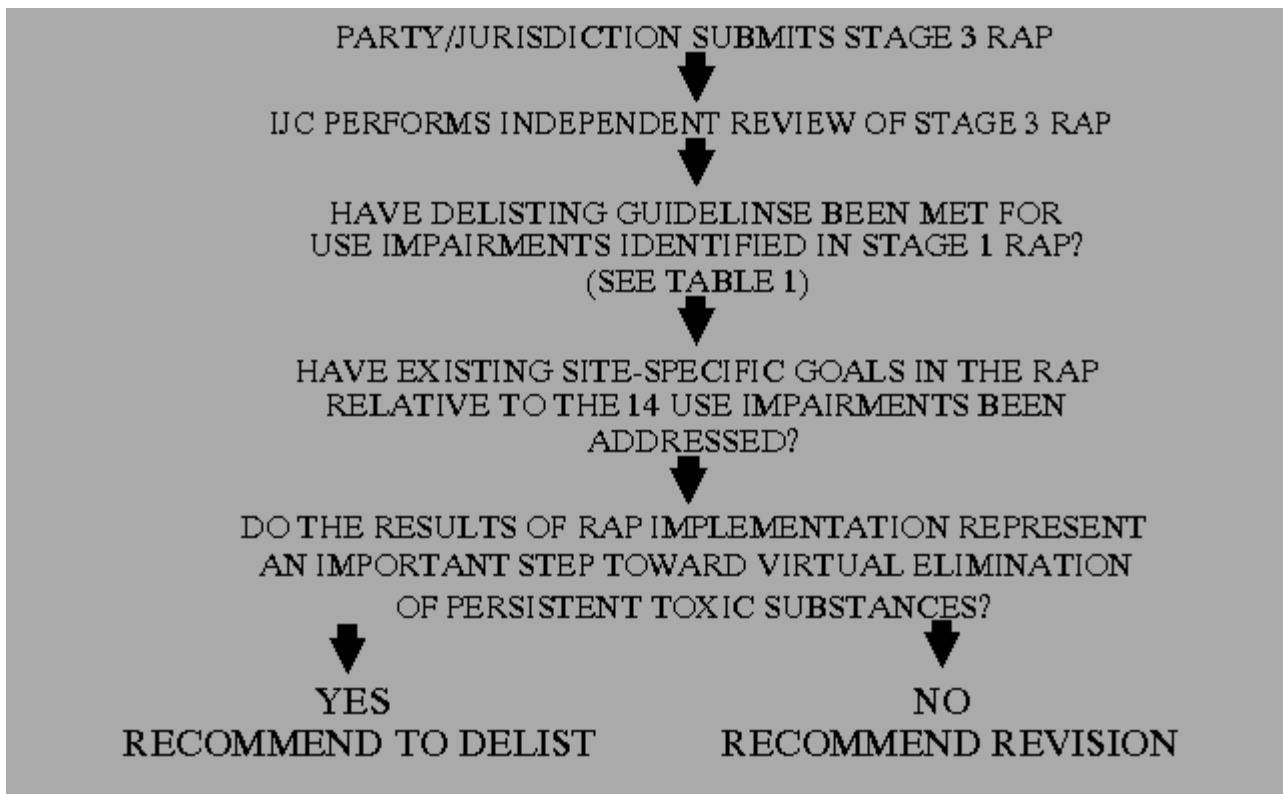


FIGURE 1. A generalized process for IJC review of a Stage 3 RAP and application of guidelines used to make recommendations on delisting Areas of Concern.

There is an obvious need to use "common sense" in the application of these listing/delisting guidelines. For example, the purpose of Stage 1 RAPs is to reach agreement on beneficial use impairments and their causes. Once this is accomplished, Stage 2 RAPs identify the remedial actions necessary to restore the impaired uses. However, it may not be possible to fully restore some uses because of natural factors (e.g. sedimentation) or social or economic factors (e.g. the necessity to dredge navigational channels may preclude fully restoring the benthic community). In these special cases, there may be very logical and practical reasons why the impaired uses cannot be fully restored and these reasons and rationales should be provided in a Stage 3 RAP. The intent here is to explicitly recognize that there may be some impaired uses that may not be fully restored for justifiable reasons, and that this should not prohibit the possible delisting of an Area of Concern following Party/Jurisdiction submission and IJC review of a Stage 3 RAP. Similarly, a reasonable and pragmatic approach should be taken in recommending new Areas of Concern.

Again, the intent of these listing/delisting guidelines for Great Lakes Areas of Concern is to assist the IJC and its Boards in fulfilling its responsibilities relative to Areas of Concern/RAPs called for in the Great Lakes Water Quality Agreement. It is recognized that there will undoubtedly be a need to revise these guidelines in the future based on the development of new indicators and standards, and new protocols for application of these guidelines.

TABLE 1

Guidelines for Recommending the Listing and Delisting of Great Lakes Areas of Concern

- [Restrictions on Fish and Wildlife Consumption](#)
 - [Tainting of Fish and Wildlife Flavor](#)
 - [Degraded Fish and Wildlife Populations](#)
 - [Fish Tumors or Other Deformities](#)
 - [Bird or Animal Deformities or Reproductive Problems](#)
 - [Degradation of Benthos](#)
 - [Restrictions on Dredging Activities](#)
 - [Eutrophications or Undesirable Algae](#)
 - [Restrictions on Drinking Water Consumption or Taste and Odor Problems](#)
 - [Beach Closings](#)
 - [Degradation of Aesthetics](#)
 - [Added Costs to Agriculture or Industry](#)
 - [Degradation of Phytoplankton and Zooplankton Populations](#)
 - [Loss of Fish and Wildlife Habitat](#)
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RESTRICTIONS ON FISH AND WILDLIFE CONSUMPTION

LISTING GUIDELINE

When contaminant levels in fish or wildlife populations exceed current standards, objectives or guidelines, or public health advisories are in effect for human consumption of fish or wildlife. Contaminant levels in fish and wildlife must be due to contaminant input from the watershed.

DELISTING GUIDELINE

When contaminant levels in fish and wildlife populations do not exceed current standards, objectives or guidelines, and no public health advisories are in effect for human consumption of fish or wildlife. Contaminant levels in fish and wildlife must not be due to contaminant input from the watershed.

RATIONALE

Accounts for jurisdictional; and federal standards; emphasizes local watershed sources.

REFERENCE

Adapted from Mack 1988

TAINTING OF FISH AND WILDLIFE FLAVOR

LISTING GUIDELINE

When ambient water quality standards, objectives, or guidelines, for the anthropogenic substance(s) known to cause tainting, are being exceeded or survey results have identified tainting of fish or wildlife flavor.

DELISTING GUIDELINE

When survey results confirm no tainting of fish or wildlife flavor.

RATIONAL

Sensitive to ambient water quality standards for tainting substances; emphasizes survey results.

REFERENCE

See American Public Health Association (1980) for survey methods

DEGRADED FISH AND WILDLIFE POPULATIONS

LISTING GUIDELINE

When fish and wildlife management programs have identified degraded fish or wildlife populations due to a cause within the watershed. In addition, this use will be considered impaired when relevant, field-validated, fish or wildlife bioassays with appropriate quality assurance/quality controls confirm significant toxicity from water column or sediment contaminants.

DELISTING GUIDELINE

When environmental conditions support healthy, self-sustaining communities of desired fish and wildlife at predetermined levels of abundance that would be expected from the amount and quality of suitable physical, chemical and biological habitat present. An effort must be made to ensure that fish and wildlife objectives for Areas of Concern are consistent with Great Lakes ecosystem objectives and Great Lakes Fishery Commission fish community goals. Further, in the absence of community structure data, this use will be considered restored when fish and wildlife bioassays confirm no significant toxicity from water column or sediment contaminants.

RATIONAL

Emphasizes fish and wildlife management program goals; consistent with Agreement and Great Lakes Fishery Commission goals; accounts for toxicity bioassays.

REFERENCE

Adapted from Manny and Pacific, 1988; Wisconsin DNR 1987; United States and Canada, 1987; Great Lakes Fishery Commission 1980

FISH TUMORS OR OTHER DEFORMITIES

LISTING GUIDELINE

When the incidence rates of fish tumors or other deformities exceed rates at unimpacted control sites or when survey data confirm the presence of neoplastic or preneoplastic liver tumors in bullheads or suckers.

DELISTING GUIDELINE

When the incidence rates of fish tumors or other deformities do not exceed rates at unimpacted control sites and when survey data confirm the absence of neoplastic or preneoplastic liver tumors in bullheads or suckers.

RATIONALE

Consistent with expert opinion on tumors; acknowledges background incidence rates.

REFERENCE

Adapted from Mac and Smith, 1988 Black 1983; Baumann et al. 1982

BIRD OR ANIMAL DEFORMITIES OR REPRODUCTIVE PROBLEMS

LISTING GUIDELINE

When wildlife survey data confirm the presence of deformities (e.g. cross-bill syndrome) or other reproductive problems (e.g. egg-shell thinning) in sentinel wildlife species.

DELISTING GUIDELINE

When the incidence rates of deformities (e.g. cross-bill syndrome) or reproductive problems (e.g. egg-shell thinning) in sentinel wildlife species do not exceed background levels in inland control populations.

RATIONALE

Emphasizes confirmation through survey data; makes necessary control comparisons.

REFERENCE

Adapted from Kubiak 1988, Miller 1988; Wiemeyer et al. 1984

DEGRADATION OF BENTHOS

LISTING GUIDELINE

When the benthic macroinvertebrate community structure significantly diverges from unimpacted control sites of comparable physical and chemical characteristics. In addition, this use will be considered impaired when toxicity (as defined by relevant, field-validated, bioassays with appropriate quality assurance/quality controls) of sediment associated contaminants at a site is significantly higher than controls.

DELISTING GUIDELINE

When the benthic macroinvertebrate community structure does not significantly diverge from unimpacted control sites of comparable physical and chemical characteristics. Further, in the absence of community structure data, this use will be considered restored when toxicity of sediment-associated contaminants is not significantly higher than controls.

RATIONALE

Accounts for community structure and composition; recognizes sediment toxicity; uses appropriate control sites.

REFERENCE

Adapted from Reynoldson 1988; Henry 1988; IJC 1988

RESTRICTIONS ON DREDGING ACTIVITIES

LISTING GUIDELINE

When contaminants in sediments exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities.

DELISTING GUIDELINE

When contaminants in sediments do not exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities.

RATIONALE

Accounts for jurisdictional and federal standards; emphasizes dredging and disposal activities.

REFERENCE

Adapted from IJC 1988

EUTROPHICATION OR UNDESIRABLE ALGAE

LISTING GUIDELINE

When there are persistent water quality problems (e.g. dissolved oxygen depletion of bottom waters, nuisance algal blooms or accumulation, decreased water clarity, etc.) attributed to cultural eutrophication.

DELISTING GUIDELINE

When there are no persistent water quality problems (e.g. dissolved oxygen depletion of bottom waters, nuisance algal blooms or accumulation decreased water clarity, etc.) attributed to cultural eutrophication.

RATIONALE

Consistent with Annex 3 or the Agreement; accounts for persistence of problems.

REFERENCE

United States and Canada, 1987

RESTRICTIONS-DRINKING WATER CONSUMPTION-TASTE/ODOR PROBLEMS

LISTING GUIDELINE

When treated drinking water supplies are impacted to the extent that: 1) densities of disease-causing organisms or concentrations of hazardous or toxic chemicals or radioactive substances exceed human health standards, objectives or guidelines; 2) taste and odor problems are present; or 3) treatment needed to make raw water suitable for drinking is beyond the standard treatment used in comparable portions of the Great Lakes which are not degraded (i.e. settling, coagulation, disinfection).

DELISTING GUIDELINE

For treated drinking water supplies: 1) when densities of disease-causing organisms or concentrations of hazardous or toxic chemicals or radioactive substances do not exceed human health objectives, standards or guidelines; 2) when taste and odor problems are absent; and 3) when treatment needed to

make raw water suitable for drinking does not exceed the standard treatment used in comparable portions of the Great Lakes which are not degraded (i.e. settling, coagulation, disinfection).

RATIONALE

Consistency with the Agreement; accounts for jurisdictional standards; practical; sensitive to increased cost as a measure of impairment.

REFERENCE

Adapted from United States and Canada, 1987

BEACH CLOSINGS

LISTING GUIDELINE

When waters, which are commonly used for total-body contact or partial-body contact recreation, exceed standards, objectives, or guidelines for such use.

DELISTING GUIDELINE

When waters, which are commonly used for total-body contact or partial body-contact recreation, do not exceed standards, objectives, or guidelines for such use.

RATIONALE

Accounts for use of waters; sensitive to jurisdictional standards; addresses water contact recreation; consistent with the Agreement.

REFERENCE

Adapted from United States and Canada, 1987; Ontario Ministry of the Environment 1984

DEGRADATION OF AESTHETICS

LISTING GUIDELINE

When any substance in water produces a persistent objectionable deposit, unnatural color or turbidity, or unnatural odor (e.g. oil slick, surface scum).

DELISTING GUIDELINE

When the waters are devoid of any substance which produces a persistent objectional deposit, unnatural color or turbidity, or unnatural odor (e.g. oil slick, surface scum).

RATIONALE

Emphasizes aesthetics in water, accounts for persistence.

REFERENCE

Adapted from Ontario Ministry of the Environment 1984

ADDED COSTS TO AGRICULTURE OR INDUSTRY

LISTING GUIDELINE

When there are additional costs required to treat the water prior to use for agricultural purposes (i.e. including, but not limited to, livestock watering, irrigation and crop-spraying) or industrial purposes (i.e. intended for commercial or industrial applications and noncontact food processing).

DELISTING GUIDELINE

When there are no additional costs required to treat the water prior to use for agricultural purposes (i.e. including, but not limited to, livestock watering, irrigation and crop-spraying) and industrial purposes (i.e. intended for commercial or industrial applications and noncontact food processing).

RATIONALE

Sensitive to increased cost and measure of impairment.

REFERENCE

Adapted from Michigan DNR 1977

DEGRADATION OF PHYTOPLANKTON AND ZOOPLANKTON POPULATIONS

LISTING GUIDELINE

When phytoplankton or zooplankton community structure significantly diverges from unimpacted control sites of comparable physical and chemical characteristics. In addition, this use will be considered impaired when relevant, field- validated, phytoplankton or zooplankton bioassays (e.g. Ceriodaphnia; algal fractionation bioassays) with appropriate quality assurance/quality controls confirm toxicity in ambient waters.

DELISTING GUIDELINE

When phytoplankton and zooplankton community structure does not significantly diverge from unimpacted control sites of comparable physical and chemical characteristics. Further, in the absence of community structure data, this use will be considered restored when phytoplankton and zooplankton bioassays confirm no significant toxicity in ambient waters.

RATIONALE

Accounts for community structure and composition; recognizes water column toxicity; uses appropriate control sites.

REFERENCE

Adapted from IJC 1987

LOSS OF FISH AND WILDLIFE HABITAT

LISTING GUIDELINE

When fish and wildlife management goals have not been met as a result of loss of fish and wildlife habitat due to a perturbation in the physical, chemical, or biological integrity of the Boundary Waters, including wetlands.

DELISTING GUIDELINE

When the amount and quality of physical, chemical, and biological habitat required to meet fish and wildlife management goals have been achieved and protected.

RATIONALE

Emphasizes fish and wildlife management program goals; emphasizes water component of Boundary Waters.

REFERENCE

Adapted from Manny and Pacific, 1988