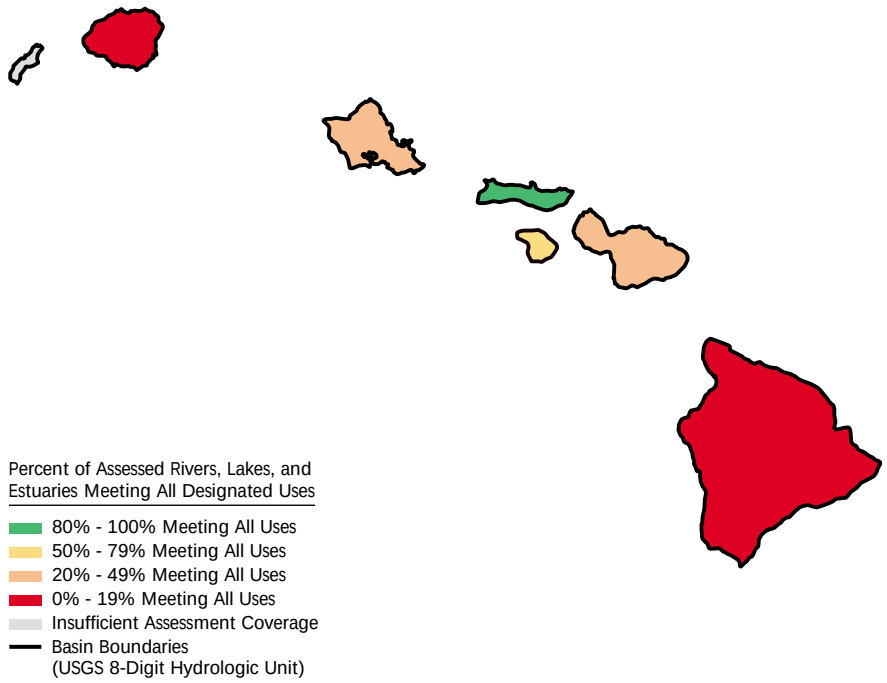
Hawaii



For a copy of the Hawaii 1998 305(b) report, contact:

Eugene Akazawa, Monitoring Supervisor
Hawaii Department of Health
Clean Water Branch
919 Ala Moana Blvd., Room 301
Honolulu, HI 96814
(808) 586-4309

Surface Water Quality

Most of Hawaii's waterbodies have variable water quality due to stormwater runoff. During dry weather, most streams and estuaries have good water quality that fully supports beneficial uses, but the quality declines when stormwater runoff carries pollutants into surface waters. The most significant pollution problems in Hawaii are siltation, turbidity, nutrients, organic enrichment, toxics, pathogens, and pH from nonpoint sources, including agriculture and urban runoff. Introduced species and stream alteration are other stressors of concern. Very few point sources discharge into Hawaii's streams; most industrial facilities and wastewater treatment plants discharge into coastal waters. Other concerns include elevated levels of arsenic from a now-closed canoe plant and the spread, through recreational contact, of *leptospirosis*, a disease caused by a pathogenic bacteria.

Hawaii did not report on the condition of wetlands.

Ground Water Quality

Compared to mainland states, Hawaii has very few ground water problems due to a long history of land use controls for ground water protection. Prior to 1961, the state designated watershed reserves to protect the purity of rainfall recharging ground water. The Underground Injection Control Program also prohibits wastewater injection in areas surrounded by "no-pass" lines. However, aquifers outside of reserves and no-pass lines may be impacted by injection wells, household wastewater disposal systems, such as seepage pits and cesspools, landfills, leaking underground storage tanks, and agricultural activities.

Programs to Restore Water Quality

Recognition of nonpoint source pollution as the major cause of surface water impairment in Hawaii has led to the creation of the

Polluted Runoff Control (PRC) Program. The PRC administers the Nonpoint Source Pollution Control Program, which has oversight for nonpoint source implementation projects. In addition, the program with the largest impact on nonpoint source pollution is the stormwater program. This is a permitting program administered by the Clean Water Branch of the Department of Health for entities that discharge significant quantities of stormwater.

Programs to Assess Water Quality

Hawaii's monitoring program, which is based on a network of routine monitoring stations, has continued to suffer setbacks due to budgetary restraints over the past several years. Toxics and biota sampling were completely curtailed and routine monitoring has been reduced significantly. The Department of Health (DOH) is investigating the use of *Clostrida Pererfringens* as an indicator of sewage contamination, and some new laboratory equipment has been purchased. Other than these two developments, DOH has not initiated any new monitoring or assessment programs or made significant innovations to the existing ones. Unfortunately, further budgetary cuts are expected in the future.

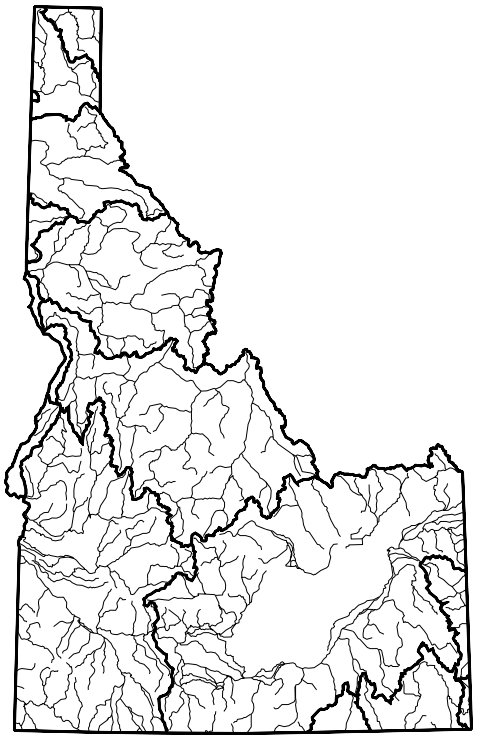
– Not reported in a quantifiable format or unknown.
[a] A subset of Hawaii's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes nonperennial streams that dry up and do not flow all year.

Individual Use Support in Hawaii

Designated Use[a]	Total Miles Assessed	Percent: Good (Fully Supporting)	Percent: Good (Threatened)	Percent: Fair (Partially Supporting)	Percent: Poor (Not Supporting)	Percent: Not Attainable
Rivers and Streams (Total Miles = 3,905)[b]						
	3,905	40	0	0	60	0
	3,892	100	0	0	0	0
	3,898	100	0	0	0	0
Lakes (Total Acres = 2,168)						
	Total Acres Assessed					
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
Estuaries (Total Square Miles = 55)						
	Total Square Miles Assessed					
	0.02	100	0	0	0	0
	0.02	0	0	0	100	0
	0.02	0	0	0	100	0
	0.02	0	0	0	100	0

Note: Figures may not add to 100% due to rounding.

Idaho



Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

For a copy of the Idaho 1998 305(b) report, contact:

Michael McIntyre
Idaho Department of Health and Welfare
Division of Environmental Quality
1410 North Hilton
Statehouse Mall
Boise, ID 83720
(208) 373-0502
e-mail: mmintyr@deq.state.id.us

Surface Water Quality

Idaho reports that 33% of river and stream miles fully support uses, while 67% are impaired for one or more uses. Based on the state's proposed Section 303(d) list, the major causes of impairment in Idaho's rivers and streams include siltation, nutrients, thermal modifications, bacteria, habitat alterations, and oxygen-depleting substances. The state has not yet determined the sources of impairment to rivers and streams.

Information on lake use support was not included in Idaho's 1998 305(b) report because the state is currently developing a lake and reservoir beneficial use assessment process. Based on the state's proposed Section 303(d) list, the major causes of impairment in Idaho's lakes and reservoirs include oxygen-depleting substances, nutrients, acidity, toxic chemicals, mercury, and flow alterations.

Idaho did not report on the condition of wetlands.

Ground Water Quality

More than 90% of Idaho's residents use ground water as their domestic water supply. The major sources of ground water contamination in Idaho are agricultural activities, waste storage and disposal, mining, and hazardous material transportation.

Ground water quality data in Idaho come primarily from the Statewide Ambient Ground Water Quality Monitoring Network and the Public Water Systems. On a statewide basis, the ground water contaminants of greatest concern are nitrates, pesticides, and volatile organic compounds.

Programs to Restore Water Quality

EPA has primary responsibility for issuing NPDES permits in Idaho. The Idaho Division of Environmental Quality (DEQ) is concerned that EPA does not have the staff to issue new permits or revise and reissue old permits. Major discharges are inspected annually but minor discharges do not receive this attention.

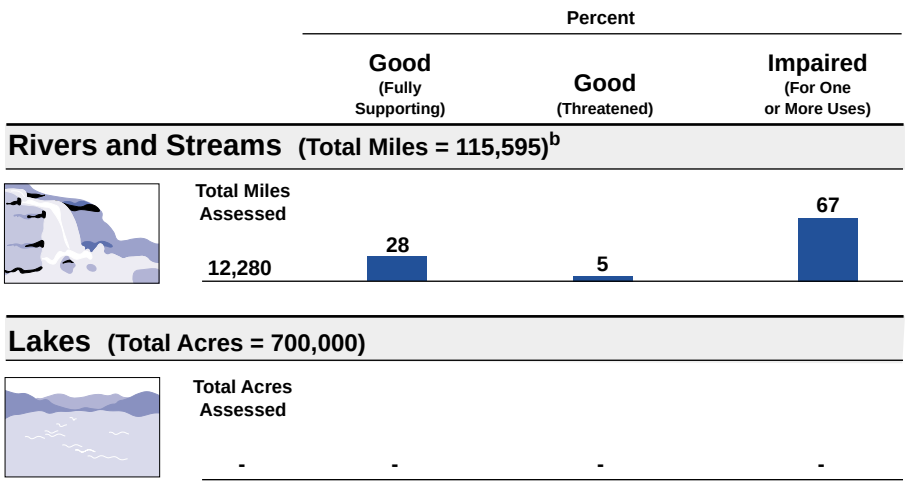
The nonpoint source program in Idaho is administered on a watershed basis and includes provisions

for public education and technical protocol development. Project emphasis is placed on management effectiveness, beneficial use monitoring, public awareness, antidegradation, and endangered species issues.

Programs to Assess Water Quality

Monitoring activities in Idaho have focused on beneficial uses and ambient water quality trends. Data from DEQ's monitoring are used to document the existence of uses, the degree of use support, and reference conditions. This monitoring is made up of primarily the collection of biological and physical data. The ambient trend monitoring network is designed to document water quality trends at the river basin and watershed scales through the collection of mainly water column constituent data. Biological parameters are being added to this network as well. Fifty-six monitoring stations are currently sampled on a rotating basis to provide data for water quality trend assessment.

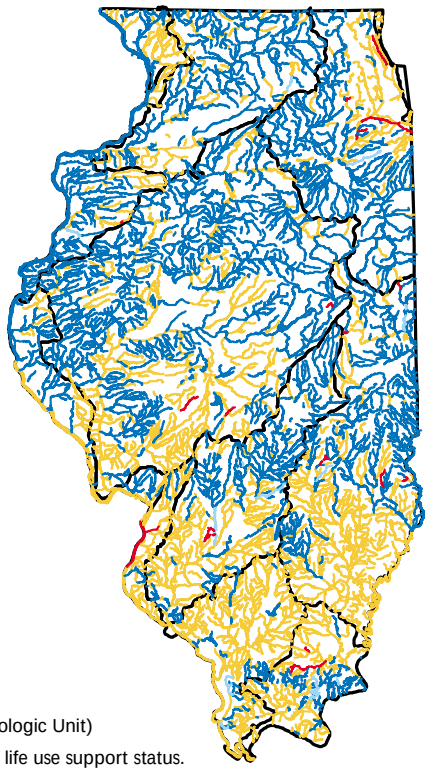
Summary of Use Support[a] in Idaho



– Not reported in a quantifiable format or unknown.
[a] A summary of use support data is presented because Idaho did not report individual use support in their 1998 Section 305(b) report.
[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.

Illinois



This map depicts aquatic life use support status.

For a copy of the Illinois 1998 305(b) report, contact:

Mike Branham
Illinois Environmental Protection Agency
Division of Water Pollution Control
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-3362
e-mail: epa1110@epa.state.il.us

For more information, visit IEPA on the Internet at: *http://www.epa.state.il.us/water/water-quality*

Surface Water Quality

The Illinois Environmental Protection Agency (IEPA) reported that over 55% of assessed stream miles fully support aquatic life use, which the state considers the single best indicator of overall stream conditions. The major causes of impairment in Illinois' rivers include nutrients, siltation, habitat/flow alteration, organic enrichment/dissolved oxygen depletion, metals, and suspended solids. Major sources include agriculture, point sources, hydrological/habitat modification, urban runoff, and resource extraction.

Fifty-two percent of Illinois' inland lake acres fully support aquatic life uses, while another 46% partially support this use, and 3% do not support aquatic life use. The major causes of impairment to Illinois' inland lakes include nutrients, siltation, suspended solids, and organic enrichment/dissolved oxygen depletion. Major sources include agriculture, contaminated sediments (in-place contaminants such as sediment, or phosphorus attached to particles), and hydrological/habitat modification.

Water quality continues to improve in the Illinois portion of Lake Michigan. Trophic status has improved from mesotrophic/eutrophic conditions in the 1970s to oligotrophic conditions today.

Illinois did not report on the condition of wetlands.

Ground Water Quality

Ground water quality is generally good, but past and present activities contaminate ground water in isolated areas. Major sources of ground water contamination include agricultural chemical operations, fertilizer and pesticide applications, above- and belowground storage tanks, septic systems, manufacturing/repair shops, surface impoundments, and wastepiles.

Programs to Restore Water Quality

The IEPA recently directed program resources toward a watershed-based framework to effectively protect and restore natural resources. This comprehensive approach will focus on the total spectrum of water

resource issues, emphasizing involvement of citizens and the regulated community. The IEPA has restructured its program activities using a priority watershed management approach.

Illinois established a Great Lakes Program Office in FY93 to oversee all Lake Michigan programs on a multimedia basis. Activities include promotion of pollution prevention for all sources of toxics in all media (such as air and water).

Programs to Assess Water Quality

The IEPA has maintained a comprehensive surface water monitoring and assessment program since its inception in 1970. Monitoring activities focus on water and sediment chemistry as well as on physiological and biological data (e.g., aquatic invertebrates, fisheries, and habitat). Data from more than 4,000 stations have been used in the assessment of surface water quality conditions. In addition, over 600 volunteers participate in citizen monitoring of over 300 lakes as part of IEPA's Volunteer Lake Monitoring Program, which has been incorporated into the state's water quality assessments.

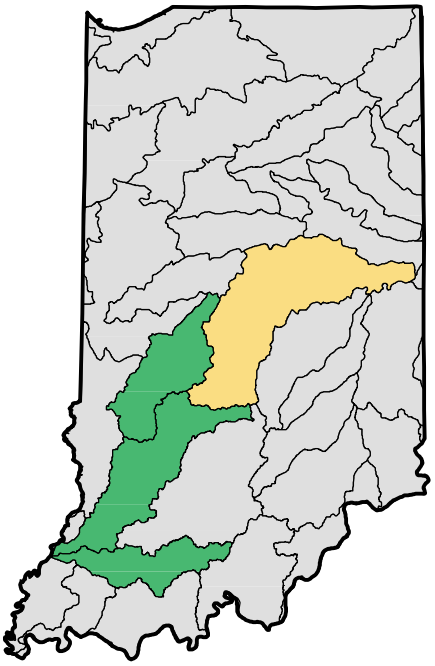
– Not reported in a quantifiable format or unknown.
[a] A subset of Illinois' designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes nonperennial streams that dry up and do not flow all year.

Individual Use Support in Illinois

Designated Use[a]	Total Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 87,110)[b]						
	28,448	55	1	43	1	-
	3,779	81	0	0	19	-
	3,502	23	0	22	55	-
Lakes (Total Acres = 309,340)						
	188,103	42	10	46	3	-
	127,814	77	0	14	9	-
	188,277	9	12	47	32	-
Great Lakes (Total Shore Miles = 63)						
	63	0	100	0	0	0
	63	0	0	0	100	0
	63	79	0	21	0	0

Note: Figures may not add to 100% due to rounding.

Indiana



Percent of Assessed Rivers, Lakes, and Estuaries Meeting Aquatic Life Uses

- 80% - 100% Meeting All Uses
- 50% - 79% Meeting All Uses
- 20% - 49% Meeting All Uses
- 0% - 19% Meeting All Uses
- Insufficient Assessment Coverage
- Basin Boundaries (USGS 8-Digit Hydrologic Unit)

For a copy of the Indiana 1998 305(b) report, contact:

Linda Schmidt
Indiana Department of Environmental Management
Office of Water Management
P.O. Box 6015
Indianapolis, IN 46206-6015
(317) 233-8905
e-mail: lschmidt@dem.state.in.us

The report is also available on the Internet at: *http://www.state.in.us/idem/owm/index.html*

Surface Water Quality

All of the surveyed lake acres and 79% of the surveyed river miles have good water quality that fully supports aquatic life. However, 21% of the surveyed river miles do not support swimming due to high bacteria concentrations. A fish consumption advisory impairs all of Indiana's Lake Michigan shoreline. The pollutants most frequently identified in Indiana waters include PCBs, bacteria, priority organic compounds, oxygen-depleting wastes, pesticides, and metals. The sources of these pollutants include combined sewer overflows, resource extraction, and land disposal. Many sources are unknown.

Indiana identified elevated concentrations of toxic substances in about 5% of the river miles monitored for toxics. High concentrations of PCBs and mercury were most common in sediment samples and in fish tissue samples.

Ground Water Quality

Indiana has a plentiful ground water resource serving nearly 70% of its population for drinking water and filling many of the water needs of business, industry, and agriculture. The major sources of ground water contamination in Indiana are commercial fertilizer application, confined animal feeding operations, underground storage tanks, surface impoundments, landfills constructed prior to 1989, septic systems, shallow injection wells, industrial facilities, materials spills, and salt storage and road salting. Contaminants from these sources include nitrate, salts, pesticides, petroleum compounds, metals, radionuclides, and bacteria. Ground water protection programs are being implemented through the efforts of five state agencies.

Programs to Restore Water Quality

In February 1997, the Indiana Water Pollution Control Board adopted revised water quality standards for those waters in the Great Lakes Basin. Water quality standards, including proposed sediment and wetland narrative criteria, for the area outside the Great Lakes Basin are currently under development. Macroinvertebrate and fish community data are being

evaluated for the purpose of developing biocriteria.

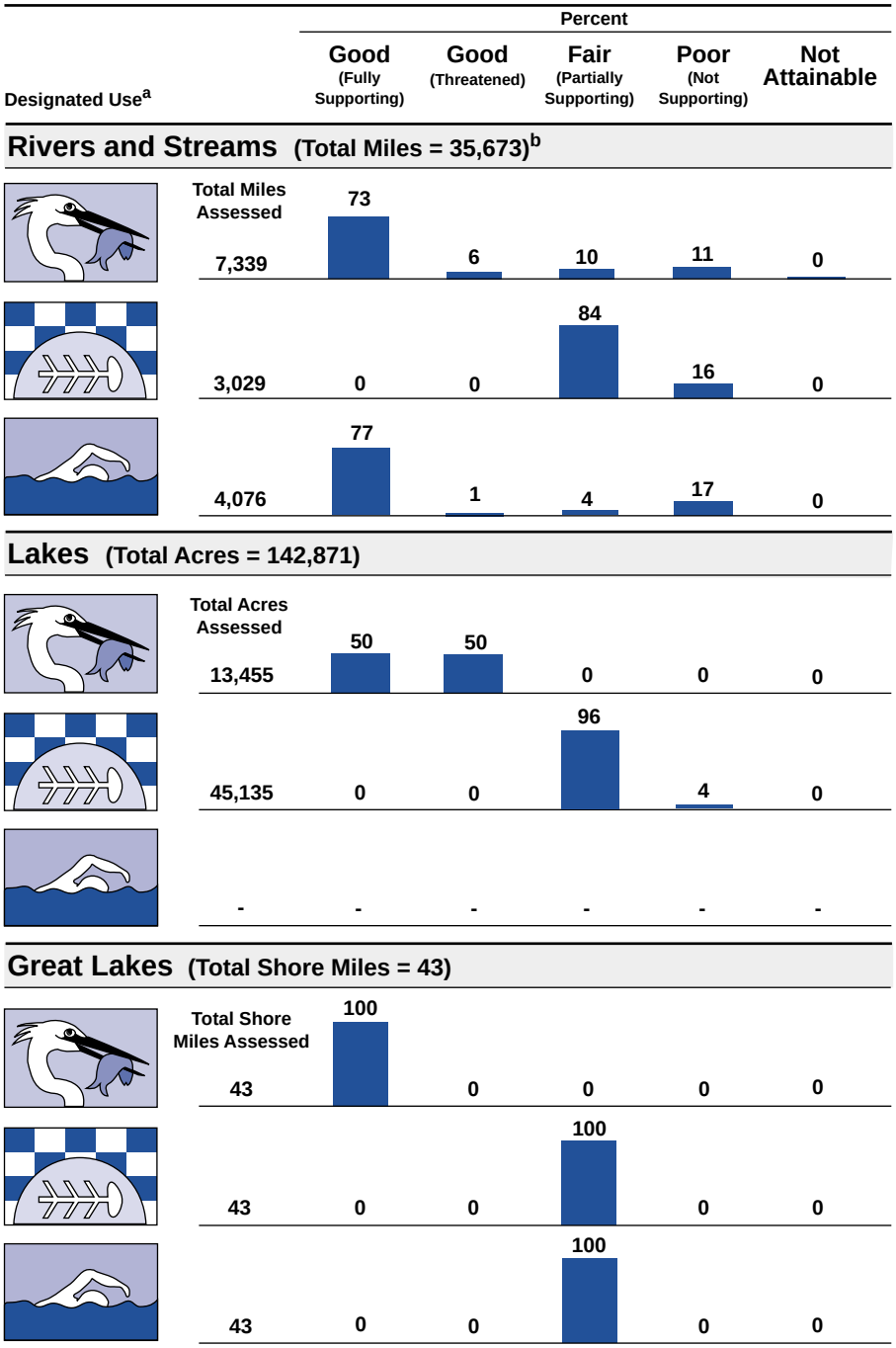
Point sources are regulated primarily through the NPDES program in Indiana. The state has a goal of processing over 400 administratively extended permits by June 1999. Nonpoint sources are addressed through watershed management and planning projects. In 1996 and 1997, federal funds totaling $4,450,000 were used to support nonpoint source control projects in Indiana.

Programs to Assess Water Quality

A new surface water monitoring strategy for Indiana was implemented in 1996 with the goal of monitoring all waters of the states by 2001 and reporting the assessments by 2003. Each year approximately 20% of the waterbodies in the state will be assessed and reported the following year. Assessment in 1997 and reporting in 1998 focused on the White River, West Fork, and Patoka River basins. Elements of Indiana's sampling program include: fixed station monitoring, TMDL development, trace metals monitoring, pesticide water column monitoring, bacteriological sampling, and targeted fish tissue and surficial aquatic sediment sites. The program also includes a number of sites selected by probabilistic design and sampled for fish community biotic integrity, benthic aquatic macroinvertebrate community biotic integrity, fish tissue contaminants, surficial aquatic sediment contaminants, and water column chemistry.

Indiana is developing biological assessment methods and criteria for wetlands.

Individual Use Support in Indiana

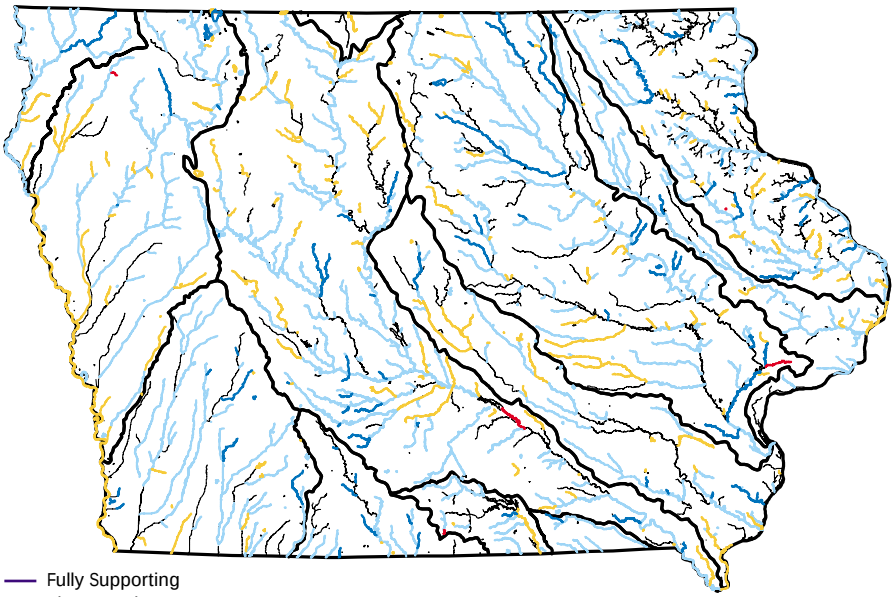


[a] A subset of Indiana's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.

Iowa



Fully Supporting
Threatened
Partially Supporting
Not Supporting
Not Assessed
Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

This map depicts aquatic life use support status.

For a copy of the Iowa 1998 305(b) report, contact:

John Olson
Iowa Department of Natural Resources
Water Resources Section
502 East 9th Street
Des Moines, IA 50319
(515) 281-8905
e-mail: John.Olson@dnr.state.ia.us

Surface Water Quality

There is impaired aquatic life use in 19% of Iowa's assessed rivers and 35% of assessed lakes. Swimming use is impaired in 54% of 913 surveyed river miles and 26% of assessed lakes, ponds and reservoirs. Saylorville, Red Rock, Coralville, and Rathbun reservoirs have good water quality that fully supports all designated uses. However, siltation threatens beneficial uses at all reservoirs, and agricultural pesticides threaten drinking water uses at Rathbun. Point sources still pollute about 5% of the assessed stream miles and two lakes.

Ground Water Quality

Ground water supplies about 80% of Iowa's drinking water. Agricultural chemicals, underground storage tanks, agricultural drainage wells, livestock wastes, and improper management of hazardous substances all contribute to ground water contamination. Several studies have detected low levels of common agricultural pesticides and synthetic organic compounds in both untreated and treated ground water. In most cases, the small concentrations are thought to pose no immediate threat to public health, but little is known about the health effects of long-term exposure to low concentrations of these chemicals.

Programs to Restore Water Quality

Pollution from municipal and industrial point sources is controlled primarily through the Clean Water Act's National Pollutant Discharge Elimination System through permits, development and enforcement of water quality standards, and legal action. The program also includes control of stormwater runoff from urban and industrial areas.

Sediment is the greatest pollutant, by volume, in Iowa. The state adopted a nonpoint control strategy of education projects and cost-share programs. Later, it adopted rules requiring that land disposal of animal wastes not contaminate

surface and ground waters. Landfill rules require annual inspections and permit renewals every 3 years. Iowa regulates construction in floodplains to limit erosion and impacts on aquatic life. In 1990, a Nonpoint Source Program was developed whereby state and federal agencies cooperate to implement water quality projects, including education, demonstrations, and implementation of best management practices.

Programs to Assess Water Quality

Iowa's Department of Natural Resources (DNR) either maintains or cooperates in long-term sampling networks for both surface and ground waters. DNR routinely monitors metals, ammonia, and residual chlorine at fixed sampling sites. Limited sampling for agricultural pesticides began in 1995.

Information about toxic contaminants in fish is from long-term DNR/EPA and other monitoring programs. Toxins in sediment are monitored as part of a USGS study. The role of biological sampling is growing, with over 100 reference sites sampled so far. The development of volunteer monitoring programs will provide an additional source of water quality information.

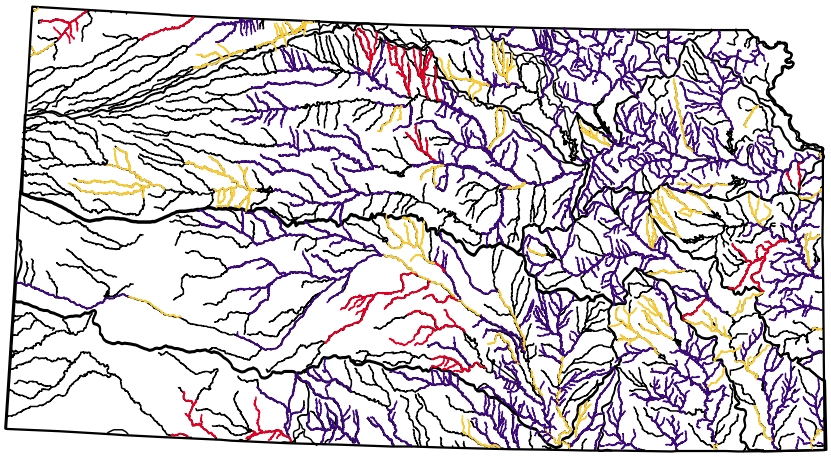
[a] A subset of Iowa's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes nonperennial streams that dry up and do not flow all year.
[c] Excludes flood control reservoirs.

Note: Figures may not add to 100% due to rounding.

Individual Use Support in Iowa

Designated Use[a]	Total Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 71,665)[b]						
	9,418	11	70	19	0	-
	1,819	83	16	0	1	-
	913	13	32	39	15	-
Lakes (Total Acres = 161,336)[c]						
	41,753	32	32	35	0	-
	27,323	99	0	0	1	-
	38,661	25	48	26	0	0
Flood Control Reservoirs (Total Acres = 31,700)						
	40,300	26	74	0	0	-
	40,300	100	0	0	0	-
	40,300	26	74	0	0	-
Wetlands (Total Acres = 37,800)						
	33,221	6	38	43	14	-
	-	-	-	-	-	-
	1,138	100	0	0	0	-

Kansas



Fully Supporting
Threatened
Partially Supporting
Not Supporting
Not Assessed
Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

This map depicts aquatic life use support status.

For a copy of the Kansas 1998 305(b) report, contact:

Eva Hays
Kansas Department of Health and Environment
Bureau of Environmental Field Services
Forbes Field, Building 283
Topeka, KS 66620
(913) 296-1981
e-mail: ehays@kdhe.state.ks.us

Surface Water Quality

Kansas assessed water quality for 15,620 miles of streams during 1996-1997. Of these, 88% fully or partially support designated uses. Major causes of nonsupport are fecal coliform, organic enrichment, sulfates, and chlorides. Impairment of streams is attributed to agriculture, natural sources, hydromodification, and ground water withdrawal.

Of the public lakes assessed during the reporting period, 66% of the total acres are impaired for one or more uses. The major causes of impairment are sediment, turbidity, nutrients/eutrophication, and taste and odor problems. Agriculture and natural sources are the major sources of impairment for lakes. The trophic status of 68% of the assessed lake acreage is stable over time.

Most wetlands are on private lands. Of the public wetlands assessed, 29% support aquatic life use but are considered threatened, while food procurement use is fully supported but threatened in 91% of wetlands. The major causes of impairment are excessive nutrient load, flow alterations, low dissolved oxygen, and turbidity/siltation. Agriculture, hydromodifications in watersheds, and natural processes are the sources of impairment. As part of a special wetland project, 25,069 wetland acres were monitored for toxics (heavy metals, pesticides, and ammonia); 4% were found to be impacted. Trophic status studies indicate that 52% of the wetlands are stable over time.

Ground Water Quality

The Kansas Department of Health and Environment's (KDHE) ground water quality monitoring network is composed of 242 different types of wells and conducts the primary ambient ground water monitoring in the state. Nitrate contamination is a major concern. During 1996-1997 high nitrate concentration accounted for about 82% of the documented exceedances of federal drinking water maximum contaminant levels in ground water. Other ground water concerns included volatile organic compounds, heavy metals, petroleum products, and/or bacteria. The major sources of these contaminants included active industrial facilities, spills, leaking storage tanks, mineral extraction, and agricultural activities.

Programs to Restore Water Quality

A Local Environmental Protection Program provides financial assistance to 98 of the state's 105 counties to develop and implement a comprehensive plan for protection of the local environment.

The Point Source Pollution Program regulates wastewater treatment systems of municipal, federal, industrial, and commercial sewage facilities, stormwater, and larger livestock operations. Smaller livestock facilities and other sources of pollutants are addressed by the Non Point Source Control Program. Directed funds, mainly to upgrade large wastewater treatment facilities serving cities, have resulted in documented water quality improvements at several locations.

All Clean Lakes Program projects are completed.

Programs to Assess Water Quality

Every year, KDHE collects and analyzes about 1,500 surface water samples, 50 aquatic macroinvertebrate samples, and 40 composite fish tissue samples from stations located throughout the state. Wastewater samples are collected at about 50 municipal sewage treatment plants, 20 industrial facilities, and 3 federal facilities to evaluate compliance with discharge permit requirements. KDHE also conducts special studies and prepares about 100 site-specific water quality summaries at the request of private citizens or other interested parties.

Individual Use Support in Kansas

Designated Use[a]	Total Miles Assessed	Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
		Percent				
Rivers and Streams (Total Miles = 134,338)[b]						
	15,620	73	0	18	9	0
	836	72	0	0	28	0
	1,697[c]	0	0	0	0	100
Lakes (Total Acres = 181,337)						
	181,337	0	51	47	2	0
	45,107	0	100	0	<1	0
	181,337[c]	0	49	49	2	0
Wetlands (Total Acres = 35,607)						
	35,607	0	29	5	66	-
	35,607	0	91	6	4	-
	-	-	-	-	-	-

– Not reported in a quantifiable format or unknown.

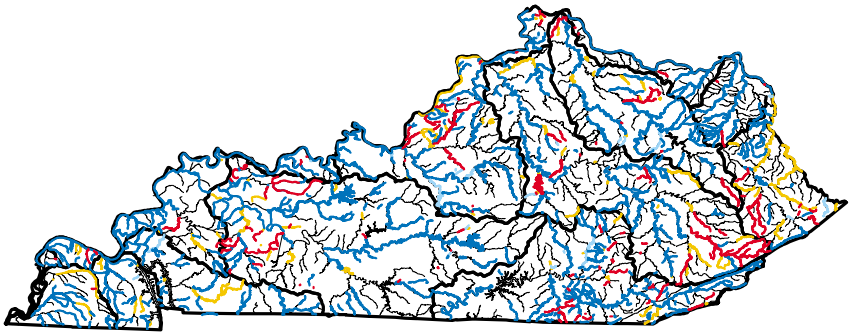
[a] A subset of Kansas' designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

[c] Kansas designated uses do not address swimming beaches. Refer to the Kansas 305(b) report on contact recreational use.

Note: Figures may not add to 100% due to rounding.

Kentucky



Fully Supporting
Threatened
Partially Supporting
Not Supporting
Not Assessed
Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

This map depicts aquatic life use support status.

For a copy of the Kentucky 1998 305(b) report, contact:

Tom VanArsdall
Department for Environmental Protection
Division of Water
14 Reilly Road
Frankfort Office Park
Frankfort, KY 40601
(502) 564-3410
e-mail: vanarsdall@nrdep.nr.state.ky.us

The report is also available on the Internet at: *http://water.nr.state.ky.us/305b/*

Surface Water Quality

About 75% of Kentucky's surveyed rivers (excluding the Ohio River) and 98% of surveyed lake acres have good water quality that fully supports aquatic life. Swimming use is fully supported in over 99% of the surveyed lake acres, but 75% of the river miles surveyed for bacteria do not fully support swimming. Fecal coliform bacteria, siltation, PCBs, and priority organics are the most common pollutants in Kentucky rivers. Frequently identified sources include urban runoff, resource extraction, sewage treatment facilities, land disposal of wastes, and agricultural activities. Nutrients, priority organics, and PCBs have the most widespread impacts on lakes. Potential sources include resource extraction, agriculture, and industrial discharges.

Declining trends in chloride concentrations and nutrients provide evidence of improving water quality in Kentucky's rivers and streams. Swimming advisories remain in effect on 86 miles of the North Fork Kentucky River, several streams in the upper Cumberland River basin, and the lower 5 miles of the Licking River and two tributary streams in northern Kentucky. Fish consumption advisories remain posted on three creeks for PCBs, the Ohio River for PCBs and chlordane, the Green River Lake because of PCB spills from a gas pipeline compressor station, and for five ponds on the West Kentucky Wildlife Management Area because of mercury contamination from unknown sources.

Ground Water Quality

Kentucky maintains an ambient ground water monitoring network of more than 100 sites. Underground storage tanks, septic tanks, spills, urban runoff, mining activities, agricultural activities, and landfills have been identified as the major sources of ground water contamination in Kentucky. Bacteria is the major pollutant in ground water. The state is concerned about the lack of ground water data, absence of ground water regulations, and the potential for ground water pollution in karst regions of the state.

Programs to Restore Water Quality

Construction grants, state revolving loan fund monies, and other funding programs have funded the construction of 26 wastewater projects that were completed in 1995-1997. These projects either replaced outdated or inadequate treatment facilities or provided centralized treatment for the first time. Kentucky requires toxicity testing on many point source discharges and permits for stormwater outfalls and combined sewer overflows. The nonpoint source program oversees projects addressing watershed demonstrations, education, training, enforcement, technical assistance, and evaluation of best management practices.

Programs to Assess Water Quality

Kentucky sampled 44 ambient monitoring stations characterizing about 1,432 stream miles during the reporting period. More than 60% of the state's least impacted streams have been monitored under the reference reach program. The state performed biological sampling at 17 of these stations in 1996 and 1997. Thirteen lakes were sampled to detect eutrophication trends. The state also performed 29 intensive studies to evaluate point source and nonpoint source impacts, establish baseline water quality measurements, and reevaluate water quality in several streams. Other data sources used by the state include discharge monitoring data, reports from the Kentucky Department of Fish and Wildlife Resources, and data from agencies such as the U.S. Geological Survey, the Army Corps of Engineers, the U.S. Forest Service, the Ohio River Valley Sanitation Commission, and Lexington and Louisville local governments.

Individual Use Support in Kentucky

Designated Use[a]	Total Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 49,105)[b]						
	8,276	72	3	12	13	-
	1,659	92	0	<1	7	-
	2,510	21	3	20	55	-
Lakes (Total Acres = 228,385)						
	217,480	74	24	2	<1	-
	205,712	96	0	4	0	-
	217,732	100	0	<1	0	-

Summary of Use Support in Kentucky

	Total Acres Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Impaired (For One or More Uses)
Wetlands (Total Acres = 975,593)				
	973,168	0	100	0

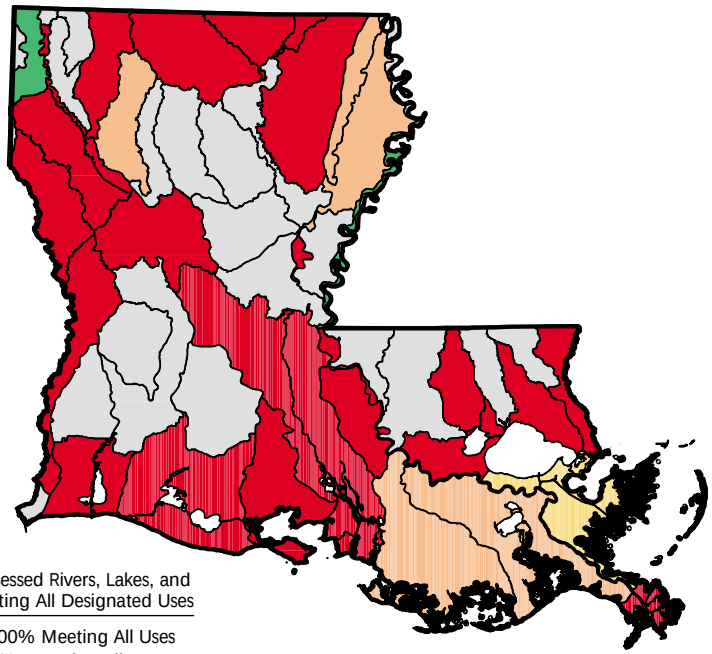
– Not reported in a quantifiable format or unknown.

[a] A subset of Kentucky's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.

Louisiana



For a copy of the Louisiana 1998 305(b) report, contact:

Albert E. Hindrichs
Louisiana Department of Environmental Quality
Office of Water Resources
Watershed Support Division
P.O. Box 82215
Baton Rouge, LA 70884-2215
(225) 765-0511
e-mail: al_h@deq.state.la.us

The report is also available on the Internet at: *http://www.deq.state.la.us/planning/305b/*

Surface Water Quality

About 15% of the assessed stream miles, 10% of the assessed lake acres, and 11% of the assessed estuarine square miles in Louisiana have good water quality that fully supports aquatic life. Metals are cited as the largest suspected cause of impairment to the state's rivers, lakes, and estuarine waters. This is due to closer scrutiny of metals criteria for water quality and the increased sampling of fish for a mercury contamination study. The state notes that much of the impairment due to metals criteria exceedances may be the result of sample contamination.

Organic enrichment/low dissolved oxygen, pathogens, and nutrients are also cited as major causes of stream impairment. Major sources of pollution to streams include agricultural practices, municipal point sources, and natural sources.

Major causes of lake impairment include organic enrichment/low dissolved oxygen, siltation, and turbidity. Major sources include atmospheric deposition, natural sources, and industrial point sources.

In estuarine waters, major causes of impairment include pathogen indicators and nutrients. Major sources of impairment include atmospheric deposition, natural sources, septic tanks, and land disposal.

Ground Water Quality

Water in the state's major aquifer systems continues to be of good quality. For this reporting cycle, EPA encouraged states to select an aquifer of hydrogeologic unit setting and discuss available data that best reflect the quality of the resources. Louisiana chose to discuss the baseline monitoring network for the Chicot Aquifer. The data indicated this aquifer to be of good quality with the exception of one well, indicating a localized area of concern.

Programs to Restore Water Quality

The water pollution controls employed by the Louisiana Department of Environmental Quality (LDEQ) include municipal and

industrial wastewater discharge permits, enforcement of permit requirements, review and certification of projects affecting water quality, and implementation of best management practices for nonpoint sources. In 1997, LDEQ was granted NPDES delegation by EPA. The LDEQ's Water Quality Management Division has implemented a nonpoint source management program and has been successful in implementing voluntary controls and education efforts. This has been done through coordination with other concerned agencies, such as the State Department of Agriculture and Forestry, the U.S. Natural Resource Conservation Service, and the Louisiana State University Cooperative Extension Service.

Programs to Assess Water Quality

Louisiana's surface water monitoring program consists of a fixed-station long-term network, intensive surveys, special studies, and wastewater discharge compliance sampling. The LDEQ is currently revising its fixed-station monitoring program to operate on a 5-year cycle with sample collections occurring in two basins each year and rotating from year to year. While the state does not maintain a regular fish tissue monitoring program, fish are frequently sampled in response to complaints or as a result of enforcement actions.

– Not reported in a quantifiable format or unknown.

[a] A subset of Louisiana's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

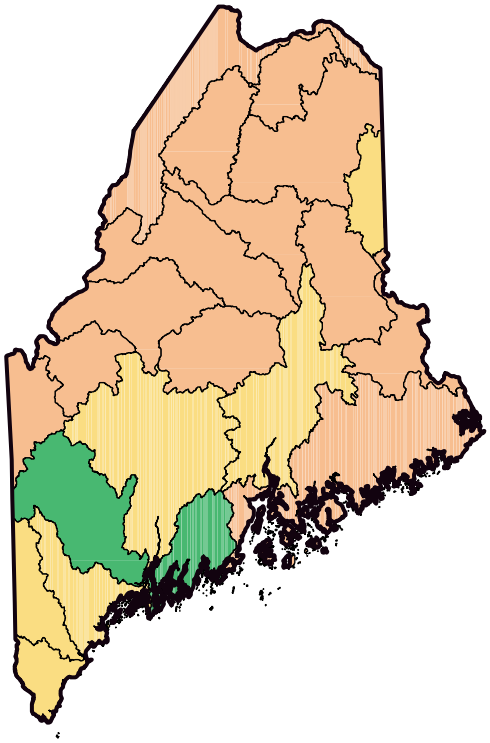
[b] Includes nonperennial streams that dry up and do not flow all year.

Individual Use Support in Louisiana

Designated Use[a]	Total Miles Assessed	Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 66,294)[b]						
	5,848	13	2	29	56	-
	-	-	-	-	-	-
	5,576	50	1	4	45	-
Lakes (Total Acres = 1,078,031)						
	375,114	8	2	68	23	-
	-	-	-	-	-	-
	349,643	97	0	<1	3	-
Estuaries (Total Square Miles = 7,656)						
	2,969	11	0	86	3	-
	-	-	-	-	-	-
	458	69	0	15	16	-
	1,606	37	24	1	39	-
Wetlands (Total Acres = 8,101,772)						
	667,520	1	0	99	0	-
	-	-	-	-	-	-
	464,000	100	0	0	0	-

Note: Figures may not add to 100% due to rounding.

Maine



Percent of Assessed Rivers, Lakes, and Estuaries Meeting All Designated Uses

- 80% - 100% Meeting All Uses
- 50% - 79% Meeting All Uses
- 20% - 49% Meeting All Uses
- 0% - 19% Meeting All Uses
- Insufficient Assessment Coverage
- Basin Boundaries (USGS 8-Digit Hydrologic Unit)

For a copy of the Maine 1998 305(b) report, contact:

Dave Courtemanch
Maine Department of Environmental Protection
Bureau of Land and Water Quality
State House Station 17
Augusta, ME 04333
(207) 287-7789
e-mail: dave.l.courtemanch@state.me.us

Surface Water Quality

Maine's water quality has significantly improved since enactment of the Clean Water Act in 1972. Atlantic salmon and other fish now return to Maine's rivers, and waters that were once open sewers are now clean enough to swim in. Ninety-nine percent of the state's river miles, 90% of the lake acres, and over 99% of the estuarine waters have good water quality that fully supports aquatic life uses. All lake waters in Maine are impaired due to a statewide fish consumption advisory. Oxygen-depleting substances from nonpoint sources and bacteria from inadequate sewage treatment are significant problems in rivers and streams. Major causes of impairment to lakes include nutrients, siltation, oxygen-depleting substances, and flow alterations. Sources of impairment include agriculture, forestry, urban runoff, and hydrologic modifications. Bacteria from municipal treatment plants, combined sewer overflows, and small dischargers contaminate shellfish beds in estuarine waters.

Ground Water Quality

The most significant ground water impacts include petroleum compounds from leaking underground and aboveground storage tanks, other organic chemicals from leaking storage facilities or disposal practices, and bacteria from surface disposal systems or other sources. Maine requires that all underground tanks be registered and that inadequate tanks be removed. About 23,000 tanks have been removed since 1986. Maine also regulates installation of underground storage tanks and closure of landfills to protect ground water resources from future leaks.

Programs to Restore Water Quality

As the state makes progress in restoring waters impacted by point sources, new water quality problems emerge from nonpoint sources. Therefore, the most important water quality initiatives for the future include implementing pollution prevention, nonpoint source management, watershed-based planning, coordinated land use management, and water quality monitoring. The state is linking

pollution prevention with the watershed protection approach in a pilot project within the Androscoggin River basin. The state is also providing local officials and citizen groups with technical assistance to identify problem areas and develop local solutions for reducing pollution generation throughout the watershed.

The Maine Department of Environmental Protection completed a Strategic Plan that will be used to guide future environmental programs. The Strategic Plan is linked with the state of Maine's Performance Partnership Agreement with EPA. This Agreement provides an opportunity for greater dialogue and targeting on state priorities.

Programs to Assess Water Quality

Maine's surface water monitoring program includes ambient water quality monitoring, assimilative capacity and wasteload allocation studies, diagnostic studies, treatment plant compliance monitoring, and special investigations. Due to budgetary constraints, some of these activities are much more limited in scope than is desirable for accurately characterizing water quality conditions in Maine.

Maine started a pilot project in the Casco Bay watershed to develop biological assessment methods and criteria for wetlands.

– Not reported in a quantifiable format or unknown.

[a] A subset of Maine's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

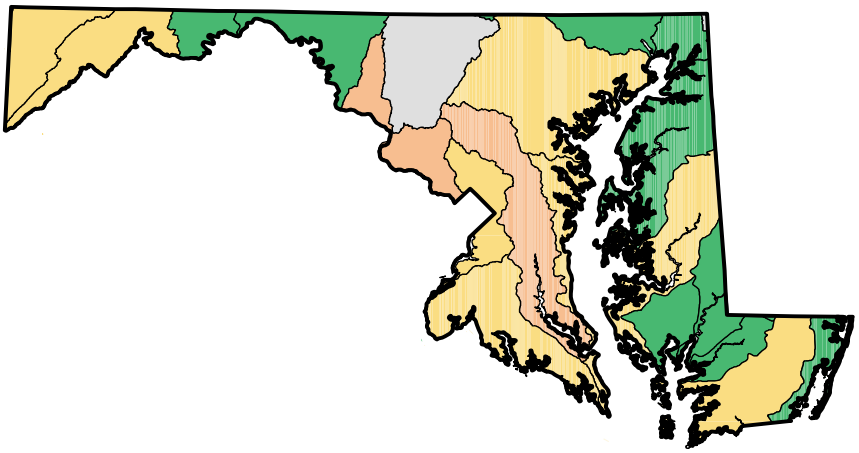
[c] Maine includes coastal shoreline waters in their assessment of estuarine waters.

Individual Use Support in Maine

Designated Use[a]	Total Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 31,752)[b]						
	31,752	99	0	<1	1	-
	31,752	99	0	1	<1	-
	31,752	99	0	<1	<1	-
Lakes (Total Acres = 987,283)						
	987,283	74	16	10	0	-
	987,283	0	0	100	0	-
	987,283	73	22	5	0	-
Estuaries (Total Square Miles = 2,852)[c]						
	2,852	100	0	<1	0	-
	2,852	0	0	100	0	-
	2,852	87	0	2	12	-
	2,852	100	0	<1	0	0

Note: Figures may not add to 100% due to rounding.

Maryland



Percent of Assessed Rivers, Lakes, and Estuaries Meeting All Designated Uses

- 80% - 100% Meeting All Uses
- 50% - 79% Meeting All Uses
- 20% - 49% Meeting All Uses
- 0% - 19% Meeting All Uses
- Insufficient Assessment Coverage
- Basin Boundaries (USGS 8-Digit Hydrologic Unit)

For a copy of the Maryland 1998 305(b) report, contact:

Sherm Garrison
Maryland Department of Natural Resources
Resource Assessment Service/TEA
Tawes State Office Building, D-2
Annapolis, MD 21401
(410) 260-8624
e-mail: sgarrison@dnr.state.md.us

Surface Water Quality

Overall, Maryland's surface waters have good quality, but excess nutrients, suspended sediments, bacteria, toxic materials, or stream acidity impact some waters. The most serious water quality problem in Maryland is the continuing accumulation of nutrients in estuaries and lakes from agricultural runoff, urban runoff, natural nonpoint source runoff, and point source discharges. Excess nutrients stimulate algal blooms and low dissolved oxygen levels that adversely impact water supplies and aquatic life.

Sources of sediment include agricultural and urban runoff, construction activities, natural erosion, dredging, forestry, and mining operations. In western Maryland, acidic waters from abandoned coal mines severely impact some streams. Agricultural, urban, and natural runoff and failing septic systems elevate bacteria concentrations, causing continuous shellfish harvesting restrictions in about 102 square miles of estuarine waters and temporary restrictions in another 71.1 square miles after major rainstorms.

Maryland did not report on the condition of wetlands.

Ground Water Quality

Maryland's ground water resource is of generally good quality. Localized problems include excess nutrients (nitrates) from fertilizers and septic systems; bacteria from septic systems and surface contamination; saline water intrusion aggravated by ground water withdrawals in the coastal plain; toxic compounds from septic tanks, landfills, and spills; petroleum products from leaking storage facilities; and acidic conditions and metals from abandoned coal mine drainage in western Maryland. Control efforts are limited to implementing agricultural best management practices and enforcing regulations for septic tanks, underground storage tanks, land disposal practices, and well construction.

Programs to Restore Water Quality

Maryland manages nonpoint sources with individual programs for each individual nonpoint source category. Urban runoff is addressed through stormwater and sediment control laws that require development projects to maintain predevelopment runoff patterns through implementation of best management practices, such as detention ponds or vegetated swales. The Agricultural Water Quality Management Program supports many approaches, including Soil Conservation and Water Quality Plans, implementation of BMPs, and education. The Agricultural Cost Share Program has provided state and some federal funds to help offset the costs of implementing almost 8,000 agricultural BMPs since 1983.

Programs to Assess Water Quality

Maryland's monitoring programs include a combination of water chemistry, compliance, aquatic resource, and habitat monitoring programs. In addition to traditional monitoring, Maryland also conducts an innovative randomized sampling program in Chesapeake Bay waters using a probabilistic approach to sample analysis. Besides these programs, data from local governments and volunteer groups are available in some areas of the state.

– Not reported in a quantifiable format or unknown.

[a] A subset of Maryland's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

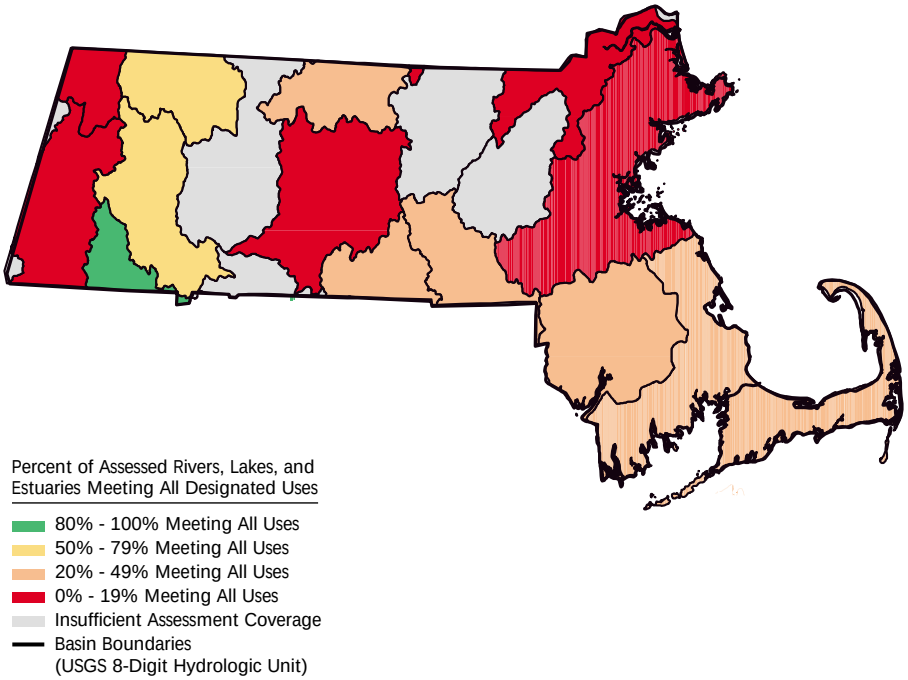
[b] Includes nonperennial streams that dry up and do not flow all year.

Individual Use Support in Maryland

Designated Use[a]	Total Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 17,000)[b]						
	6,682	94	-	5	1	-
	17,000	100	-	0	0	-
	17,000	100	-	<1	<1	-
Lakes (Total Acres = 77,965)						
	21,010	37	-	63	0	-
	21,010	100	-	<1	0	-
	5,023	98	-	1	1	-
Estuaries (Total Square Miles = 2,522)						
	2,459	55	-	45	<1	-
	2,465	99	-	1	0	-
	1,839	92	0	4	4	-
	2,465	100	-	<1	<1	-

Note: Figures may not add to 100% due to rounding.

Massachusetts



For a copy of the Massachusetts 1998 305(b) report, contact:

Richard McVoy
Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street, 2nd floor
Worcester, MA 01608
(508) 767-2822
e-mail: richard.mcvoy@state.ma.us

Surface Water Quality

More than half of the 1,495 river miles assessed by Massachusetts now support aquatic life, swimming, and boating uses, although half of the swimmable miles still experience at least intermittent problems. Twenty-five years ago, swimming and boating in most of these waters would have been unthinkable. The completion of river cleanup will require targeting various sources of pollution, primarily nonpoint source pollution from stormwater runoff and combined sewer overflows, and toxic contamination in sediments (largely historical).

Over a quarter (28%) of the assessed lake acreage, excluding Quabbin Reservoir, fully supports all beneficial uses. The causes of nonsupport include introductions of nonnative species, excessive growth of aquatic plants, and excess metals. The sources of these stressors are largely unknown, although nonpoint sources, including stormwater runoff and onsite wastewater systems, are largely suspected.

Massachusetts' marine waters lag behind its rivers in improvement. Only 32% of the assessed waters fully support all their uses. However, all the major urban areas along the coast either have initiated or are planning cleanup efforts. Foremost among these is a massive project to clean up Boston Harbor.

Ground Water Quality

Organic chemical contaminants have been detected in at least 245 ground water suppy wells (22% of reporting sources). Three percent have at least one exceedance of the MCL. Other contaminants include metals, chlorides, bacteria, inorganic chemicals, radiation, nutrients, turbidity, and pesticides. Since 1983, Massachusetts has required permits for all industrial discharges into ground waters and sanitary wastewater discharges of 15,000 gallons or more per day. The permits require varying degrees of wastewater treatment based on the quality and use of the receiving ground water. Additional controls are needed to eliminate contamination from septic systems and sludge disposal.

Programs to Restore Water Quality

Wastewater treatment plant construction has resulted in significant improvements in water quality,

but $7 billion of unfunded wastewater needs remain. The Nonpoint Source Control Program has implemented over 60 projects to provide technical assistance, implement best management practices, and educate the public. The state has also adopted a combined sewer overflow policy that provides engineering targets for cleanup and is currently addressing several CSO abatement projects.

Programs to Assess Water Quality

The Department of Environmental Protection (DEP) adopted a watershed planning approach to coordinate stream monitoring with wastewater discharge permitting, water withdrawal permitting, and nonpoint source control on a 5-year rotating schedule. The DEP is also adapting its monitoring strategies to provide information on nonpoint source pollution. For example, DEP will focus more on wet weather sampling and biological monitoring and less on chemical monitoring during dry periods in order to gain a more complete understanding of the integrity of water resources.

The state is developing biological assessment methods for coastal wetlands. The state is also partnering with two watershed organizations to train volunteers to monitor salt marshes.

– Not reported in a quantifiable format or unknown.
[a] A subset of Massachusetts's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes nonperennial streams that dry up and do not flow all year.
[c] Including Quabbin Reservoir (25,000 acres).
[d] Includes "marine waters"— harbors, bays, estuaries, and open ocean waters.

Individual Use Support in Massachusetts

Designated Use[a]	Total Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 8,229)[b]						
	1,325	53	7	10	30	0
	679	40	0	0	60	0
	1,082	43	3	29	26	0
Lakes (Total Acres = 151,173)[c]						
	28,103	6	2	88	1	2
	10,479	2	0	0	92	6
	19,566	11	24	26	37	3
Estuaries (Total Square Miles = 2,728)[d]						
	135	47	1	17	36	0
	46	0	0	0	100	0
	-	-	-	-	-	-
	182	51	0	42	7	0

Note: Figures may not add to 100% due to rounding.

Michigan

Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

For a copy of the Michigan 1998 305(b) report, contact:

John Wuycheck
Michigan Department of Environmental Quality
Surface Water Quality Division
P.O. Box 30273
Lansing, MI 48909-7773
(517) 335-4195
e-mail: wuychecj@state.mi.us

The report is also available on the Internet at: *http://www.deq.state.mi.us/swq/gleas/gleas.htm*

Surface Water Quality

Ninety-seven percent of Michigan's assessed river miles fully support aquatic life uses. Swimming use is also fully supported in 98% of the assessed rivers and over 99% of the assessed lake acres. Priority organic chemicals (in fish) are the major cause of nonsupport in more river miles than any other pollutant, followed by siltation and sedimentation, metals, and pathogens. Leading sources of pollution in Michigan include unspecified nonpoint sources, combined sewers, agriculture, contaminated sediments, municipal and industrial discharges, and urban runoff.

Water quality in Michigan's inland lakes is generally good to excellent, with a number of outstanding lakes. While almost all lakes support swimming, a generic fish consumption advisory is applied to all inland lakes due to widespread mercury contamination. Accelerated eutrophication (overenrichment) is also a concern in Michigan's lakes. Nutrient sources associated with human activities such as sewage, fertilizers, detergents, and surface runoff result in nuisance plant and algal growth.

Four of the five Great Lakes border Michigan. The open waters of Lakes Superior, Michigan, and Huron have good quality. Poor water quality is restricted to a few degraded locations near shore. Lake Erie's water quality has improved dramatically in the last two decades, due to pollutant discharge reductions for nutrients, metals, and oils. Water quality in Lake Huron has also improved due to water quality improvements in Saginaw Bay.

Ground Water Quality

Most of the ground water resource is of excellent quality, but certain aquifers have been contaminated with toxic materials leaking from waste disposal sites, businesses, or government facilities. The Michigan Ground Water Protection Strategy and Implementation Plan identifies specific program initiatives, schedules, and agency responsibilities for protecting the state's ground water resources.

Programs to Restore Water Quality

Major point source reductions in phosphorus and organic material

loads have reduced or eliminated water quality problems in many Michigan waters. However, expanded efforts are needed to control nonpoint source pollution, eliminate combined sewer overflows, and reduce toxic contamination. Michigan has implemented an industrial pretreatment program, promulgated rules on the discharge of toxic substances, and regulated hazardous waste disposal facilities, but many toxicity problems are due to past activities that contaminated sediments and atmospheric loadings.

Programs to Assess Water Quality

Michigan employs a 5-year watershed monitoring program cycle to track whether waters of the state meet water quality standards. Each year the state focuses on 9 to 19 of the 61 major watersheds in Michigan. The state's surface water monitoring strategy was recently updated, and additional funding of $500,000 per year was provided to bolster both "local" and state monitoring efforts. The enhanced program consists of eight interrelated monitoring elements: fish contaminants, water chemistry, sediment chemistry, biological integrity, physical habitat, wildlife contaminants, inland lake quality and eutrophication, and stream flow.

– Not reported in a quantifiable format or unknown.

[a] A subset of Michigan's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

Individual Use Support in Michigan

Designated Use[a]	Total Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 51,438)[b]						
	20,575	97	-	-	3	-
	20,576	96	-	-	4	-
	20,575	98	-	-	2	-
Lakes (Total Acres = 889,600)						
	8,154	-	-	-	100	-
	43,820	-	-	-	100	-
	491,931	100	-	-	<1	-
Great Lakes (Total Shore Miles = 3,250)						
	0	-	-	-	-	-
	3,250	0	0	0	100	0
	3,250	100	0	0	<1	0

Summary of Use Support in Michigan

	Total Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Impaired (For One or More Uses)
Wetlands (Total Acres = 6,240,000)				
	10	100	-	0

Note: Figures may not add to 100% due to rounding.