



**APPENDIX A:  
INTEGRATED REPORT TABLES**

Table 1: Summary of Use Support – Assessed and Reported

Designated Use	Total Size	Size Assessed	Size Fully Supporting	Size Not Supporting	Size Not Assessed
Rivers (miles)					
Full Body Contact (Recreational Use)	40,168.59	16,788.42	4,103.98	12,684.44	18,871.46
Human Health and Wildlife (Fishable Use)	40,168.59	4,990.86	1,085.90	3,904.96	30,545.44
Limited Use	31.27	--	--	--	31.27
Public Water Supply <sup>1</sup>	110.81	1	--	1	109.81
Warm Water Aquatic Life (Aquatic Life Use)	40,168.59	19,623.22	13,941	5,682.22	15,902.05
Lake Michigan Shoreline (miles)					
Full Body Contact (Recreational Use)	67.12 <sup>2</sup>	67.12	4.54	62.58	--
Human Health and Wildlife (Fishable Use)	67.12	67.12	--	67.12	--
Public Water Supply	34.97	34.97	34.97	--	--
Warm Water Aquatic Life (Aquatic Life Use)	67.12	67.12	62.58	4.54	--
Lake Michigan (acres)					
Human Health and Wildlife (Fishable Use)	154,176	154,176	--	154,176	--
Lakes and Reservoirs (acres)					
Full Body Contact (Recreational Use)	122,517.26	31,804.60	23,798.64	8,006	90,497.90
Human Health and Wildlife (Fishable Use)	122,517.26	220,422.60	7,820	212,602.60	56,055.90
Public Water Supply	29,541	16,615	230	16,385	12,926
Warm Water Aquatic Life (Aquatic Life Use)	122,517.26	10,315	3,690	6,625	111,987.50

Source: IDEM's assessment database

<sup>1</sup>While all waterbodies in Indiana are designated for aquatic life and recreational uses, not all are designated for drinking water use. There are a total of 29,541 lake acres and 110 stream miles (including 35 miles of shoreline) currently designated for drinking water in Indiana.

<sup>2</sup>Due to the differences between the 1:100,000 NDH and the 1:24,000 National Hydrography Data (NHD), the Lake Michigan Shoreline miles have changed. The 1:24,000 NHD has higher resolution and is more accurate.

Table 2: Atlas Information

Description	Value	Units
Indiana population <sup>1</sup>	6,080,485	
Indiana surface area <sup>2</sup>	36,291	square miles
Total miles of rivers and streams <sup>3</sup>	40,168	miles
Number of publicly-owned lakes/ reservoirs/ ponds <sup>4</sup>	575+	
Publicly-owned lakes/ reservoirs/ ponds <sup>4</sup>	106,205	acres
Great Lakes <sup>4</sup>	154176	acres
Great Lakes shoreline <sup>5</sup>	67	miles
Fresh water wetlands <sup>6</sup>	813,000	acres

Sources: <sup>1</sup> U.S. Census Bureau <sup>2</sup> State Information Center <sup>3</sup> United States Geological Survey (USGS) National Hydrography Database (NHD) <sup>4</sup> U.S. EPA 1993 <sup>5</sup> Indiana Reach Index <sup>6</sup> Rolley 1991

Table 3: 205(j) and 319(h) Investments in SFY 2003-2009\*

205(j)			319(h)		
FFY	Number of Projects	Amount Awarded	FFY	Number of Projects	Amount Awarded
2003	6	\$507,054.00	2003**	34	\$4,544,480
2004	6	\$497,220.00	2004***	27	4,159,332
2005	3	\$254,430.00	2005****	21	\$3,747,145
2006	2	\$251,310.00	2006	18	\$3,374,538
2007	2	\$148,915	2007	12	\$3,022,961.00
2008	0	0	2008	8	\$2,967,181
2009	2	\$271,432.00	2009	9	\$2,759,609.00

\* Additionally, 4 ARRA projects received \$434,328 in 2009;

\*\* includes 2 in-house projects totaling \$526,122;

\*\*\* includes 2 in-house projects totaling \$248,792;

\*\*\*\* includes 1 in-house project totaling \$155,686

Table 4: SRF Investments in SFY 2008 and 2009

SRF program	Number of projects	Loan amount	Savings realized
Clean Water	29	\$240,882,000	\$66,149,612
Drinking Water	16	\$49,299,600	\$24,722,062

Source: SRF tracking database

Table 5: Reduction of Sediment, Phosphorus, and Nitrogen Reaching Indiana Waters

Dates	Sediment Reduction (ton/year)	Phosphorus Reduction (lbs/year)	Nitrogen Reduction (lbs/year)
2000-2003	35,870	42,662	85,710
2004	18,561	21,993	44,527
2005	33,415	39,347	79,349
2006	25,831	40,538	99,434
2007	23,279	126,529	125,848
2008	18,119	25,400	65,367
2009	7,965	15,479	15,319

Source: IDEM's nonpoint source project tracking database

Table 6: Funding for Projects in the Big Walnut Creek Watershed

Project Name	Section 319 Funds Awarded	Date of Grant
Putnam County SWCD Upper Eel River Manure Management	\$101,000	1999
Sycamore Trails RC&D Upper Eel River Manure Management	\$138,305	2000
Sycamore Trails RC&D Big Walnut and Deer Creek Conservation Buffers	\$140,000	2001
Owen County SWCD CORE 4 Initiative	\$185,000	2003

Table 7: Water Quality Improvements in the Big Walnut Creek Watershed

Stream Name	Hydrologic Unit Code	2001 geometric mean results	2007 geometric mean results	Percent difference
East Branch Big Walnut Creek	051202030102	1016.1 MPN	37.4 MPN	96.3 %
West Branch Big Walnut Creek	051202030104	152.3 MPN	28.2 MPN	81.4%
Eldin Ditch	051202030101	152.3 MPN	27.1 MPN	82.2%

Table 8: Summary of Changes in Water Quality in the Lower Clifty Creek Watershed

Stream Name	Hydrologic Unit Code	WQS geometric mean	2002 geometric mean	2007 geometric mean	Percent reduction
Clifty Creek	051202060107	125 MPN	205.02 MPN	67.58 MPN	67.03 %

Table 9: External data sets received in response to IDEM's 305(b)/303(d) solicitations in 2007 and 2009.

Source
AMERICAN WATER COMPANY
ANCILLA COLLEGE
CITY OF ANDERSON
CITY OF ANGOLA AND TRINE UNIVERSITY
CITY OF DECATUR
CITY OF ELKHART
CITY OF INDIANAPOLIS
CITY OF KOKOMO
CITY OF LAFAYETTE
CITY OF PERU
CITY OF RICHMOND
CITY OF SEYMOUR
CITY OF SHELBYVILLE
CITY OF SOUTH BEND
CITY OF VALPARAISO
CITY OF ELKHART
EMILY TALLO AND SAVE MAUMEE GRASSROOTS ORGANIZATION
HAMILTON COUNTY HEALTH DEPARTMENT
HOWARD COUNTY HEALTH DEPARTMENT
JOHNSON COUNTY HEALTH DEPARTMENT
MADISON COUNTY MS4

Source
MARION COUNTY HEALTH DEPARTMENT
MICHIGAN CITY
MONROE COUNTY PARKS AND RECREATION
CITY OF MUNCIE
SARAH SKELTON AND LAKE OF THE WOODS PROPERTY OWNER'S ASSOCIATION
ST. JOSEPH WATERSHED AND THE NATURE CONSERVANCY
STEBEN COUNTY LAKES COUNCIL
TOWN OF BROWNSBURG
TOWN OF FORTVILLE
TOWN OF MCCORDSVILLE
TOWN OF SPEEDWAY
WHITE COUNTY DEPARTMENT OF HEALTH

Table 10: External data sets determined by IDEM to meet the necessary data quality requirements for 305(b) assessment and 303(d) listing purposes.

Source	Type of Assessment
AMERICAN WATER COMPANY	DRINKING WATER USE SUPPORT
CITY OF ELKHART	AQUATIC LIFE USE SUPPORT; FISHABLE USE SUPPORT
CITY OF INDIANAPOLIS	RECREATIONAL USE SUPPORT; DRINKING WATER USE SUPPORT; AQUATIC LIFE USE SUPPORT
CITY OF MUNCIE	RECREATIONAL USE SUPPORT; DRINKING WATER USE SUPPORT; AQUATIC LIFE USE SUPPORT
CITY OF SOUTH BEND	RECREATIONAL USE SUPPORT
CITY OF VALPARAISO	RECREATIONAL USE SUPPORT; DRINKING WATER USE SUPPORT; AQUATIC LIFE USE SUPPORT
MARION COUNTY HEALTH DEPARTMENT	RECREATIONAL USE SUPPORT; DRINKING WATER USE SUPPORT; AQUATIC LIFE USE SUPPORT



Table 11: Summarized criteria for Use Support Assessment

Aquatic Life Use Support - Rivers and Streams		
Toxicants	Dissolved metals, pesticides, polyaromatic hydrocarbons (PAH), free cyanide, ammonia were evaluated on a site-by-site basis and judged according to the magnitude of the exceedance(s) of Indiana's WQS and the number of times the exceedance(s) occurred. For any one pollutant (grab or composite samples), the following assessment criteria are applied to data sets consisting of three or more measurements.	
	<b>Fully Supporting</b>	<b>Not Supporting</b>
	≤1 exceedance of the acute criteria within a three-year period, and ≤1 exceedance of the chronic criteria for aquatic life within a three-year period.	>1 exceedance of the acute or chronic criteria for aquatic life within a three-year period.
Conventional inorganics	Dissolved oxygen, pH, sulfates, chlorides were evaluated for the exceedance(s) of Indiana's WQS. For any one pollutant, the following assessment criteria are applied to data sets consisting of three or more measurements.	
	<b>Fully Supporting</b>	<b>Not Supporting</b>
	For dissolved oxygen, one or more samples may be <4mg/L, but no more than 10% of all measurements are <5mg/L. For other conventional inorganics, criteria are exceeded in ≤10% of measurements.	For dissolved oxygen, one or more samples <4mg/L and more than 10% of all measurements are <5mg/L. For other conventional inorganics, criteria are exceeded in >10% of measurements.
Nutrients	<p>Nutrient conditions were evaluated on a site by site basis using the benchmarks described below. In most cases, two or more of these conditions must be met on the same date in order to classify a waterbody as impaired. This methodology assumes a minimum of three sampling events.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Total Phosphorus: One or more measurements &gt;0.3 mg/l</li> <li><input type="checkbox"/> Nitrogen (measured as NO<sub>3</sub> + NO<sub>2</sub>) – One or more measurements &gt;10.0 mg/l</li> <li><input type="checkbox"/> Dissolved Oxygen (DO) -- Measurements below the water quality standard of 4.0 mg/l or measurements that are consistently at/close to the standard, in the range of 4.0-5.0 mg/l or values &gt;12.0 mg/l</li> <li><input type="checkbox"/> pH measurements -- Measurements above the water quality standard of 9.0 or measurements that are consistently at/close to the standard, in the range of 8.7- 9.0</li> <li><input type="checkbox"/> Algal Conditions -- Algae are described as “excessive” based on field observations by IDEM scientists.</li> </ul>	

Benthic aquatic macroinvertebrate Index of Biotic Integrity (mIBI) Scores (Range of possible scores is 12-60)	<b>Fully Supporting</b>	<b>Not Supporting</b>
	mIBI >36	mIBI <36
Fish community (IBI) Scores (Range of possible scores is 6-60)	IBI ≥36	IBI <36
	<p>The Qualitative Habitat Evaluation Index (QHEI) is not used to determine aquatic life use support. Rather, the QHEI is an index designed to evaluate the lotic habitat quality important to aquatic communities and is used in conjunction with mIBI or IBI data, or both to evaluate the role that habitat plays in waterbodies where impaired biotic communities (IBC) have been identified. QHEI scores are calculated using six metrics: substrate, instream cover, channel morphology, riparian zone, pool/riffle quality, and gradient. A higher QHEI score represents a more diverse habitat for colonization of aquatic organisms. IDEM has determined that a QHEI total score of &lt;51 indicates poor habitat. For streams where the macroinvertebrate community (mIBI or mHab) or fish community (IBI) scores indicate IBC, QHEI scores are evaluated to determine if habitat is the primary stressor on the aquatic communities or if there may be other stressors/pollutants causing the IBC.</p>	
<b>Aquatic Life Use Support – Lakes and Reservoirs</b>		
Indiana Department of Natural Resources surveys of the status of sport fish communities in lakes and information on trout stocking.	<b>Fully Supporting</b>	<b>Not Supporting</b>
	Supports cold water fishery, including native Cisco and stocked trout, or both.	Native Cisco population is gone or lake unable to support stocked trout and lake attributes, or both, appear to contribute to warm water fishery condition.
Temperature and pH	Lakes in which thermal modifications have caused an adverse effect on aquatic life and lakes that do not meet Indiana's WQS for pH have been assessed as not supporting of aquatic life use.	

### Fish Consumption Use Support (Human Health)

All samples from a given sampling reach must have results below the benchmarks for mercury and polychlorinated biphenyls (PCBs) in order to be assessed as fully supporting, and all waters with a sample result exceeding the benchmark for either mercury or PCBs, or both are classified as impaired.

	Fully Supporting	Not Supporting
Mercury in Fish Tissue	Actual concentration values (including estimated values above the method detection limits) for all samples collected from sampling reach are $\leq 0.3$ mg/kg	One or more actual concentration values (including estimated values above the method detection limits) for samples collected from sampling reach are $> 0.3$ mg/kg
PCBs in Fish Tissue	Actual concentration values (including estimated values above the method detection limits) for all samples collected from sampling reach are $\leq 0.02$ mg/kg	One or more actual concentration values (including estimated values above the method detection limits) for samples collected from sampling reach are $> 0.02$ mg/kg

### Recreational Use Support (Human Health) – All waters

IDEM has two different criteria for recreational use assessments depending on the type of data set being used in making the assessment. For data sets consisting of five equally spaced samples over a 30-day period, we apply two tests, both of which are based on U.S. EPA's Ambient Water Quality Criteria for Bacteria - 1986 (EPA440/5-84-002), which provides the foundation for Indiana's WQS for recreational use. For data sets consisting of 10 or more grab samples where no five of which are equally spaced over a 30-day period, the 10% rule is applied. Specific criteria are provided below.

	Fully Supporting	Not Supporting
Bacteria ( <i>E. coli</i> ): at least five equally spaced samples over 30 days. (cfu = colony forming units)	Geometric mean does not exceed 125 cfu/100ml and no more than one sample $> 576$ cfu/100ml.	Geometric mean exceeds 125 cfu/100mL.
Bacteria ( <i>E. coli</i> ): grab samples (cfu = colony forming units)	No more than 10% of measurements $> 576$ cfu/100ml and not more than one sample $> 2,400$ cfu/100ml.	More than 10% of samples $> 576$ cfu/100ml or more than one sample $> 2,400$ cfu/100ml.

### Drinking Water Use Support – Rivers and Streams

Rivers are designated for drinking water uses if a community water supply has a drinking water intake somewhere along the segment. When IDEM has data for a segment with a drinking water intake, those data are compared to the applicable ambient water quality criteria in Indiana’s WQS to determine if the drinking water use is met. The appropriate water quality criteria are applied for specific substances identified in the WQS. Information regarding non-naturally occurring taste and odor producing substances not specifically identified in the WQS are reviewed within the context of a water treatment facility’s ability to meet Indiana’s drinking WQS using conventional treatment.

Toxicants	Dissolved metals, pesticides, PCBs, free cyanide were evaluated on a site by site basis and judged according to magnitude of the exceedance(s) of Indiana’s WQS for point of water intake and the number of times exceedance(s) occurred. For any one pollutant (grab or composite samples), the following assessment criteria are applied.	
	<b>Fully Supporting</b>	<b>Not Supporting</b>
	No more than one exceedance of the acute or chronic criteria for human health within a three-year period.	More than one exceedance of the acute or chronic criteria for human health within a three-year period.
Conventional inorganics	Total dissolved solids, specific conductance, sulfate, chloride, nitrite-N and nitrogen (measured as NO <sub>3</sub> + NO <sub>2</sub> ) were evaluated for the exceedance(s) of Indiana’s WQS for point of water intake and the number of times the exceedance(s) occurred. For any single pollutant (grab or composite samples), the following assessment criteria are applied to data sets consisting of three or more measurements.	
	<b>Fully Supporting</b>	<b>Not Supporting</b>
	No more than one exceedance of the acute or chronic criteria for human health within a three-year period.	More than one exceedance of the acute or chronic criteria for human health within a three-year period.
Taste and odor producing substances	<b>Fully Supporting</b>	<b>Not Supporting</b>
	Taste and odor substances not present in quantities sufficient to interfere with production of drinking water by conventional treatment	Taste and odor substances present in quantities requiring additional treatment by the public water supply to prevent taste and odor problems

Recreational Use Support (Aesthetics) – Lakes and Reservoirs		
Natural Lakes	<b>Fully Supporting</b>	<b>Not Supporting</b>
	No more than 10% of all TP values >54 ug/L and their associated Chla values are <20ug/L	<p>Less than 10% of all TP values are &gt;54 ug/L but their associated Chla values are &gt;20ug/L, and the TSI score for the lake indicates eutrophic (32-46) or hypereutrophic (&gt;47) conditions</p> <p>Or</p> <p>More than 10% of all TP values are &gt;54 ug/L with associated Chla values &lt;4ug/L, but the TSI score for the lake indicates eutrophic (32-46) or hypereutrophic (&gt;47) conditions</p> <p>Or</p> <p>More than 10% of all TP values are &gt;54 ug/L with associated Chla values &gt;4ug/L</p>
Reservoirs	<b>Fully Supporting</b>	<b>Not Supporting</b>
	No more than 10% of all TP values >51 ug/L and their associated Chla values are <25ug/L	<p>Less than 10% of all TP values are &gt;51 ug/L but their associated Chla values are &gt;25 ug/L and the TSI score for the lake indicates eutrophic (32-46) or hypereutrophic (&gt;47) conditions</p> <p>Or</p> <p>More than 10% of all TP values are &gt;51 ug/L with associated Chla values &lt;2ug/L, but the TSI score for the lake indicates eutrophic (32-46) or hypereutrophic (&gt;47) conditions</p> <p>Or</p> <p>More than 10% of all TP values are &gt;51 ug/L with associated Chla values &gt;2ug/L</p>

<b>Drinking Water Use Support – Lakes and Reservoirs</b>	
Information on the application of pesticides to surface drinking water reservoirs	Reservoirs or lakes that serve as source water for public water supplies that received pesticide (algaecide) application permits for algae were classified as not supporting because additional treatment by the public water supply was required to prevent taste and odor problems.
<b>Other Assessments – Lakes and Reservoirs</b>	
Indiana Trophic State Index (TSI)	Nutrients, ammonia, dissolved oxygen, light transmission and light penetration in the water column turbidity, and algae growth were used to determine TSI scores. Trophic scores were used to classify lakes according to their trophic state. Lake trends were also assessed for lakes with two or more trophic scores if at least one of the scores was less than five years old. Trophic scores and lake trends are not used to determine use support status. These assessments are conducted to fulfill Clean Water Act Section 314 reporting requirements for publicly owned lakes and reservoirs.

Table 12: Individual Use Support Summary – Streams

USE	Total Size	Size Assessed	Percent Assessed	Size Fully Supporting	Size Not Supporting	Size Not Assessed
Full Body Contact (Recreational Use)	40,168.59	16,788.42	41.79%	4,103.98	12,684.44	18,871.46
Human Health and Wildlife (Fishable Use)	40,168.59	4,990.86	12.42%	1,085.90	3,904.96	30,545.44
Limited Use	31.27	0	0.00%	0	0	31.27
Public Water Supply	110.81	1	0.90%	0	1	109.81
Warm Water Aquatic Life (Aquatic Life Use)	40,168.59	19,623.22	48.85%	13,941	5,682.22	15,902.05

Sources: Indiana 305(b) assessment database and IDEM biological studies section

Table 13: Summary of National and State Causes Impairing Waters – Streams

Cause	Total Size (miles)
<b>PATHOGENS</b>	
Escherichia coli	12,716.83
<b>OXYGEN DEPLETION</b>	
Oxygen, Dissolved	1,471.49
<b>FLOW ALTERATIONS</b>	
Low flow alterations	33.4
<b>HABITAT ALTERATIONS (INCLUDING WETLANDS)</b>	
Physical substrate habitat alterations	74.86
<b>THERMAL IMPACTS</b>	
Temperature, water	96.29
<b>NUTRIENTS (Macronutrients/Growth Factors)</b>	
Ammonia (Un-ionized)	44.58
Nutrient/Eutrophication Biological Indicators	1,091.19
Organic Enrichment (Sewage) Biological Indicators	32.53
<b>TOXIC INORGANICS</b>	
Chloride	166.22
Cyanide (as free cyanide)	162.09
Sulfates	136.06
<b>TOXIC ORGANICS</b>	
Dioxin (including 2,3,7,8-TCDD)	364.27
Hexachlorocyclohexane (mixture)	56.1
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	27.43
PCB in Fish Tissue	3,473.47
PCB in Water Column	364.27
<b>METALS</b>	
Mercury in Fish Tissue	1,756.32
Mercury in Water Column	255.03
<b>PESTICIDES</b>	
Atrazine	6.54
<b>pH/ACIDITY/CAUSTIC CONDITIONS</b>	
pH	144.72
<b>SEDIMENTATION</b>	
Sedimentation/Siltation	85.02

OIL AND GREASE	
Oil and Grease	27.22
ALGAE	
Chlorophyll-a	98.36
CAUSE UNKNOWN	
Impaired Biotic Communities	3,667.42

Source: Indiana 305(b) assessment database

Table 14: Summary of National and State Sources Impairing Waters – Streams

Source	Total Size (miles)
AGRICULTURE-ANIMAL FEEDING/HANDLING OPERATIONS (NPS - NOT REGULATED)	
Animal Feeding Operations (NPS)	4,971.69
Managed Pasture Grazing	41.99
Permitted Runoff from Confined Animal Feeding Operations (CAFOs)	1,310.82
Agriculture	482.8802
Unrestricted Cattle Access	316.74
Test Source	776.53
AGRICULTURE-CROP PRODUCTION	
Crop Production with Subsurface Drainage	1,914.91
Crop Production (Crop Land or Dry Land)	96.15
AGRICULTURE-GRAZING-RELATED SOURCES	
Livestock (Grazing or Feeding Operations)	3,262.46
CONSTRUCTION	
Site Clearance (Land Development or Redevelopment)	33.37
GROUNDWATER LOADINGS	
Contaminated Groundwater	6.43
HABITAT ALTERATIONS (NOT DIRECTLY RELATED TO HYDROMODIFICATION)	
Impacts from Hydrostructure Flow Regulation/modification	380.9901
Loss of Riparian Habitat	593.0501
Streambank Modifications/destabilization	341.2401
Upstream Impoundments (e.g., PI-566 NRCS Structures)	8.11



HYDROMODIFICATION	
Channelization	208.08
Dam Construction (Other than Upstream Flood Control Projects)	13.92
INDUSTRIAL PERMITTED DISCHARGES	
Industrial Point Source Discharge	242.49
Rcra Hazardous Waste Sites	3.4
Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)	15.38
LAND APPLICATION/WASTE SITES	
Discharges from Biosolids (SLUDGE) Storage, Application or Disposal	1.0701
Illegal Dumps or Other Inappropriate Waste Disposal	375.01
On-site Treatment Systems (Septic Systems and Similar Decentralized Systems)	759.9301
LEGACY/HISTORICAL POLLUTANTS	
Acid Mine Drainage	172.18
Contaminated Sediments	181.71
Historic Bottom Deposits (Not Sediment)	68.09
Impacts from Abandoned Mine Lands (Inactive)	8.76
MUNICIPAL PERMITTED DISCHARGES (DIRECT AND INDIRECT)	
Combined Sewer Overflows	987.63
Municipal Point Source Discharges	1,044.63
Package Plant or Other Permitted Small Flows Discharges	1,604.95
Sanitary Sewer Overflows (Collection System Failures)	12.78
STORMWATER PERMITTED DISCHARGES (DIRECT AND INDIRECT)	
Unspecified Urban Stormwater	830.43
NATURAL	
Waterfowl	2,125.69
Wildlife Other than Waterfowl	2,125.69
Upstream/Downstream Source	43.39
Natural Sources	530.2

RESOURCE EXTRACTION	
Dredge Mining	51.05
Reclamation of Inactive Mining	78.17
SPILLS AND UNPERMITTED DISCHARGES	
Sewage Discharges in Unsewered Areas	3,213.77
URBAN-RELATED RUNOFF/STORMWATER (OTHER THAN REGULATED DISCHARGES)	
Golf Courses	10.07
Highways, Roads, Bridges, Infrastructure (New Construction)	2.12
Post-development Erosion and Sedimentation	3.36
Wastes from Pets	86.62
Impervious Surface/Parking Lot Runoff	396.54
Rural (Residential Areas)	9.77
Urban Runoff/Storm Sewers	63.13
OTHER	
Source Unknown	5,455.22
Non-Point Source	9,822.58

Source: Indiana 305(b) assessment database

Table 15: Individual Use support Summary – Great Lakes Shoreline

USE	Total Size	Size Assessed	Percent Assessed	Size Fully Supporting	Size Not Supporting	Size Not Assessed
Full Body Contact (Recreational Use)	67.1	67.12	100.00%	4.54	62.58	0
Human Health and Wildlife (Fishable Use)	67.1	67.12	100.00%	0	67.12	0
Public Water Supply	35	34.97	100.00%	34.97	0	0
Warm Water Aquatic Life (Aquatic Life Use)	67.1	67.12	100.00%	62.58	4.54	0

Source: Indiana 305(b) assessment database

Table 16: Summary of National and State Causes Impairing Great Lakes Shoreline

Cause	Total Size
<b>PATHOGENS</b>	
Escherichia coli	62.58
<b>TOXIC INORGANICS</b>	
Cyanide (as free cyanide)	4.54
<b>TOXIC ORGANICS</b>	
PCB in Fish Tissue	67.12
<b>METALS</b>	
Mercury in Fish Tissue	67.12

Source: Indiana 305(b) assessment database

Table 17: Summary of National and State Sources Impairing Great Lakes Shoreline

Source	Total Size
<b>LAND APPLICATION/WASTE SITES</b>	
On-site Treatment Systems (Septic Systems and Similar Decentralized Systems)	22
<b>MUNICIPAL PERMITTED DISCHARGES (DIRECT AND INDIRECT)</b>	
Illicit Connections/Hook-ups to Storm Sewers	22
<b>OTHER</b>	
Source Unknown	67.12
Non-Point Source	5.61

Source: Indiana 305(b) assessment database

Table 18: Individual Use Support Summary – Lake Michigan

National and state uses (acres)					
Beneficial use	Size assessed	Size fully supporting	Size fully supporting, but threatened	Size not supporting	Size not attainable
Aquatic life use					
Fishable uses	154,176			154,176	
Drinking water supply					
Recreational use (human health)					

Source: Indiana 305(b) assessment database

Table 19: Summary of National and State Causes Impairing Lake Michigan

Cause/Stressor	Acres
Bioaccumulative chemicals of concern	
PCBs in fish tissue	154,176
Mercury in fish tissue	154,176

Source: Indiana 305(b) assessment database

Table 20: Summary of National and State Sources Impairing Lake Michigan

Source	Acres
Source unknown (applied to fish tissue impairments)	154,176

Source: Indiana 305(b) assessment database

Table 21: Individual Use Support Summary – Lakes, Reservoirs

USE	Total Size	Size Assessed	Percent Assessed	Size Fully Supporting	Size Not Supporting	Size Not Assessed
Full Body Contact (Recreational Use)	122,517.26	31,804.60	25.96%	23,798.64	8,006	90,497.90
Human Health and Wildlife (Fishable Use)	122,517.26	220,422.60	179.91%	7,820	212,602.60	56,055.90
Public Water Supply	29,541	16,615	56.24%	230	16,385	12,926
Warm Water Aquatic Life (Aquatic Life Use)	122,517.26	10,315	8.42%	3,690	6,625	111,987.50

Source: Indiana 305(b) assessment database and IDEM biological studies section

Table 22: Summary of national and state causes impairing lakes and reservoirs

Cause	Total Size
PATHOGENS	
Escherichia coli	983
THERMAL IMPACTS	
Temperature, water	1,556
NUTRIENTS (Macronutrients/Growth Factors)	
Phosphorus (Total)	7,023
TOXIC ORGANICS	
PCB in Fish Tissue	187,256.60
METALS	
Mercury in Fish Tissue	193,482.60
MINERALIZATION	
Taste and Odor	16,385
pH/ACIDITY/CAUSTIC CONDITIONS	
pH	105
ALGAE	
Chlorophyll-a	16,385
OTHER	
Cause Unknown	6,520
Mercury in Fish Tissue	193,482.60

Source: Indiana 305(b) assessment database

Table 23: Summary of national and state sources impairing lakes and reservoirs

Source	Total Size
<b>AGRICULTURE-ANIMAL FEEDING/HANDLING OPERATIONS (NPS - NOT REGULATED)</b>	
Agriculture	30
<b>INDUSTRIAL PERMITTED DISCHARGES</b>	
Industrial Point Source Discharge	1,556
<b>LEGACY/HISTORICAL POLLUTANTS</b>	
Acid Mine Drainage	105
<b>MUNICIPAL PERMITTED DISCHARGES (DIRECT AND INDIRECT)</b>	
Combined Sewer Overflows	30
<b>URBAN-RELATED RUNOFF/STORMWATER (OTHER THAN REGULATED DISCHARGES)</b>	
Impervious Surface/Parking Lot Runoff	30
<b>OTHER</b>	
Source Unknown	214,173.60
Non-Point Source	7,054

Source: Indiana 305(b) assessment database

Table 24: Lake classification scheme for Indiana


Trophic state		TSI score
Increasing eutrophication 	Oligotrophic	Less than 15 points on the Indiana TSI scale
	Mesotrophic	16-31 TSI points
	Eutrophic	32-46 TSI points
	Hypereutrophic	Greater than 47 TSI points
	Dystrophic	Lakes with little plant growth despite the presence of nutrients; usually due to high humic conditions

Table 25: Trophic status of lakes assessed 2005-2006

Trophic Status	Number of Lakes	Total Size
Oligotrophic	77	13,629
Mesotrophic	186	64,680.64
Eutrophic	100	16,378
Hypereutrophic	36	3,058
Dystrophic	0	0
Unknown	5	193

Source: Indiana 305(b) assessment database

Table 26: Trends in the trophic status of lakes assessed 2005-2006

Trend	Number	Acres
Improving	6	3489
Stable	13	6840
Fluctuating	35	12672
Degrading	3	469
Total Assessed for Trends	57	23470

Source: Indiana 305(b) assessment database

Table 27: General wetland information

Statistic	Amount
Total surface area of the state of Indiana	23,310,000 acres
Estimate of wetland acreage in Indiana circa 1700	5,600,000 acres
Wetland acreage in Indiana circa 1986 (National Wetland Inventory)	813,000 acres
Percent of surface area of Indiana covered by wetlands circa 1700	24.1%
Percent of surface area of Indiana covered by wetlands circa 1986	3.5%
Percent of total area of wetlands that are wholly or partially contained within managed lands (state, local, federal and private areas)	14%
Percent of Indiana's total wetlands that are 0.25 acres or less in size	11.6%
Percent of Indiana's total wetlands that are 0.50 acres or less in size	29.5%
Percent of Indiana's total wetlands that are 1.00 acres or less in size	46.9%
Percent of Indiana's total wetlands that are 5.00 acres or less in size	80.2%

Table 28: Type and extent of Indiana's wetlands

Wetland type (Cowardin classification)	Historical Extent (acres)	Extent as of mid-1980s (acres)
Palustrine scrub/shrub (PSS)		42,000
Palustrine forested (PFO)		504,000
Palustrine emergent (PEMB)		55,000
Palustrine emergent seasonally flooded (PEMC)		68,000
Palustrine emergent semi-permanently flooded (PEMF)		21,000
Palustrine open water (POW)		99,000
Lacustrine limnetic open water (L10W)		141,000
Riverine (R)		53,000
Total wetland resources	5,600,000	813,000

Source: Rolley, 1991



Table 29: Calls, spills and fish kills reported from 1998 to 2009

Year	Calls	Spills	Fish Kills
1998	2649	1393	28
1999	2507	1246	41
2000	2930	1491	43
2001	3093	1591	51
2002	3043	1666	55
2003	3026	1551	30
2004	2829	1406	37
2005	3319	1271	40
2006	3319	1368	31
2007	2852	1354	36
2008	3250	1588	39

Source: ULCERS database

Table 30: Major sources of ground water contamination

Contaminant Source	Highest Priority	Risk Factors*	Type of Contaminant**
<b>Agricultural Activities</b>			
Agricultural chemical facilities		A,C,H,I	5
Commercial fertilizer applications	X	A, C, D, E	5
Confined animal feeding operations	X	A, D, E	5, 9
Farmstead agricultural mixing and loading procedures			
Irrigation practices		A,C,H,I	1,2,5,8,9
Manure applications	X	A,C,H,I	5, 9
Pesticide applications		A,C,H,I	1,2
<b>Storage and Treatment Activities</b>			
Land application		A,C,H,I	5,9
Domestic and industrial residual applications		A,C,H,I	5,9
Material stockpiles		A,C,H,I	5,9
Storage tanks (above ground)		A,C,H,I	
Storage tanks (underground)	X	A, B, C, D, E, F	2, 3, 4
Surface impoundments			
Waste piles		A,C,H,I	5,9
<b>Disposal Activities</b>			
Deep injection wells			
Landfills (constructed prior to 1989)	X	A, B, C, D, E, F	1, 2, 3, 4, 5, 6, 7, 8, 9
Permitted landfills (constructed 1989- present)			
Septic systems	X	A, C, D, E, F, G	1, 2, 3, 4, 5, 7, 9
Shallow (Class V) injection wells	X	A, B, C, D, E, I	1, 2, 3, 4, 5, 7, 9

Other			
Hazardous waste generators		A	
Hazardous waste sites		A	
Industrial facilities	X	A, B, C, D, E, F	1, 2, 3, 4, 5, 7, 8, 9
Liquid transport pipelines (including sewer)		A	8
Materials spills (including during transport)	X	A, B, C, D, E, F	1, 2, 3, 4, 5, 7, 8, 9
Material transfer operations		A	
Small-scale manufacturing and repair shops		A, I	8
Mining and mine drainage		A	7,8
Salt storage (state and nonstate facilities) and road salting	X	A, C, D, E, F	6
Urban runoff		A, C, H, I	1, 2, 4, 5, 7, 8, 9

Source: U.S. EPA 2006a; 2007

\*Factors considered in selecting the contaminant source: (A) human health and/or environmental risk (toxicity); (B) size of the population at risk; (C) location of source relative to drinking water source; (D) number and/or size of contaminant sources; (E) hydrogeologic sensitivity; (F) documented state findings, other findings; (G) high to very high priority in localized areas, but not over majority of Indiana; (H) geographic distribution/occurrence; and, (I) lack of information

\*\*Classes of contaminants associated with contamination source: (1) Inorganic pesticides; (2) Organic pesticides; (3) Halogenated solvents; (4) Petroleum compounds; (5) Nitrate; (6) Salinity/brine; (7) Metals; (8) Radionuclides; and, (9) Bacteria, protozoa and viruses

Table 31: Summary of state ground water protection programs through 2009

Program or Activity	Status	State Agency/Organization
Active SARA Title III Program	Fully established	IDEM-OLQ <sup>1</sup>
Ambient ground water monitoring program	Under development	IDEM-OWQ
Aquifer sensitivity assessment	Fully established	IDEM-OWQ, IDNR, IGS <sup>2</sup> , OISC <sup>3</sup>
Aquifer mapping/basin studies	Under development	IDNR, IDEM-OWQ
Aquifer/ hydrogeologic setting characterization	Fully established	IGS, IDEM-OWQ, IDNR
Bulk storage program for agricultural chemicals	Fully established	OISC
Comprehensive data management system	Under development	IDEM-OWQ
Complaint response program for private wells	Fully established	IDEM-OWQ
Confined animal feeding program	Fully established	IDEM-OWQ
Ground water discharge permits for constructed wetlands	Under development	IDEM-OWQ
Ground water Best Management Practices	Under development	OISC*, IDEM-OWQ
Ground water legislation	Fully established	IDEM, IDNR, OISC, ISDH
Ground water classification	Fully established	IDEM-OWQ
Ground water quality standards	Fully established	IDEM-OWQ
Land application of domestic and industrial residuals	Fully established	IDEM-OLQ
Nonpoint source controls	Under development	IDEM-OWQ
Oil and Gas	Fully established	IDNR
Pesticide State Management Plan	Pending	OISC*, IDEM-OWQ, IDNR, IGS
Pollution Prevention Program	Fully established	IDEM-OPPTA <sup>4</sup>
Reclamation	Fully established	IDNR
Resource Conservation and Recovery Act (RCRA) Primacy	Fully established	IDEM-OLQ
Sensitivity assessment for drinking water/ wellhead protection	Fully established	IGS, IDEM-OWQ
Spill Monitoring	Fully established	IDEM-OWQ
State Superfund	Fully established	IDEM-OLQ
State RCRA Program incorporating more stringent requirements than RCRA primacy	Fully established	IDEM-OLQ
State septic system regulations	Fully established	ISDH

Program or Activity	Status	State Agency/Organization
Underground storage tank installation requirements	Fully established	IDEM-OLQ
Underground Storage Tank Remediation Fund	Fully established	IDEM-OLQ
Underground Storage Tank Permit Program	Fully established	IDEM-OLQ
Underground Injection Control Program	Fully established for Class II wells	IDNR
Well abandonment regulations	Fully established	IDNR
Wellhead Protection Program	Fully established	IDEM-OWQ
Well installation regulations	Fully established	IDNR

\*Indicates lead agency involved in enforcement or implementation.

“Pending” is used to describe those programs that have a written draft policy;

“under development” is used to describe those programs still in the planning stage.

<sup>1</sup>OLQ, Office of Land Quality; <sup>2</sup>IGS, Indiana Geological Survey; <sup>3</sup>OISC, Office of the Indiana State Chemist; <sup>4</sup>OPPTA, Office of Pollution Prevention and Technical Assistance (IDEM).