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2010 Draft 303(d) List of Impaired Waters; Consolidated Assessment and Listing Methodology
Janet Pittman
Rules Development Branch
Office of Legal Counsel, MC 65-46
Indiana Department of Environmental Management
100 North Senate Avenue
Indianapolis, Indiana 46204-2251

Re: Comments on Indiana's Proposed 2010 List of Impaired Waters

Dear Ms. Pittman,

In 2008, Forbes magazine ranked Indiana 49th of the United States in environmental quality based on a variety of factors including water quality. Indiana's long list of impaired waters confirms that our waterways face many challenges from pollution.

Under the Clean Water Act, identifying pollution problems on the Impaired Waters List is supposed to be a key step toward improving and restoring water quality. States generate a list of Impaired Waters to document pollution problems that interfere with designated uses of our waterways. These designated uses include activities such as support of aquatic life and recreational uses like wading, fishing, swimming, and kayaking. Then, under the Clean Water Act, Impaired Waters are subject to 1) anti-degradation policies that prevent pollutants that will make existing problems worse and, and 2) Total Maximum Daily Load pollution budgets and plans to phase out pollution sources until water is cleaned up. Indiana has never fully implemented these provisions, but the list remains a key baseline for assessing Indiana's water quality.

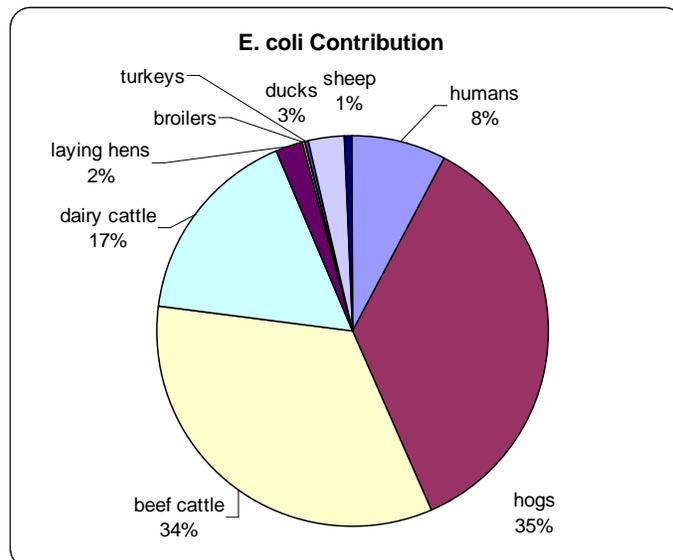
SUMMARY OF MAJOR IMPAIRMENTS

E. coli	822 assessment units
Impaired biotic communities	505
Dissolved oxygen	140
Nutrients	98
Phosphorus	50
Algae	20
Taste & odor	12
Siltation	3
PCBs in fish tissues	640
Mercury in fish tissues	315

E. coli Interferes with Recreational Use

One of the most widespread pollution problems identified on the 2010 Impaired Waters List is *E. coli*, an indicator that fecal material is present and that other pathogens are likely present as well, making the water unsafe for recreational use. Both human and animal waste can contribute to *E. coli* levels. In spite of this, IDEM continues to approve new CAFOs (Industrial scale livestock operations known as Concentrated Animal Feeding Operations) and new septic systems in areas where the waters are known to be impaired for *E. coli*. Watershed coordinators have no information about exactly where manure is being spread, when or how much. IDEM ignores the issue, considering the operations to be zero discharge if they apply manure at fertilizer rates for nitrogen. This approach ignores pathogen content of manure. As a case in point, an IDEM TMDL document states that “animal operations in [this] watershed have no open enforcement actions at this time. Therefore, these operations are not considered a significant source of *E. coli*”.

In fact, livestock operations do produce pathogens that may be entering our waterways, particularly if manure is spread on fields that have artificial drainage tiles (pipes) that can act as a conduit to carry pollutants straight to our streams. Our preliminary calculations, based on statistics about the populations of various species in Indiana and literature values about the constituents of excreta from various species indicate that livestock are likely to be a very large contributor to overall *E. coli* loads.



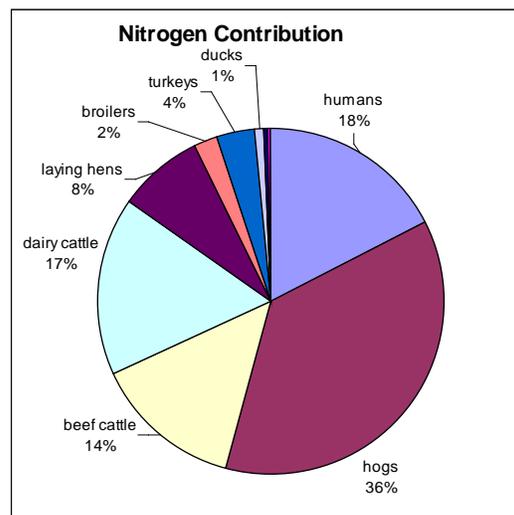
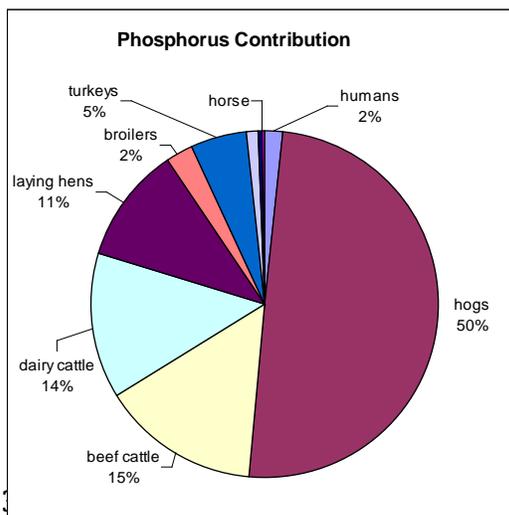
IDEM often states that *E. coli* comes from non-point sources that are unregulated, but this is not accurate. While septic systems and livestock operations may not be subject to NPDES discharge permits, they are, in fact, regulated activities. Livestock manure is subject to regulations through the Department of Environmental Management as well as the Office of the Indiana State Chemist and septic systems are subject to regulations through the Indiana State Department of Health. It is time for these agencies to work together to ensure that water quality problems are addressed!

Algae, Nutrients, Phosphorus, Sediment, and Impaired Biotic Communities

Indiana’s proposed 2010 List of Impaired Waters is a long list, with more than 2500 waters listed, and yet it does not reflect the full extent of water quality problems in the state. Some of our biggest pollution problems remain undocumented because our water quality standards are inadequate. For example, sediment is the biggest pollution problem we have by sheer volume, but this problem goes largely undocumented because we have no numeric limits to serve as a benchmark for sediment. Sediment from soil erosion can carry impair biotic communities by destroying habitat and interfering with the ability of aquatic species to breathe, feed, and reproduce.

These pollutant parameters are inter-related. Sediment also carries pathogens and nutrients that can cause algae growth, oxygen depletion, and fish kills. Algae growth is dependent upon the presence of nutrients, namely phosphorus and to a lesser degree nitrogen. Algae growth and decay uses up oxygen which can result in oxygen depletion that can kill fish and impair biotic communities.

As with sediment, we have no numeric standards for algae, nutrients or phosphorus. While some waterbodies are listed for these parameters, they tend to be overlooked and under-reported in 303(d) listing decisions and in TMDLs because we have no numeric criteria governing them. As with *E. coli*, livestock manure is an important source of nutrients in our waterways too.



Algae is an ongoing concern, especially since the discovery of blue-green algae (also known as cyanobacteria) that produce tasteless, odorless toxins. Algae has been making headlines in part because of the occurrence of an invasive toxic species known as *Cylindrospermopsis raciborskii*. These algae produce toxins that can cause skin irritations, gastrointestinal illness, neurological problems, liver failure and death¹. While no human deaths have been reported, numerous livestock and dog deaths have been documented.

The legislative Environmental Quality Service Council held a meeting this summer to focus on algae. Dr. Lenore Tedesco from the IU Center for Earth and Environmental Sciences made a presentation in which she described the occurrence of high levels of these toxic algae in Indiana lakes and reservoirs. In 2005 an inter-agency task force funded by the Indiana Department of Environmental Management found high levels in Ball Lake^{1,2}, Glen Flint Lake², and Lake Monroe (levels exceeding 300,000)². In a 2009 study conducted by CEES, 8 out of 15 Indiana lakes studies had levels higher than this benchmark, including Lake Wawasee and Geist Reservoir³.

The World Health Organization recommends that swimming be prohibited in waters with more than 100,000 cyanobacteria cells per ml. The following waters have been reported to have levels over 100,000 algae per ml and should be included on the impaired waters list for both algae and nutrients, unless there is convincing evidence to indicate that some other factor is causing algae growth.

BALL LAKE ¹

LAKE LEMON ²

GLEN FLINT LAKE ²

GEIST RESERVOIR ^{3,4},

MORSE RESERVOIR ⁴

EAGLE CREEK RESERVOIRS ⁴

LAKE WAWASEE ^{3,5}

OLD LAKE IN WHITLEY COUNTY ⁵

Morse, Geist and Eagle Creek Reservoirs are already listed for algae, but all waters with high algae levels should also be listed for phosphorus as the underlying cause. We do not have access to all the data from the 2009 CEES study. We are not sure if the 8 waterbodies listed above correspond to the 8 out of 15 that were reported to have high levels of toxic algae. If there are other waterbodies that had levels exceeding 100,000, then they too should be added to the impaired waters list.

Algae can affect rivers too. A distasteful scum on the White River this summer was attributed to algae growth. This algal bloom was given prominent coverage in the news and we wonder how the List of Impaired Waters can be considered credible if it does not include this very visible problem. Nicolas Clercin, a research scientist at CEES who is an expert on algae analyzed the sample and determined that it was dominated (>99%) by a diatom called *Cyclotella meneghiniana*. While not known to

be a toxin producing algae, this algae bloom definitely interfered with recreational use.

The following waters should be listed for both algae and phosphorus:

WHITE RIVER^{6,7}

WABASH RIVER⁸

Dr. Tedesco recommended to the legislative EQSC that Indiana consider restrictions on the use of fertilizer materials containing phosphorus. The response of the EQSC was to recommend formation of another inter-agency task force to study the issue.

There is ample evidence that nutrients triggers algae growth in fresh water systems, and it is time for Indiana to act to address phosphorus overloads and algae blooms! Waters that are impaired for algae or phosphorus should be subject to phosphorus elimination. We need to follow the Clean Water Act's anti-degradation policy and stop adding more of pollutants that are already known to be a problem.

Waterways should not be removed from 303(d) list unless restored

Waterways should not be removed from the list simply because we do not have a numeric criteria, as proposed on spreadsheet Att7_Delist_New Information. Just as staff have used their professional judgment to determine that algae or nutrients impair water quality, staff should be empowered to use their professional judgment to list waterbodies as impaired for total dissolved solids. These waterbodies should not be de-listed unless there is information indicating that total dissolved solids are not interfering with designated uses. The following waters from the Att7_Delist_New Information should be placed back on the Category 5 list.

STUCKER FORK (W L MCCLAIN DITCH)
GARRETT CITY DITCH
WABASH RIVER
UNNAMED TRIBUTARY
LITTLE RACCOON CREEK-MOORE LAKE/GUION
OTTER CREEK
SULPHUR CREEK
BIG BRANCH TRIBUTARY - GILMOUR
BIG BRANCH-MUD CREEK
BUSSERON CREEK - HYMERA
BUSSERON CREEK
BUTTERMILK CREEK
BUSSERON CREEK - PAXTON
BUSSERON CREEK-TANYARD BRANCH
LITTLE SANDY CREEK
UNNAMED TRIB BARREN FORK
OTTER CREEK (LOWER)
LITTLE PIGEON CREEK
LITTLE PIGEON CREEK
LITTLE PIGEON CREEK
CYPRESS CREEK
CYPRESS CREEK
SMITH FORK

SQUAW CREEK
PIGEON CREEK-HARPER DITCH
PIGEON CREEK-KLEYMEYER PARK
MUD CREEK
Stony Run, Middle Branch
BULL RUN BASIN
CURTIS CREEK-YEOMAN DITCH
LITTLE BLUE RIVER
FLAT CREEK HEADWATERS
FLAT CREEK-BUCK CREEK
LITTLE FLAT CREEK
PATOKA RIVER-LICK MILL CREEKS
SUGAR CREEK (PIKE COUNTY)
HOUCHIN DITCH
SOUTH FORK PATOKA R-SPURGEON
TRIBUTARIES
HONEY CREEK (SOUTH FORK PATOKA)
TRIBUTARIES
SOUTH FORK PATOKA R-WHEELER/LICK CREEKS
BLACK CREEK-BREWER DITCH
BUCK CREEK (GREENE)
UNNAMED TRIBUTARY NW OF OLD WHEATLAND

One reason why our list of impaired waters is so long is because few waters ever get cleaned up sufficiently to go off the list. It is not acceptable to remove waters from the list of impaired waters simply because a TMDL document has been completed! The TMDL must be implemented and the waterway re-assessed before we can determine that it should be removed from the list of impaired waters. This pertains to all the waters listed in attachment Att4a_Cat 5 to Cat 4A. The following waters should be placed back on the Category 5 list.

ALDRICH DITCH - SCHANG DITCH	CARPENTER CREEK (DOWNSTREAM OF
KANKAKEE RIVER-MAINSTEM	REMINGTON, IN)
COLLINS DITCH	SLOUGH CREEK-CARPENTER CREEK (LOWER)
LITTLE KANKAKEE RIVER-BYRON	IROQUOIS RIVER
KANKAKEE RIVER	IROQUOIS RIVER
POTATO CREEK	IROQUOIS RIVER
PINE CREEK-HORACE MILLER DITCH	IROQUOIS RIVER
KANKAKEE RIVER-LONG DITCH	IROQUOIS RIVER
ARMEY DITCH - HEADWATERS	CHIZUM DITCH
BUNCH DITCH, EAST BRANCH (HEADWATER)	THOMPSON DITCH
BUNCH DITCH, EAST BRANCH	SUGAR CREEK (DOWNSTREAM OF EARL PARK, IN)
MENTSSEL DITCH	BEAVER CREEK
MATTERN DITCH	SULPHUR CREEK
TROUP DITCH	SULPHUR CREEK
LAKE ARM	SULPHUR CREEK
DANIELS DITCH	GALENA RIVER
YELLOW RIVER - UNNAMED TRIBUTARY	GRASSY FORK DITCH - HARPER DITCH
YELLOW RIVER - LISTENBERGER/CLIFFTON	MUD CREEK - HEADWATERS (TIPTON)
DITCHES	MUD CREEK
UNNAMED DITCH (OAK GROVE, IN)	ROSS DITCH
YELLOW RIVER	NORTH CREEK
CANNON DITCH	OFF DITCH
CANNON DITCH	Turkey Creek
CAVANAUGH DITCH	Mud Creek
KANKAKEE RIVER-ORIGER DITCH	WILDCAT CREEK
KANKAKEE RIVER	Mud Creek - Irwin Creek
KANKAKEE RIVER	WILDCAT CREEK - JEROME
HODGE DITCH (DOWNSTREAM OF JAMES DITCH)	Stahl Ditch
KANKAKEE RIVER	Prairie Creek Ditch - upper
Singleton Ditch (upstream of Bryant Ditch)	Wildcat Creek - mainstem
Singleton Ditch (Downstream of Bryant Ditch)	Wildcat Creek - upstream of water intake
SINGLETON DITCH – UNNAMED TRIBUTARIES	Prairie Creek Ditch - lower
SINGLETON DITCH – UNNAMED TRIBUTARIES	Cannon - Goyer Ditch
SINGLETON DITCH – UNNAMED TRIBUTARIES	Finn Ditch and other tributaries
SINGLETON DITCH – UNNAMED TRIBUTARIES	KOKOMO CREEK - HEADWATERS
SINGLETON DITCH – UNNAMED TRIBUTARIES	WILDCAT CREEK, MIDDLE FORK
LITTLE DITCH	WILDCAT CREEK, MIDDLE FORK HEADWATERS
LITTLE DITCH – UNNAMED TRIBUTARY	WILDCAT CREEK, MIDDLE FORK-UNNAMED
LITTLE DITCH – UNNAMED TRIBUTARY	TRIBUTARY
LITTLE DITCH – UNNAMED TRIBUTARY	WHITEMAN DITCH
Bryant Ditch	HARNESS DITCH
BRYANT DITCH – UNNAMED TRIBUTARY	WILDCAT CREEK, MIDDLE FORK
VANNATTI DITCH	WILDCAT CREEK, MIDDLE FORK-UNNAMED
SINGLETON DITCH – UNNAMED TRIBUTARIES	TRIBUTARY
Singleton Ditch	WILDCAT CREEK, MIDDLE FORK
BULL RUN BASIN	MIDDLE FORK BRANCH-SCOFIELD DITCH
West Creek (Lower Watershed)	ROBERTSON BRANCH
RYAN DITCH	Silverthorn Branch downstream of Rossville STP
IROQUOIS RIVER (UPSTREAM OF RENSSELAER,	Campbells Run - mainstem
IN)	CRIBE RUN
IROQUOIS RIVER (DOWNSTREAM OF	CAMPBELLS RUN
RENSSELAER, IN)	WILDCAT CREEK (UPSTREAM OF TRIBUTARIES)
Slough Creek	WILDCAT CREEK (DOWNSTREAM OF
CARPENTER CREEK (REMINGTON, IN)	TRIBUTARIES)
	WILDCAT CREEK-UNNAMED TRIBUTARY

WILDCAT CREEK-UNNAMED TRIBUTARY	LYDY-FILLERWORTH DITCH
HOG RUN-UNNAMED TRIBUTARY	SWAMP CREEK-MOTT DITCH
HOG RUN	FLOYD DITCH-PARIS DITCH
WILDCAT CREEK (UPSTREAM OF SPRING RUN)	DAVIS DITCH
WILDCAT CREEK (DOWNSTREAM OF SPRING RUN)	STUMP DITCH
HALIHAN DITCH	BOYLES DITCH-UNNAMED TRIBUTARY
Little Wildcat Creek - east fork	BOYLES DITCH-UNNAMED TRIBUTARY
KELLY WEST DITCH	BOYLES DITCH
UNNAMED TRIBUTARY	BOYLES DITCH
Little Wildcat Creek - west fork	South Fork Wildcat Creek - mainstem
VOGUS DITCH	Heavilon Ditch - headwater
LYNN RUN	Heavilon Ditch - headwater
BUTLER DITCH	LAURAMIE CREEK (CLINTON CO)
LITTLE WILDCAT CREEK (UPSTREAM OF VOGUS DITCH)	LAURAMIE CREEK (CLINTON CO)
LITTLE WILDCAT CREEK (DOWNSTREAM OF VOGUS DITCH)	LAURAMIE CREEK (TIPPECANOE CO)
West Honey Creek	MCCLELLEN FICKLE DITCH
Honey Creek	MCCLELLEN FICKLE DITCH
Wildcat Creek - mainstem	HENTZ DITCH
DEARINGER DITCH-KIDDLE DITCH	ANDERSON DITCH
WILDCAT CREEK-UNNAMED TRIBUTARY	SOUTH FORK WILDCAT CREEK
WILDCAT CREEK-UNNAMED TRIBUTARIES	Unnamed tributary basin
WILDCAT CREEK-UNNAMED TRIBUTARY	SOUTH FORK WILDCAT CREEK - CARY CAMP
WILDCAT CREEK-UNNAMED TRIBUTARY	SOUTH FORK WILDCAT CREEK
PETES RUN	Killbuck Creek
DAVISON DITCH	Killbuck Creek - Thurston Ditch
MCDOWELL DITCH	Jakes Creek - Eagle Branch
MOORE DITCH	Killbuck Creek - Pleasant Run Creek
WILDCAT CREEK	Killbuck Creek
WILDCAT CREEK-UNNAMED TRIBUTARY	Killbuck Creek
WILDCAT CREEK-UNNAMED TRIBUTARY	Little Killbuck Creek - Nelson Brook
WILDCAT CREEK (BURLINGTON)-UNNAMED TRIBUTARIES	Killbuck Creek - to mouth
WILDCAT CREEK - MAINSTEM	Indian Creek (Madison)
WILDCAT CREEK-UNNAMED TRIBUTARY	Pipe Creek - Yeager Finley Menard Ditch
WILDCAT CREEK (PRINCE WM RD)-UNNAMED TRIBUTARY	Pipe Creek
WILDCAT CREEK-UNNAMED TRIBUTARY	Pipe Creek
WILDCAT CREEK (U/S OF UNNAMED TRIBUTARY AT PRINCE WM RD)	Pipe Creek
WILDCAT CREEK (D/S OF UNNAMED TRIBUTARY AT PRINCE WM RD)	Pipe Creek
Wildcat Creek - mainstem	Pipe Creek
WILDCAT CREEK - OSRW	Pipe Creek
WILDCAT CREEK	Pipe Creek - Hamilton County
TALBERT DITCH	Pipe Creek - Swanfelt Ditch to County Line
DUNN DITCH-CRIPE-DITCH	Duck Creek - Todd Ditch
SOUTH FORK WILDCAT CREEK	Little Duck Creek Basin
JENKINS DITCH	Duck Creek - Elwood to Little Duck Creek
WILDCAT CREEK, SOUTH FORK-UNNAMED TRIBUTARY	Big Duck Creek
PRAIRIE CREEK (HEADWATER)	Polywog Creek
MANN DITCH	Duck Creek - Little Duck Creek to Polywog Creek
SOUTH FORK WILDCAT CREEK - MAINSTEM	Duck Creek
SHANTY CREEK	Bear Creek - West Fork Bear Creek
KILMORE CREEK	Duck Creek
COLLIER DITCH	Duck Creek
CARTER DITCH	Long Branch
Stony Creek	Sugar Run and other Tributaries
	Stony Creek - Headwaters
	Stony Creek - William Lock Ditch Tributaries
	Stony Creek
	William Lehr Ditch and other tributaries
	Stony Creek
	North Trib - Noblesville

Restoring Impaired Waters

The 2010 List of Impaired Waters should serve as the starting point for restoring water quality. Indiana does not adequately address water quality impairments. For

example, we continue to allow unnecessary phosphorus fertilizers in areas that are already known to suffer from phosphorus overloads and algae blooms. And we continue to permit livestock operations and septic systems in areas that are impaired for E. coli and or nutrients and algae.

It is time for Indiana to start restoring its impaired waters, as required by the Clean Water Act! In order to begin to restore water quality, Indiana should:

- 1) Stop permitting new activities that are likely to exacerbate known impairments, such as confined feeding operations, septic systems, package treatment plants and fertilizer use;
- 2) Restrict phosphorus fertilizer in impaired watersheds;
- 3) Develop TMDLs and watershed management plans that address phosphorus and pathogen content of manure;
- 4) Ensure that existing septic systems are not discharging;
- 5) Ensure implementation of TMDLs and watershed plans for restoration of water quality.

Respectfully submitted,

Rae Schnapp, Ph.D. Wabash Riverkeeper
Water and Agriculture Policy Director
Hoosier Environmental Council

Lyn Crighton, Executive Director
Tippecanoe Watershed Foundation

Tom Young
Friends of the Limberlost

Bowden Quinn,
Sierra Club, Hoosier Chapter

Ted Harris
NICHES Land Trust

DonMottley
Save our Rivers

Richard Hill
Save the Valley

Andy Mahler
Heartwood

The following groups added their own comments:

I am the skipper of the Hoosier Canoe Club. Impaired water is no fun to paddle in. Our rivers are beautiful, but the water flowing in them is nasty. Please act to curtail confined feeding operations and other sources of pollution.

Dan Vallesky
Hoosier Canoe Club

I have lived near the creek all my 80+ years and have seen improvement in stream quality. But we must all work to improve it more.

Jordan Ross
Wildcat Guardians

And let's work on those mercury and heavy metal levels!

Cecily Schneider
Banks of the Wabash

It is time that IDEM begin taking their responsibility for protecting Indiana natural environment more seriously.

John Blair
ValleyWatch

References

- ¹ Invasive Blue-Green Alga Found in Indiana Lakes, WATER COLUMN Fall 2001 William W. Jones, Editor <http://www.spea.indiana.edu/clp/fall%2001%20water%20col.pdf> checked 1/8/2010.
- ² Invasive Algae Widespread in Indiana WATER COLUMN Spring 2005 William W. Jones, Editor checked 1/8/2010.
<http://www.spea.indiana.edu/clp/WATER%20COL%20V16,%20N4.pdf> checked 1/8/2010
- ³ Blue Green Algae in Indiana (powerpoint by Lenore Tedesco)
http://www.cees.iupui.edu/research/water_resources/CIWRP/Algae_Information/Presentations/2009-10-26-EQSC.ppt checked 1/8/2010
- ⁴ Indiana's Blue Green Algae home page: State Reports High Levels of Blue-Green Algae at Eagle Creek, Geist, and Morse Reservoir <http://www.in.gov/idem/algae/> checked 1/8/2010
- ⁵ State Reports High Levels of Blue-Green Algae in Area Lakes
<http://water.grace.edu/news.php?id=34> checked 1/8/2010
- ⁶ Algae Information Resources
http://www.cees.iupui.edu/research/water_resources/CIWRP/Algae_Information/2009-07_WhiteRiver_Diatoms.htm checked 1/8/2010
- ⁷ Yellow-Brown Algal Bloom Makes White River Water Brown and Foamy and May Be Responsible for Fish Kill July 2009
http://www.cees.iupui.edu/research/water_resources/CIWRP/Algae_Information/2009-07_WhiteRiver_Diatoms.htm checked 1/8/2010
- ⁸ Nutrient and Pathogen TMDLs for the Wabash River, Illinois and Indiana
http://www.epa.gov/waters/tmdldocs/31737_Wabash%20TMDL.pdf checked 1/8/2010