Executive Summary

Eutrophication, or nutrient enrichment of waters, is a concern in many areas of the United States as well as around the world. Nutrients are an essential part of the water system for plant and animal life, however when there is an excess of nutrients, it can cause water quality impairments such as hazardous algal blooms and oxygen depleted water. Excess nutrients such as nitrogen and phosphorus come from many sources including waste water treatment plants (WWTPs), failed septic systems, land-disturbing activities, and stormwater runoff from residential areas and agricultural lands. When these excess nutrients enter our waterbodies, they stimulate excessive plant growth or algal blooms. When the plants and algae die, sink, and decompose, oxygen levels are depleted in the water, which is a condition referred to as hypoxia. These hypoxic areas cannot support aquatic life and are often called "dead zones."

The Gulf of Mexico has been for many years experiencing a large hypoxia zone, so the Mississippi River/Gulf of Mexico Hypoxia Task Force (HTF) in 2008 created a priority action plan that calls for each of the major states that drain to the Mississippi River basin to develop a state nutrient reduction strategy to address the issue of excess nitrogen and phosphorus entering their rivers, lakes, streams, aquifers, wetlands, and drinking water supplies. In 2011, the U.S. Environmental Protection Agency (USEPA) released a memo outlining eight (8) *Recommended Elements of a State Framework for Managing Nitrogen and Phosphorus Pollution*, which gave guidance to the 12 states that are a part of the Gulf of Mexico HTF. Indiana is one of those 12 states.

The HTF goal is to reduce the areal extent of the Gulf of Mexico hypoxic zone to less than 5,000 square kilometers by the year 2035, with an agreed upon interim target of a 20% nitrogen and phosphorus load reduction by the year 2025.

The Indiana State Nutrient Reduction Strategy represents the state's commitment to reduce nutrient runoff into Indiana's waters from point sources and nonpoint sources alike. The overall guiding principles of this strategy are:

- **Encourage voluntary, incentive-based, practical, and cost-effective actions**
- **Use and strengthen existing regulatory and non-regulatory programs**
- **Identify existing and additional funds needed and funding sources**
- **Identify research needs**
- **Identify opportunities for innovative, market-based solutions**
- **Follow adaptive management**

More specifically, the main objectives of this strategy include:

- Acknowledgment of the challenges facing the improvement of Indiana's impaired waters;
- Involvement and engaging of stakeholders and partners in the state's efforts to reduce nutrient loads;
- Prioritization of HUC 8 watersheds within Indiana, and further prioritization of smaller HUC 12 watersheds within Indiana's ten major river and lake basins;
- Discussion of the importance of water quality monitoring and regulatory control of point sources;
- The inventory and utilization of resources and practices to achieve their highest impact on nutrient reduction;
- Encouragement of voluntary incentive-based conservation through the many local, state and federal water quality related programs;
- Measuring the impacts of urban and rural conservation best management practices and tracking nutrient load reductions; and
- Serving as a strategic document for addressing milestones and action items, and seeking continued funding sources for current and future efforts concerning water quality in Indiana.

The Indiana State Nutrient Reduction Strategy underscores the importance of continual outreach and education to conservation partnerships and the public regarding stewardship of Indiana's waters. This strategy acknowledges that the great potential to reduce nitrogen and phosphorus entering our waters depends on the cooperation of state, federal and local organizations', ag and urban programs and initiatives, as well as private sector and citizen endeavors. To make a positive difference, it is important to understand the "why" or motivations that drive the choices made by organizations and individuals that ultimately affect water quality. How do knowledge gaps, policy or program directives, incentives or disincentives affect the consideration of water quality impacts when choosing one action over another? This strategy identifies measures such as the proper location and types of conservation practices on productive agricultural ground and at the edge-of-field, efficient nutrient management, septic system maintenance, appropriate residential fertilizer applications, erosion control at construction sites, and urban best management practices (BMPs) such as green infrastructure as being keys to controlling nutrient runoff. It recognizes a continued need for conservation efforts, education, outreach and research in order to see progress.

The State of Indiana recognizes the importance of early involvement of stakeholders and partners in the planning and development of the State Nutrient Reduction Strategy. It provides transparency of the process, allows time for trust to develop, permits incorporating local knowledge, and makes it possible to deal most effectively with misperceptions and manage expectations. All of this helps gain buy-in and cooperation from stakeholders and partners and increases the likelihood of moving toward effective and sustainable solutions. Many agencies and stakeholders were consulted with in the planning and development of the Indiana State Nutrient Reduction Strategy.

Although the Indiana strategy was originally developed as a result of the HTF 2008 Action Plan for the Gulf of Mexico, this strategy encompasses all waters of the state of Indiana that drain to the Mississippi River and the Gulf of Mexico as well as to Lake Michigan and Lake Erie.

Indiana will continue to evaluate the efficacy of the nutrient reduction policies, programs, and practices outlined in this Strategy. Based on that evaluation and new information/data arising from research and monitoring data, Indiana will modify this Strategy as necessary.