

WREC's ability to conduct effective education and outreach depends on: understanding how people feel about local water resources; how much they know about water quality concerns; what practices they adopt on the land they manage; and what factors affect their land management decisions. Social indicator surveys provide one way to analyze these attitude, awareness, behavior, and constraint measures. The data obtained provide a snapshot of a given time, helping to direct outreach efforts and allowing for measurement of temporal change observed during future assessments. WREC education, urban, and rural committee members worked with a group of Purdue University social scientists to tailor an existing survey system that was originally developed for use in nonpoint source pollution projects by a regional team of researchers.

In order to assess the significant differences between agricultural and urban populations, two distinct surveys were developed. While the general format of the survey remained the same, questions relating to specific practices and water quality concerns differed between the two versions. Recipients for the agricultural/rural survey were selected from a Farm Service Agency database of agricultural producers in Tippecanoe County. The 12-page agricultural survey was sent to 715 producers, garnering an overall response rate of 51%. Recipients for the urban survey were selected randomly from the census blocks within the boundaries of Greater Lafayette's MS4. In order to compensate for an anticipated low response rate from households in the 18-34 age range, we oversampled that demographic by 25%. The 12-page urban survey was sent to 1097 residents in the targeted area, garnering an overall response rate of 38%.

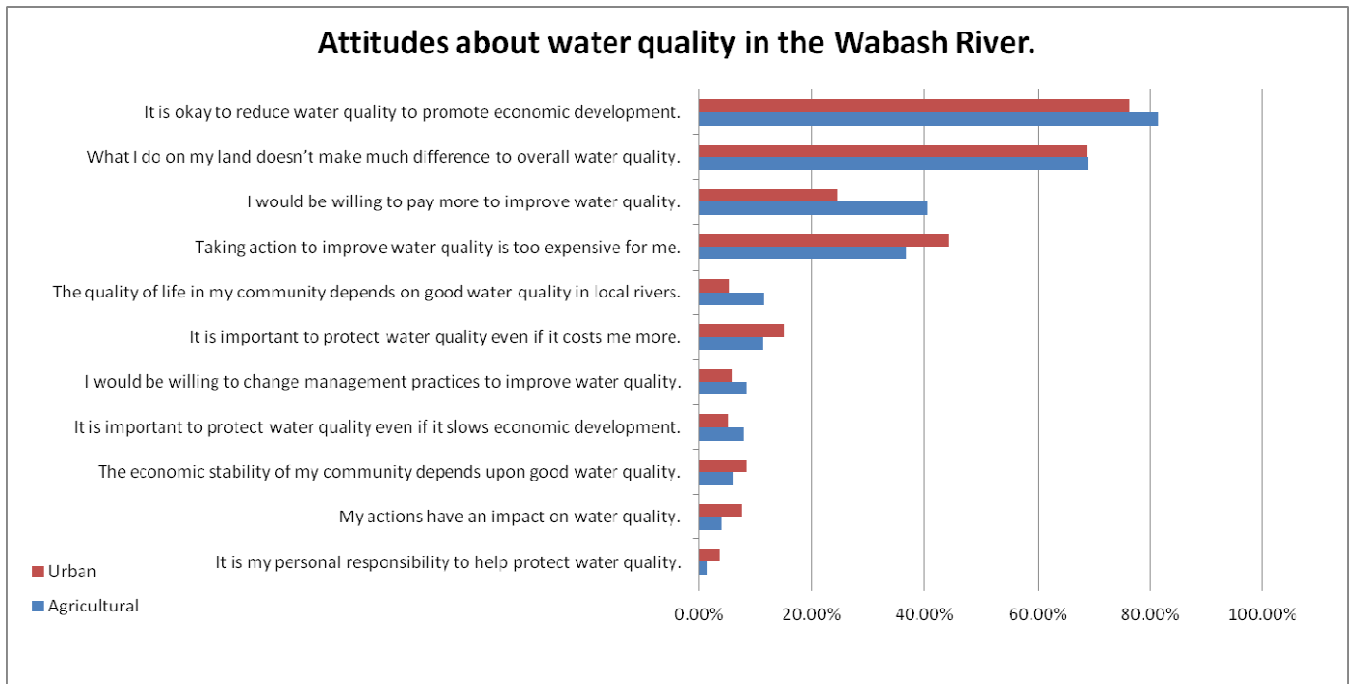
A standardized delivery and collection method was used for both surveys. In late Summer/Fall 2010, a five-wave mail survey was utilized to collect the data (Dillman, 2000). An advance notice letter was sent to potential respondents to inform them of the survey's purpose and to notify them that they would be receiving a paper survey in the next week. This letter also included instructions on how to complete the survey online. The paper survey was sent the following week and included verbiage similar to the original advance letter, instructions for completing the survey online, and a summary of the survey's purpose. A postcard reminder was sent two weeks later, followed by a replacement survey the following week. After two more weeks, a third replacement survey was sent to all non-respondents.

The survey covered the social indicators developed for use in 319-funded watershed projects. The indicators are grouped into four categories: awareness, attitudes, constraints, and behaviors. Sociodemographic information was also collected. Survey copies and detailed tables, including raw statistical data, of results are included in Appendix D and E, respectively.

Survey Results

Water Quality for Recreational Use: Respondents were asked to rate the suitability of local water resources for a number of activities. For the agricultural survey, "scenic beauty/enjoyment" was the highest rated response category, while swimming and eating fish caught in the water received generally "poor" ratings. Agricultural respondents generally thought that water quality was "okay" for boating, fishing, and picnicking near the water. This suggests a prevalent "look but don't touch" attitude toward recreational use of the water within the agricultural community. Urban respondents also indicated that "scenic beauty/enjoyment" rated the highest, while swimming and eating fish caught in the water received generally "poor" ratings. Water quality was generally thought to be "okay" for boating, fishing, and picnicking near the water by urban residents. These results are similar to those of the agriculture survey. Respondents were also asked to rank the same activities in terms of their importance. Scenic beauty/enjoyment ranked highest among respondents with 64% of responses, followed by picnicking and family activities near water, fishing, and canoeing/kayaking/other boating.

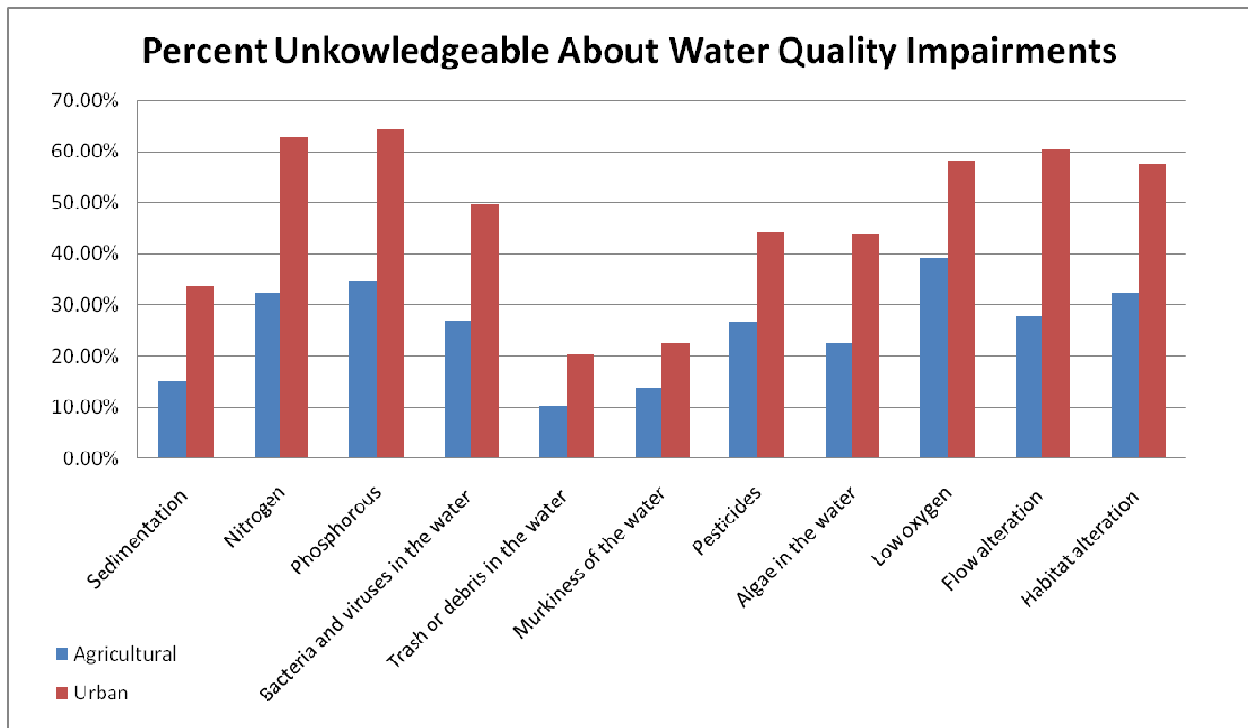
Water Quality Attitudes: Respondents were asked to rank their level of agreement with a number of statements related to their attitudes toward water quality, including its importance to the community, the financial ramifications of management practices, and levels of personal responsibility. A 1-to-5 “strongly disagree” to “strongly agree” scale was used. In general, agricultural respondents felt that the community’s economic stability depended on good water quality, that using recommended management practices improves water quality, that personal actions affect water quality, and that it is important to protect water quality even if it slows economic development. Respondents most strongly agreed with the statement “It is my personal responsibility to help protect water quality.” They also agreed that the community’s economic stability depended on good water quality, the way they care for their lawn influences water quality in rivers and streams, that it is important to protect water quality even if it slows economic development, and that quality of life depends on good water quality in local rivers and streams. Agricultural and urban respondents were more ambivalent about their personal willingness to pay for improved water quality, neither agreeing nor disagreeing with the statements “I would be willing to pay more to improve water quality,” “taking action to improve water quality is too expensive for me,” and “investing in water quality protection puts the farmer at an economic disadvantage.” In summary, respondents recognize that water quality is important for the community and that their actions can affect it, but they are less committed to paying for water quality improvements.



Urban and agricultural respondent’s attitudes about water quality as percent agreement in the Region of the Great Bend of the Wabash River watershed.

Water Impairments: Respondents were asked to rate the severity of numerous water impairments. Trash and debris, sedimentation, murkiness, and bacteria and viruses such as *E. coli*/coliform were seen as the most serious problems for agricultural landowners, with all four rated between slight and moderate problems. Flow alteration was seen as the problem of least severity. For urban residents, pesticides, herbicides, fertilizers, and insecticides (collectively) were viewed as the most severe problem. Trash and debris, sedimentation, murkiness, bacteria and viruses such as *E. coli*/coliform, and habitat

alteration harming local fish were seen as moderate or slight-to-moderate problems. Flow alteration was seen as the problem of least severity. A significant lack of knowledge was reported for several impairments, with more than 30% of agricultural respondents indicating that they “don’t know” about the severity of nitrogen, phosphorous, oxygen in the water, and habitat alterations affecting local fish; more than 60% of urban respondents indicating that they “don’t know” about the severity of nitrogen, phosphorous, oxygen in the water, and flow alteration; 40% or more of urban respondents not knowing about: bacteria or viruses; pesticides, herbicides, fertilizers, and insecticides; algae; not enough oxygen in the water; and habitat alteration harming local fish. In the agricultural community, these responses suggest that the most visible water quality problems are readily identified, while less is known about nutrient and aquatic habitat concerns. More concerning is the widespread ignorance about major water impairments within the urban community suggesting the need for extensive community education efforts in the urban areas.



Percent of individuals responses of “don’t know” about water quality impairments in the Region of the Great Bend of the Wabash River watershed.

Consequences of Poor Water Quality: Respondents were asked to rate the severity of several consequences to poor water quality. For agricultural respondents, contaminated fish were seen as the most serious issue, with loss of desirable fish species, reduced opportunities for water recreation, and reduced quality of water recreation activities also rated as slight-to-moderate problems. Contaminated drinking water, odor, and lower property values were identified only as slight problems or not problems at all with agricultural respondents. For urban residents, contaminated fish were also seen as the most serious issue, with loss of desirable fish species ranked a close second. Reduced quality of water recreation activities, reduced opportunities for water recreation, and reduced beauty of rivers and streams also rated as slight-to-moderate problems. Contaminated drinking water and lower property values were identified only as slight problems for urban residents. The responses suggest that the respondents view recreational concerns to be the most serious consequences of poor water quality.

Sources of Water Pollution: Respondents were asked to rate the severity of 18 different sources of water pollution. For agricultural respondents, discharge from sewage treatment plants, dumping/littering, and industrial discharge were seen as the most serious contributors to water pollution. Soil erosion from farm fields and streambanks was also seen as a slight-to-moderate problem for agricultural producers. Excessive use of fertilizers and pesticides on lawns was viewed as a greater problem than excessive use of fertilizers for crop production. Waste materials from pets, droppings from waterfowl, and manure from farm animals, stream channelization, and removal of riparian vegetation were also seen as slight problems within the agricultural community. For urban residents, industrial discharge, discharge from sewage treatment plants, dumping/littering, soil erosion from farm fields, and excessive use of fertilizers for crop production were seen as the most serious contributors to water pollution. Waste materials from pets and stream channelization were rated as the least severe problems. Views on sources of water pollution differ considerably between the two communities especially with concern for water pollution associated with farm operations; urban residents rated this of high concern while agricultural residents viewed these as a less severe problem.

Information Sources: Respondents were asked about the extent to which they trust a number of conservation groups and related agencies. In the agricultural community, the three most trusted information sources were (in order) the Tippecanoe County SWCD, Purdue University, and the Natural Resources Conservation Service. These sources would thus be the best options for promotional and outreach materials. NICHES Land Trust, the EPA, and the Nature Conservancy garnered the least amount of trust, with all three scoring just about the slightly trusted mark. Respondents indicated that they slightly-to-moderately trusted the Wabash River Enhancement Corporation, though 36% reported that they were not familiar with the organization. Within the urban community, the three most trusted information sources were (in order) Purdue Extension, Indiana DNR, and the Tippecanoe County SWCD. These sources would thus be the best options for promotional and outreach materials. Lawn care companies and home improvement centers garnered the least amount of trust, with both response categories being only “slightly trusted” on average. Respondents indicated that they moderately trusted the Wabash River Enhancement Corporation, though 43% reported that they were not familiar with the organization.

Survey Summary

Measures of attitude toward water quality concerns are similar between urban and rural populations. Most Tippecanoe County residents believe that good water quality is important for the communities that they live in for both economic and quality-of-life reasons. Most individuals feel a degree of personal responsibility for the actions they take that affect local water resources, though they may be unwilling to pay for improvements. It's clear that individuals frequently feel that they must compromise between desired environmental outcomes and their financial concerns.

In general, survey respondents readily identified visible water quality concerns such as littering and turbidity. Other problems, especially those related to nutrient loading and aquatic habitat alteration, are less understood. Urban residents in particular demonstrated a widespread lack of knowledge regarding many water impairments. Education and outreach efforts are needed across the board in order to effectively change management behaviors.

Rural respondents, particularly those who are agricultural producers, frequently identified financial factors as the primary constraint to adopting conservation practices. A detailed cross tabulation will be necessary to identify non-financial restraints for specific groups of non-practitioners. While urban

residents also cited economic concerns, they also expressed little to no familiarity with many urban water conservation practices. Increasing the distribution of information about these practices, improving access to equipment, and using demonstration areas may convince many urban residents to adopt better management practices without having to provide financial incentives.

Purdue University and the Tippecanoe County Soil Water and Conservation District are two of the most trusted information sources for natural resource management concerns and would thus make excellent partners for outreach efforts. This survey indicates that WREC has a fairly low public profile; 43% of urban residents and 36% of rural residents were not familiar with the organization. WREC should take advantage of its partnerships with other well-known agencies in order to bolster its own name recognition and ability to achieve its goals.