4 | Water Quality & Quantity Conditions

Photo: The English River houses a diverse collection of plant and animal specices. *Photo courtesy of Dan Ehl.*

4.1 Water Quality Summary

Summarized data in this section came from two sources: historical data and 2014 snapshot data. The Iowa Department of Natural Resources (IDNR) has been collecting water samples from the English River at a site near Riverside, Iowa (site #1 in Figure 22) since 1986. The summary of historical data from these samples, provided by IOWATER program director Dr. Mary Skopec, is in Appendix E. The Iowa Soybean Association (ISA) conducted water quality snapshots at 20 locations across the watershed on April 28th, July 17th, and October 21st of 2014. The sampling locations across the watershed were taken at bridge crossings and other publicly accessible places as close as possible to outlet of subwatersheds (HUC-12s). ISA's full report can be found in Appendix A. Data in this summary is supplemented by information on the specific contaminant and any associated environmental and / or health implications associated, provided by the Iowa Department of Natural Resources, the Environmental Protection Agency, the State of Iowa Administrative Code, and other sources.

Contaminants
The following is a summary of the water quality data based on testing for ammonia, dissolved orthophosphorous or phosphate, nitrate and nitrite, chloride, dissolved oxygen, total phosphorus, turbidity, sediment, bacteria, and sulfate provided by the IDNR and ISA.

IOWATER
Volunteer Water Quality Monitoring

IOWA SOYBEAN Association
Expanding Opportunities. Delivering Results.

Ammonia[19]

Sources: Waste, fertilizers, and natural processes.

Standard: No data available on state or federal standards for ammonia.

Historical data: Ammonia levels at the IDNR sampling site have ranged from below detection levels to 2.68 parts per million (ppm). None of the samples exceeded levels that are acutely toxic to fish, but there is still potential for long-term impacts.

2014 Snapshots: Snapshot data was not available for ammonia.

Trends: The long-term trend for ammonia appears to be downward; however, the decline is not statistically significant.

Impact: Under certain temperatures and pH levels, ammonia can be toxic- causing fish kills. Non-acute levels can have chronic or long-term impacts on growth and development of aquatic life.

More information: Additional resources include EPA's Causal Analysis/Diagnosis Decision Information System (CADDIS).

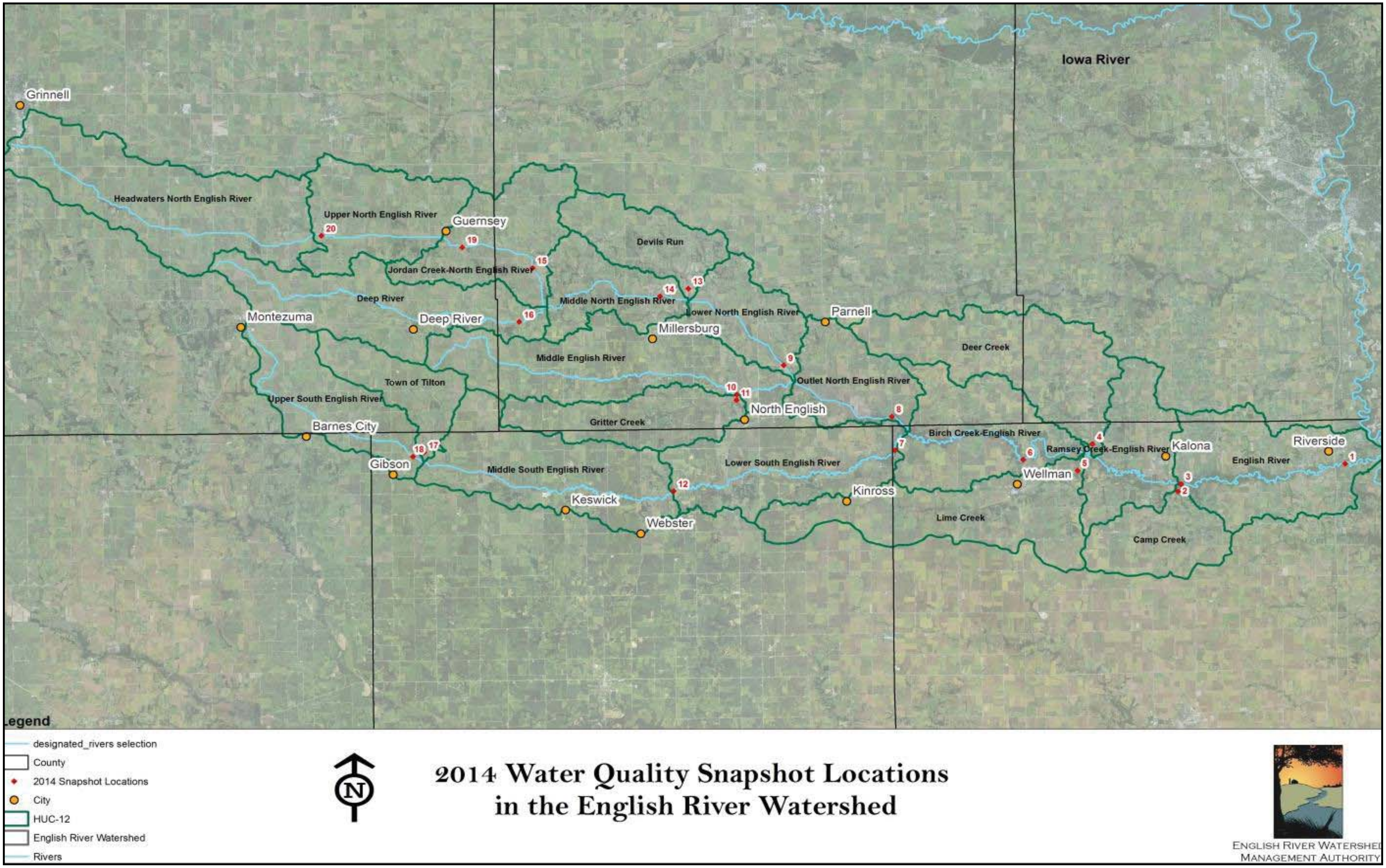

Figure 22. English River Watershed Water Sample Locations (the numbers on the map correspond with Site ID numbers provided by the Iowa Soybean Association). Site #1 (near Riverside) is also utilized by IOWATER staff for samples.

Dissolved Orthophosphorus (OP) or Phosphate[20]

Sources: Orthophosphate is dissolved phosphorus stemming from animal and human waste, and decomposition of plant material.

Standards: The state of Iowa has not established water quality standards for OP. It is typically present in very low concentrations.

Historical data: Levels of OP detected in the English River are comparable to streams statewide (median level of 0.10 ppm); however, OP has only been measured in the English River since 1998. The data suggests that the majority of the OP found in the English River is derived from sediment eroding from uplands and streambanks. The data also suggests that at times of low flow, animal and human waste is likely contributing to OP levels.

2014 Snapshots: Snapshot data indicates that OP (referred to as Phosphate in ISA's report) levels remained below detection levels (0.10 ppm) throughout 2014 for the majority of English River subwatersheds. A few subwatersheds saw OP spikes in July ranging from 0.17 to 0.31 ppm, which may be related to heavy rain events occurring that month: English River at Riverside, Ramsey Creek, Deer Creek, the Middle and Lower South English, the Middle and the Lower North English subwatersheds.

Trends: There has been a slight downward trend in OP in the English River watershed during the past 16 years, but the decline is not considered statistically significant.

Impact: Adverse plant growth, algal blooms.

More information: Additional resources include Vernier Labs' "Water Quality with Vernier: Phosphates."

Nitrate / Nitrite[21]

Sources: Organic matter, animal and human waste, decomposing plant matter, rodenticides, and fertilizers. Nitrite in water can indicate ammonia contamination.

Standards: The Environmental Protection Agency's drinking water standard for nitrate is 10 ppm, and 1 ppm for nitrite. The State of Iowa follows these standards for public drinking water supplies.

Historical data: Nitrate levels in the English River are consistent with trends in southern Iowa streams, which are generally below the drinking water standard. The statewide median (50th percentile) is roughly 5.4 ppm; the median nitrate level in the English River is 4.1 ppm.

2014 Snapshots: Snapshots conducted by ISA in 2014 indicated 7 of 20 subwatersheds in the English River valley with nitrate levels in excess of the 10 ppm standard (Figure 24). Samples from two locations in April were not obtained due to severe weather occurring. All but 1 of the subwatersheds indicated levels in excess of 5 ppm. Significant spikes were observed in April and July and may be correlated to significant heavy rain events that occurred during these months. The highest nitrate levels were found in the Upper North English, Camp and Deer Creek subwatersheds across multiple seasons.

Trends: Despite some high levels of nitrates found in portions of the watershed in 2014, the long-term trends appear to be slightly decreasing for nitrate, although the decline is not statistically significant.

Impact: Nitrogen is a naturally occurring plant nutrient, but in excess amounts, can increase adverse plant growth and changes in biological ecosystems. Nitrates in water also impact the pH and dissolved oxygen levels in a waterbody. Nitrates / nitrites are known to cause human health issues such as "blue baby syndrome," and are believed to be associated with leukemia and cancers of the nose and throat.

More information: Additional resources include EPA's "Nitrates and Nitrites: TEACH Chemical Summary."

Researchers at IIHR-Hydroscience and Engineering and the Iowa Flood Center (IFC) developed a model that can predict which of the 103 subwatershed areas in the English River watershed are prone to the greatest nutrient losses during heavy rain events, which is based on hydrologic patterns observed. The map below illustrates that the areas with the greatest concentration of nitrate runoff are part of the Deer and Camp Creek HUC-12s. The complete Hydrologic Modeling of the English River Watershed Report from the research team at IIHR and IFC can be found in Appendix B.

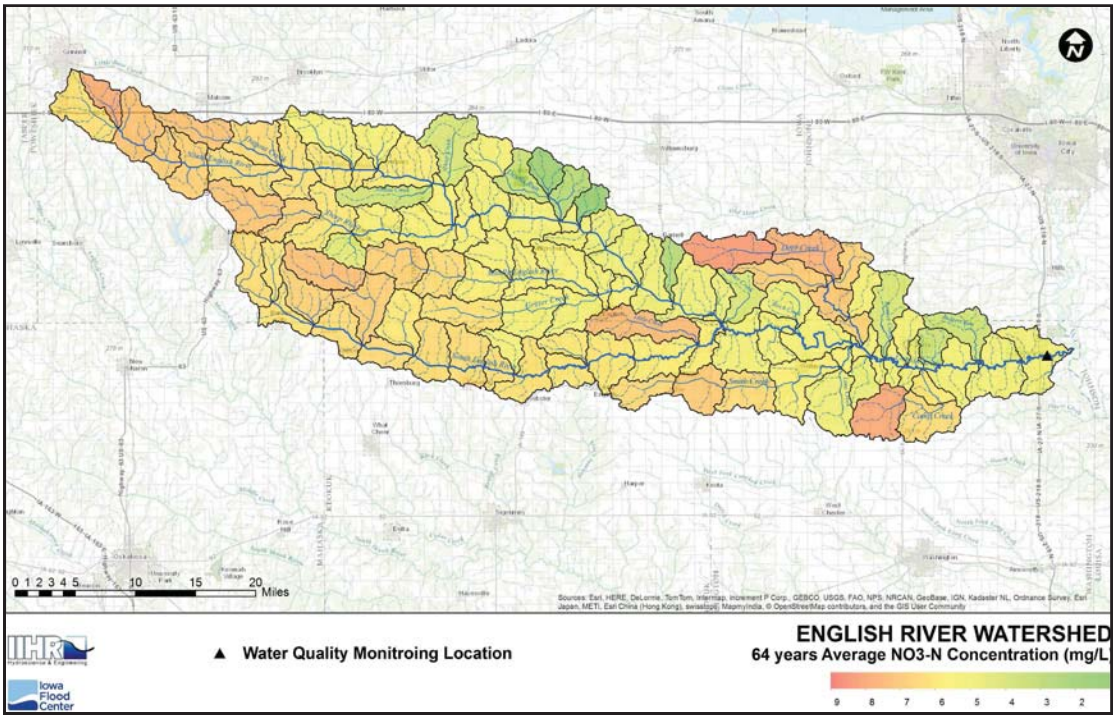

Figure 23. Current nitrate loading predictions for the English River watershed based on land use and hydrologic variables (map courtesy of the Iowa Flood Center)

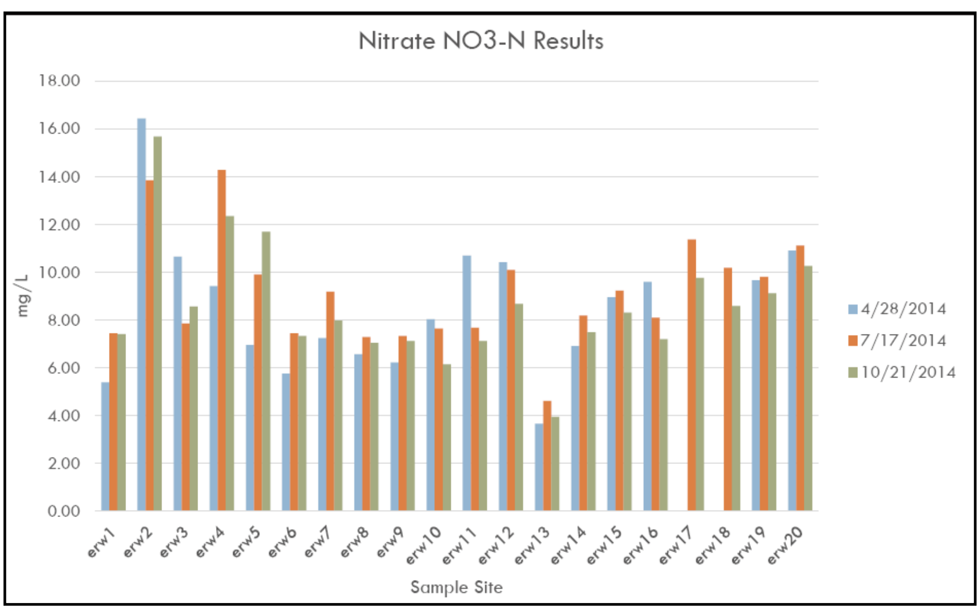

Figure 24. Nitrate data from 2014 Water Quality Snapshots (graph courtesy of Iowa Soybean Association)

Chloride[22]

Sources: Road salt, human or animal waste, fertilizers, oil and gas drilling, municipal or industrial wastewater discharge.

Standards: Acute toxicity levels for chloride are 629 ppm, and at 389 ppm (the maximum standard for warm water streams), chloride can create chronic, long-term impacts. The EPA lists chloride as having a "secondary standard," meaning that the contaminant has recommended, but not enforced standards. The recommended maximum chloride standard for drinking water is 250 ppm.

Historical data: Chloride levels have been monitored in the English River watershed since 2001. Data from the sampling site near Riverside indicate chloride levels ranging from 4 to 69 ppm. Average chloride values for Iowa streams range between 16 and 29 ppm, which means that some local samples registered higher than state averages. However, the observed values are still well below benchmark values.

2014 Snapshots: Snapshot data indicates chloride ranging from 9 to 39 ppm in the English River watershed during 2014.

Trends: Long-range data suggests that chloride levels have been significantly declining over time. The decline is statistically significant.

Impact: Toxicity to freshwater aquatic life.

More information: Additional resources include the *State of Iowa Environmental Protection Code,* Chapter 61: Water Quality Standards, and the EPA's *List of Drinking Water Contaminants and Ambient Water Quality Criteria for Chloride.*

Dissolved Oxygen (DO)[23]

Sources: DO is added to waterbodies physically through turbulence.

Standards: The minimum standard for DO in warm water streams is 5 ppm in warm water streams, and 7 ppm in cold water streams.

Historical data: On average, Iowa waterbodies had DO levels of 10.5ppm between 2000 and 2009. Data suggests that there were only two years where recorded DO levels in the English River were lower than the standard of 5 ppm, 1996 and 2014. However, in winter of 2013/2014, very low DO levels were recorded. It is unclear why that occurred.

2014 Snapshots: Snapshot data was not available for DO.

Trends: Long-range trends indicate that DO levels in the English River are declining.

Impact: DO is necessary for aquatic life. DO is removed from the water through decomposition or organic matter, through respiration, and through photosynthesis. Lower dissolved oxygen suggests that higher levels of pollutants are present.

More information: Additional resources include the IDNR's IOWATER *Chemical Assessment Manual.*

Total Phosphorus (TP)[24]

Sources: Human, animal and industrial waste; runoff from fertilized lawns and cropland.

Standards: The State of Iowa does not have water quality standards for TP; however, the EPA has established a benchmark value of 0.075 ppm for streams similar to the English River.

Historical data: Over 95% of English River watershed samples taken in the last 28 years have exceeded EPA benchmark values for TP (Figure 25). Maximum levels of TP in the English River approached 20 ppm, which is extremely high relative to the benchmark of 0.075 ppm. The median value of TP in the English River is 0.2 ppm, which is more than double the benchmark value, and is higher than median values for similar streams statewide. Between 2000 and 2009, the typical TP levels in Iowa rivers ranged between 0.11 to 0.34 ppm.

2014 Snapshots: Snapshot data was not available for TP.

Trends: A trend analysis for TP over time suggests little change over the years with consistently high levels indicated at the testing site near Riverside.

Impact: Excess TP can cause adverse plant growth and algal blooms, low dissolved oxygen levels, and hypoxia (oxygen deprivation causing death of aquatic life).

More information: Additional resources include the IDNR's IOWATER *Chemical Assessment Manual.*

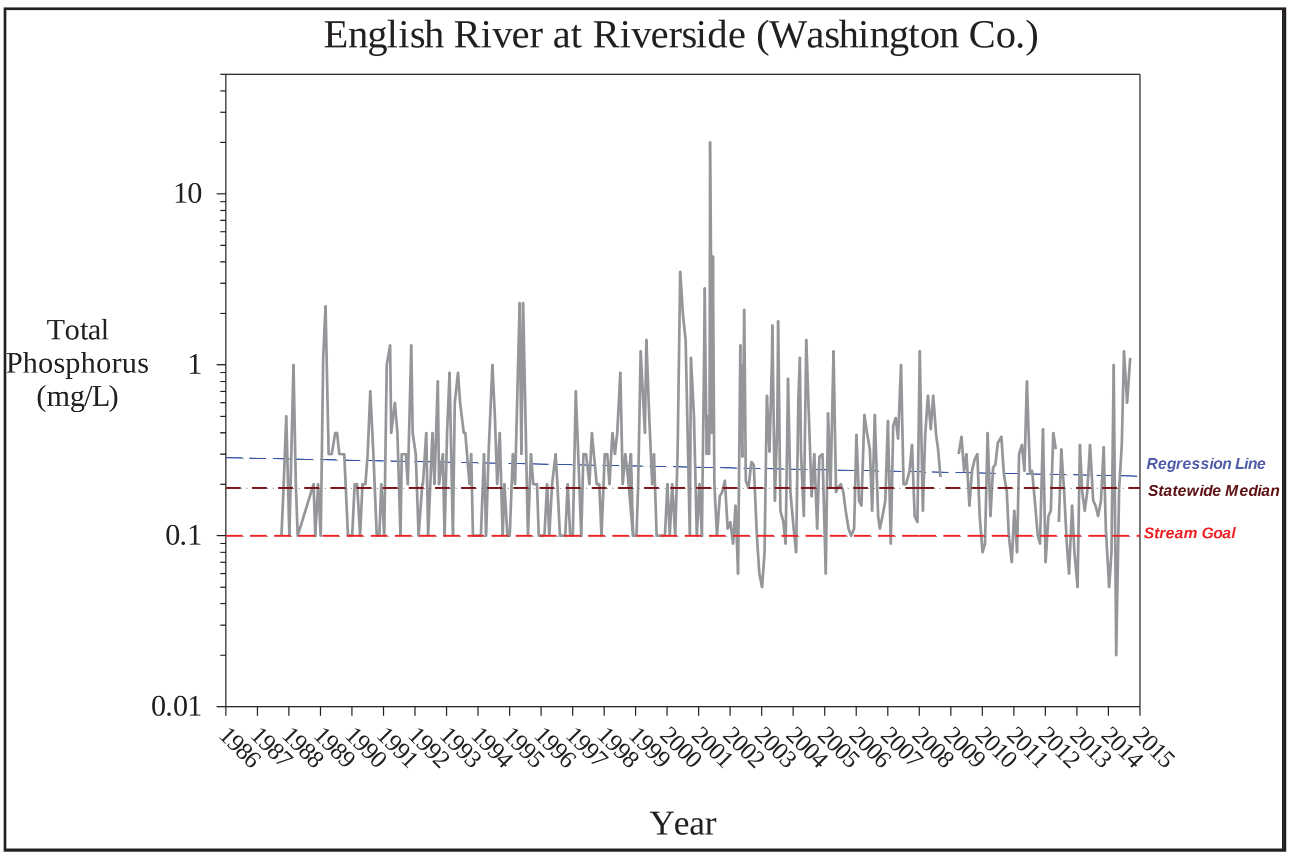

Figure 25. Phosphate data from 1988 – present (graph courtesy of IOWATER)

Turbidity[25]

Sources: Erosion, waste discharge, urban runoff, and large populations of bottom-feeding fish.

Standards: The State of Iowa follows EPA standards for turbidity of drinking water, which is that samples from filtered drinking water systems must not exceed 0.3 NTUs (Nephelometric Turbidity Units) at least 95 percent of the time, and no single sample can exceed 1.0 NTU.

Historical data: Long-range data for turbidity was not available.

2014 Snapshots: ISA conducted turbidity testing once in 2014, during a heavy rainfall event in April. Data from two locations was not obtained due to severe weather occurring. Observed turbidity levels ranged from 100 to over 900 NTUs during this event. Three of the subwatersheds indicated turbidity levels in excess of 500 NTUs: the Lower South English, the Middle South English, and Middle North English River areas (Figure 26).

Trends: No trends established at this time due to lack of historical data.

Impact: Turbidity in itself has no adverse health effects; however, higher turbidity is often associated with the presence of harmful microorganisms (viruses, parasites, and bacteria) that can cause illness.

More information: Additional resources include the EPA's *National Primary Drinking Water Regulations* and the IDNR's *State Public Drinking Water Annual Compliance Report 2012*.

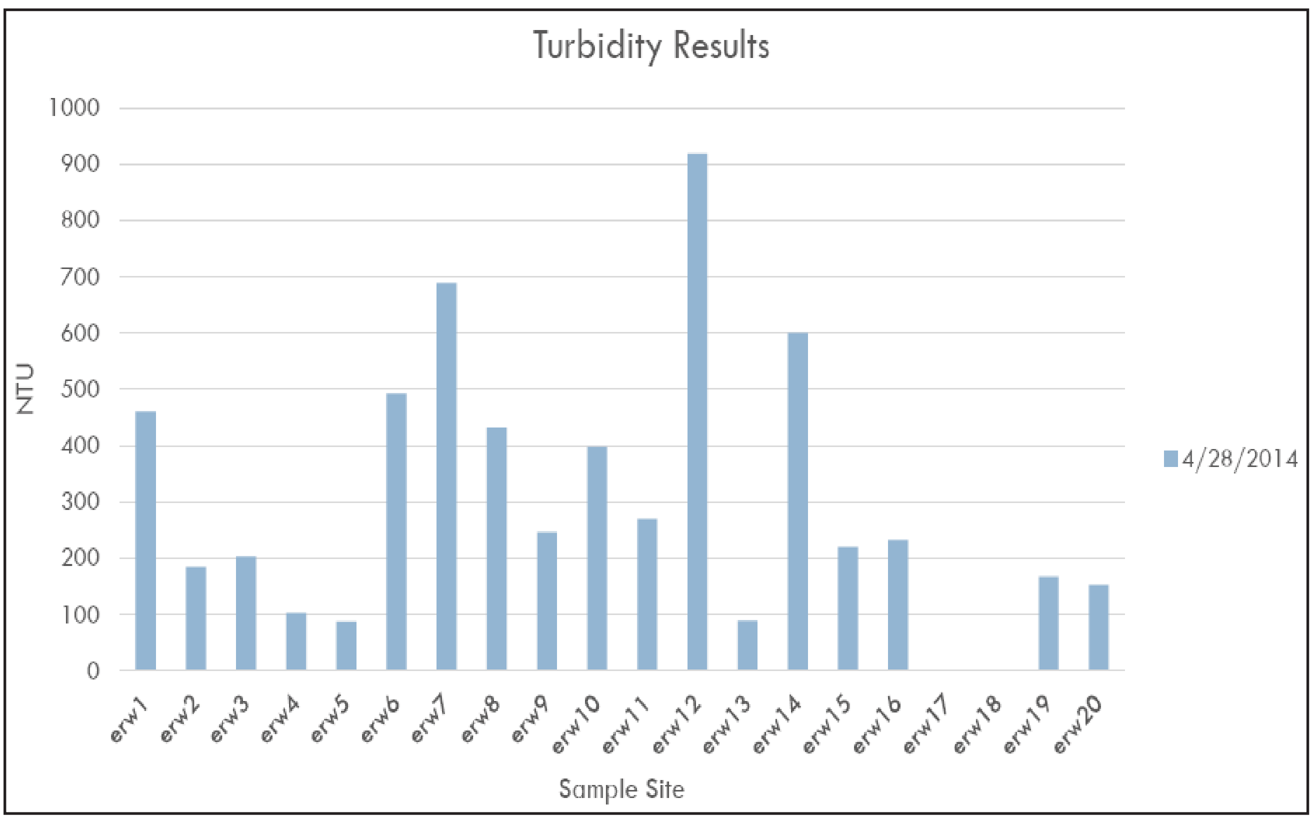

Figure 26. Turbidity data from 2014 Water Quality Snapshots (graph courtesy of Iowa Soybean Association)

Sediment (Total Suspended Solids - TSS)[26]

Sources: Silt, clay, decomposing plant material or algae.

Standards: The State of Iowa does not have water quality standards for sediment. South Dakota, however, as one example, has established a maximum of 158 ppm for warm water streams (like the English River). Sediment levels above 40 ppm negatively impact the aesthetics of a waterbody, especially for recreational uses like swimming.

Historical data: The median TSS value for the English River between 1986 and the present has been 43 ppm, and is higher than the state median of 33 (Figure 27). Approximately 25 percent of samples taken from this testing site indicated TSS levels of 197 ppm or higher. These high levels of TTS suggest that erosion from streambanks and upland areas is occurring in the watershed.

2014 Snapshots: Snapshot data was not available for TSS.

Trends: Long-range trends suggest consistent TSS levels recorded since data collection began, with no general upwards or downward trends occurring.

Impact: Sediment can decrease light, adversely impacting plant life. It can also smother fish spawning areas and macroinvertebrates, damage fish gills, and impact biological systems of a waterbody.

More information: Additional resources include the IDNR's *Water Quality Summary 2000-2012*.

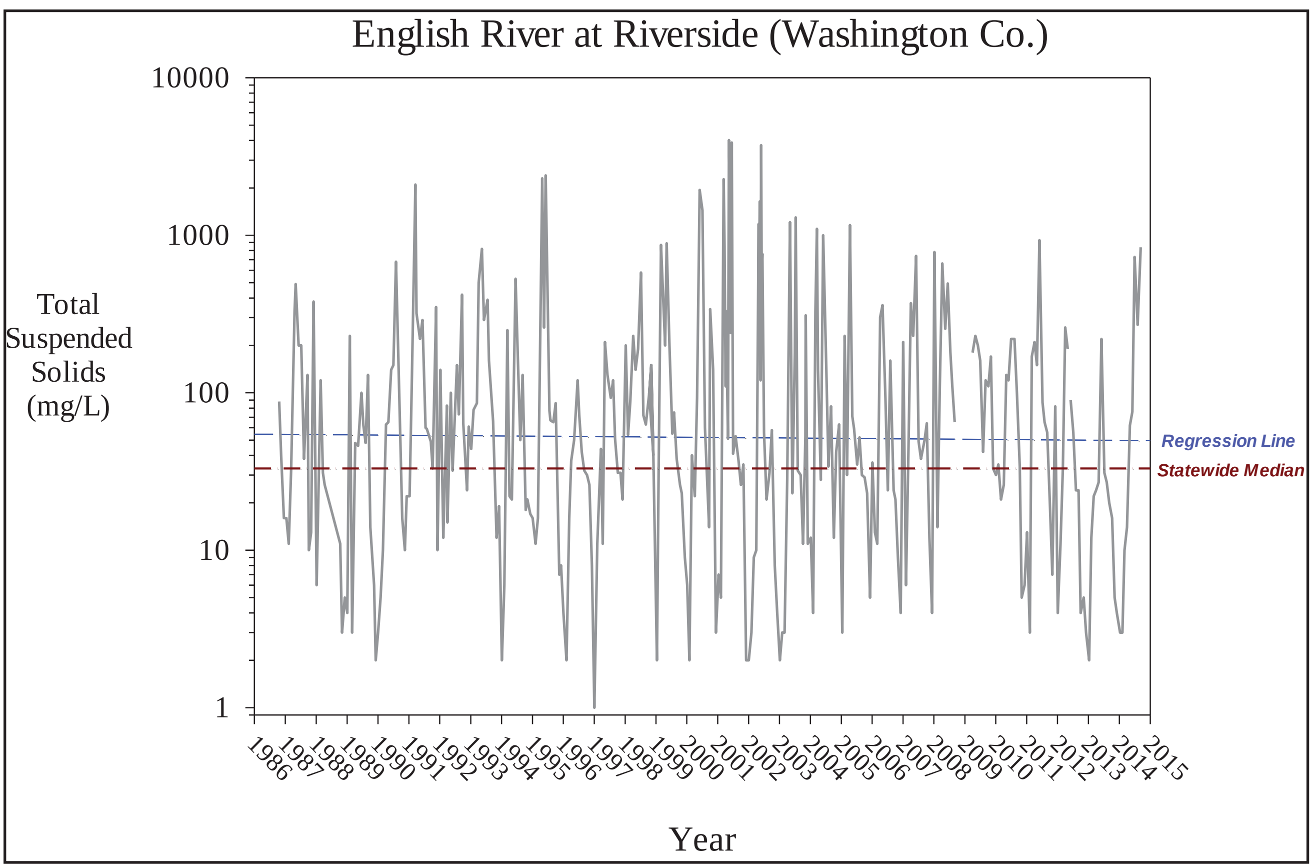

Figure 27. Total Suspended Solids (TSS) data from 1986 – present (graph courtesy of IOWATER)

Bacteria (Fecal Coliform)[27]

Sources: Human and animal waste.

Standards: The Iowa Administrative Code defines the 235 CFUs/100mL (colony forming units per 100 mL) as the benchmark for posing a health risk to humans, also referred to as a recreational standard.

Historical data: Testing for E. coli on the English River site near Riverside began in 1999. Historical water quality testing indicates that bacteria levels in the English River generally exceed state averages, and have exceeded the benchmark value more than 50 percent of the time (Figure 28). Bacteria peaks in the data appear to be correlated with rainy seasons and resultant erosion, since bacteria clings to sediment particles

2014 Snapshots: Snapshot data was not available for bacteria.

Trends: Long-range trends suggest that even though bacteria levels in the English River have been higher than state averages historically, bacteria levels have been trending downwards over the last 16 years.

Impact: Gastrointestinal illnesses.

More information: Additional resources include the IDNR's IOWATER *Bacteria Monitoring Manual.*

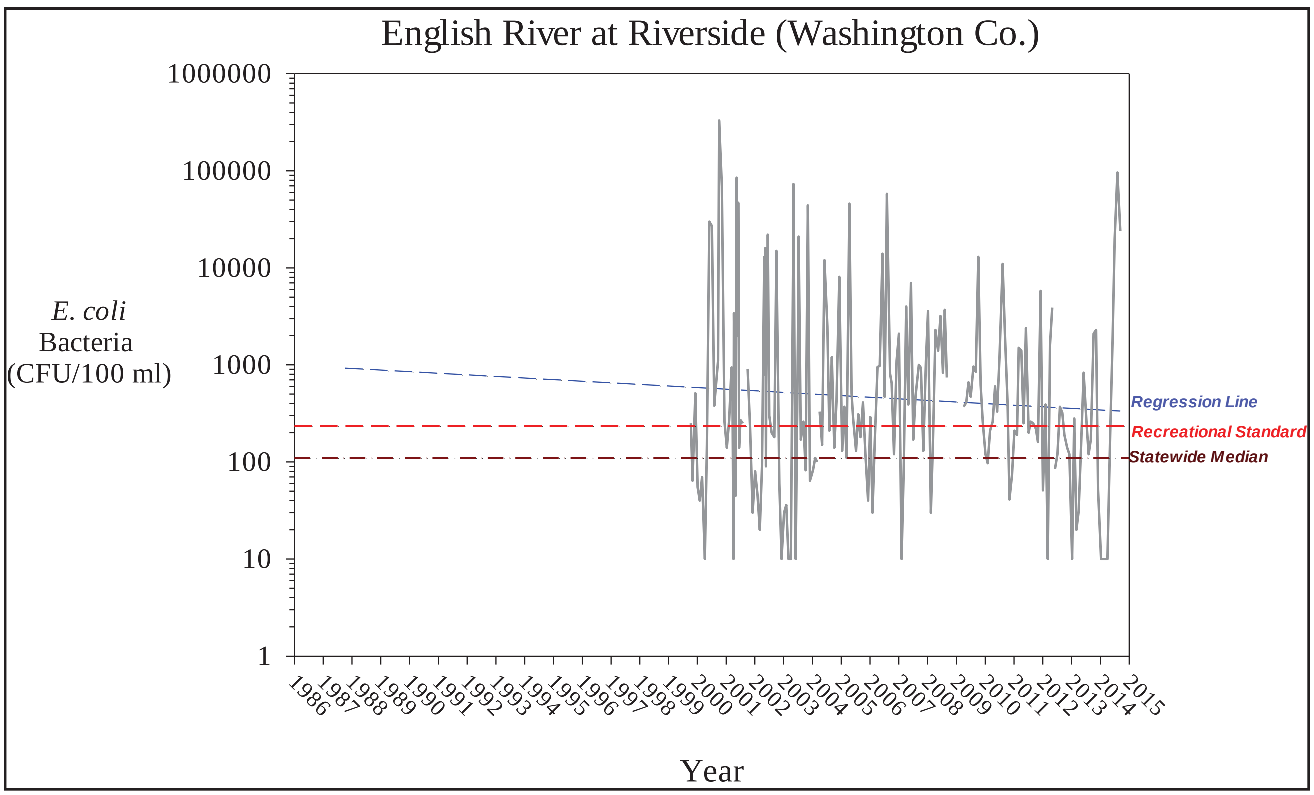

Figure 28. E. coli bacteria data from 1999 – present (graph courtesy of IOWATER)

Sulfate[28]

Sources: Sulfate is a naturally occurring substance in drinking water.

Standards: The EPA lists sulfate as having a "secondary standard" (recommended, but not enforced) drinking water maximum of 250 ppm.

Historical data: Median sulfate levels in Iowa waterbodies were 35 ppm in samples obtained from 2000 to 2012. Monitoring of sulfate in the English River watershed began in 2001, and water samples have shown sulfate levels ranging from from 4 to 83 ppm in the last 14 years. While some values in the English River were twice the state's median values, sulfate levels in the English River have remained well below the secondary standard for drinking water.

2014 Snapshots: Snapshot data from 2014 indicated ranges of sulfate from 12 to 62 ppm. For unknown reasons, water samples from the Lime Creek subwatershed (ERW5) shows sulfate levels nearly twice as high as those found in any other subwatershed (Figure 29).

Trends: Long-range data suggests that sulfate levels in the English River have been on the rise, but that rise is not found to be statistically significant.

Impact: Gastrointestinal upset in humans.

More information: Additional resources include the EPA's *List of Drinking Water Contaminants; Sulfate: An Innovative Approach to Regulating a Naturally Occurring Contaminant* (fact sheet); and, IDNR's *Water Quality Summary 2000-2012*.

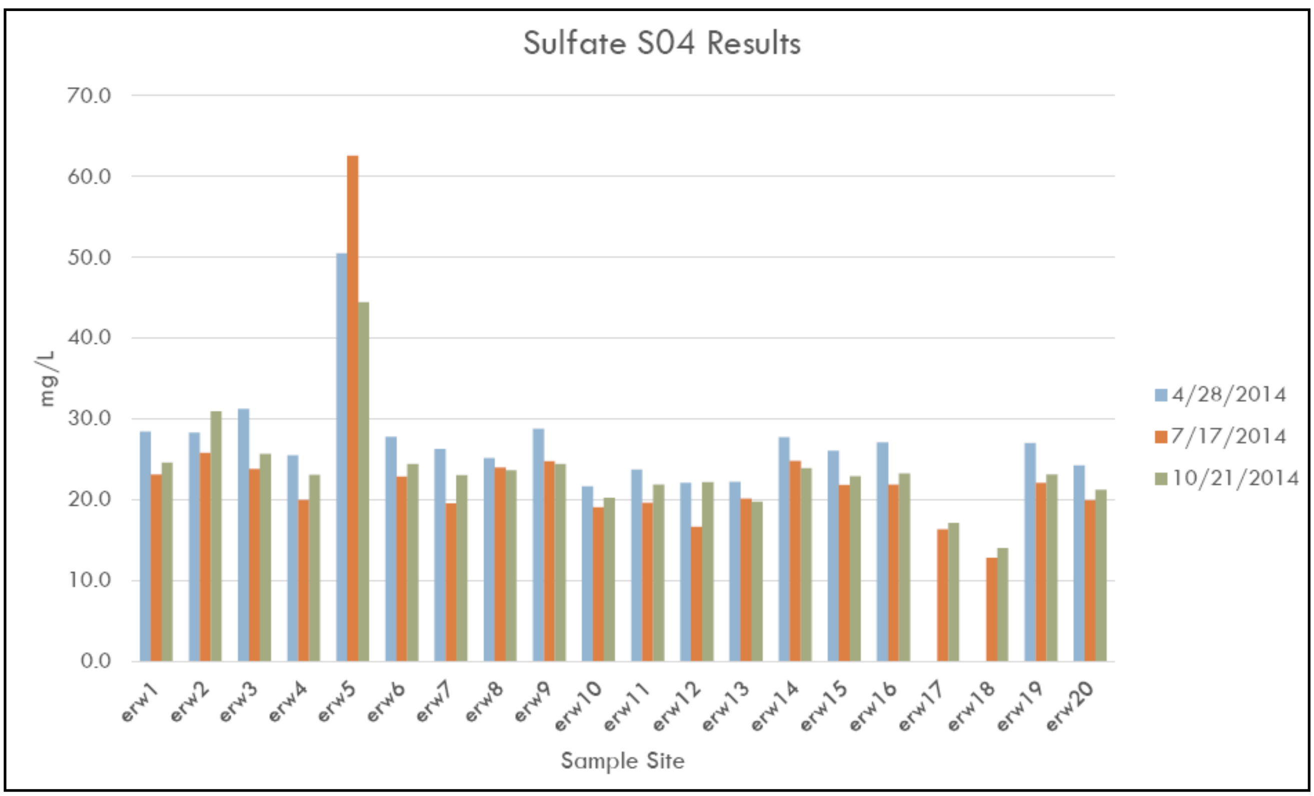

Figure 29. Sulfate data from 2014 Water Quality Snapshots (graph courtesy of Iowa Soybean Association)

4.2 Hydrologic Modeling Summary

The following is a summary of hydrologic assessment research by Dr. Allen Bradley, Jr., Ashok KC, Nicholas Leach, and Rachel Tokuhisa from the Iowa Flood Center and IIHR- Hydroscience and Engineering at the University of Iowa. The complete hydrologic modeling report can be found in Appendix B.

Based on historical data collected within the English River watershed:

KEY FINDINGS

1) Average annual precipitation in the English River watershed is 36.5 inches; of this amount, 69 percent evaporates into the atmosphere, and 31 percent ends up as runoff (in baseflow or surface flow form);

2) River flows are typically higher in the spring and early summer, then decrease through the growing season into the fall and winter; peak river flows often occur in March or April due to snowmelt, or in early summer due to heavy rainfall.

3) Iowa has seen *increased* precipitation since the 1970s, and *more frequent* heavy rain events;

4) In the last 75 years, flooding events have occurred in 1/3 of those years; 13 of those floods occurred between the months of May and July;

5) Runoff has increased significantly in Iowa due to:
   - a) conversion of land from highly-absorbent prairie to much-less absorbent farmland;
   - b) removal of forests and other native vegetation, replacement with less absorbent ground cover plant species;
   - c) increases in annual and seasonal precipitation;
   - d) and urban development and increased impervious surface areas (i.e. concrete, asphalt)

To perform this analysis, research staff also built a hydrologic model of the English River watershed using the Hydrological Simulation Program – FORTRAN (HSPF), which was developed to understand areas of the watershed most vulnerable to high runoff or high flood potential, and identify areas where increased water retention, or detention, could reduce flood severity.

High Runoff Areas

The percentage of precipitation that becomes runoff is known as the "runoff coefficient," and it is used to identify high runoff areas. The watershed was divided into smaller areas (subwatersheds), and the hydrological model predicted the runoff coefficient for each. Runoff in the English River watershed ranged as low as 24 percent of precipitation in low runoff areas, to as high as 36 percent in high runoff areas.

As Figure 30 shows, areas with high average runoff (in red) tend to be located in the upper portion of the watershed, including tributaries of the upper English River; Deep River; and the Upper and Middle South English Rivers in Poweshiek, Iowa, and Keokuk Counties. These areas overlap with the English River-Dugout Creek, Upper English River, English River-Jordan Creek, Deep River, Upper South English River, and the Unnamed Creek-South English River HUC – 12 watersheds. In addition, a few tributaries of the Deer and Birch Creek HUC – 12s (in Iowa and Johnson Counties) are also areas of high runoff. These areas are characterized with high levels of agricultural land uses, and fewer forest and grassland areas compared to other parts of the watershed. These are key areas for implementation of BMPs that can reduce runoff volume and velocity (which increases flood severity), such as detention ponds, which capture and store water temporarily allowing the flow to be released more slowly downstream. Additionally, these are key areas for BMPs promoting infiltration of runoff, such as cover crops, soil restoration, native vegetation, riparian areas, and development of wetlands and other conservation areas.

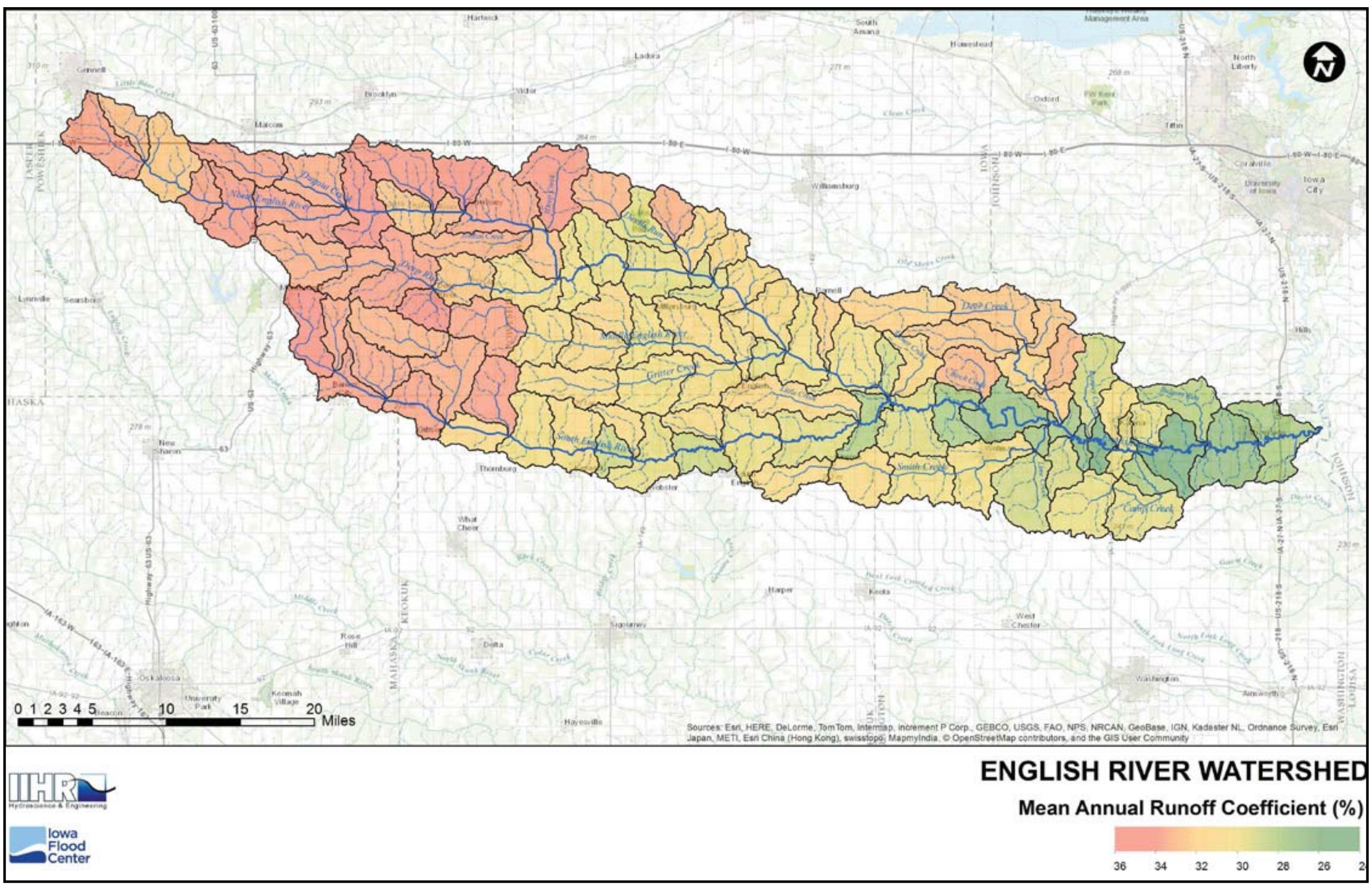

Figure 30: Mean annual runoff coefficient (percentage of precipitation that runs off) in the English River watershed. Areas prone to high runoff are shown in red.

Flooding
The mean annual flood is a measure of flood magnitude at a site. It is found by taking the largest peak discharge every year, and then computing the sample average (or mean). Mean annual floods tend to increase with drainage area; smaller drainage areas tend to have a smaller mean annual flood than larger drainage areas (Figure 31). The mean annual flood was calculated using the hydrologic model for the English River watershed to identify areas that are most vulnerable to flooding. The watershed was divided into areas with high mean annual floods (in red), areas of medium annual floods (yellow), and areas of low annual floods (green).

A comparison of Figure 30 and Figure 31 shows that some areas of high runoff overlap with high annual flood areas, but also that some areas with high runoff overlap with low annual flood areas.

One example of this is the area of the English River just west of Highway 63 in Poweshiek County, an area where runoff is high, but lower annual floods occur because the channel of the river is long and narrow, increasing the length of time flow requires to navigate downstream, which eases flood severity downstream. Shorter channels, on the other hand, tend to increase flooding magnitudes by decreasing the length of time flows need to navigate downstream. Areas of lower runoff but higher annual floods can be found in the Deep River area, immediately south of the Upper English River, and in the Lower South English River.

Areas of high flooding risk are areas where tributaries of similar size converge, and the timing of when their respective flows coincide. The areas in the English River watershed most prone to higher annual flooding risk include areas south of where the English River (at English River Wildlife Area) and the South English River converge. Another area prone to high annual flooding include the area downstream of the English River / Gritter Creek convergence, and areas in the western section of the watershed where high runoff areas overlap with high annual flood areas (headwaters of the North English River, and Deep River). These areas are key areas for future mitigation projects.

Photo: Flood waters rise in Kalona, Iowa in the spring of 2013. *Photo courtesy of Jody Bailey.*

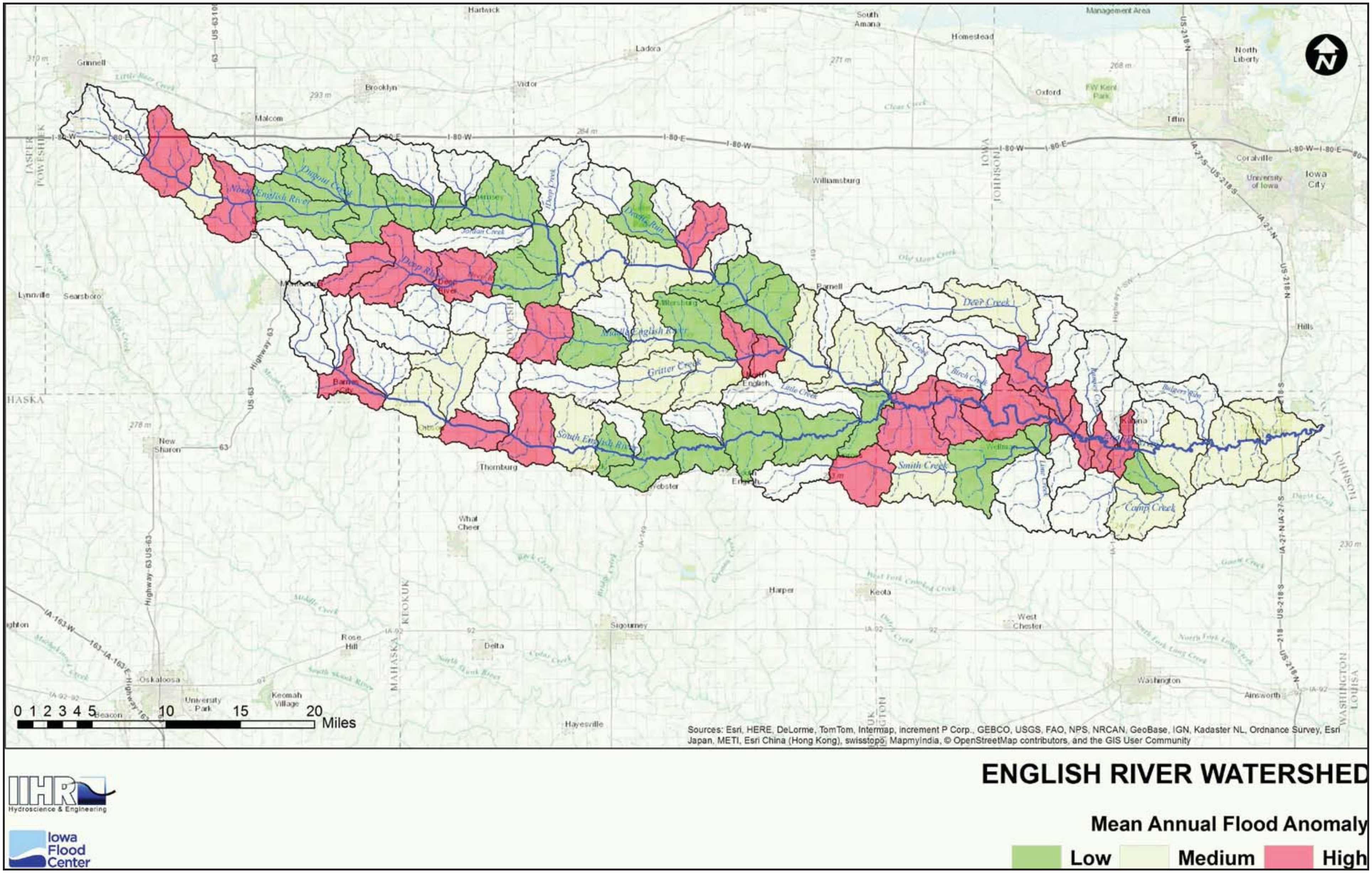

Figure 31: Mean annual flooding in the English River watershed. Areas prone to high mean annual floods are shown in red. Mean annual flood tendencies are not shown for headwater subbasins.

4.3 Social Survey Summary

During summer of 2014, watershed staff conducted a survey of watershed landowners to identify practice and policy trends in the English River valley. Of the 688 randomly sampled watershed landowners, for which the English River Watershed is home to approximately 21,600 residents, nearly 25 percent participated in the survey, providing their unique perspectives as farmers, urban homeowners, business owners, and taxpayers.

Without further analysis, it is difficult to determine to what degree the opinions of survey participants can be extrapolated to the entire population of watershed residents. However, the survey allowed the team to gather diverse feedback from watershed stakeholders across a large region. The information gathered was used in the development of watershed goals. We are appreciative of the many individuals who took the time to provide this feedback, which has been essential to the project.

Demographics
In summary, three-quarters of survey participants were male, and over half of participants were age 60 or older. While 55 percent had not attained a college degree, a third of those surveyed had attained a 4-year degree or higher. Less than 5 percent of respondents indicated that their household income was at or below poverty level for a family of 4. Seventy-five percent of properties in the watershed are characterized as farm properties, but just a little over half of participants identified as being farmers. Over half of those surveyed responded that they rent out some portion of land they own in the watershed.

Of the farm properties, 70 percent produced corn recently and 69 percent produced soybeans. Nearly three-quarters of landowners had owned their watershed property for over 10 years, and over half actually live within the English River watershed. Of the 54 landowners who stated that they do not live on their watershed properties, 56 percent of these "absentee landowners" live within 25 miles of their property, and 75 percent live within 50 miles.

Survey Highlights
The following boxes detail basic statistics discovered through the social survey process. Highlights are broken down into several categories: general, water quality, flooding, best management practices (BMPs), and policy-related questions. Table 15 provides an abridged version of fill-in comments received at the end of survey.

Photo: Residents socialize on an old bridge near North English. *Photo courtesy of Amy Greene.*

GENERAL

- The greatest percentage of participants agreed (either "strongly" or "somewhat") with the following statements:
  - o We need to improve water quality (85%)
  - o We need to improve soil health (84%)
  - o We need to provide more education for landowners on water quality issues (76%)
  - o We need to increase incentives for farmers to protect soil and water (71%)

- In comparison, the greatest percentage of participants disagreed (either "strongly" or "somewhat") with the following statements:
  - o We need to increase regulations for landowners to protect soil and water (40%)
  - o We need to reduce regulations on private property use (20%)
  - o We need to increase livestock production (17%)
  - o We need to reduce restrictions associated with conservation dollars (Environmental Quality incentives Program - EQIP, Conservation Reserve Program - CRP, Water Quality Improvement Plan - WQIP) (17%)

- Both farmers and non-farmers strongly supported the statements "We need to improve soil health," "We need to improve water quality," and "We need to provide more education for landowners on water quality issues." The groups diverged from one another on statements pertaining to financial incentives (for both farmers and communities) for conservation practices, protection/creation of wildlife habitat, and educating the public about flooding

WATER QUALITY

- 73% of survey participants believe that the drinking water on their watershed properties is safe to drink

- The majority of those surveyed felt that surface water quality in the watershed was "Good" (39%) or "Fair" (30%)

- Between 60 and 80 percent of participants felt that illegal dumping, agriculture, and / or livestock are the most "responsible" for Iowa's water quality issues

- Farmers were more likely to list (in order) illegal dumping or littering, agriculture, livestock or poultry; and non-farmers: construction erosion, livestock or poultry, and mining, as being the most responsible for the Iowa's water quality issues

- The majority (37%) of those surveyed were "unsure" whether enough is being done to address water quality issues in Iowa or not; 31 percent felt that "enough is being done," and 29 percent felt that "enough was not being done"

FLOODING

- Nearly 42 percent of those surveyed had watershed properties that were impacted by flooding in the last 10 years, but only 33 percent indicated that they were *concerned* about future flooding
- Nearly 49 percent believe that rainwater gets "absorbed by the land" after it falls on their properties, versus running off the land
- Most participants (42%) suggested that they were "unsure" about whether or not enough was being done to address flooding in Iowa; 27 percent felt that enough was not being done; and 24 percent felt enough is being done

BMPs

- Of 145 individuals who responded to the question about best management practices (BMPs) they have used in the last 5 years, 68 percent stated they use crop rotation, 64 percent grassed waterways, 55 percent no-till, and 51 percent make crop or fertilizer adjustments on their (farm) properties
- Nearly 30 percent of non-farm property owners stated they had maintained or replaced a septic system, 26 percent followed the instructions for lawn and garden products, and 24 percent have recycled household paint and chemicals
- Less than 10 percent of those surveyed agreed that they wanted to learn about additional BMPs they could use on their farm and urban properties to protect water quality
- Barriers to BMP implementation include lack of cost-share dollars, education, or technical assistance; tenant farmers; and deterrence by the scope and expense of desired projects

POLICY

- Of a given list of current "hot" policy topics, the top three items participants were "very concerned" about included soil erosion (45%), loss of agricultural land (38%), and loss of soil fertility (36%)
- The topics that survey participants were mostly "not concerned about" included extreme temperatures (39%), severe weather (34%), and the impact of water quality issues on recreation and tourism (32%)
- Of the policy topics participants were most likely to be "unsure" about (their level of concern), was Iowa's contribution to the dead zone in the Gulf of Mexico (15%)
- 70 percent of participants have not heard about Iowa's Nutrient Reduction Strategy; broken down, 90 percent of "non-farmers" and 60 percent of "farmers" stated that they were unfamiliar with the policy

Table 15. Social Survey Fill-in Comments (abriged)
"Good Luck! Volunteer efforts are better than top down regulation particularly egress is the EPA and COE and their proposed rewrite of the regulaitons (sic) concerning Waters of the US (WOTUS). Ephemeral drains and waterways are NOT WOTUS."
"Smith Creek has a continual flow of tires, glass and junk coming down it from somewhere."
"We are currently involved in the CSP program. Voluntary participation and education are more acceptable than forced participation. Seed money to enhance new concepts works!"
"You need more waterways, no-till, oats, hay and pasture, terracing, dry ponds, cover crops"
"Don't forget mother nature rules. Whatever you do if the ground is soaked wet and you get a 6" rain you are going to have floods."
"3/4 of the people who are going on and on about how the farmers are ruining the environment know very little about what they are talking about. But yet they are getting all of the headlines and the general public is believeing (sic) it. These people use information that is 10-15 years old to back up their information. In the last 15-20 years the farmers have made great strides in soil conservation but when you get 4-6 inches of rain in 10-12 hours, it doesn't matter what you have done. There will be erosion."
"1-4 lakes upstream would have the largest impact on flooding, water quality, and recreation in my opinion."
"I wish people would stop and look back at the long range history of our weather patterns and educate themselves on the fact that these events have happened before and will in fact happen again. Everything on earth happens in cycles, instead of looking at a snapshot in time and get all up in the air about things, and try to keep mother nature from taking her course"
"I think tiling farm fields should be restricted. More and more people are tiling all their cropland which causes rainwater to quickly run out of farmland into creeks and stream then on to larger fivers causing floods. Years ago before farmers tiled their fields there were a lot less damaging floods. Another factor that contributes to flooding is cleaning out and straightening small creeks and waterways, damming up small creeks and waterways would slow rainwater from entering streams and rivers thus preventing a lot of floods and lots of water damage. We cannot change the weather, but we can change how we react to it."
"This year will mark the first year out of the last five my neighbor didn't spread hog manure on his river bottom ground just to have it wash away in the spring flood. This seems like something that should stopped. It seems like the English has become a toilet bowl with all of the tiling that has occurred in the last few years. When it rains it flushes and floods and soon after it runs to a trickle. Seems like exactly what any sensible person would predict would happen if all the fields are tiled."
"Thanks for doing watershed work- we need to feel responsible for every drop of water that leaves our property and consider what it might be carrying."