Welcome to the Iowa Water Quality Information System. The IWQIS allows access to real-time water-quality data and information such as nitrate, pH, and dissolved oxygen concentrations, discharge rates, and temperature.
IIHR WQS Network & IWQIS

- IIHR WQS Network
  - Established sensor network
  - Sensors & stations

- Iowa Water Quality Information System (IWQIS)
  - Data platform, tools, features
## Network Expansion

### 2017 Network:
- IIHR
- USGS
- USDA-ARS
- IDNR
- Coe College

### 2012 - 2016 Network Expansion

<table>
<thead>
<tr>
<th>Year</th>
<th>IIHR Sites</th>
<th>% of Iowa (IIHR + USGS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>7</td>
<td>33%</td>
</tr>
<tr>
<td>2013</td>
<td>10</td>
<td>48%</td>
</tr>
<tr>
<td>2014</td>
<td>22</td>
<td>51%</td>
</tr>
<tr>
<td>2015</td>
<td>30</td>
<td>55%</td>
</tr>
<tr>
<td>2016</td>
<td>47</td>
<td>76%</td>
</tr>
<tr>
<td>2017</td>
<td>&gt;61</td>
<td>&gt;80%</td>
</tr>
</tbody>
</table>
### WQS Station Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nitratax</strong></td>
<td>Nitrate + nitrite as N (mg/L)</td>
</tr>
<tr>
<td><em>(Hach)</em></td>
<td></td>
</tr>
<tr>
<td><strong>Hydrolab DS5x</strong></td>
<td>Temperature, pH, specific conductance, dissolved oxygen, turbidity</td>
</tr>
<tr>
<td><em>(Ott Hydromet)</em></td>
<td></td>
</tr>
<tr>
<td><strong>DTS-12</strong></td>
<td>Turbidity (NTU), temperature</td>
</tr>
<tr>
<td><em>(FTS)</em></td>
<td></td>
</tr>
<tr>
<td><strong>Phosphax</strong></td>
<td>Orthophosphate (mg/L)</td>
</tr>
<tr>
<td><em>(Hach)</em></td>
<td></td>
</tr>
<tr>
<td>Additional Components:</td>
<td>Control enclosure, IIHR datalogger, cellular modem, charge controller, 20W solar panel, 12V battery</td>
</tr>
</tbody>
</table>
Field Deployment
Network Objectives

- Generate credible data for science and policy
- Practice Assessment
- Water Quality and Hydrologic Research
- Quantify loads for Nutrient Reduction Strategy

Time-series showing real-time and monthly sampling at Iowa River, Iowa City for 2013.
- Monthly sampling suggests concentration exceeds MCL for ~ 9 days
- Real-time sampling shows MCL exceeded for ~ 60 days
Welcome to the Iowa Water Quality Information System. The IWQIS allows access to real-time water-quality data and information such as nitrate, pH, and dissolved oxygen concentrations, discharge rates, and temperature.
South Fork Iowa River, New Providence, IA

Sensor ID: WQS0024
Recent Nitrate + Nitrite as N: 7.9 mg/L
Last Reported: Tue, Sep 6, 2016 09:00 am

Nitrate + Nitrite as N mg/L

10 mg/L drinkable threshold

Annual
More Data
Landcover:

- Latitude: 41° 40' 23.34"
- Longitude: -91° 33' 44.06"

- Corn: 770.33 k acre (38.4%)
- Soybeans: 582.99 k acre (29.1%)
- Grass 1: 239.92 k acre (12.0%)
- Grass 2: 121.54 k acre (6.1%)
- Deciduous Tall: 61.66 k acre (3.1%)
- Deciduous Short: 53.97 k acre (2.7%)
- Deciduous Medium: 50.39 k acre (2.5%)
- Roads / Impervious: 43.20 k acre (2.2%)
- Wetland: 28.49 k acre (1.4%)
- Water: 24.63 k acre (1.2%)
- Others: 29.17 k acre (1.5%)
- TOTAL: 2.01 m acre (100%)

STATE OF IOWA

- Population: 3,046,355
- Land Area: 55,872 sq mi
WATER QUALITY GAUGE

City, State: New Providence, IA
River: South Fork Iowa River
Station ID: WQ50024
Drainage Area: 224 sq mi
Variables: Load
Plot Year: 2016

Graph showing Load (lb/day) from March to September with peaks in May and August.
WATER QUALITY GAUGE

City, State: Van Meter, IA
River: Raccoon River
Station ID: 05484500
Drainage Area: 3441 sq mi
Variables: Accumulated Yield

Graph showing accumulated yield over months from July to December.
2016 N Load Estimation

Million pounds

1: 28
2: 81
4: 19
5: 30
6: 19
7: 7.6
8: 1.7
9: 255
10: 44
11: 236
12: 46
13: 35
14: 42

Legend

- IIHR Sensor
- USGS Sensor

The University of Iowa
College of Engineering
Yields to Missouri:
32.7 lbs/ac
354 Million lbs

Yields to Mississippi:
28.8 lbs/ac
695 million lbs

Total: 1.05 billion lbs

Iowa’s share of N load:
72% of Missouri @ Hermann
47% of UMRB
41% MRB to the Gulf
Summary Thoughts

- Power of Monitoring: counting conservation practices is not enough
- Hard choices: diversify the landscape
Questions

• **Contacts**
  - Caroline Davis caroline-davis@uiowa.edu
  - Chris Jones christopher-s-jones@uiowa.edu

• **Links**
  - http://iwqis.iowawis.org/
  - http://www.iihr.uiowa.edu/

• **Acknowledgements**
  - Tom Stoeffler, Jason McCurdy, Sam Debionne, Andre Zanchetta, Jim Niemeier