

# IOWA'S WATER

## Ambient Monitoring Program

### Water Quality Summary 2000-2007\*

| Water Quality Parameter                | Units      | Number of Samples | Min Value | Percentiles |       |       |       |       | Max Value |
|--|------------|-------------------|-----------|-------------|-------|-------|-------|-------|-----------|
|  |            |                   |           | 10th        | 25th  | 50th  | 75th  | 90th  |           |
| Acetochlor <sup>††</sup>               | µg/L       | 7,054             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | 0.16  | 21        |
| Alachlor <sup>††</sup>                 | µg/L       | 7,054             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | <0.1  | 8.6       |
| Ammonia (as N)                         | mg/L       | 8,233             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | 0.20  | 5.7       |
| Atrazine <sup>††</sup>                 | µg/L       | 7,062             | <0.1      | <0.1        | <0.1  | <0.1  | 0.23  | 0.74  | 53        |
| Butylate <sup>††</sup>                 | µg/L       | 6,973             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | <0.1  | <0.1      |
| Carbonaceous BOD (5 day)               | mg/L       | 7,713             | <2        | <2          | <2    | <2    | 3     | 5     | 35        |
| Chloride                               | mg/L       | 6,999             | 2.2       | 12          | 17    | 23    | 30    | 40    | 170       |
| Chlorophyll a <sup>†</sup>             | µg/L       | 5,056             | <1        | 2           | 5     | 13    | 43    | 120   | 640       |
| Chlorophyll b <sup>†</sup>             | µg/L       | 5,049             | <1        | <1          | <1    | <1    | <1    | 2     | 70        |
| Chlorophyll c <sup>†</sup>             | µg/L       | 5,049             | <1        | <1          | <1    | <1    | 2     | 8     | 66        |
| Chlorophyll free of pheophytin         | µg/L       | 2,724             | <1        | 2           | 5     | 13    | 33    | 92    | 870       |
| Corrected Chlorophyll a <sup>†</sup>   | µg/L       | 5,053             | <1        | <1          | 3     | 10    | 36    | 110   | 620       |
| Cyanazine <sup>††</sup>                | µg/L       | 6,973             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | <0.1  | 1.3       |
| Deethylatrazine <sup>††</sup>          | µg/L       | 6,973             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | 0.17  | 2.6       |
| Deisopropylatrazine <sup>††</sup>      | µg/L       | 6,973             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | <0.1  | 0.57      |
| Dimethenamid <sup>††</sup>             | µg/L       | 6,201             | <0.05     | <0.05       | <0.05 | <0.05 | <0.05 | <0.05 | 4.4       |
| Diss. Orthophosphate (as P)            | mg/L       | 8,118             | <0.1      | <0.1        | <0.1  | <0.1  | 0.15  | 0.28  | 5.1       |
| Dissolved Oxygen                       | mg/L       | 8,114             | 0.7       | 7.7         | 8.7   | 10.5  | 13.0  | 14.4  | 21        |
| <i>E. coli</i> Bacteria                | CFU/100 ml | 8,288             | <10       | <10         | 20    | 110   | 400   | 2,300 | 960,000   |
| Field pH                               | pH units   | 7,783             | 5.0       | 7.8         | 8.0   | 8.3   | 8.4   | 8.6   | 10.4      |
| Field Temperature                      | Celsius    | 8,183             | 0.0       | 0.2         | 2.5   | 12.8  | 20.7  | 24.5  | 34.3      |
| Flow <sup>**</sup>                     | CFS        | 6,843             | <1        | 17          | 76    | 300   | 1,100 | 3,200 | 78,500    |
| Metolachlor <sup>††</sup>              | µg/L       | 7,054             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | 0.3   | 36        |
| Metribuzin <sup>††</sup>               | µg/L       | 6,973             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | <0.1  | 1.5       |
| Nitrate+Nitrite (as N)                 | mg/L       | 8,235             | <0.1      | 0.8         | 2.9   | 5.7   | 8.7   | 12    | 35        |
| Pheophytin <sup>†</sup>                | µg/L       | 5,049             | <1        | <1          | 1     | 3     | 9     | 19    | 204       |
| Silica                                 | mg/L       | 7,781             | <1        | 4.8         | 8.7   | 12    | 17    | 21    | 190       |
| Simazine <sup>††</sup>                 | µg/L       | 6,695             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | <0.1  | 20        |
| Specific Conductance                   | µmhos/cm   | 7,947             | 120       | 420         | 510   | 620   | 720   | 830   | 1,700     |
| Sulfate                                | mg/L       | 6,725             | 2.8       | 21          | 26    | 37    | 61    | 97    | 400       |
| Total Dissolved Solids                 | mg/L       | 7,838             | 30        | 250         | 300   | 360   | 440   | 510   | 1,640     |
| Total Hardness (as CaCO <sub>3</sub> ) | mg/L       | 7,676             | 64        | 200         | 240   | 300   | 360   | 410   | 820       |
| Total Kjeldahl Nitrogen                | mg/L       | 7,871             | <0.1      | 0.3         | 0.5   | 0.8   | 1.3   | 2.0   | 28        |
| Total Phosphorus                       | mg/L       | 8,232             | <0.1      | <0.1        | 0.11  | 0.20  | 0.34  | 0.60  | 26        |
| Total Suspended Solids                 | mg/L       | 7,866             | <1        | 4           | 9     | 31    | 82    | 200   | 17,000    |
| Trifluralin <sup>††</sup>              | µg/L       | 6,973             | <0.1      | <0.1        | <0.1  | <0.1  | <0.1  | <0.1  | 0.35      |
| Turbidity                              | NTU        | 8,185             | <1.0      | 2.8         | 6.0   | 17    | 43    | 110   | 8,500     |

µg/L – micrograms per liter (parts per billion)  
 mg/L – milligrams per liter (parts per million)  
 CFU/100 ml – Colony Forming Units per 100 milliliters of water  
 CFS – Cubic Feet per Second (ft<sup>3</sup>/sec)  
 µmhos/cm – micromhos per centimeter  
 NTU – Nephelometric Turbidity Units; Diss. – Dissolved  
 < – less than detection limit shown; BOD – Biological Oxygen Demand

Raw data are available through STORET at [wqm.igsb.uiowa.edu/iastoret](http://wqm.igsb.uiowa.edu/iastoret)

Note: This summary only includes stream sites monitored as part of the fixed monthly network. Additional stream sites throughout Iowa are also monitored, but are not included in this summary, since their sampling frequency and parameters vary from the fixed network.

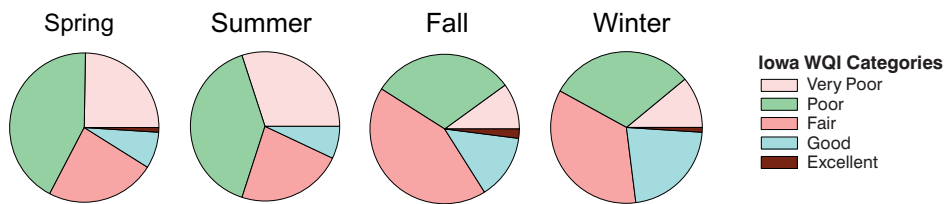
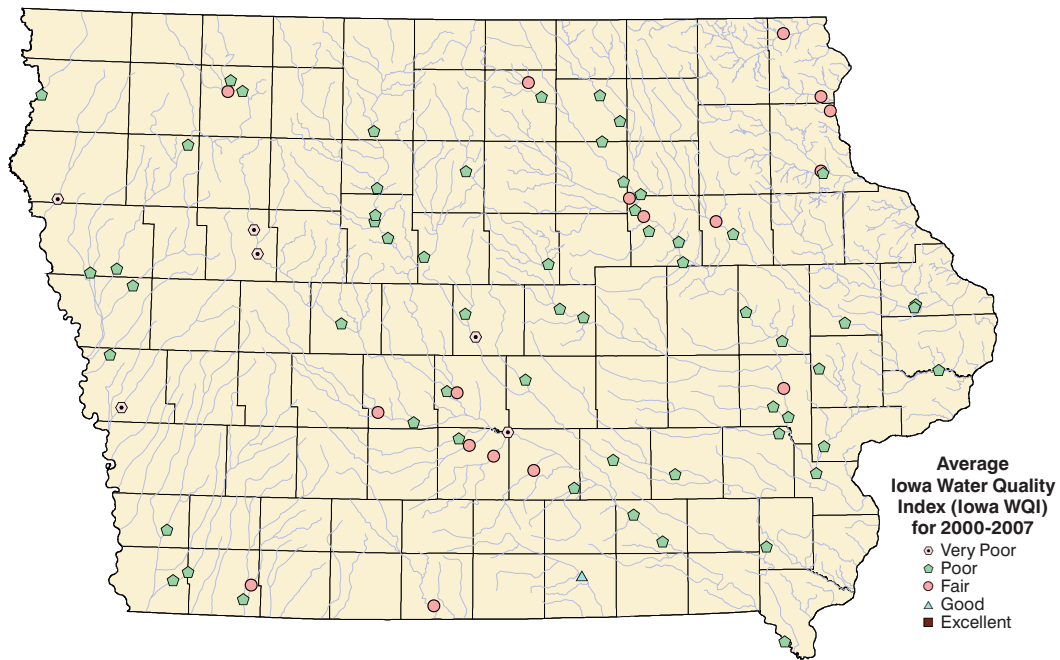
\* Includes monthly and event samples for all stream sites  
 \*\* Provisional data from the U.S. Geological Survey and University of Iowa Hygienic Laboratory  
 † Sampling discontinued in March 2005  
 †† Sampling discontinued in December 2006

Less than values have been standardized to account for decreases in detection limits through time.

A total of 80 stream sites were sampled monthly from 2000-2002. A total of 84 stream sites were sampled monthly from 2003-2006. Number of sites sampled from Aug-Dec 2006 varied from 75 to 83. A total of 75 stream sites were sampled monthly since Dec 2006.

## Iowa Water Quality Index for 2000-2007

In 2005, the Iowa Department of Natural Resources developed the Iowa Water Quality Index (WQI), a standardized method for comparing the water quality of various water bodies across the state. The Iowa WQI rates water quality using the following nine parameters: biological oxygen demand, dissolved oxygen, *E.coli* bacteria, nitrate+nitrite as nitrogen, total detected pesticides, pH, total phosphorus, total dissolved solids, and total suspended solids. If a result is missing for any of these parameters, the IWQI assigns a default value for the missing parameters. Iowa WQI values range from 0 – 100 and streams are classified as **very poor** (0 – 25), **poor** (25.1 – 50), **fair** (50.1 – 70), **good** (70.1 – 90), and **excellent** (90.1 – 100). For 2000-2007, 1% of the monthly stream WQI values were in the **excellent** category, 12% were **good**, 31% were **fair**, 37% were **poor**, and 19% were **very poor**. (See map below for average WQI value for each site.)



Streams in Iowa show seasonal Iowa WQI patterns. For the majority of streams, water quality is **poor** during the spring, followed by a decline in water quality during the summer months when the number of streams in the **very poor** category increases, while the number of streams in the **poor** category remains relatively the same. Water quality is at its best during the fall and winter months, with nearly 59% of the streams classified in the **fair**, **good**, and **excellent** categories during the fall and 58% of the streams classified in the **fair**, **good**, and **excellent** categories during the winter. (See pie charts above.)



Prepared by  
Iowa Department of Natural Resources, Geological Survey  
109 Trowbridge Hall, Iowa City, IA 52242-1319