Appendix B. Plots of Trend Analyses for pH, Specific Conductance, and Water Temperature from Selected Sites, 1989–2012

Additional explanation for all graphs in appendix B

- Represents percentile limits defining the confidence band of the regression model
- Field measurement

CPP 2 (433432112560801)

**pH** in units

**Specific conductance**, in microsiemens per centimeter at 25°C

**Temperature**, in degrees Celsius

Regression, p < 0.001

Regression, p = 0.279

![Graphs showing pH, specific conductance, and temperature trends over time.](image)

- **pH** in units
- **Specific conductance**, in microsiemens per centimeter at 25°C
- **Temperature**, in degrees Celsius

**Graph Descriptions:**

- **pH:** Regression, $p = 0.143$
- **Specific conductance:** Regression, $p < 0.001$
- **Temperature:** Regression, $p = 0.614$

---

**Notes:**

- The pH values range from 7.4 to 8.0.
- Specific conductance values range from 280 to 400 microsiemens per centimeter.
- Temperature values range from 11.0 to 14.0 degrees Celsius.

---

**Source:**

USGS 20 (433253112545901)
**USGS 34 (433334112565501)**

**pH, in units**
- Regression, \( p = 0.034 \)
- 7.6 7.7 7.8 7.9 8.0 8.1 8.2

**Specific conductance, in microsiemens per centimeter at 25°C**
- Regression, \( p = 0.773 \)
- 380 400 420 440 460

**Temperature, in degrees Celsius**
- Regression, \( p = 0.005 \)
- 11.0 11.5 12.0 12.5 13.0
Regression, p < 0.001

Regression, p = 0.626

Regression, p = 0.009

pH, in units
Specific conductance, in microsiemens per centimeter at 25°C
Temperature, in degrees Celsius
USGS 40 (433411112561101)

- **pH, in units**: Regression, p = 0.265

- **Specific conductance, in microsiemens per centimeter at 25°C**: Regression, p = 0.002

- **Temperature, in degrees Celsius**: Regression, p < 0.001

<table>
<thead>
<tr>
<th>Year</th>
<th>pH</th>
<th>Specific Conductance</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
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<td>11.5</td>
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<td>1996</td>
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</tr>
<tr>
<td>2012</td>
<td>7.6</td>
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<td>-</td>
</tr>
</tbody>
</table>

**USGS 41 (433409112561301)**

- **pH, in units**
- **Specific conductance, in microsiemens per centimeter at 25°C**
- **Temperature, in degrees Celsius**

**Graph Analysis:**
- Regression, $p = 0.002$
- Regression, $p < 0.001$
- Regression, $p = 0.003$
Appendix B

USGS 42 (433404112561301)

Regression, $p = 0.023$

Regression, $p < 0.001$

Regression, $p < 0.001$

pH, in units
Specific conductance, in microsiemens per centimeter at 25°C
Temperature, in degrees Celsius
USGS 43 (433415112561501)

**pH** in units

**Specific conductance** in microsiemens per centimeter at 25°C

**Temperature** in degrees Celsius

- Regression, p < 0.001

**Regression, p < 0.001**

- **pH, in units**
- **Specific conductance, in microsiemens per centimeter at 25°C**
- **Temperature, in degrees Celsius**
Appendix B

USGS 46 (433407112561501)

**pH, in units**

Regression, \( p = 0.008 \)

**Specific conductance, in microsiemens per centimeter at 25°C**

Regression, \( p < 0.001 \)

**Temperature, in degrees Celsius**

Regression, \( p = 0.004 \)
USGS 48 (433401112560301)

- **pH**, in units
  - *Regression, p = 0.031*

- **Specific conductance**, in microsiemens per centimeter at 25°C
  - *Regression, p = 0.002*

- **Temperature**, in degrees Celsius
  - *Regression, p = 0.003*
Regression, $p < 0.001$

Regression, $p = 0.103$

pH, in units
Specific conductance, in microsiemens per centimeter at 25°C
Temperature, in degrees Celsius
Regression, $p < 0.001$

Regression, $p = 0.002$

Regression, $p = 0.001$
Appendix B

Regression, p < 0.001

Regression, p = 0.005

Regression, p = 0.027

pH, in units
Specific conductance, in microsiemens per centimeter at 25°C
Temperature, in degrees Celsius
Appendix B

USGS 77 (433315112560301)

**pH, in units**

- **Regression, p = 0.004**

**Specific conductance, in microsiemens per centimeter at 25°C**

- **Regression, p = 0.111**

**Temperature, in degrees Celsius**

- **Regression, p = 0.112**
Regression, $p < 0.001$

Regression, $p = 0.295$

Regression, $p = 0.060$

pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius

USGS 85 (433246112571201)

- **pH**, in units
  - Regression, $p = 0.002$

- **Specific conductance**, in microsiemens per centimeter at 25°C
  - Regression, $p < 0.001$

- **Temperature**, in degrees Celsius
  - Regression, $p = 0.012$
Regression, $p = 0.492$

Regression, $p < 0.001$

Regression, $p = 0.336$

pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius
Regression, $p < 0.001$

Regression, $p = 0.032$

Regression, $p = 0.584$

pH, in units
Specific conductance, in microsiemens per centimeter at 25°C
Temperature, in degrees Celsius
Appendix B

USGS 123 (433352112561401)

Regression, p = 0.020

Regression, p < 0.001

Regression, p = 0.382

pH, in units
Specific conductance, in microsiemens per centimeter at 25°C
Temperature, in degrees Celsius

- **pH, in units**
  - Regression, $p = 0.089$

- **Specific conductance, in microsiemens per centimeter at 25°C**
  - Regression, $p = 0.020$

- **Temperature, in degrees Celsius**
  - Regression, $p = 0.712$
**PH, in units**

- Regression, \( p = 0.005 \)

**Specific conductance, in microsiemens per centimeter at 25°C**

- Regression, \( p < 0.001 \)

**Temperature, in degrees Celsius**

- Regression, \( p = 0.002 \)
USGS 79 (433505112581901)

**pH, in units**

- Regression, $p = 0.030$

**Specific conductance, in microsiemens per centimeter at 25°C**

- Regression, $p = 0.219$

**Temperature, in degrees Celsius**

- Regression, $p = 0.781$
Regression, p < 0.001

Regression, p = 0.635

Regression, p = 0.527

pH, in units
Specific conductance, in microsiemens per centimeter at 25°C
Temperature, in degrees Celsius
CFA2 (433144112563501)

- **pH**, in units
- **Specific conductance**, in microsiemens per centimeter at 25°C
- **Temperature**, in degrees Celsius

Regression analysis:
- pH: $p < 0.001$
- Specific conductance: $p < 0.001$
- Temperature: $p = 0.383$
CFA LF 3–9 (433216112571001)

pH, in units

Temperature, in degrees Celsius

Specific conductance, in microsiemens per centimeter at 25°C

Regression, $p = 0.585$

Regression, $p = 0.374$

Regression, $p = 0.025$
CFA LF 2–10 (433216112563301)

- **pH**, in units
- **Specific conductance**, in microsiemens per centimeter at 25°C
- **Temperature**, in degrees Celsius

Regression:
- p = 0.035
- p < 0.001
- p = 0.155
pH, in units

Regression, $p = 0.571$

Specific conductance, in microsiemens per centimeter at 25°C

Regression, $p = 0.013$

Temperature, in degrees Celsius

Regression, $p = 0.962$
pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius

Regression, p = 0.789

Regression, p = 0.708

Regression, p = 0.048
pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius

Regression, p = 0.514

Regression, p = 0.454

Regression, p = 0.148
**pH, in units**

- Regression, $p = 0.274$

**Specific conductance, in microsiemens per centimeter at 25°C**

- Regression, $p = 0.142$

**Temperature, in degrees Celsius**

- Regression, $p = 0.754$
Appendix B

**RWMC Production (433002113021701)**

1. **pH, in units**
   - Regression, $p < 0.001$
   - Values range from 6.5 to 8.5

2. **Specific conductance, in microsiemens per centimeter at 25°C**
   - Regression, $p < 0.001$
   - Values range from 340 to 420

3. **Temperature, in degrees Celsius**
   - Regression, $p = 0.056$
   - Values range from 12 to 15
USGS 88 (432940113030201)

<table>
<thead>
<tr>
<th>Year</th>
<th>pH Values</th>
<th>Conductance</th>
<th>Temperature</th>
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<td>1998</td>
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<td>560</td>
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<td>2012</td>
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<td>440</td>
<td>17.0</td>
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</table>

Regression, p < 0.001

Regression, p = 0.035

Regression, p = 0.727

- pH, in units
- Specific conductance, in microsiemens per centimeter at 25°C
- Temperature, in degrees Celsius
USGS 104 (432856112560801)

**pH, in units**

Regression, $p < 0.001$

**Specific conductance, in microsiemens per centimeter at 25°C**

Regression, $p = 0.018$

**Temperature, in degrees Celsius**

Regression, $p = 0.211$
Appendix B

USGS 105 (432703113001801)

**pH, in units**

- Regression, \( p = 0.009 \)

**Specific conductance, in microsiemens per centimeter at 25°C**

- Regression, \( p < 0.001 \)

**Temperature, in degrees Celsius**

- Regression, \( p = 0.011 \)

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Regression, $p < 0.001$

Regression, $p = 0.495$

Regression, $p = 0.004$
**Appendix B**

USGS 108 (432659112582601)

- **pH, in units**
  - Regression, $p = 0.014$

- **Specific conductance, in microsiemens per centimeter at 25°C**
  - Regression, $p < 0.001$

- **Temperature, in degrees Celsius**
  - Regression, $p = 0.385$
pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius

Regression, p = 0.299

Regression, p = 0.543

Regression, p = 0.020
Appendix B

**PW 1 (433349112560701)**

**pH, in units**

Regression, $p = 0.153$

**Specific conductance, in microsiemens per centimeter at 25°C**

Regression, $p < 0.001$

**Temperature, in degrees Celsius**

Regression, $p = 0.052$
Appendix B

PW 3 (433351112555701)

**pH, in units**

Regression, \( p = 0.157 \)

**Specific conductance, in microsiemens per centimeter at 25°C**

Regression, \( p = 0.029 \)

**Temperature, in degrees Celsius**

Regression, \( p = 0.787 \)
**Regression, p = 0.035**

**Regression, p = 0.107**

**Regression, p = 0.084**

<table>
<thead>
<tr>
<th>Year</th>
<th>pH</th>
<th>Specific Conductance</th>
<th>Temperature</th>
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<td>1994</td>
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<td>1996</td>
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<td>2002</td>
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<tr>
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<td>800</td>
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</tr>
<tr>
<td>2006</td>
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<tr>
<td>2008</td>
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<td>800</td>
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</tr>
<tr>
<td>2010</td>
<td>8.4</td>
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</tr>
<tr>
<td>2012</td>
<td>8.4</td>
<td>800</td>
<td>0</td>
</tr>
</tbody>
</table>
pH, in units
Specific conductance, in microsiemens per centimeter at 25°C
Temperature, in degrees Celsius

Regression, $p = 0.092$
Regression, $p < 0.001$
Regression, $p = 0.596$
pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius
Appendix B

CWP 4 (433454112572601)

pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Regression, $p = 0.618$

Temperature, in degrees Celsius

Regression, $p = 0.077$

Regression, $p = 0.823$

![Graphs showing trends in pH, specific conductance, and temperature over time.](image)

- **pH**: In units
- **Specific conductance**: In microsiemens per centimeter at 25°C
- **Temperature**: In degrees Celsius

Regression, $p = 0.377$

Regression, $p = 0.367$

Regression, $p = 0.758$
CWP 8 (433500112573001)

- **pH** in units
- **Specific conductance** in microsiemens per centimeter at 25°C
- **Temperature** in degrees Celsius

**Regression, p = 0.371**

**Regression, p = 0.586**

**Regression, p = 0.070**
**Appendix B**

**PW 8 (433456112572001)**

**pH, in units**

Regression, $p = 0.777$

**Specific conductance, in microsiemens per centimeter at 25°C**

Regression, $p = 0.854$

**Temperature, in degrees Celsius**

Regression, $p = 0.009$
PW 9 (433500112575401)

**pH, in units**

Regression, p = 0.302

**Specific conductance, in microsiemens per centimeter at 25°C**

Regression, p = 0.036

**Temperature, in degrees Celsius**

Regression, p = 0.990
Appendix B

**TRA A 13 (433502112572802)**

1. **pH, in units**
   - Regression, $p = 0.566$

2. **Specific conductance, in microsiemens per centimeter at 25°C**
   - Regression, $p = 0.814$

3. **Temperature, in degrees Celsius**
   - Regression, $p = 0.026$

**pH, in units**

**Specific conductance, in microsiemens per centimeter at 25°C**

**Temperature, in degrees Celsius**
pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius

Regression, p = 0.021

Regression, p < 0.001

Regression, p = 0.002

pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius

Regression, $p = 0.005$

Regression, $p = 0.908$

Regression, $p = 0.006$
**USGS 54 (433503112572801)**

**pH, in units**

Regression, $p < 0.001$

**Specific conductance, in microsiemens per centimeter at 25°C**

Regression, $p = 0.278$

**Temperature, in degrees Celsius**

Regression, $p = 0.004$
pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius

Regression, $p = 0.787$

Regression, $p = 0.036$

Regression, $p < 0.001$
Regression, $p = 0.029$

Regression, $p = 0.751$

Regression, $p < 0.001$
Appendix B

USGS 62 (43346112570701)

**pH** in units

**Specific conductance**, in microsiemens per centimeter at 25°C

**Temperature**, in degrees Celsius

---

Regression, p < 0.001

Regression, p = 0.274

Regression, p < 0.001
pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius
Regression, $p = 0.017$

Regression, $p = 0.991$

Regression, $p = 0.220$

pH, in units
Specific conductance, in microsiemens per centimeter at 25°C
Temperature, in degrees Celsius
Appendix B

USGS 69 (433450112573001)

- **pH**, in units
  - Regression, p < 0.001

- Specific conductance, in microsiemens per centimeter at 25°C
  - Regression, p < 0.001

- Temperature, in degrees Celsius
  - Regression, p = 0.002

The graphs show data points with regression lines indicating significant trends over the years 1990 to 2012.
**Graph 1:**
- Title: pH in units
- Data points for pH over the years 1990 to 2012
- Regression line with a p-value of 0.003

**Graph 2:**
- Title: Specific conductance, in microsiemens per centimeter at 25°C
- Data points for specific conductance over the years 1990 to 2012
- Regression line with a p-value of 0.488

**Graph 3:**
- Title: Temperature, in degrees Celsius
- Data points for temperature over the years 1990 to 2012
- Regression line with a p-value of 0.907
pH, in units

Regression, $p = 0.977$

Specific conductance, in microsiemens per centimeter at 25°C

Regression, $p = 0.290$

Temperature, in degrees Celsius

Regression, $p = 0.594$
**Regression, p = 0.033**

- **pH, in units**
- **Specific conductance, in microsiemens per centimeter at 25°C**
- **Temperature, in degrees Celsius**
**Appendix B**

**USGS 73 (433502112575401)**

- **Regression, p = 0.108**
- **Regression, p = 0.370**
- **Regression, p = 0.020**

- **pH**, in units
- **Specific conductance**, in microsiemens per centimeter at 25°C
- **Temperature**, in degrees Celsius

USGS 78 (433413112573501)

- **pH, in units**
  - Regression, $p = 0.469$

- **Specific conductance, in microsiemens per centimeter at 25°C**
  - Regression, $p = 0.550$

- **Temperature, in degrees Celsius**
  - Regression, $p = 0.024$
pH, in units

Specific conductance, in microsiemens per centimeter at 25°C

Temperature, in degrees Celsius

Regression, $p = 0.902$

Regression, $p = 0.789$

Regression, $p = 0.067$