2017 Water Cruise:
Update on Copper dataset and Rolling Averages
Calculating 3-Event Rolling Averages

- As part of the site-specific objectives (SSO), NPDES dischargers are required to calculate the 3-event rolling average of dissolved copper and total cyanide concentrations in each segment of the Bay, based on RMP data.

- Data from the last three RMP water cruises (2013, 2015, and 2017) were used to update the averages.
2017 Cu Dataset Summary

• December ‘17: Ila presented preliminary copper results & rolling averages
  • Results were using Brooks new ion column preparation method
  • Concentrations were ~20% higher and approaching triggers
  • Don mentioned possible issue with new Brooks Cu method

• Don worked with Brooks in 2018 to determine the issue with the IP method (interference from Ti species)

• Brooks re-ran samples using the IP and older, reductive precipitation (“RP”) method

• September ‘18: Don & TRC decided to publish results using the RP method
# Sites With Results by Year & Region

## Copper (dissolved)

<table>
<thead>
<tr>
<th></th>
<th>Suisun Bay</th>
<th>San Pablo Bay</th>
<th>*Central Bay</th>
<th>**South Bay</th>
<th>Lower South Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2015</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2017</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Total Samples in Rolling Average</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>12</td>
<td>15</td>
</tr>
</tbody>
</table>

*Historical station BC10 included; **Historical station BA30 included
Copper Results

**FINAL DATA**

<table>
<thead>
<tr>
<th>Region</th>
<th>Copper SSO (μg/L)</th>
<th>Copper TL (μg/L)</th>
<th>Previous Average (μg/L) (2011, 2013, 2015)</th>
<th>Current Average (μg/L) (2013, 2015, 2017)</th>
<th>Δ Rolling Average</th>
<th>Distance From TL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suisun Bay</td>
<td>6.0</td>
<td>2.8</td>
<td>2.29</td>
<td>2.10</td>
<td>-0.19</td>
<td>0.70</td>
</tr>
<tr>
<td>San Pablo Bay</td>
<td>6.0</td>
<td>3</td>
<td>2.00</td>
<td>1.81</td>
<td>-0.19</td>
<td>1.19</td>
</tr>
<tr>
<td>Central Bay</td>
<td>6.0</td>
<td>2.2</td>
<td>1.45</td>
<td>1.46</td>
<td>0.01</td>
<td>0.74</td>
</tr>
<tr>
<td>South Bay</td>
<td>6.9</td>
<td>3.6</td>
<td>2.77</td>
<td>2.37</td>
<td>-0.40</td>
<td>1.23</td>
</tr>
<tr>
<td>Lower South Bay</td>
<td>6.9</td>
<td>4.2</td>
<td>3.62</td>
<td>3.04</td>
<td>-0.58</td>
<td>1.16</td>
</tr>
</tbody>
</table>

- Copper rolling averages are below the trigger level (TL) in all regions
- Averages either stayed the same (1 region) or decreased
- Region closest to SSO (Suisun Bay) decreased 0.2 μg/L
Trend in Copper Rolling Average

Copper Concentration (μg/L)

- Suisun Bay
- San Pablo Bay
- Central Bay
- South Bay
- Lower South Bay
- Trigger Level

3-Event Rolling Averages:
- 2010, 2011, 2013
- 2011, 2013, 2015
- 2013, 2015, 2017

Graph showing the trend in copper concentration for different bay areas and years.
Copper Results vs Trigger

- **Suisun Bay**: Copper Concentration (μg/L) - 2.5
- **San Pablo Bay**: Copper Concentration (μg/L) - 3.0
- **Central Bay**: Copper Concentration (μg/L) - 2.0
- **South Bay**: Copper Concentration (μg/L) - 4.0
- **Lower South Bay**: Copper Concentration (μg/L) - 4.5