The creek’s main branch flows roughly 5 miles through Kirkland, Washington’s residential areas into Lake Washington. The water quality in Juanita is highly impacted by stormwater and irrigation runoff from impervious surfaces. King County and the City of Kirkland staff also monitor water quality in the Juanita Watershed with parameters such as benthic macroinvertebrates, dissolved oxygen, and temperature.

Site information:

In 2020, Washington State Department of Agriculture (WSDA) monitored 16 sites in Washington. Juanita was the only monitoring site located in King County.

**Years sampled:** 2020 – present

**Fish habitat:** Fall Chinook, coho, and sockeye salmon; and winter steelhead trout (SalmonScape: apps.wdfw.wa.gov/salmonscape)

**Sampling dates:**
15 weeks, March 16 and June 15 – September 14

- Although staff typically collect samples during the spring and summer seasons when higher pesticide usage is expected, the sampling schedule was shifted three months later due to COVID-19 restrictions.

Water testing:

- Samples were analyzed at the Manchester Environmental Lab, Port Orchard, Wash.
- Samples were tested for 166 current and legacy chemicals (61 insecticides, 58 herbicides, 23 fungicides, 19 pesticide degradates, 2 synergists, 1 antimicrobial, 1 insect repellent, and 1 wood preservative)
- WSDA compares detected pesticide concentrations to WSDA assessment criteria, which are half of state and federal water quality criteria. Each pesticide has its own assessment criteria, based on its toxicity to aquatic animals, insects, and plants.

### Results:

- There were 38 unique chemicals detected with a total of 194 detections in Juanita Creek. Of these, four detections were above WSDA assessment criteria.
- When multiple pesticides are detected simultaneously, the harmful effects can combine; multiple pesticides were detected every week Juanita Creek was sampled. Between 8 and 25 pesticides were detected at each sampling visit.
- WSDA identifies some pesticides as Pesticides of Concern (POC) when they have been detected above WSDA’s assessment criteria and above established detection frequencies.

### Watershed-specific POCs in Juanita Creek:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tralomethrin</td>
<td>This insecticide was voluntarily cancelled by the pesticide registrants in 2012. Persons may use existing stock of the pesticide until it is used up. Detected only at Juanita in 2020. The detection is likely from use of the pesticide beyond the product cancellation date. Tralomethrin breaks down quickly in the environment into deltamethrin. It is of high importance that this chemical be used following the label or not at all if there are alternative products available to use. Tralomethrin is highly toxic to all aquatic life.</td>
</tr>
<tr>
<td>Deltamethrin</td>
<td>Deltamethrin is a currently-registered pesticide. Common trade names: Suspend, Raid Max Perimeter Example uses within watershed: mosquito control, dogs, around buildings, residential Detected only at Juanita in 2020. It is unknown whether the detection came from an insecticide product containing deltamethrin or tralomethrin. Deltamethrin is even more toxic to aquatic life than tralomethrin.</td>
</tr>
</tbody>
</table>

Products listed are for descriptive purposes only and do not imply endorsement by the author or the Department of Agriculture.
**Recommendations:**

- **Make use of natural protections**
  - Use buffers, filter strips, sediment basins, ground cover, and setbacks.
  - Maintain vegetation along creeks and take care during spring time applications before vegetation along streams leafs out.

- **Be informed**
  - Read and follow pesticide label directions.
  - Check the weather forecast to reduce the chances of drift or runoff.
  - Review WSDA’s Pesticides of Concern and choose less-toxic pesticides when possible.

- **Care for your equipment and products**
  - Calibrate, maintain, and inspect application equipment.
  - Properly dispose of all unneeded pesticides. Visit agr.wa.gov/wastepesticide to learn about waste pesticide collection events.

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**Watershed Pesticides of Concern Detected and their Corresponding Sampling Dates and Concentrations**

<table>
<thead>
<tr>
<th>Month</th>
<th>Mar</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day of the Month</td>
<td>Use*</td>
<td>16</td>
<td>15</td>
<td>22</td>
<td>29</td>
</tr>
<tr>
<td>Deltamethrin</td>
<td>I</td>
<td>0.015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tralomethrin</td>
<td>I</td>
<td>0.015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total suspended solids (mg/L)</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Streamflow (cubic ft/sec)</td>
<td>6.4</td>
<td>13.9</td>
<td>4.3</td>
<td>5.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Precipitation (total in/week)</td>
<td>0.28</td>
<td>1.37</td>
<td>1.24</td>
<td>0.39</td>
<td>0.06</td>
</tr>
</tbody>
</table>

[ * I: Insecticide ]

The calendar at right shows the concentration in µg/L and date sampled of the watershed POCs. This calendar does not include all the pesticides WSDA found during the growing season. Detected concentrations that exceed WSDA’s assessment criteria have a higher potential to cause harm to aquatic ecosystems.

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**Total Number of Detections per Sampling Event by Pesticide Category**

<table>
<thead>
<tr>
<th>Month</th>
<th>Mar</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day of the Month</td>
<td>16</td>
<td>15</td>
<td>22</td>
<td>29</td>
<td>6</td>
</tr>
<tr>
<td>Deltamethrin</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Tralomethrin</td>
<td>10</td>
<td>15</td>
<td>3</td>
<td>7</td>
<td>9</td>
</tr>
</tbody>
</table>

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The graph at right shows the total number of detections per sampling visit in each pesticide category. The category ‘other’ includes degradates and additional pesticide-related chemicals. Note that the number of detections between categories cannot be directly compared due to the different number of chemicals in each category and variability in analysis methods used.

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[Please see agr.wa.gov/AgScience for more information.]
To view mapped crop groups at the field scale, download the WSDA Agricultural Land Use data or view the interactive web map here: https://agr.wa.gov/departments/land-and-water/natural-resources/agricultural-land-use