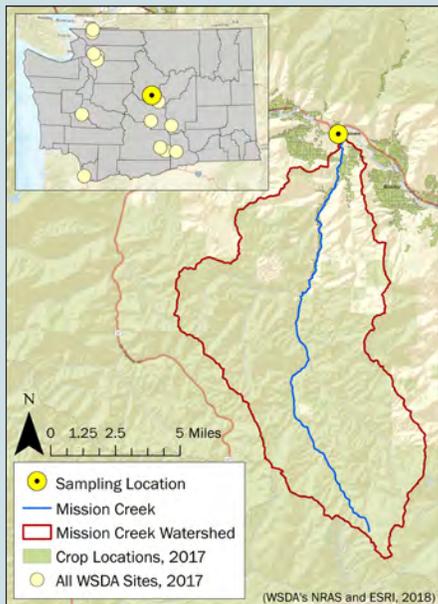
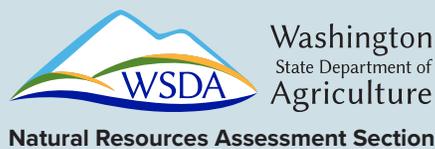


# Mission Creek

## Summary of 2017 Surface Water Monitoring Program Results | November 2018



The Washington State Department of Agriculture (WSDA) has monitored pesticide concentrations in surface water throughout the state since 2003. WSDA staff take surface water samples during the typical pesticide use season (March - September). In 2017, WSDA monitored 16 sites in Washington, 4 of which were in the Wenatchee River watershed. State and federal agencies use this data to evaluate water quality and make exposure assessments for pesticides registered for use in Washington State.



### Watershed and site information

**Sampling history:** 2016 - present

**Watershed area:** 52,400 acres (~82 square miles)

**Area in agricultural use:** 700 acres (~1% of total watershed acreage)

**Main crops:** Pears, cherries, apples, and fallow fields

**Fish habitat:** Summer steelhead (Washington State Department of Fish and Wildlife SalmonScope: [apps.wdfw.wa.gov/salmonscope/](https://apps.wdfw.wa.gov/salmonscope/))

**Sampling dates:** 12 sampling events, April 4th - August 8th

#### Water testing:

- 130 chemicals (current and legacy insecticides, herbicides, fungicides, rodenticides, pesticide degradates, and other pesticide products)
- Streamflow and total suspended solids
- Air and water temperature measured every 30 minutes
- Sample analysis at Manchester Environmental Lab, Port Orchard, Washington

#### Notes:

- Mission Creek has dense riparian vegetation on its banks for most of the reach, which helps prevent pesticide contamination.
- Juvenile fish of an unknown species were frequently observed at the site.

### Results and Conclusions

- There were 12 pesticide detections in Mission Creek. Of these, 7 were above WSDA's assessment criteria.
- Out of all the chemicals tested for, there were 4 types of insecticides, 1 fungicide, 2 degradates, and 1 other pesticide-related chemical detected.
- WSDA identifies a pesticide as a Pesticide of Concern (POC) when it has been found somewhere in the state above WSDA's assessment criteria in recent years. Chlorpyrifos, difenoconazole, imidacloprid, and malathion are POCs that were detected in Mission Creek.
- All detections of these POCs at this site except difenoconazole were higher than WSDA's assessment criteria.
- Chlorpyrifos was only detected during the first 2 weeks of monitoring.
- Chlorpyrifos and imidacloprid have also been detected in Mission Creek in previous years at concentrations known to negatively affect aquatic life.
- DDT was banned in the U.S. in 1972, but DDT and its breakdown products (including 4,4'-DDE) are very persistent in the environment and bind strongly to soil.

### Recommendations

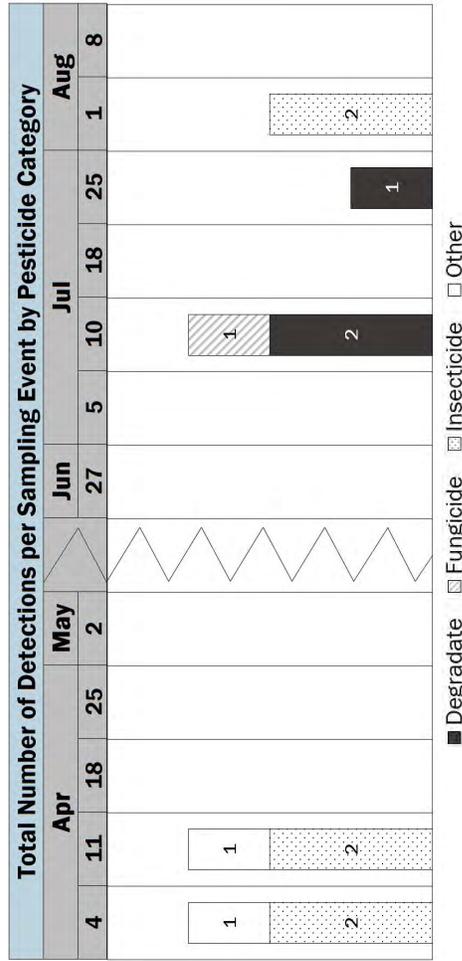
- **Make use of natural protections**
  - Use buffers, filter strips, sediment basins, ground cover, and setbacks.
  - Maintain vegetation along the creek and take care during spring applications before vegetation along streams leaves out.
- **Be informed**
  - Read and follow pesticide label directions, and be familiar with active ingredients.
  - Plan applications using the weather forecast to reduce the chances of drift or runoff.
  - Review WSDA's POCs and choose less-toxic pesticides when possible.
- **Care for your equipment and products**
  - Calibrate, maintain, and inspect application equipment regularly.
  - Properly dispose of all unneeded pesticides. Visit [agr.wa.gov/wastepesticide](https://agr.wa.gov/wastepesticide) to learn about waste pesticide collection events.

The calendar to the right shows the concentration in µg/L and date sampled of each WSDA Pesticide of Concern detected. This calendar does not include all the pesticides WSDA found during the growing season. The colors correspond to the risk each pesticide's detected concentration represents to an aquatic ecosystem. Detected concentrations that exceed WSDA's assessment criteria have a higher potential to cause harm to aquatic ecosystems. These assessment criteria are specific to each individual pesticide and are determined by applying a safety factor to state and federal water quality standards and criteria. The "--" signifies a sample or measurement that was not collected.

Washington State's Pesticides of Concern Detected and their Corresponding Sampling Dates and Concentrations												
Month	Apr		May		Jun		Jul		Aug			
	Day of the Month	Use*	Day of the Month	Use*	Day of the Month	Use*	Day of the Month	Use*	Day of the Month	Use*		
Chlorpyrifos	11	0.327	18	0.383	25		1		8			
Difenoconazole	4		11		18		25		1			
Imidacloprid	11	0.273	18		25		1		8			
Malathion	4		11		18		25		1			
Total Suspended Solids (mg/L)		63.0		188.0		46.0		7.0		6.0		
Streamflow (cubic ft./sec.)		--		135.0		148.0		20.6		15.1		
Precipitation (total in./week)		0.19		0.57		0.74		0.24		0.24		

Exceeds Assessment Criteria   
 Below Assessment Criteria  
 (\* F: Fungicide, I: Insecticide, OP: Organophosphate, N: Neonicotinoid)

The graph below shows the total number of detections per sampling event in each pesticide category. The category 'other' includes wood preservatives, an insect repellent, synergists, and antimicrobials.



The triangle to the right shows what pesticides were detected in Mission Creek in 2017. Pesticides were categorized based on the highest detected concentration. The total number of detections for each pesticide is in parentheses next to the pesticide name. Detections have been color sorted according to WSDA risk assessment criteria that were surpassed. The risk each pesticide represents to an aquatic ecosystem is based on assessment criteria specific to each individual pesticide, not only on the concentration detected. WSDA's assessment criteria are derived by applying a safety factor to state and federal water quality standards and criteria in order to be proactively protective of aquatic life. Please see [agr.wa.gov/PestFert/natresources/SWM](http://agr.wa.gov/PestFert/natresources/SWM) for more information.

