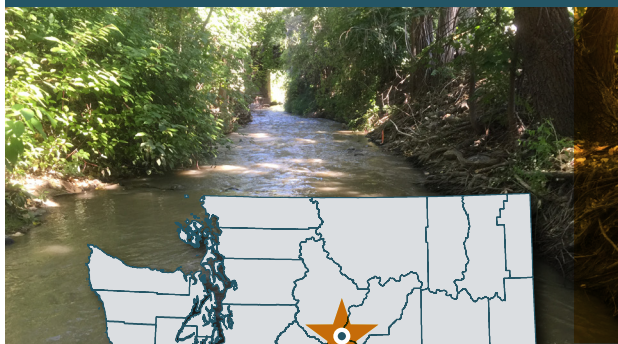


# Mission Creek

MAY 2024

## Summary of 2022 Surface Water Monitoring Program Results



In 2022, Washington State Department of Agriculture (WSDA) monitored 17 sites in Washington. Mission was one of three monitoring sites located in Chelan County.

Samples were analyzed at the Manchester Environmental Lab, Port Orchard, Washington.

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.

### Site information:

**Years sampled:** 2007 – present

**Fish habitat:** Spring Chinook salmon; rainbow and summer steelhead trout (SalmonScape: [apps.wdfw.wa.gov/salmonscape](https://apps.wdfw.wa.gov/salmonscape))

### Sampling dates:

12 weeks; March 22 – June 7

### Water testing:

Samples were tested for 137 current and legacy chemicals (48 insecticides, 42 herbicides, 21 fungicides, 18 pesticide degradates, 5 legacy chemicals, 1 antimicrobial, 1 insect repellent, and 1 synergist).

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



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*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:

- There were 21 unique chemicals detected with a total of 58 detections in Mission Creek.
  - Of these, 21 detections were above WSDA assessment criteria. Roughly 57% (12 detections) of exceeding detections were from DDT and its degradates.
- When multiple pesticides are detected simultaneously, the harmful effects can combine; multiple pesticides were detected every week Mission Creek was sampled. Between 1 and 14 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 Mission Creek:

#### ICONS FOR ENVIRONMENTAL HAZARDS LISTED ON PESTICIDE LABELS



#### Chlorpyrifos — Insecticide



- Common trade names:** Lorsban, Pilot, Vesper
- Example uses within watershed:** silviculture, mosquito control
- As of early 2022, chlorpyrifos has been banned for use on food and feed commodities. It can still be applied to registered non-food commodities.
- Also detected in five other monitored watersheds and a POC in four of them.

#### gamma-Cyhalothrin — Insecticide



- Common trade names:** Declare, Scion
- Example uses within watershed:** orchard, residential
- Also detected in six other monitored watersheds and a POC in all of them.

#### Malathion — Insecticide



- Common trade names:** Malathion, Fyfanon
- Example uses within watershed:** orchard, pasture
- A streamside no-spray buffer zone is required in Washington for malathion to protect threatened and endangered Pacific salmon and steelhead.
- Also detected in six other monitored watersheds and a POC in three of them.

#### Pyriproxyfen (Nylar) — Insecticide



- Common trade names:** Seize, Terva, Esteem
- Example uses within watershed:** orchard, residential
- This was the only monitored watershed where this chemical was a POC.

#### Tolfenpyrad — Insecticide & Fungicide



- Common trade names:** Torac, Bexar
- Example use within watershed:** orchard
- This chemical was also a POC in one other monitored watershed.

The calendar at right shows the concentration in µg/L and date sampled of each watershed POC detected. 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.

[ \* I: Insecticide ]

exceeds assessment criteria

below assessment criteria

The graph at right shows the total number of detections per sampling visit in each pesticide category. The category ‘other’ includes legacy, 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.



### 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 leaves 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

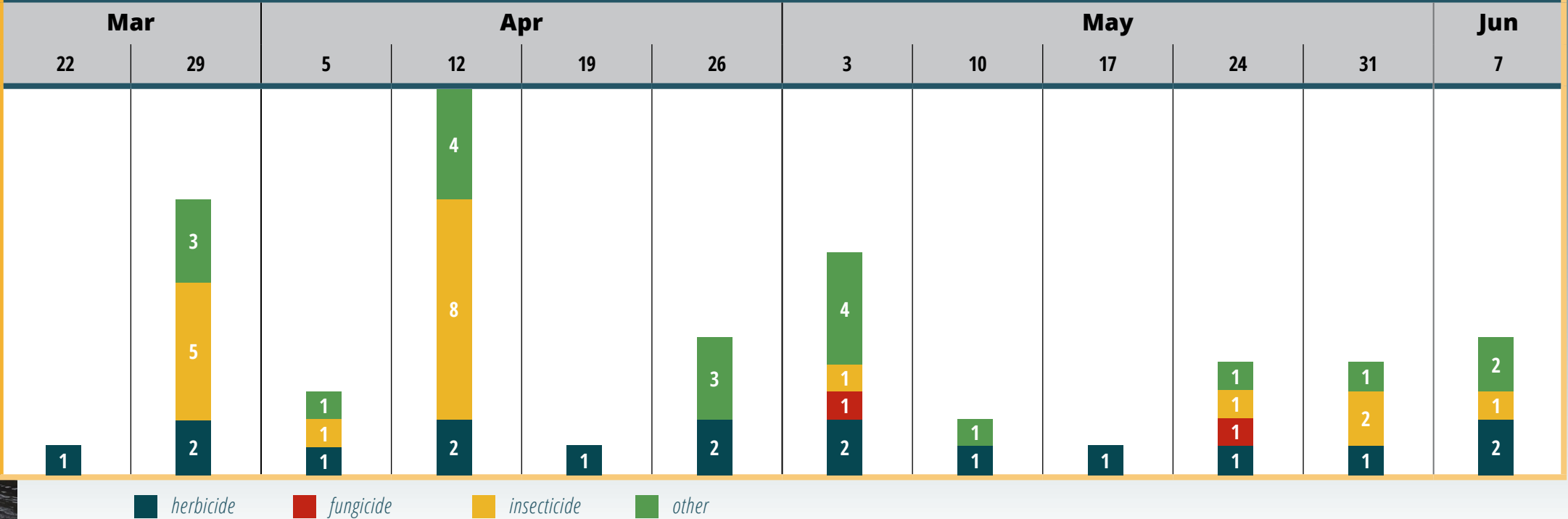
- Calibrate, maintain, and inspect application equipment.
- Properly dispose of all unneeded pesticides. Visit [agr.wa.gov/wastepesticide](http://agr.wa.gov/wastepesticide) to learn about waste pesticide collection events.



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

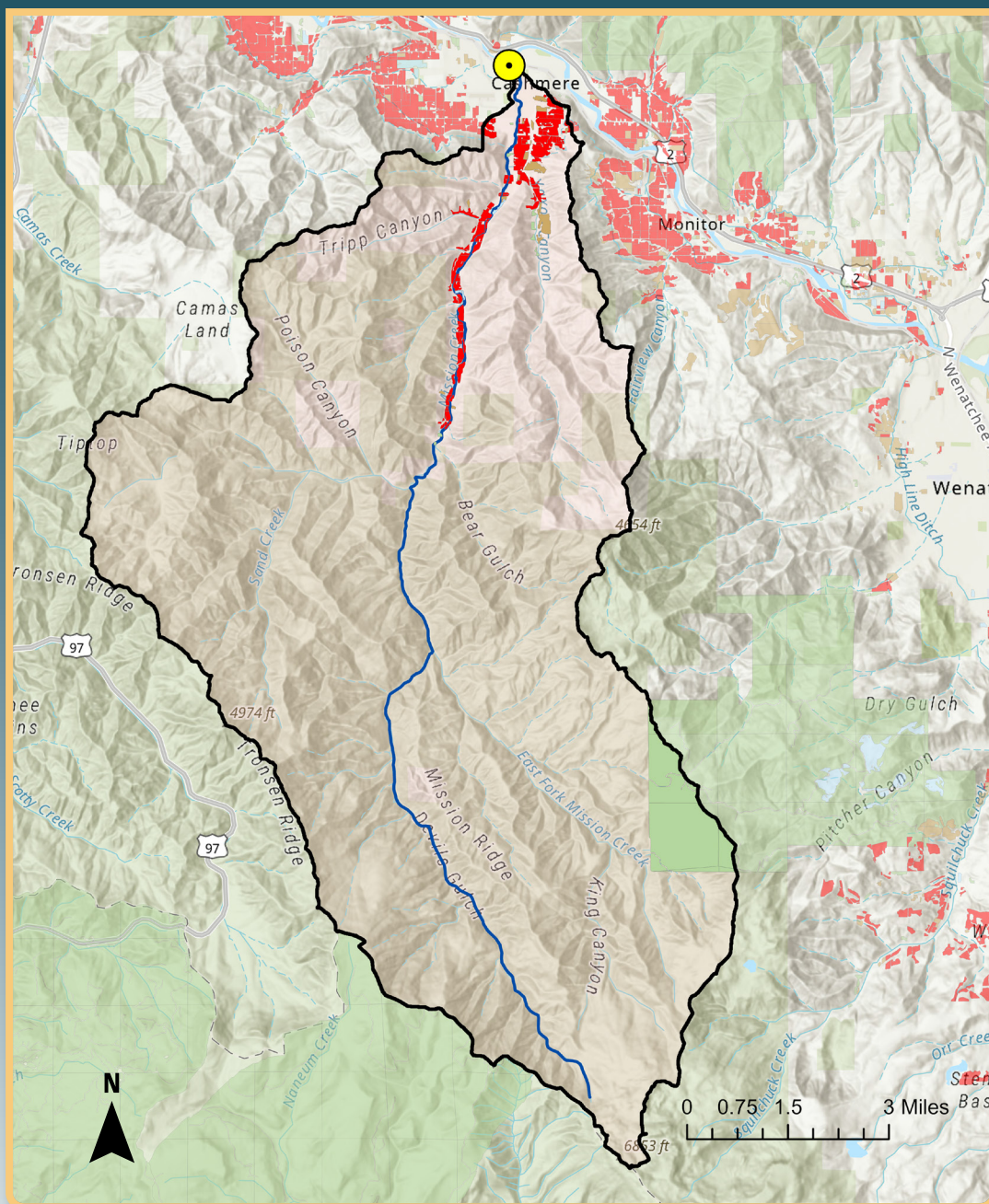
Month ▶		Mar		Apr				May					Jun
Day of the Month ▶	Use*	22	29	5	12	19	26	3	10	17	24	31	7
Chlorpyrifos	I				0.002								
gamma-Cyhalothrin	I		0.004		0.002								
Malathion	I		0.107		0.080								
Pyriproxyfen	I		0.075	0.007	0.012			0.004			0.003		0.003
Tolfenpyrad	I				0.052								
Suspended sediment concentration (mg/L)		11	60	18	10	12	205	410	82	63	49	35	196
Streamflow (cubic ft/sec)		33.0	62.1	40.0	33.4	38.4	91.7	110.0	68.8	62.5	53.1	46.0	50.4
Precipitation (total in/week)		0.02	0.00	0.27	0.05	0.67	0.10	0.36	0.04	0.32	0.14	0.01	0.86

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



Please see [agr.wa.gov/AgScience](http://agr.wa.gov/AgScience) for more information.





### Mission Creek crop groupings | acres

<span style="color: red;">■</span>	<b>Orchard</b>	535
<span style="color: brown;">■</span>	<b>Fallow</b>	94
<span style="color: green;">■</span>	<b>Pasture</b>	1,090
<span style="color: blue;">■</span>	<b>Other</b>	9

- Sampling Location
- Mission Creek
- Mission Creek Watershed

Total Agriculture	1,728	acres
Total Non-Agriculture	50,659	acres
<b>Watershed Total</b>	<b>52,387</b>	<b>acres</b>

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>