

Middle Deschutes PSP: Partial-Year 2024 Water Quality Monitoring Results

Feb. 19, 2025
Middle Deschutes PSP Meeting (Virtual)

Partial-Year 2024 Water Quality Data Summary

- Partial-year 2024 results:
 - Data FOR sample weeks:
 - March – June (7 sample weeks)
 - Data **NOT AVAILABLE** for sample weeks:
 - September – October (4 sample weeks)
- 2025 Pesticides of Concern not yet evaluated
 - 2024 Pesticides of Concern (data from 2021-2023) used to structure data presentation
- Exceedances of Aquatic Life Benchmarks in available 2024 data:
 - Linuron
 - Diuron
 - Prometryn
 - Dimethoate
- Campbell Creek at Hwy. 26 – highest number of detections and Aquatic Life Benchmarks

PSP Sampling

Weekly discrete monitoring provides conservative estimates of pesticide related ecological impacts (Nowell et al. 2021):

PSP sampling underestimates acute exposure to pesticides in small streams

- Samples collected following runoff events tend to have higher concentrations than those collected at regular intervals
- Aquatic communities may be adversely affected at lower pesticide concentrations than expected based on single-species laboratory bioassays

Nowell, Lisa H., Patrick W. Moran, Laura M. Bexfield, Barbara J. Mahler, Peter C. Van Metre, Paul M. Bradley, Travis S. Schmidt, Daniel T. Button, and Sharon L. Qi. 2021. "Is There an Urban Pesticide Signature? Urban Streams in Five U.S. Regions Share Common Dissolved-Phase Pesticides but Differ in Predicted Aquatic Toxicity." *Science of The Total Environment* 793 (November): 148453. <https://doi.org/10.1016/j.scitotenv.2021.148453>.



How are Monitoring Data Evaluated?

1. EPA Aquatic Life Benchmarks (ALB) in ug/L (ppb)

- Most sensitive acute & chronic toxicity data for each group of organisms represented for EPA risk assessments
- **Helps identify and prioritize pesticides & locations**



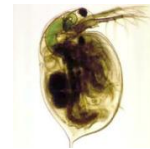
Rainbow trout



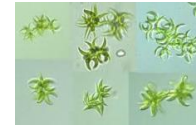
Fathead minnow



Bluegill sunfish



Daphnia magna



Green algae



Duckweed

2. Aquatic Life Ratio:

- Detected concentration (ug/L) / lowest (acute or chronic) ALB
Values ≥ 1.0 indicates further attention required

3. Frequency of Detection & Mixtures

- Percentage of samples chemical detected in & number of pesticides in a sample

Decision Matrix Based on Water Quality Monitoring Data (2019)
 Detected concentration relative to aquatic life benchmark (ALBs) and frequency of detection

Reference Level Criteria

Frequency of Detection in Last 3 Years (%)	≥ 1 detection at or above 50% of an acute ALB	≥ 3 detection at or above 50% of a chronic ALB	1 - 2 detections at or above 50% of a chronic ALB	No detections over 50% of any ALB	
	65.1% - 100%	High Level of Concern	High Level of Concern	High Level of Concern	Moderate Level of Concern
	35.1% - 65%	High Level of Concern	High Level of Concern	Moderate Level of Concern	Moderate Level of Concern
	0% to 35%	High Level of Concern	High Level of Concern	Moderate Level of Concern	Low Level of Concern

Decision Matrix Based on Water Quality Monitoring Data (2019)
 Detected concentration relative to aquatic life benchmark (ALBs) and frequency of detection

**2024
 Pesticides
 of Concern
 – Middle
 Deschutes
 PSP:**

[Based on
 data from
 2021-2023]

		Reference Level Criteria			
		≥ 1 detection at or above 50% of an acute ALB	≥ 3 detection at or above 50% of a chronic ALB	1 - 2 detections at or above 50% of a chronic ALB	No detections over 50% of any ALB
Frequency of Detection in Last 3 Years (%)	65.1% - 100%				1. AMPA
	35.1% - 65%	1. Diuron 2. Linuron			1. Glyphosate
	0% to 35%	1. Imidacloprid 2. Oxyfluorfen 3. Prometryn 4. Sulfomethurn methyl	1. Dimethoate		

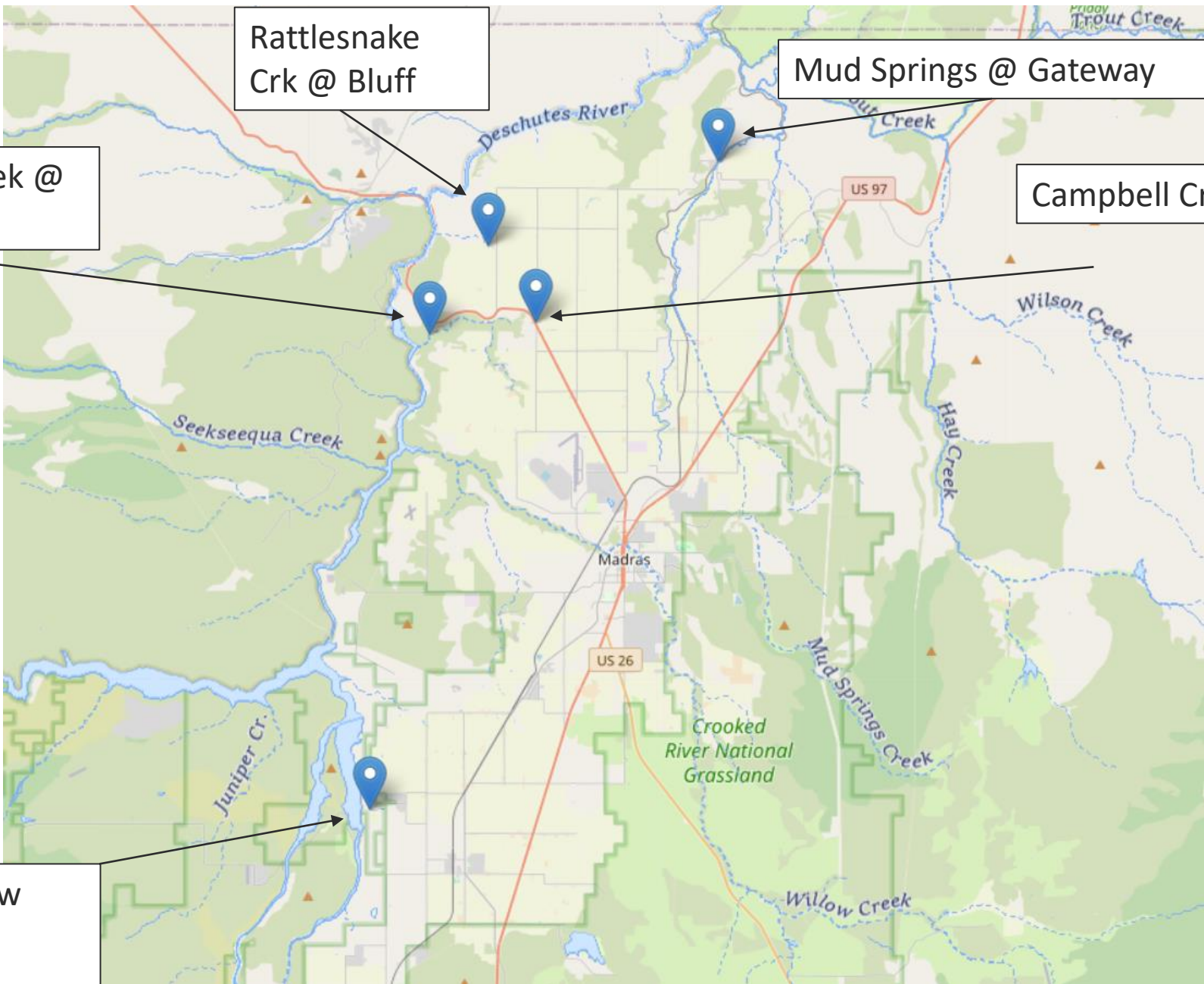
Campbell Creek @
Mouth

Rattlesnake
Crk @ Bluff

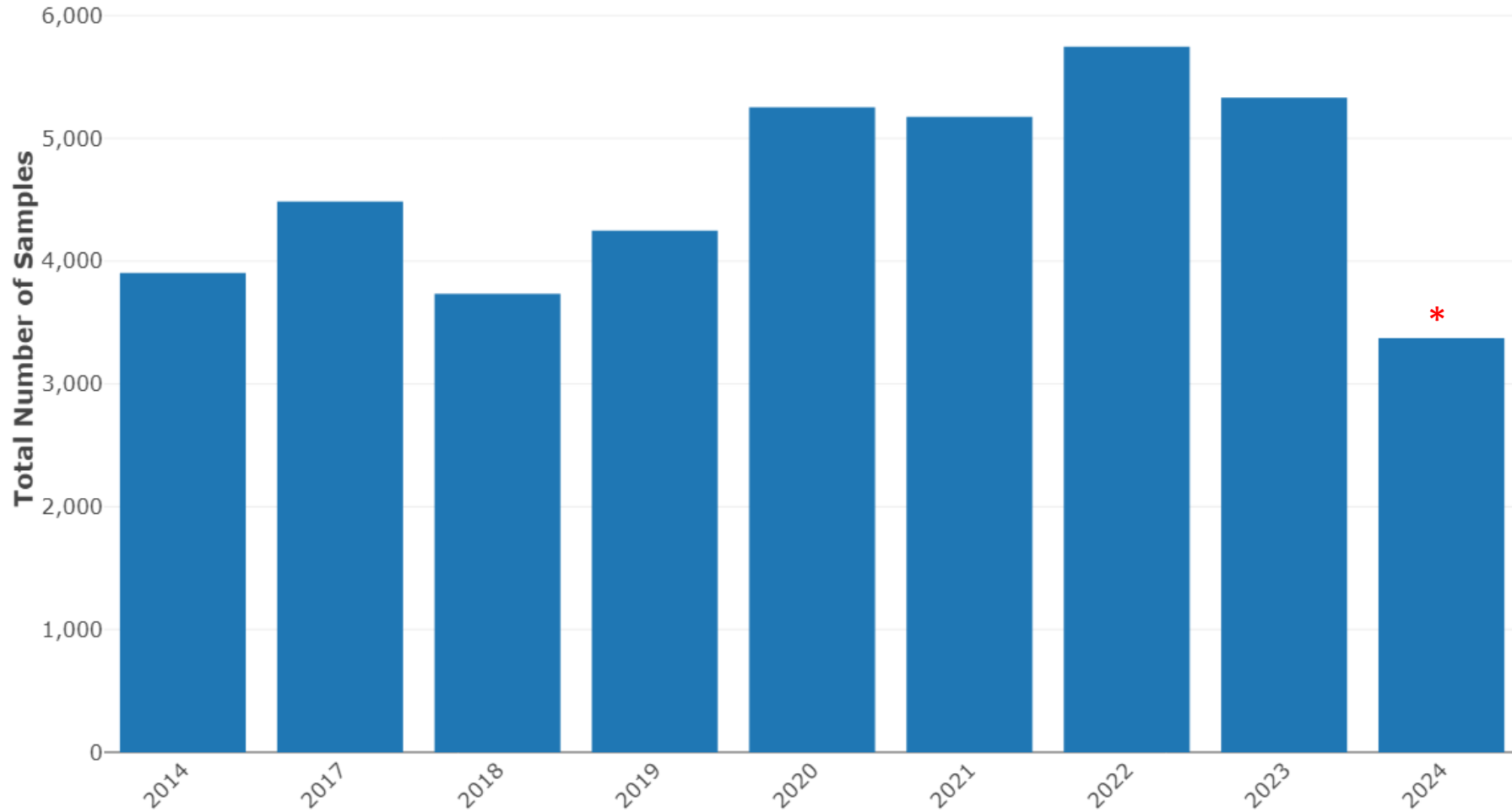
Mud Springs @ Gateway

Campbell Creek @ Hwy 26

Culver Drain below
Crooked River
Campground

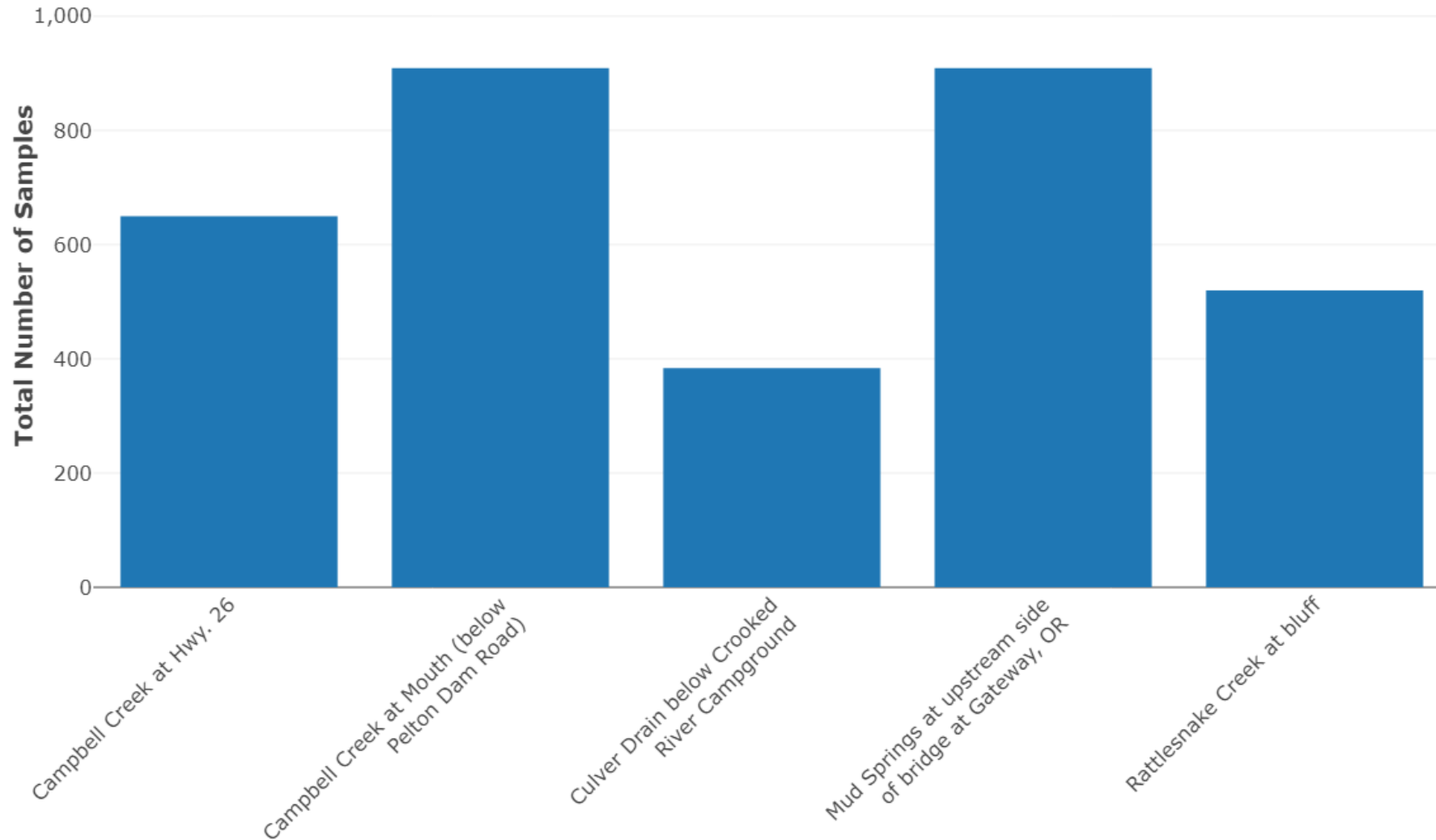


Total Number of Pesticide Samples in the Middle Deschutes PSP



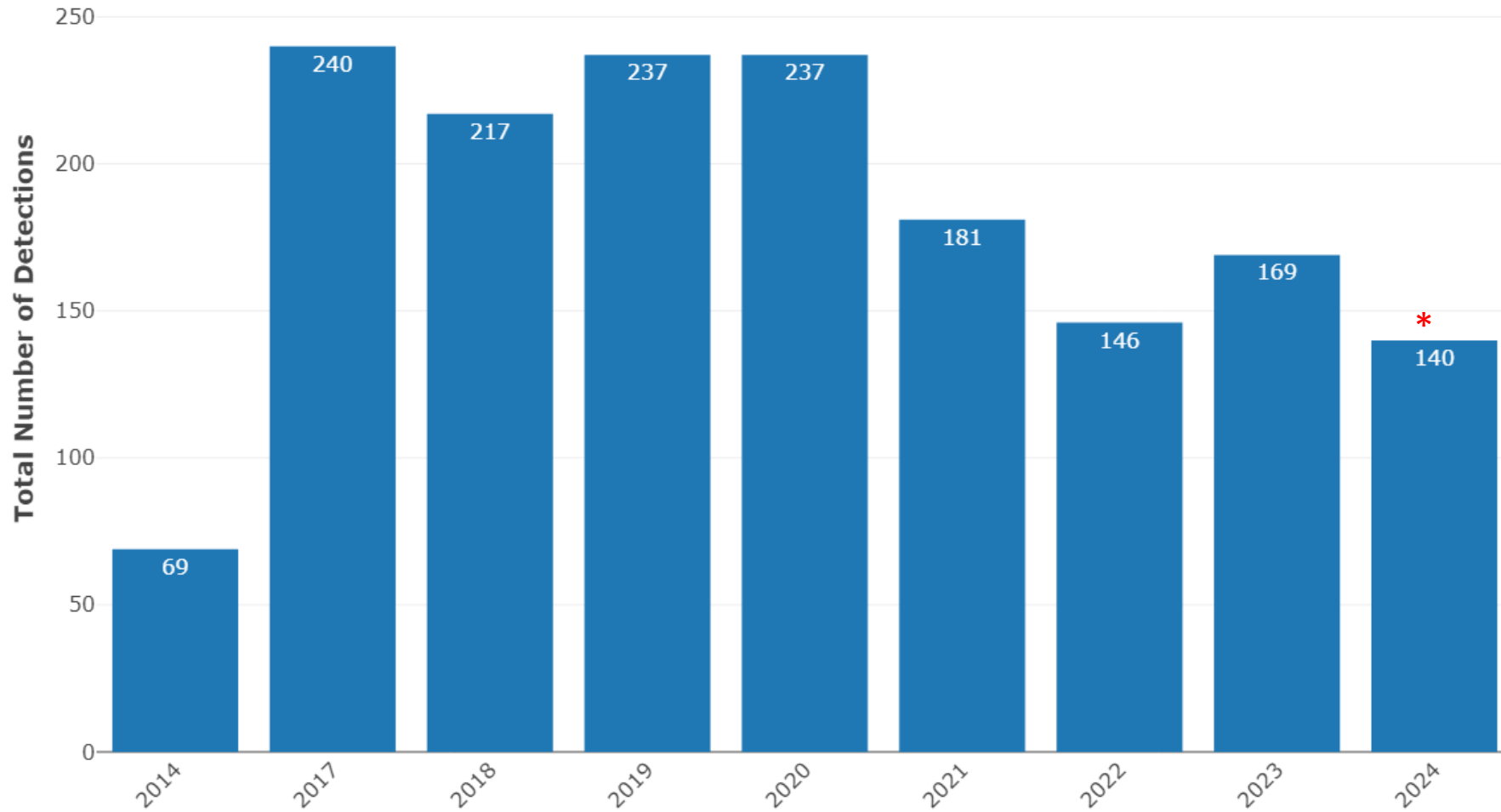
* Note: Partial 2024 calendar year results – missing data from approximately 5 out of 12 sampling weeks.

Total Number of Pesticide Samples Middle Deschutes 2024



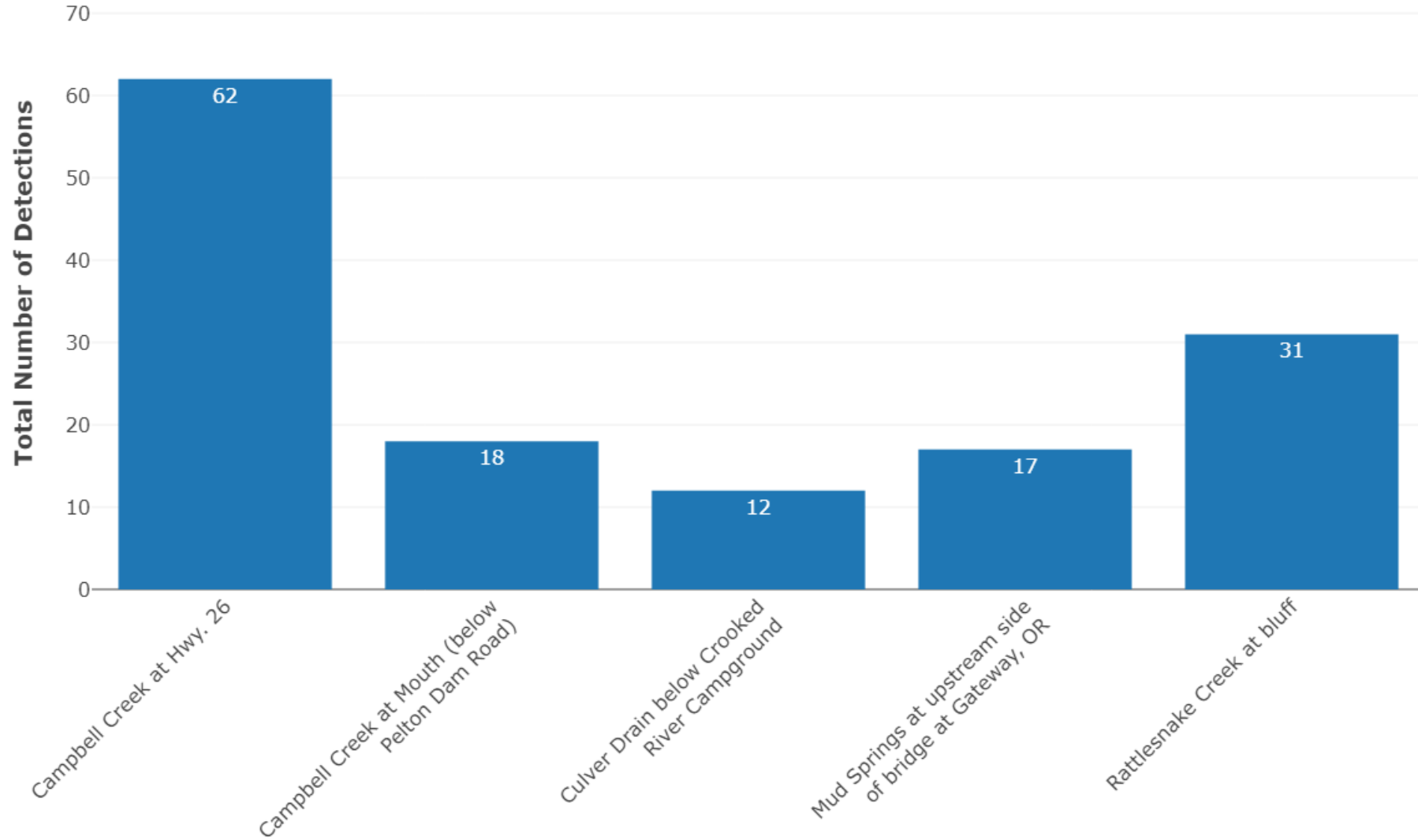
NOTE: partial calendar year results shown. Full dataset not currently available (2/18/2025)

Total Number of Pesticide Detections in the Middle Deschutes PSP



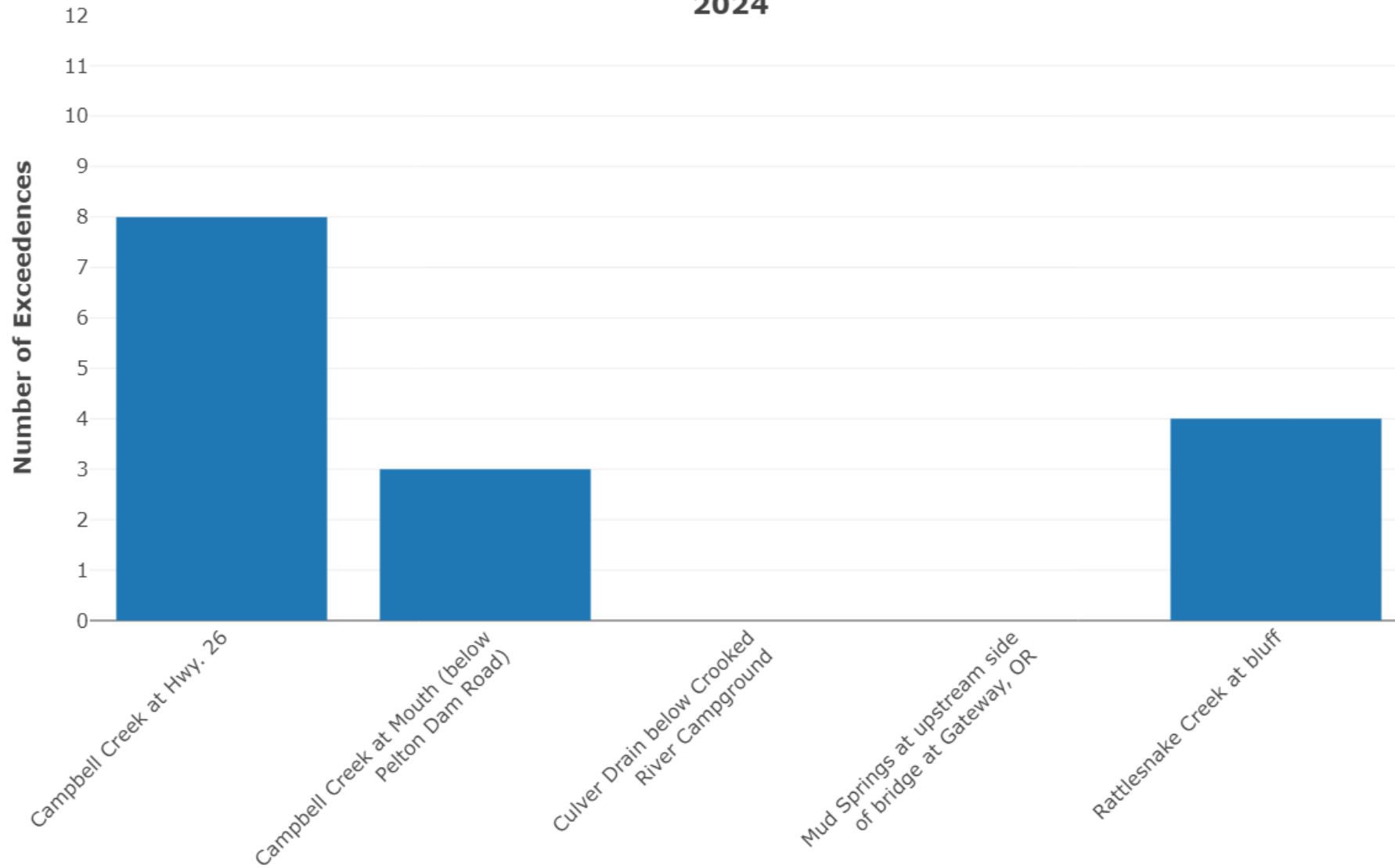
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Total Number of Pesticide Detections Middle Deschutes 2024



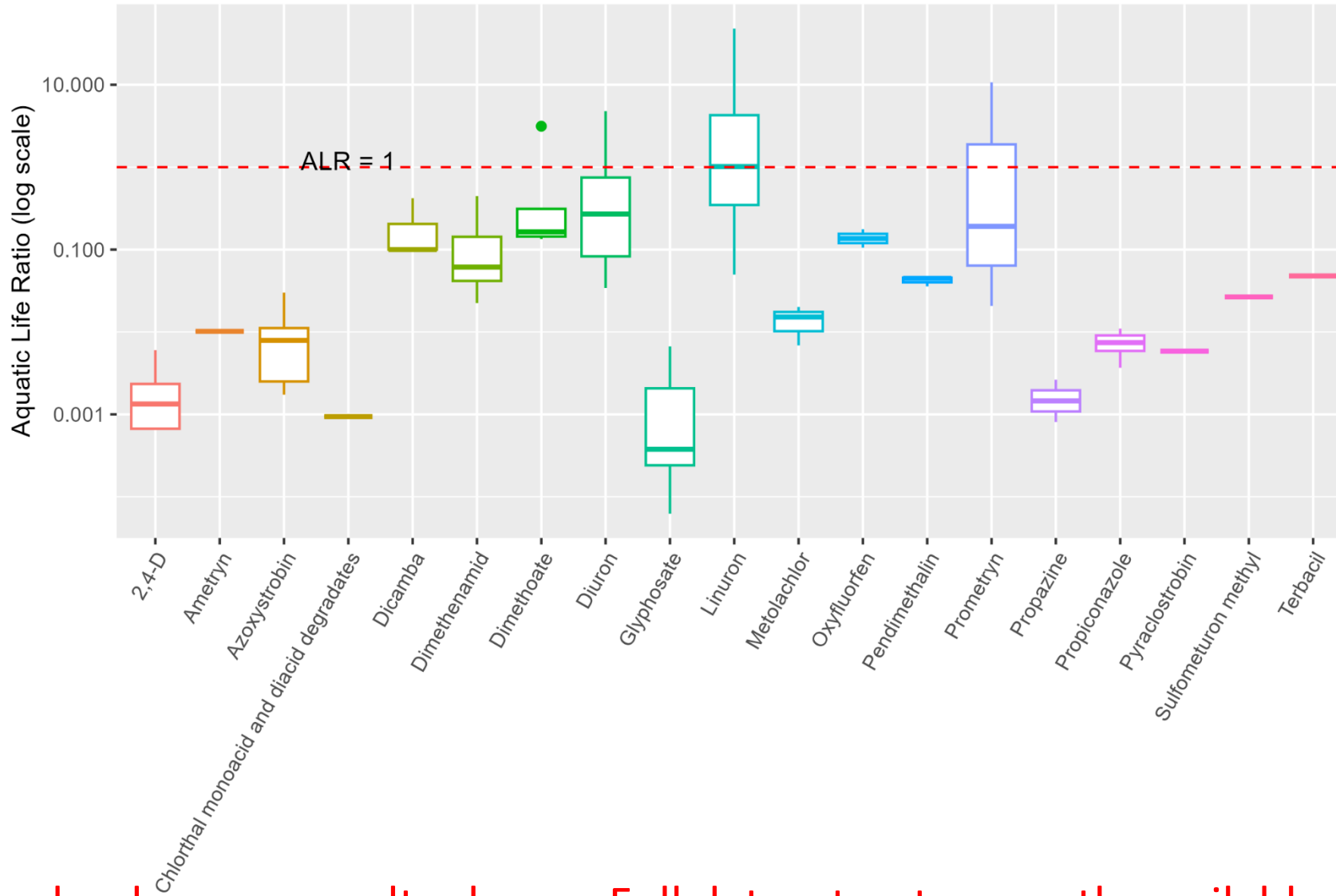
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Total Number of Pesticide Benchmark Exceedances in the Middle Deschutes PSP 2024



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Middle Deschutes 2024
 Aquatic Life Ratio of Detected Chemicals

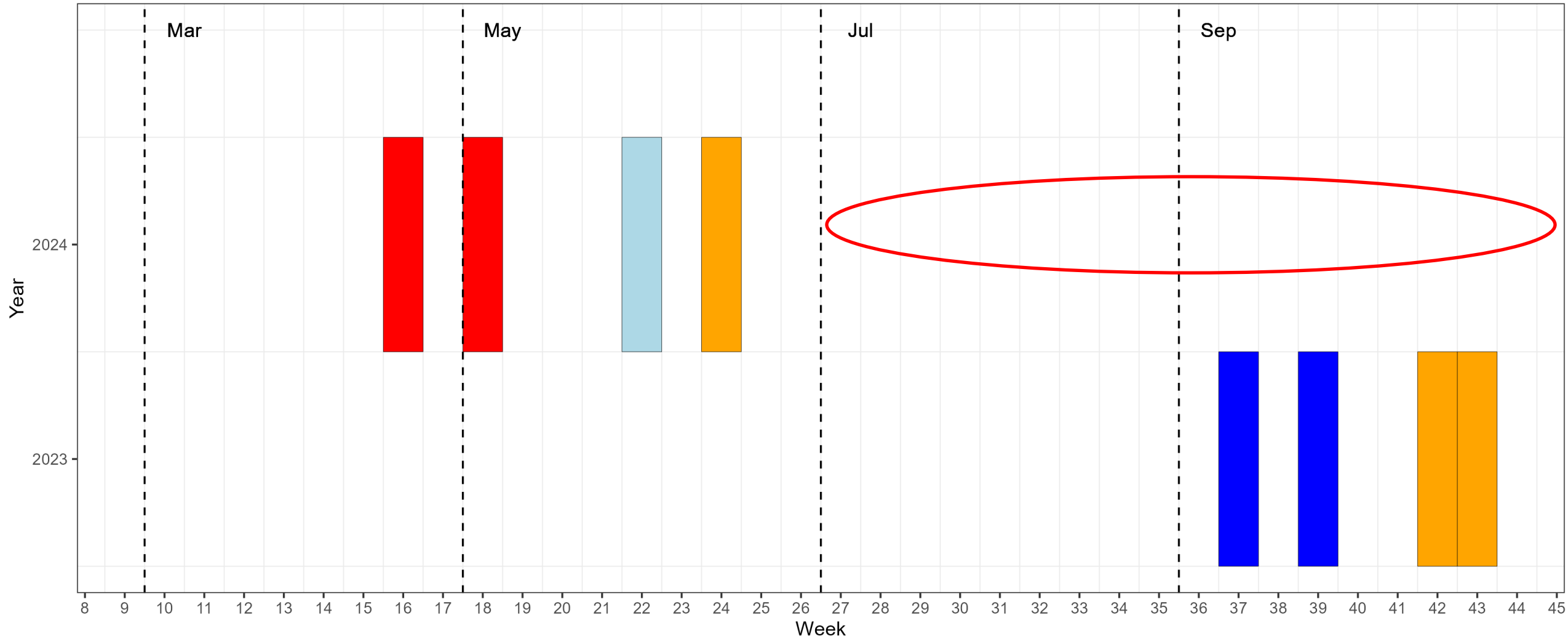


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Middle Deschutes Concentrations Relative to Minimum Aquatic Life Benchmark by Week

Diuron at 35227-ORDEQ Rattlesnake Creek at Bluff

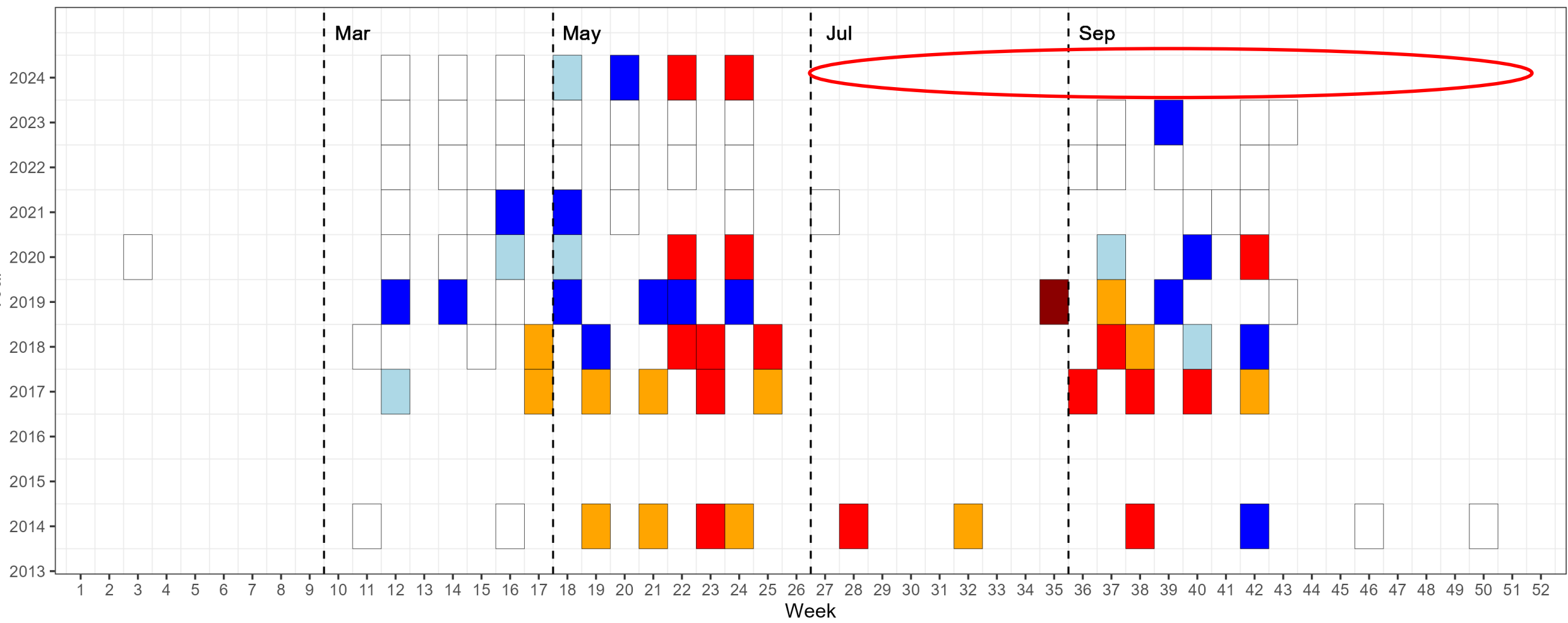
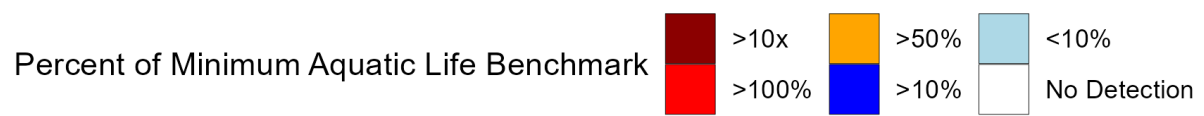
Percent of Minimum Aquatic Life Benchmark ■ >100% ■ >50% ■ >10% ■ <10%



NOTE: partial 2024 calendar year results shown. Full dataset not currently available (2/18/2025)

Middle Deschutes Concentrations Relative to Minimum Aquatic Life Benchmark by Week

Linuron at 37635-ORDEQ Campbell Creek at Mouth



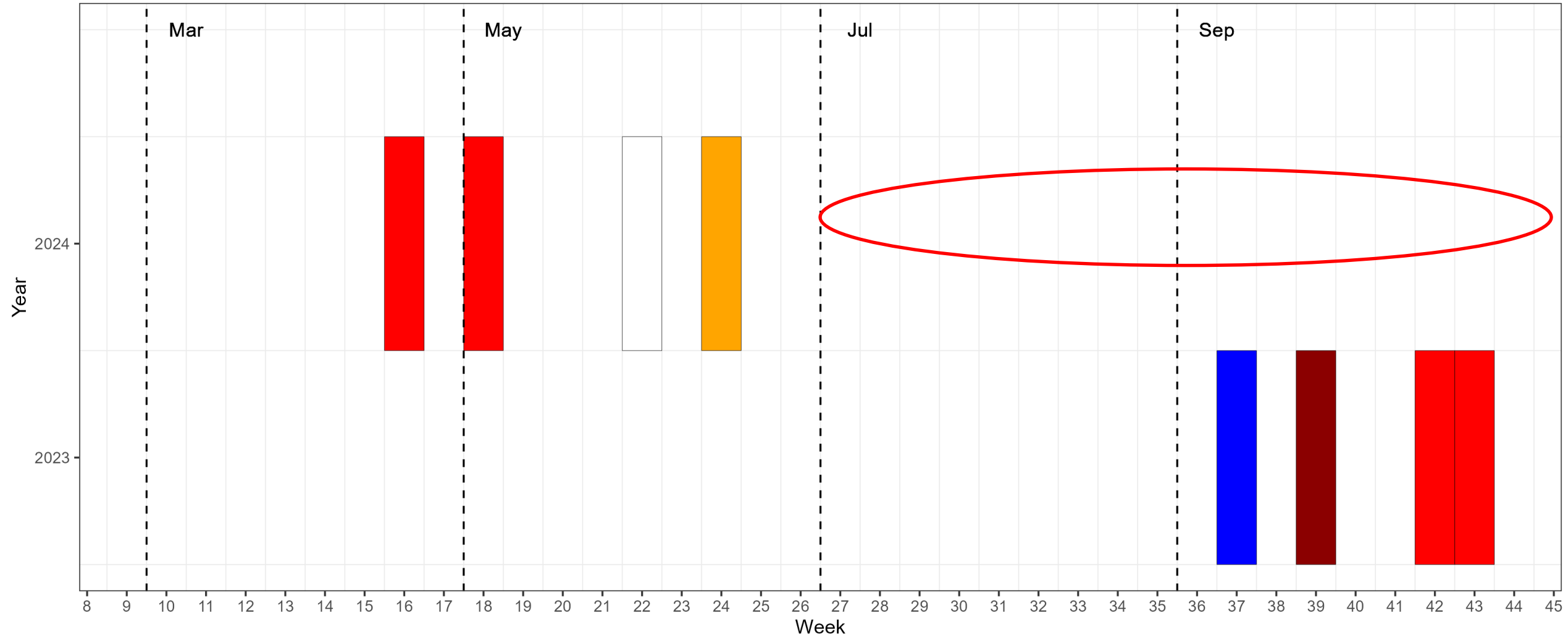
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Middle Deschutes Concentrations Relative to Minimum Aquatic Life Benchmark by Week

Linuron at 35227-ORDEQ Rattlesnake Creek at Bluff

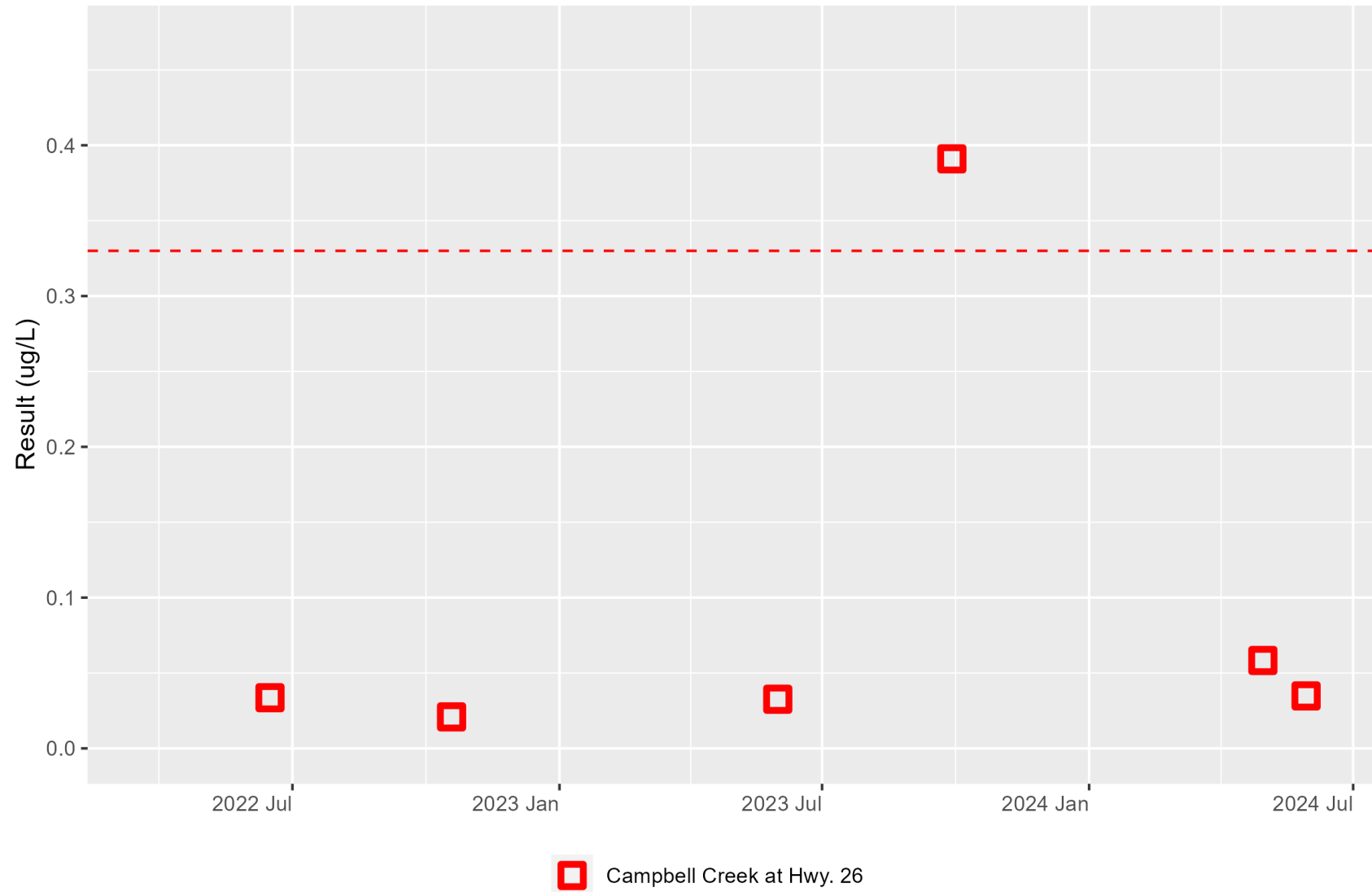
Percent of Minimum Aquatic Life Benchmark ■ >10x ■ >100% ■ >50% ■ >10% No Detection



NOTE: partial 2024 calendar year results shown. Full dataset not currently available (2/18/2025)

Middle Deschutes 2022-2024 Oxyfluorfen

Acute benchmark: 0.33 (ug/L) Chronic benchmark: 1.3 (ug/L)

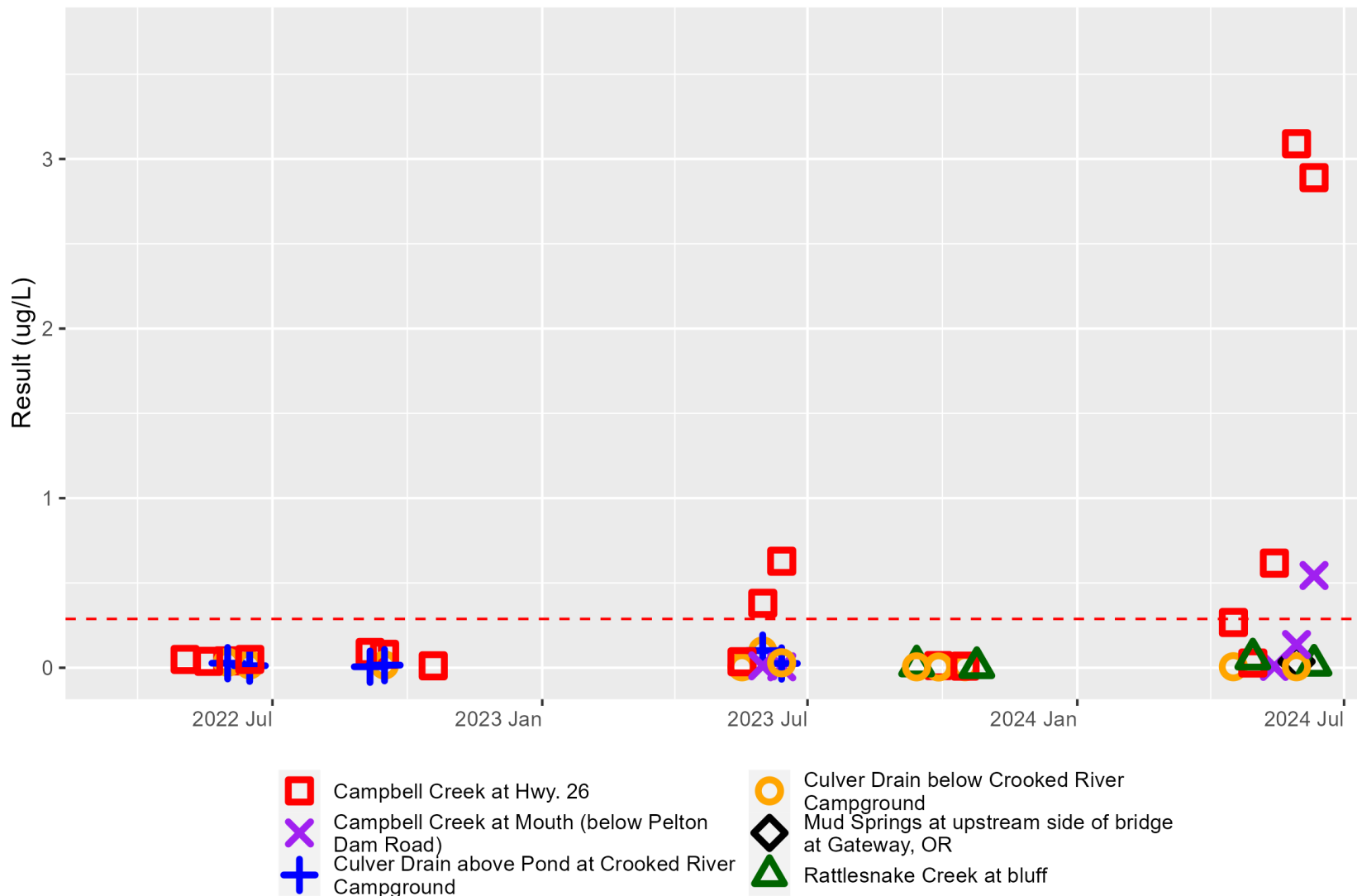


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Middle Deschutes 2022-2024

Prometryn

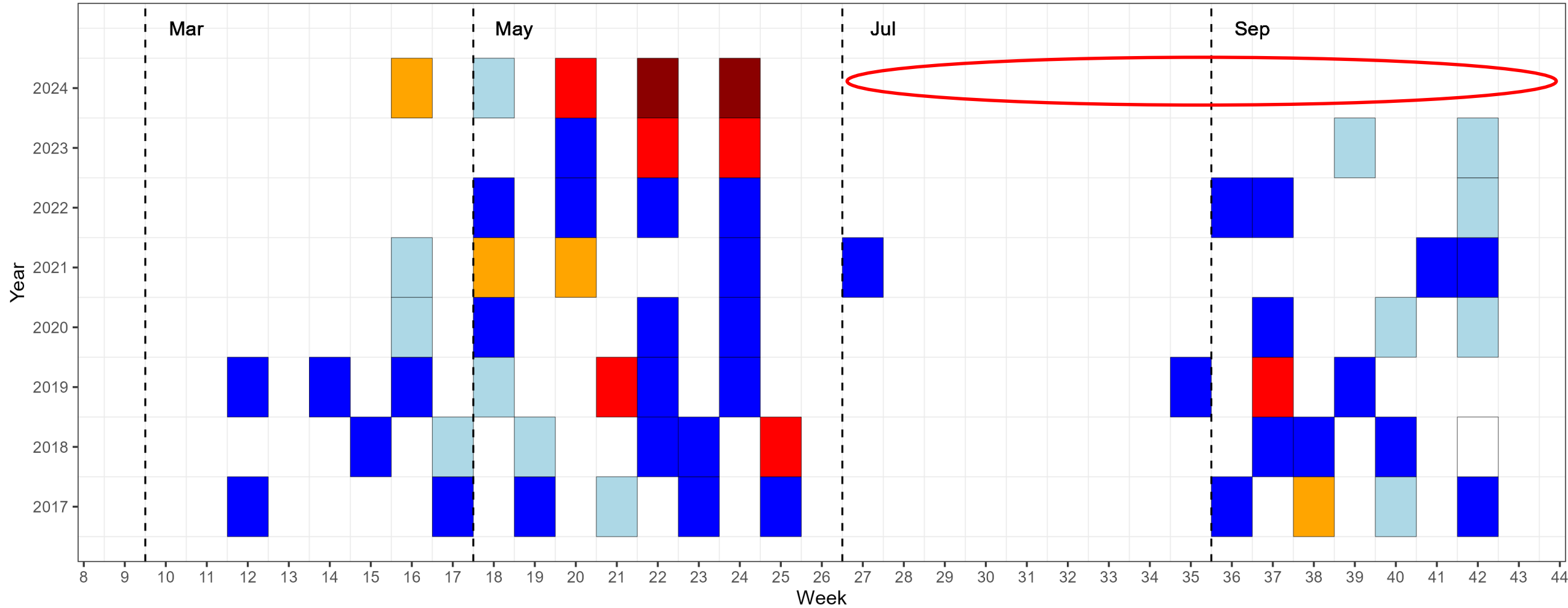
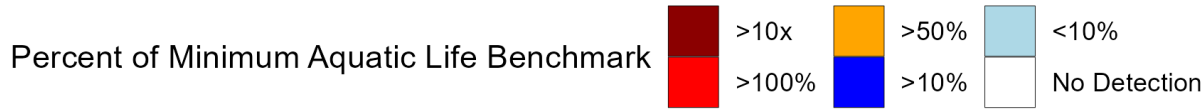
Acute benchmark: 0.288 (ug/L) Chronic benchmark: 620 (ug/L)



NOTE: partial 2024 calendar year results shown. Full dataset not currently available (2/18/2025)

Middle Deschutes Concentrations Relative to Minimum Aquatic Life Benchmark by Week

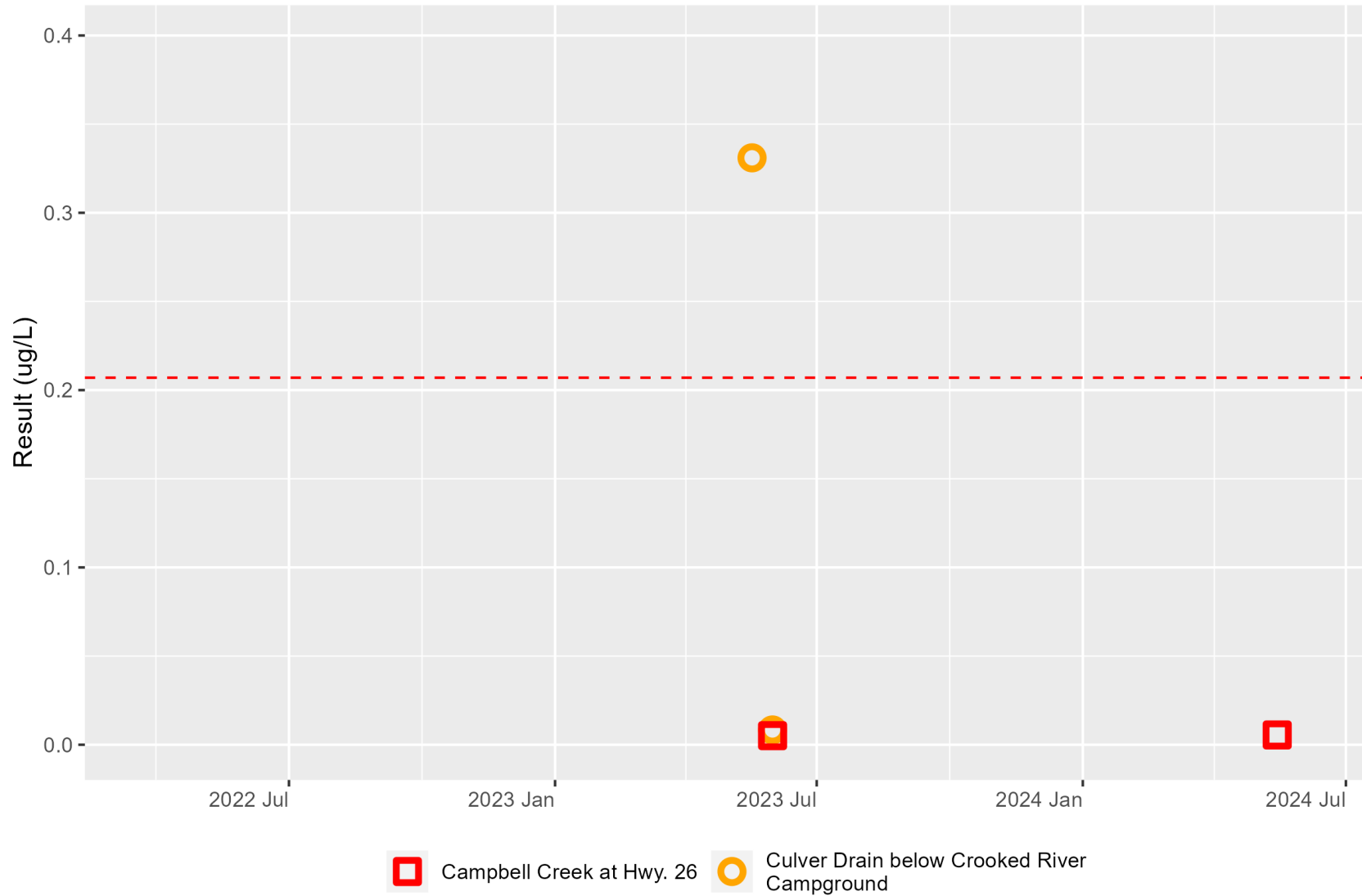
Prometryn at 35226-ORDEQ Campbell Creek at Hwy 26



NOTE: partial 2024 calendar year results shown. Full dataset not currently available (2/18/2025)

Middle Deschutes 2022-2024 Sulfometuron methyl

Acute benchmark: 0.207 (ug/L) Chronic benchmark: 97000 (ug/L)

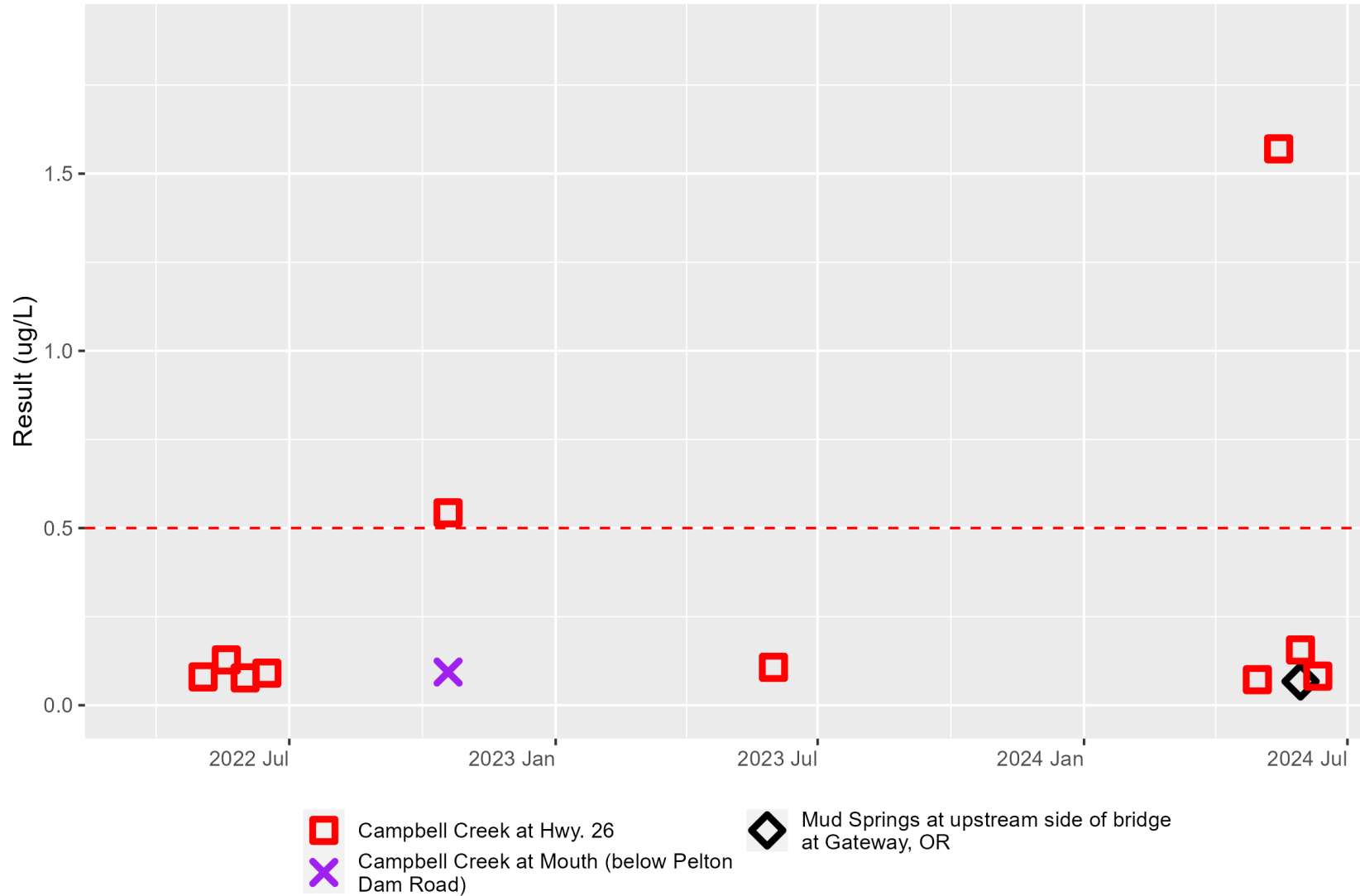


NOTE: partial 2024 calendar year results shown. Full dataset not currently available (2/18/2025)

Middle Deschutes 2022-2024

Dimethoate

Acute benchmark: 15.5 (ug/L) Chronic benchmark: 0.5 (ug/L)

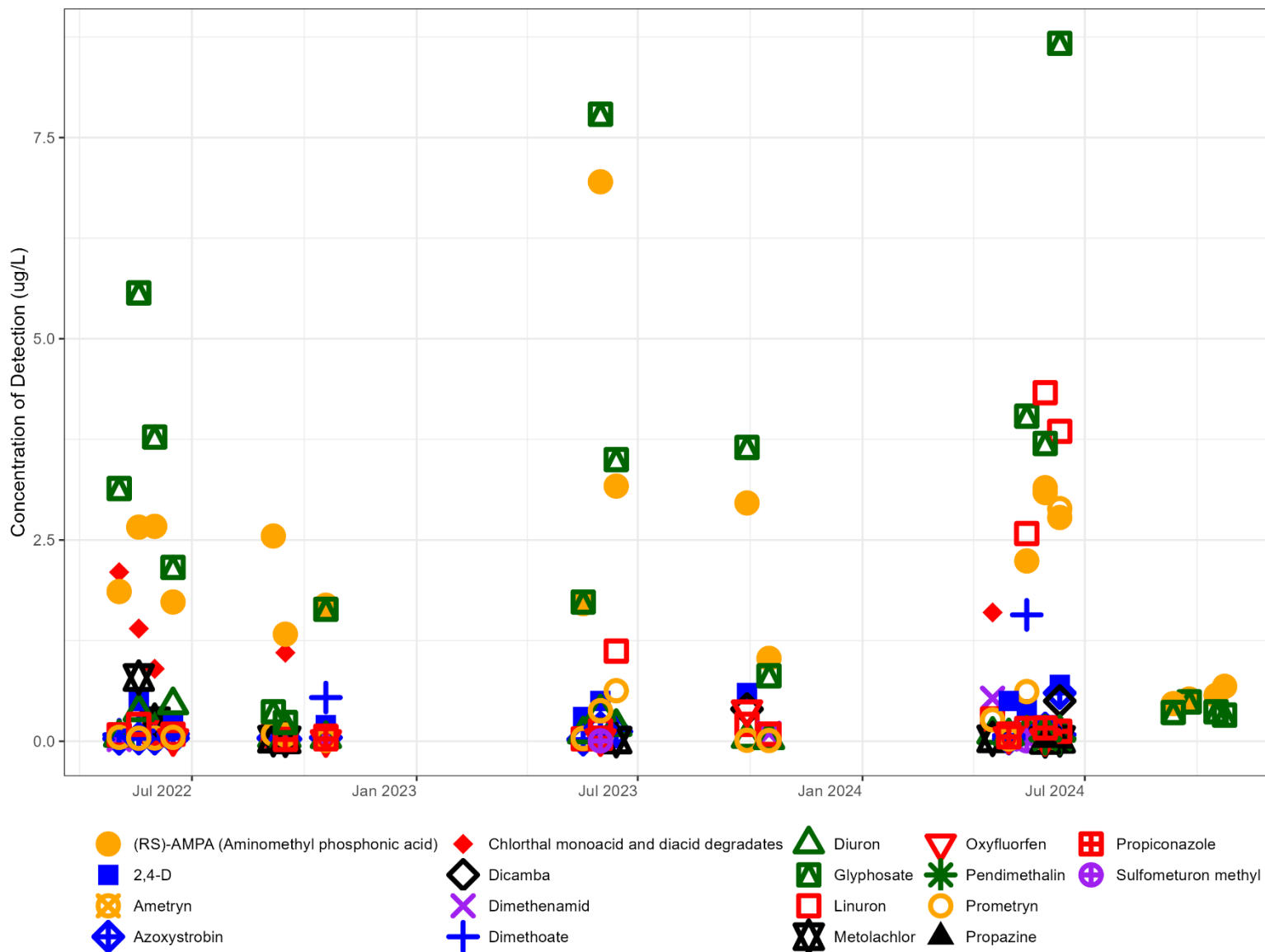


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Partial-Year 2024 Water Quality Data Summary

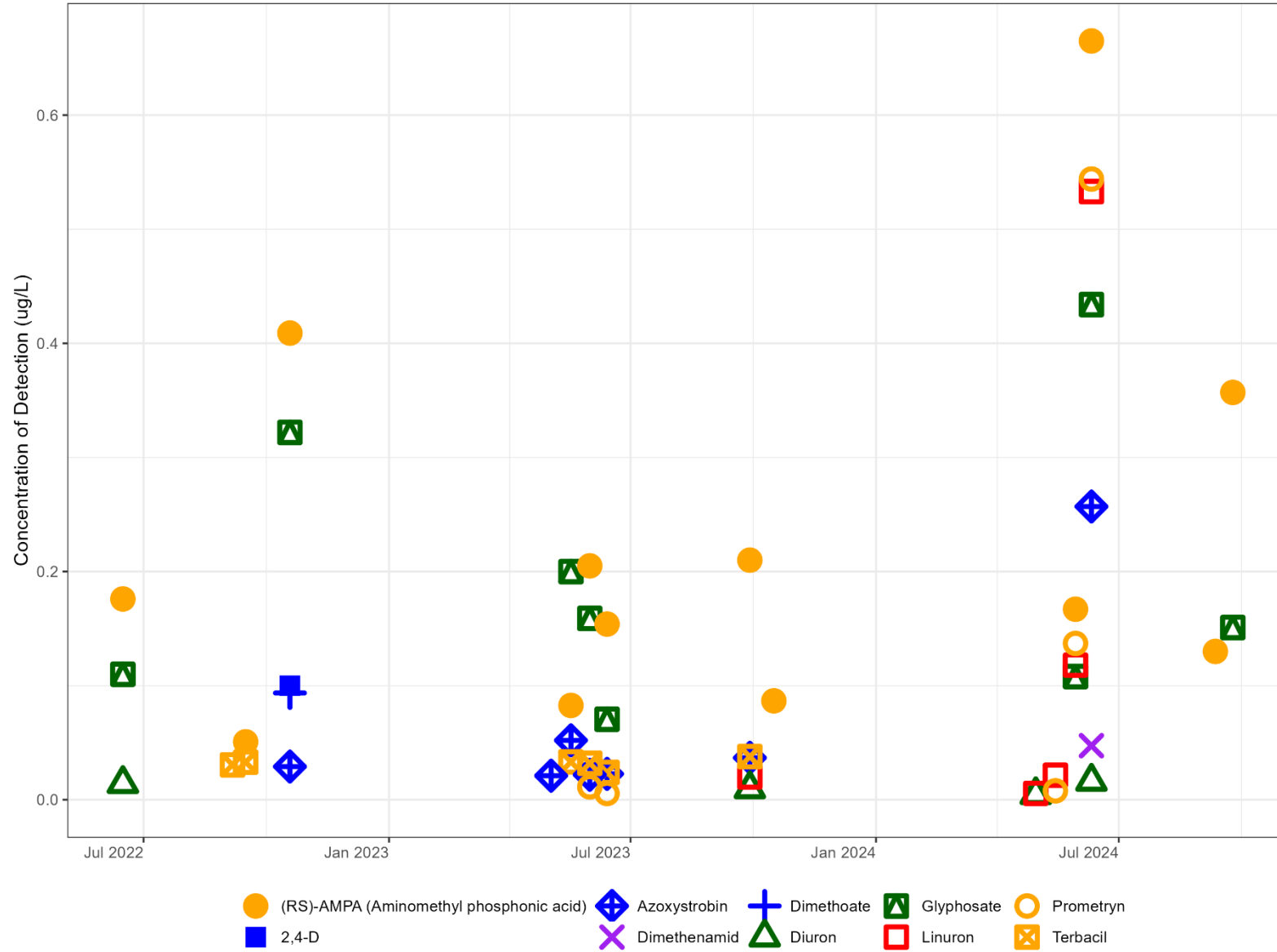
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Campbell Creek at Hwy. 26
2022-2024



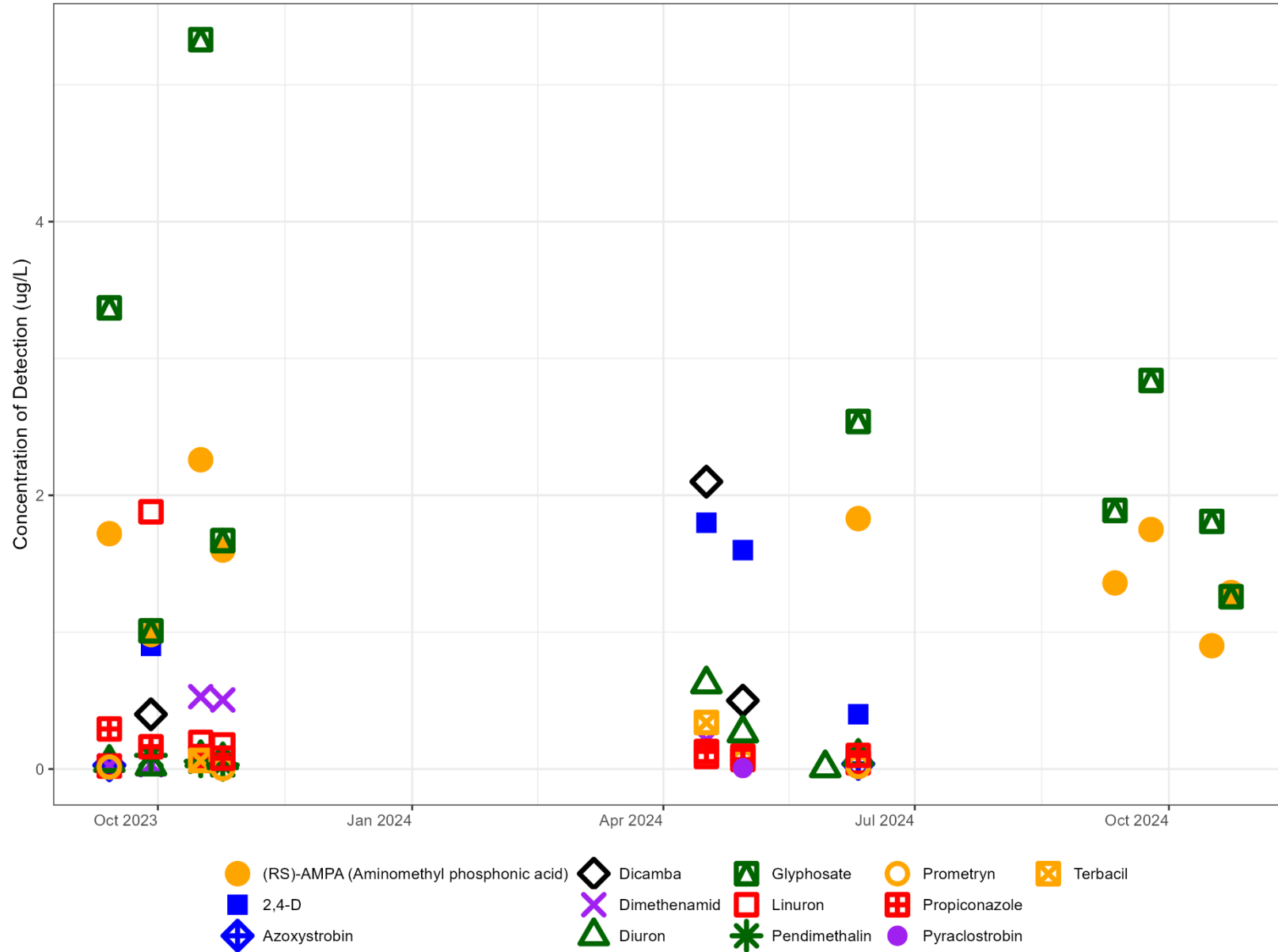
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Campbell Creek at Mouth (below Pelton Dam Road)
2022-2024



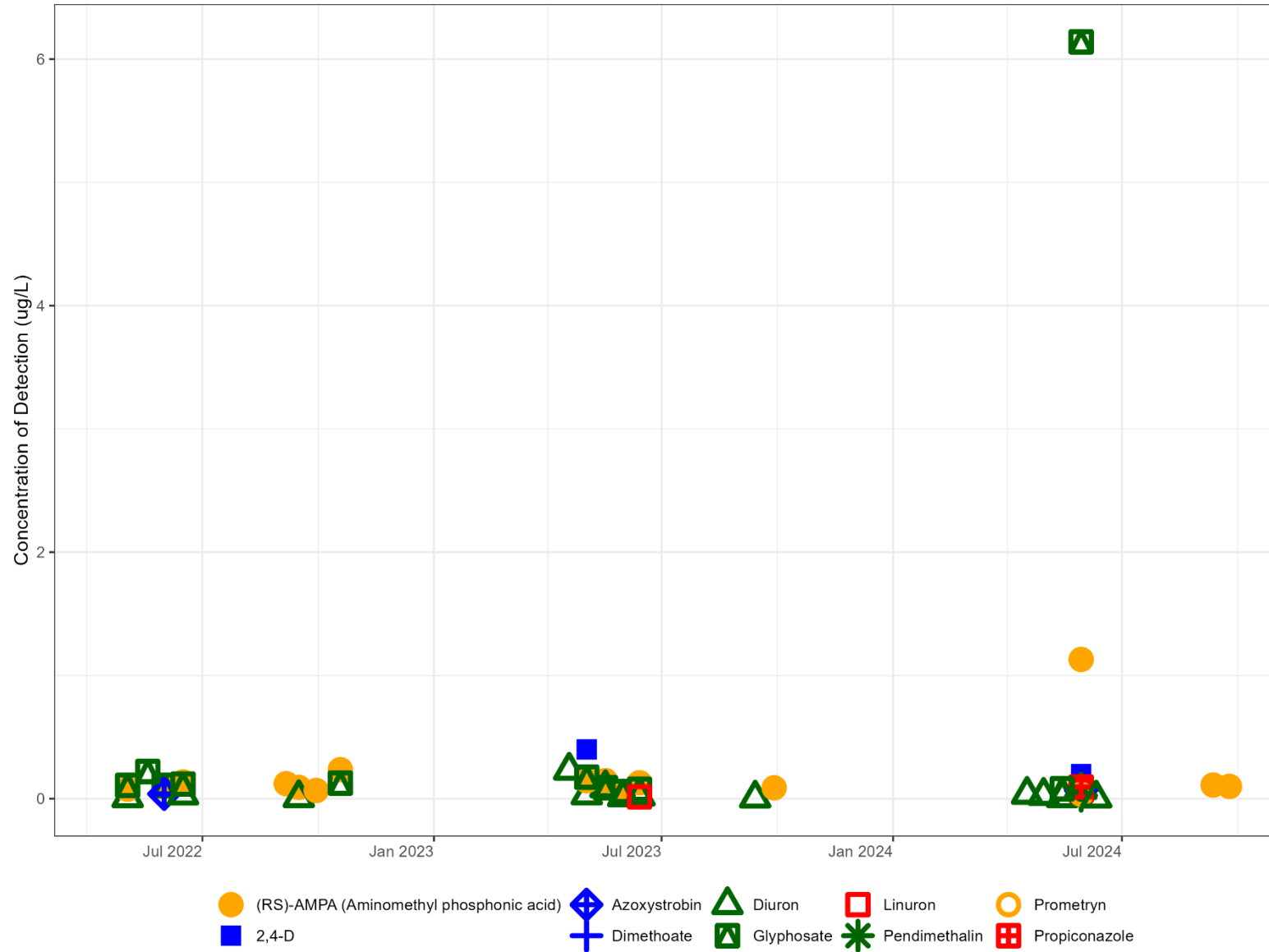
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Rattlesnake Creek at bluff
2022-2024



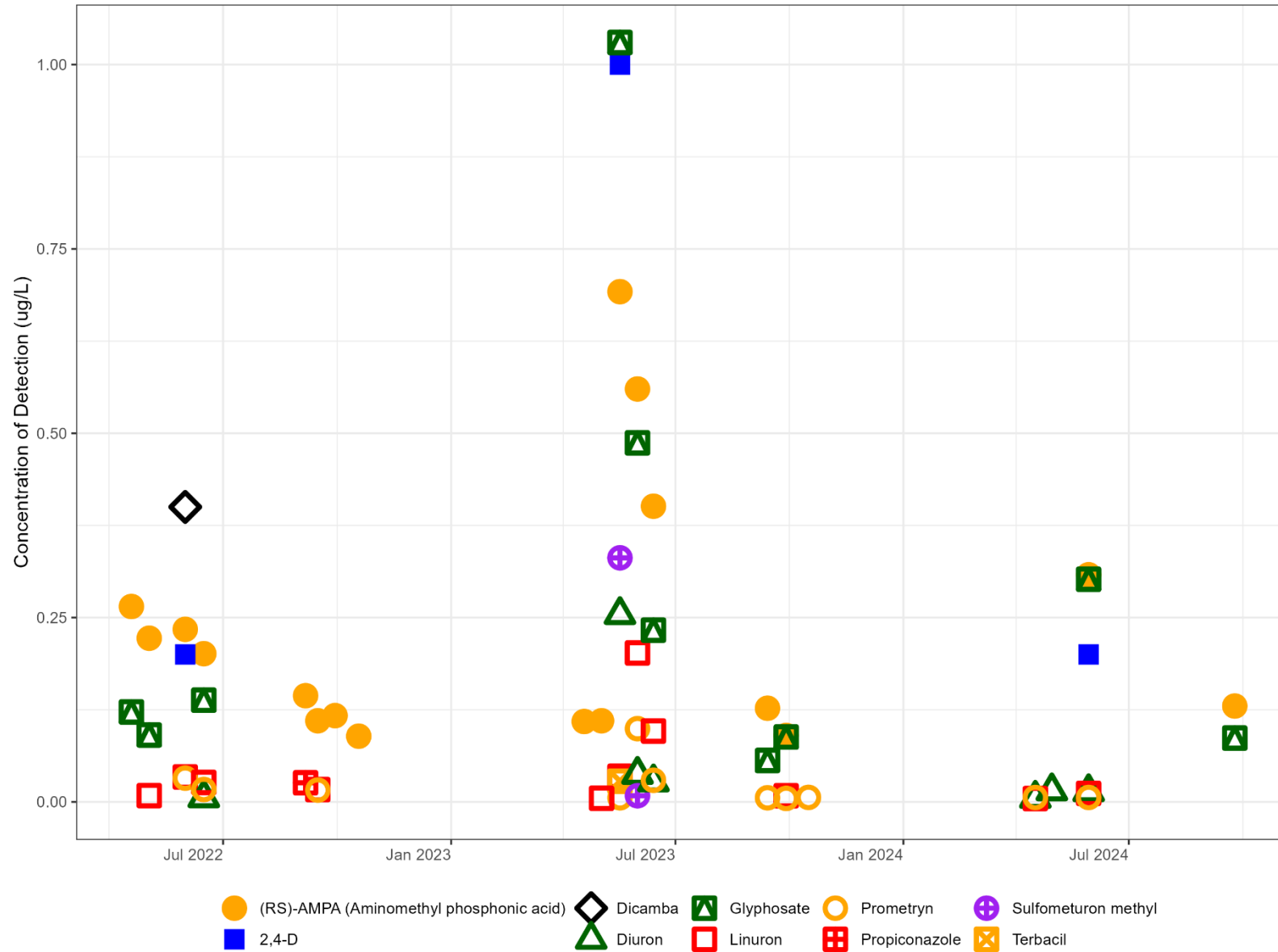
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Mud Springs at upstream side of bridge at Gateway, OR
2022-2024



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Culver Drain below Crooked River Campground
2022-2024



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