

# Middle Deschutes PSP: 2023 Water Quality Monitoring Results

March 11, 2024 [updated March 12, 2024]  
Virtual Presentation

# 2023 Water Quality Data Summary

- Increase in Aquatic Life Benchmark (ALB) exceedances compared to 2022
  - Similar sampling effort; new location at Rattlesnake Creek at Bluff
- ~~Six (6)~~ **Seven (7)** Pesticides of High Concern
  - Diuron
  - Linuron
  - Dimethoate
  - Imidacloprid
  - Oxyfluorfen
  - **Prometryn**
  - Sulfometuron-Methyl
- Campbell Creek at Hwy 26 – opportunities for outreach
  - Co-highest number of ALB exceedances (6)
  - Highest number of total pesticides detected at location in (15)
  - Highest number of pesticides detected in single sample (10)

# 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**



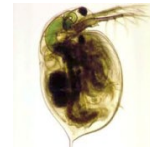
Rainbow trout



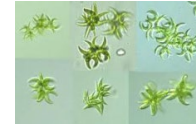
Fathead minnow



Bluegill sunfish



*Daphnia magna*



Green algae



Duckweed

## 2. Aquatic Life Ratio:

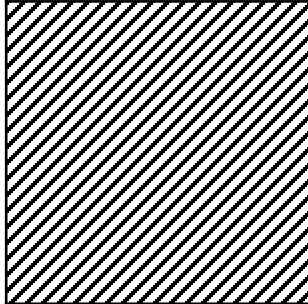
- Detected concentration (ug/L) / lowest (acute or chronic) ALB  
**Values  $\geq 1.0$  indicates further attention required**

## 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**

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

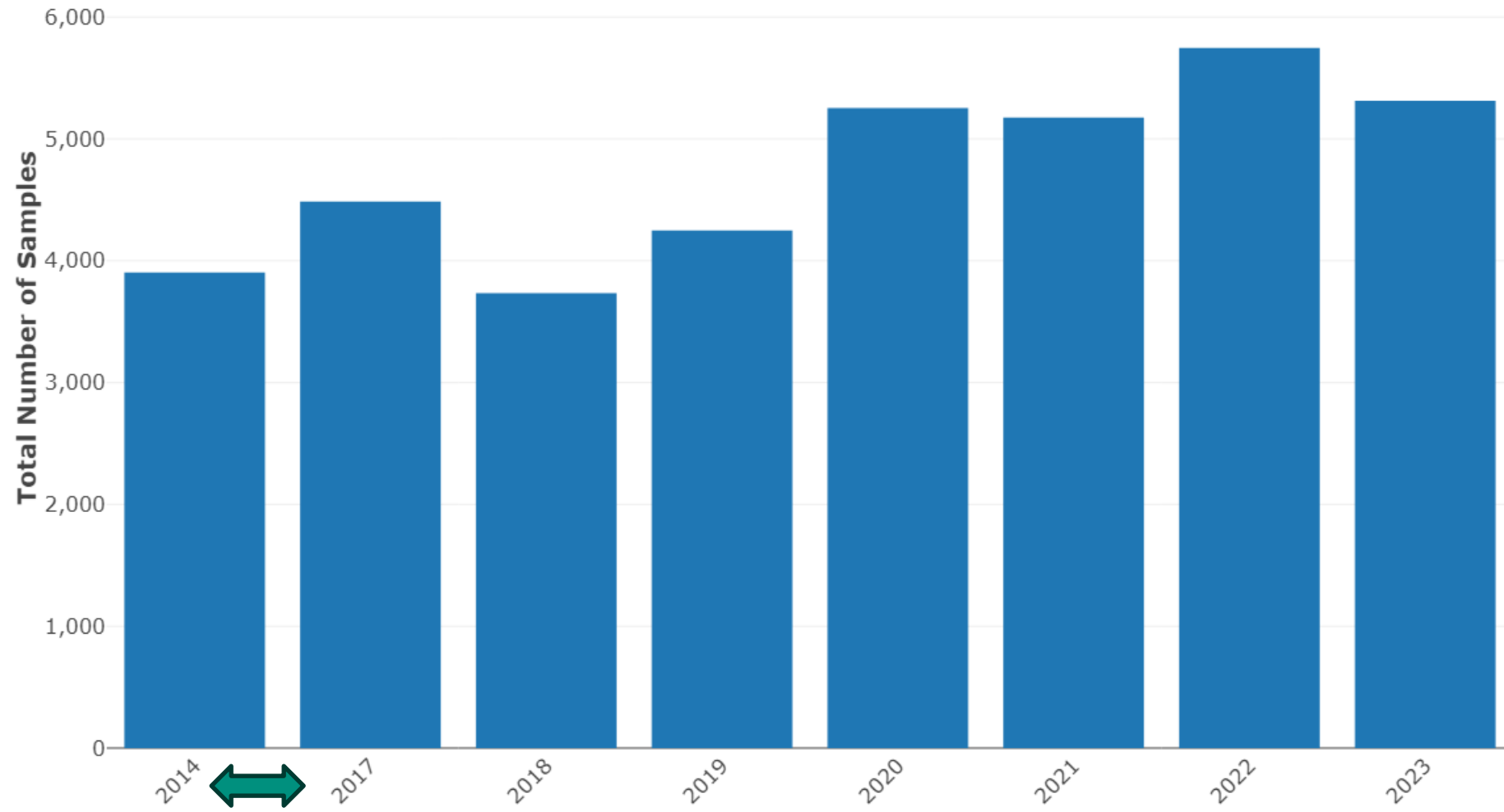
**2024  
Pesticides  
of Concern  
– Middle  
Deschutes  
PSP:**

[Based on  
data from  
2021-2023]

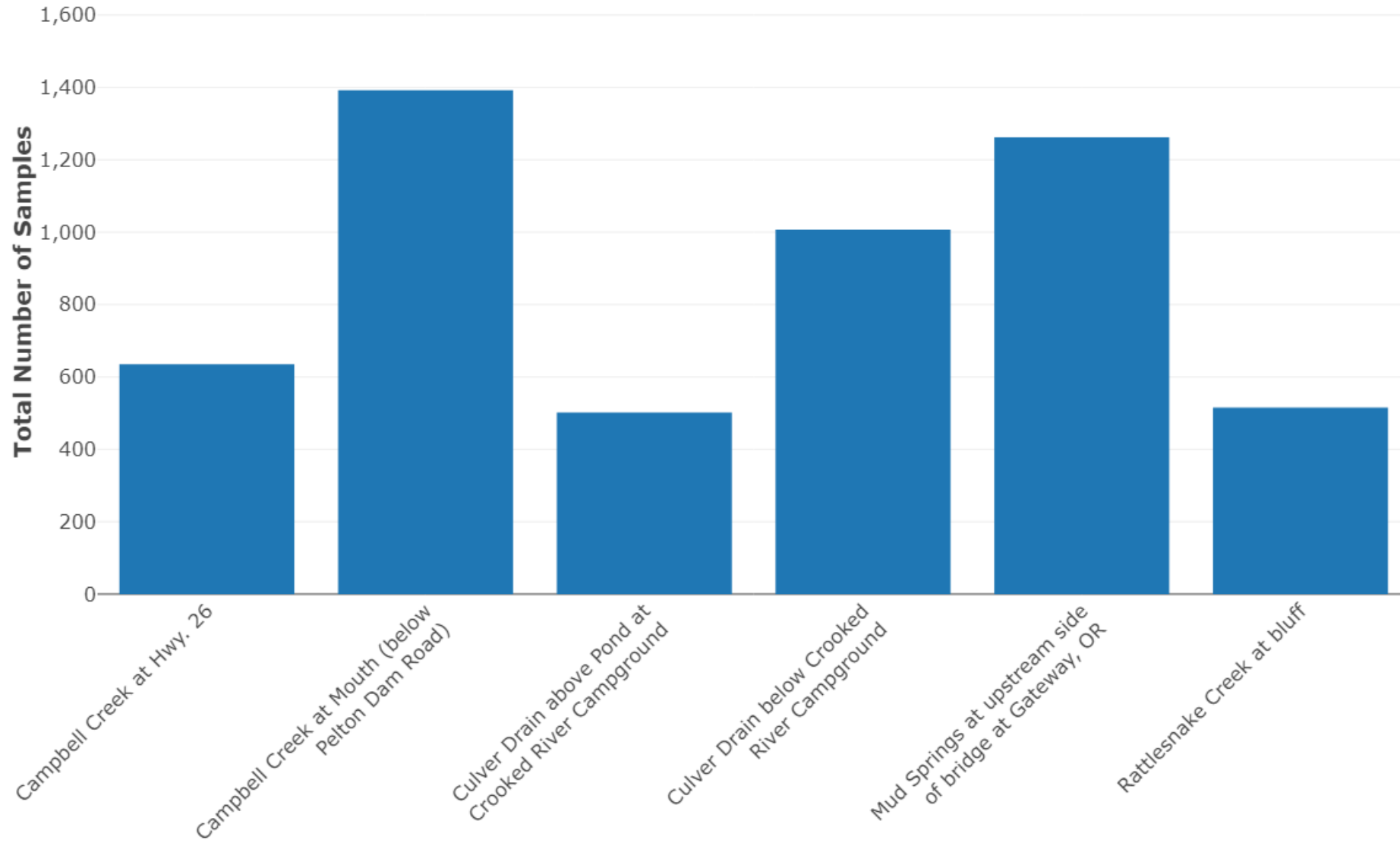
Decision Matrix Based on Water Quality Monitoring Data (2019)  
Detected concentration relative to aquatic life benchmark (ALBs) and frequency of detection

		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 (%)	Hatched				
	65.1% - 100%				1. AMPA
	35.1% - 65%	1. Diuron 2. Linuron			1. Glyphosate
0% to 35%	1. Imidacloprid 2. Oxyfluorfen 3. Prometryn 4. Sulfometuron-Methyl	1. Dimethoate			

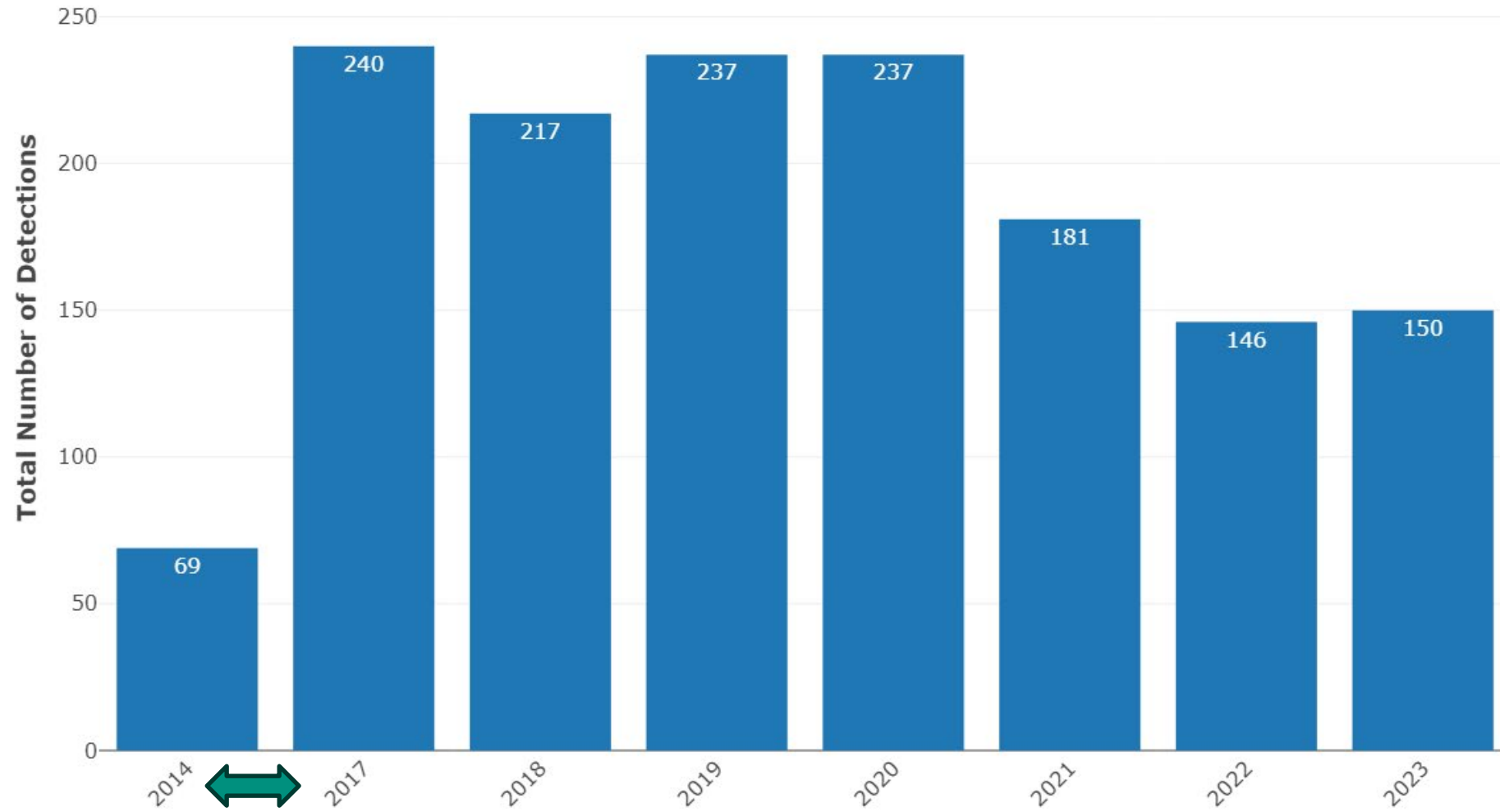
## Total Number of Pesticide Samples in the Middle Deschutes PSP



## Total Number of Pesticide Samples Middle Deschutes 2023

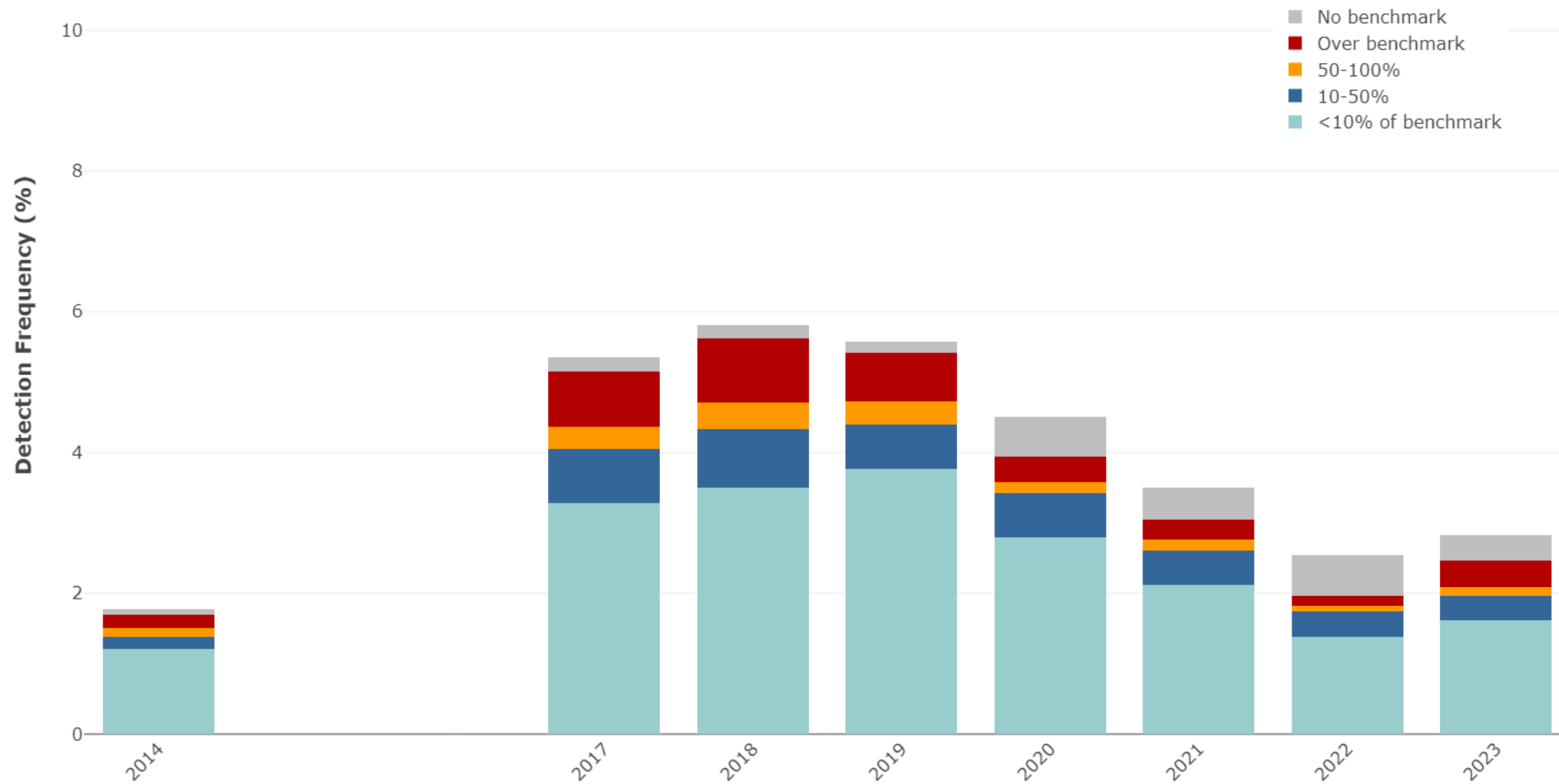


## Total Number of Pesticide Detections in the Middle Deschutes PSP

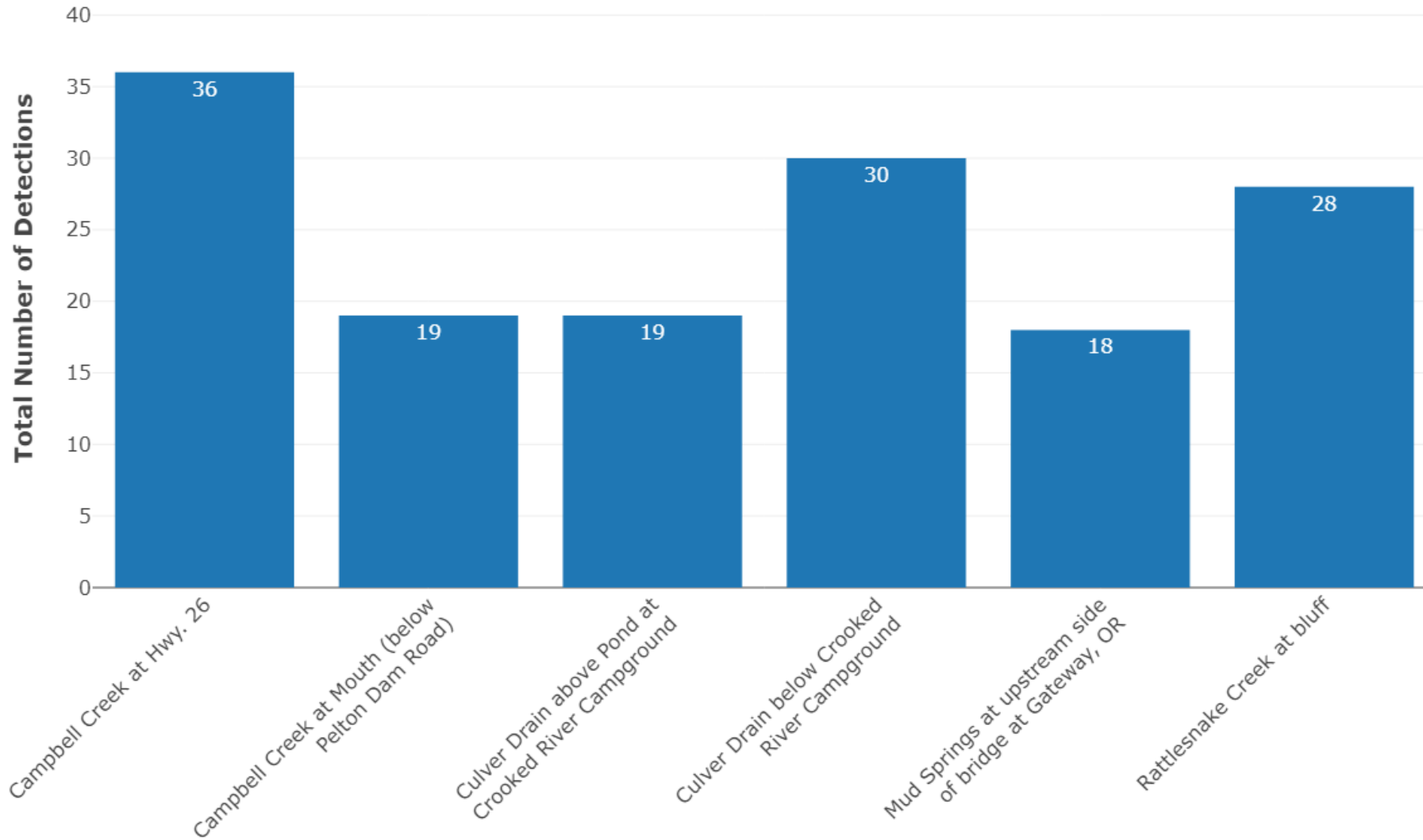




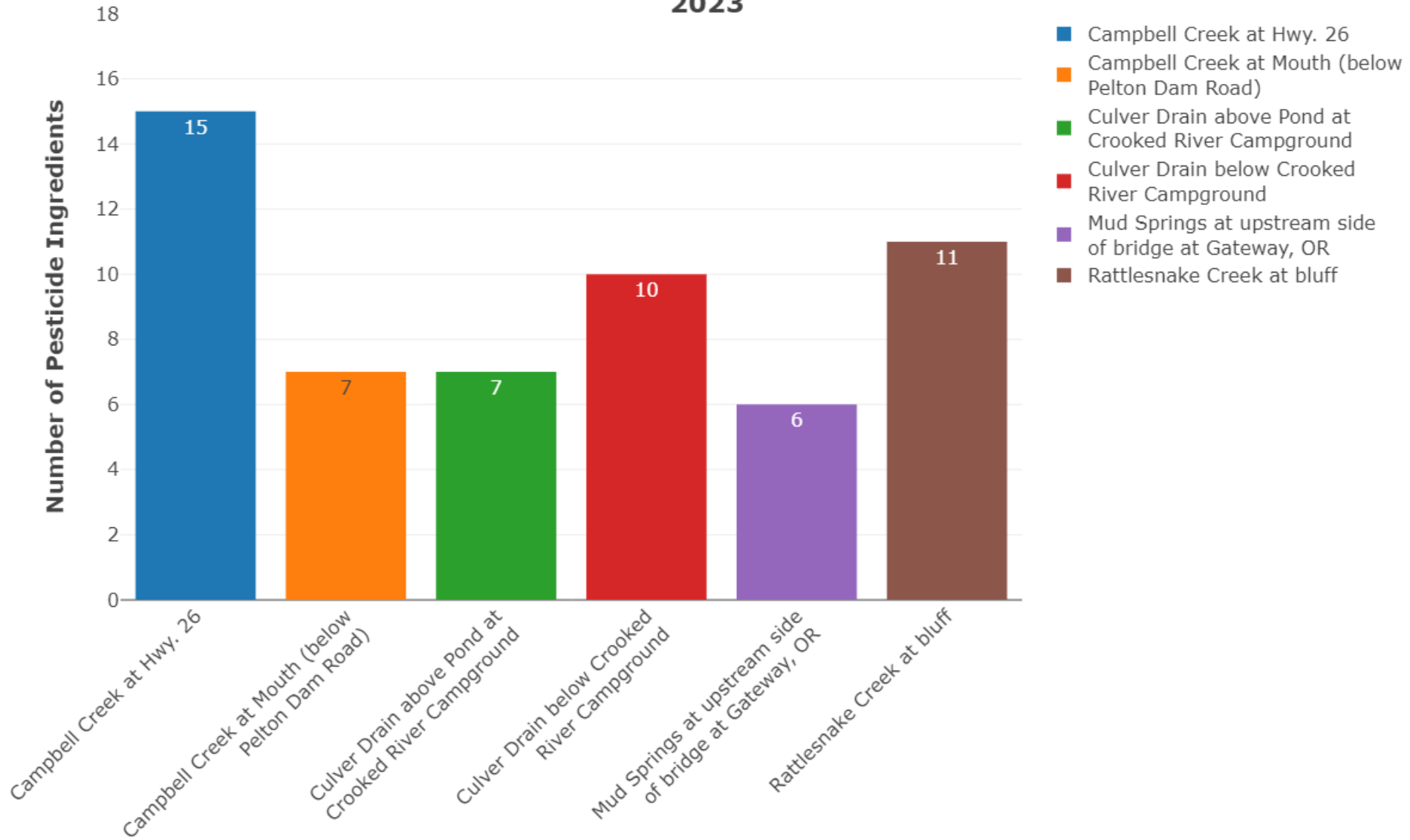
### Middle Deschutes 2014-2023 Detection Frequency



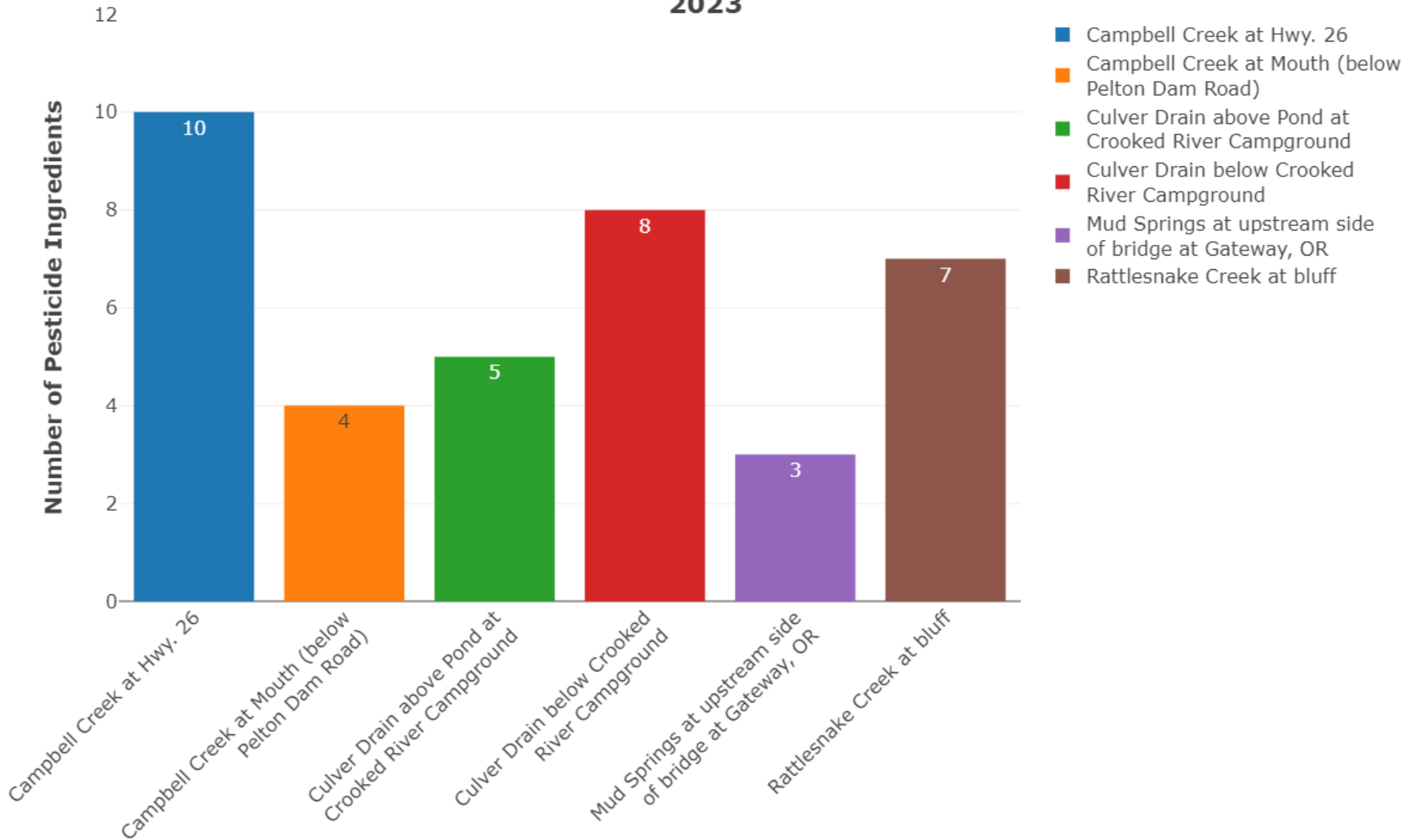
## Total Number of Pesticide Detections Middle Deschutes 2023



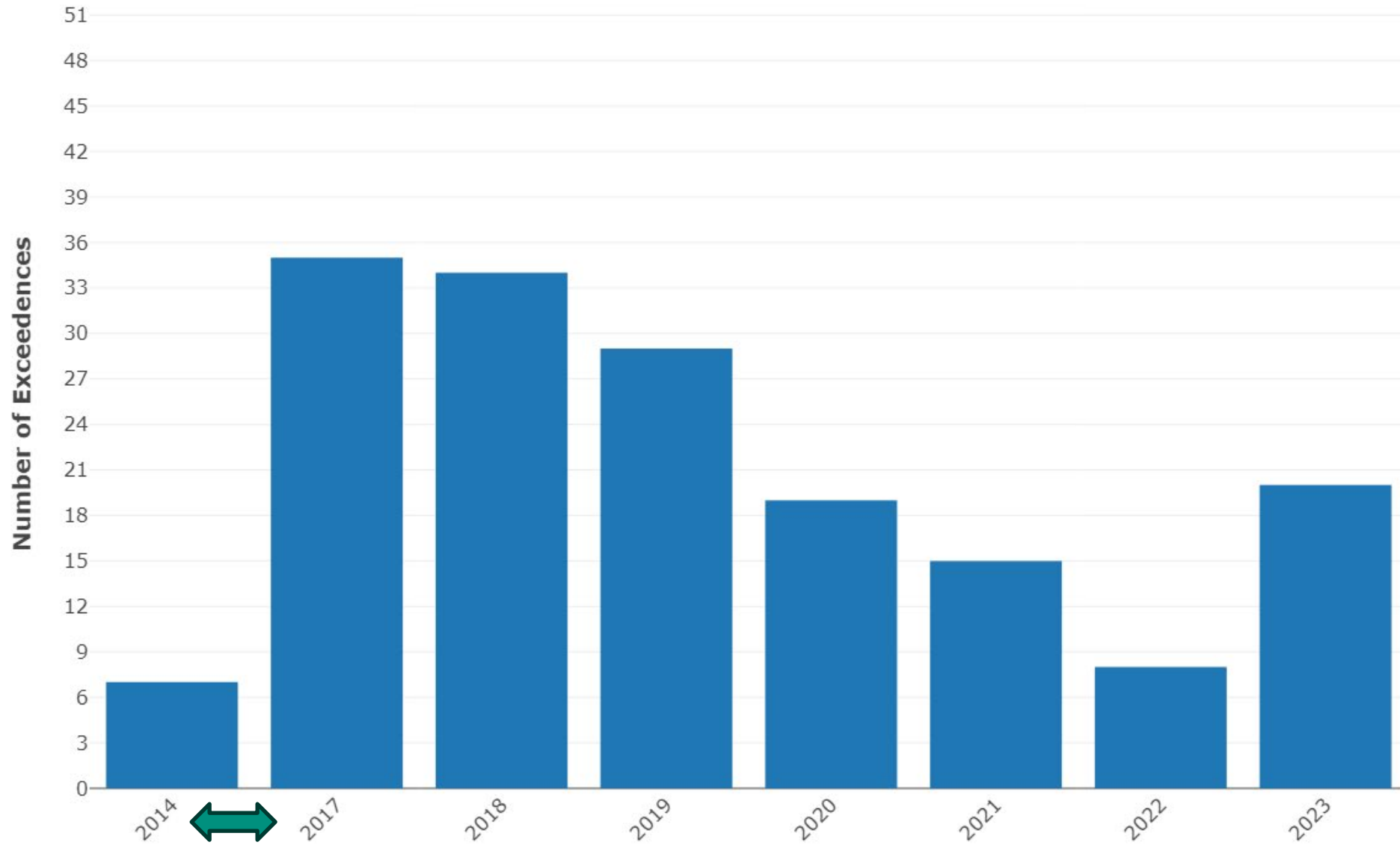
## Number of Individual Pesticide Ingredients Detected in the Middle Deschutes PSP 2023



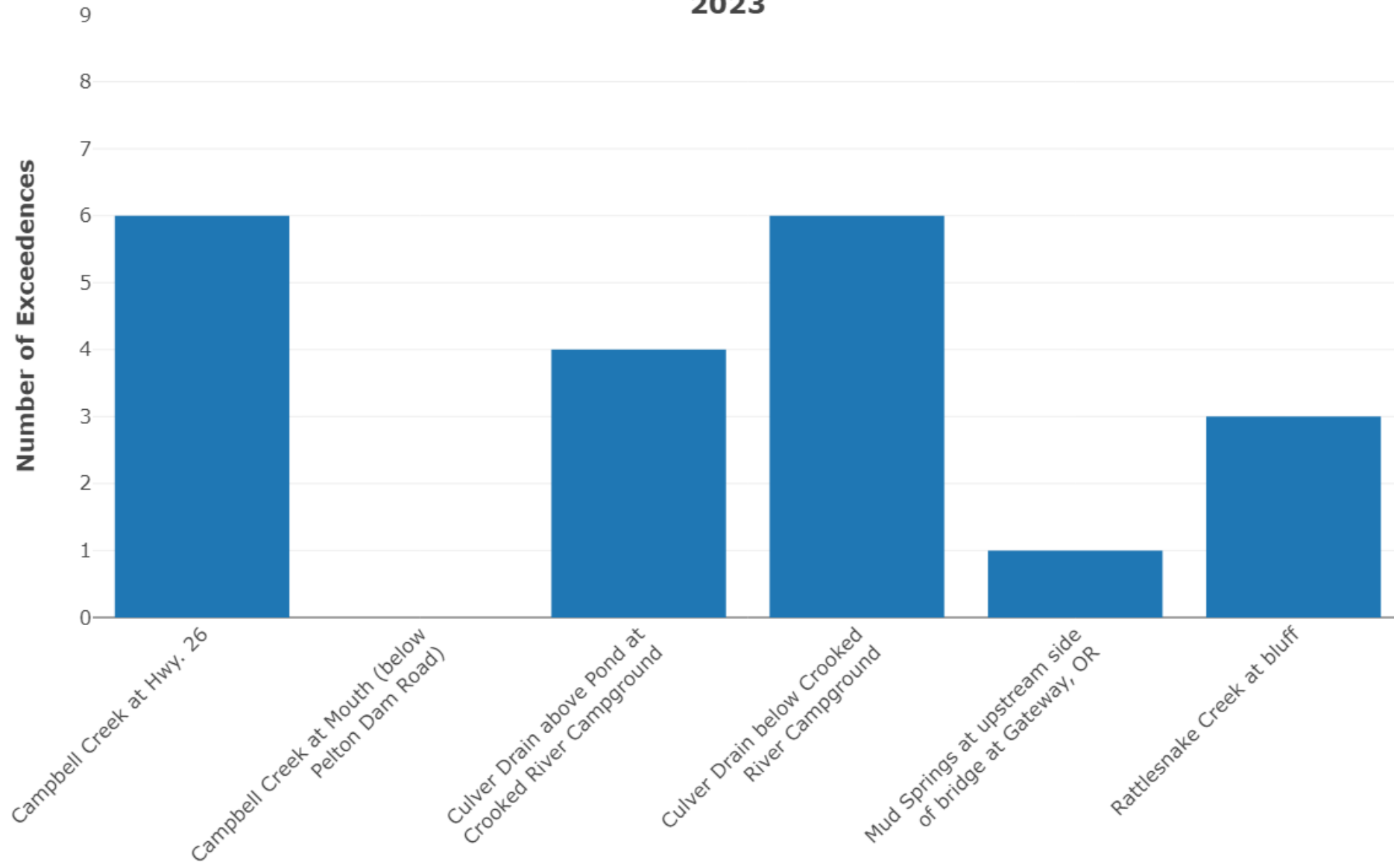
## Maximum Number of Pesticide Ingredients in a Single Middle Deschutes PSP Sample 2023



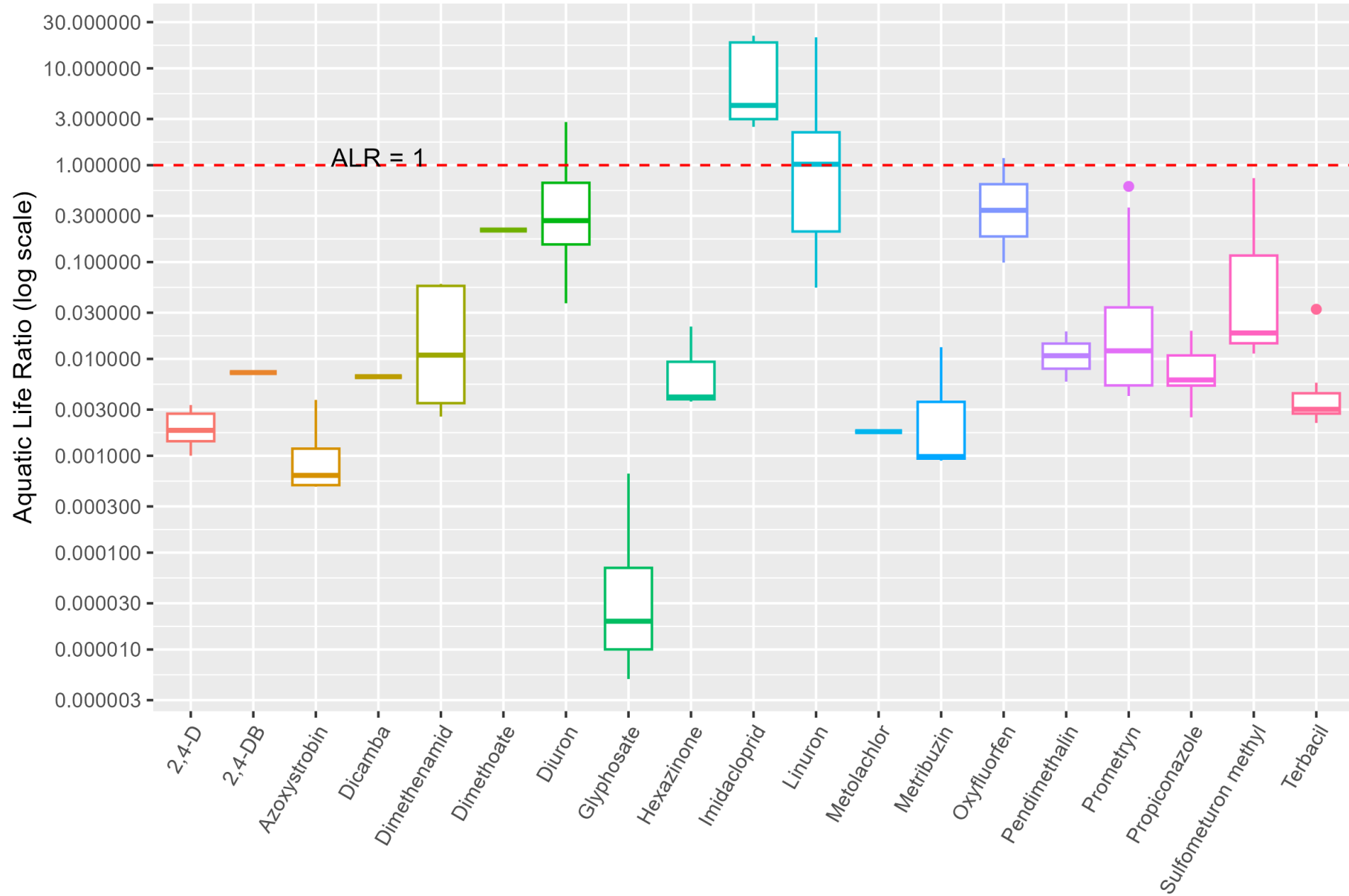
## Total Number of Pesticide Benchmark Exceedances in the Middle Deschutes PSP



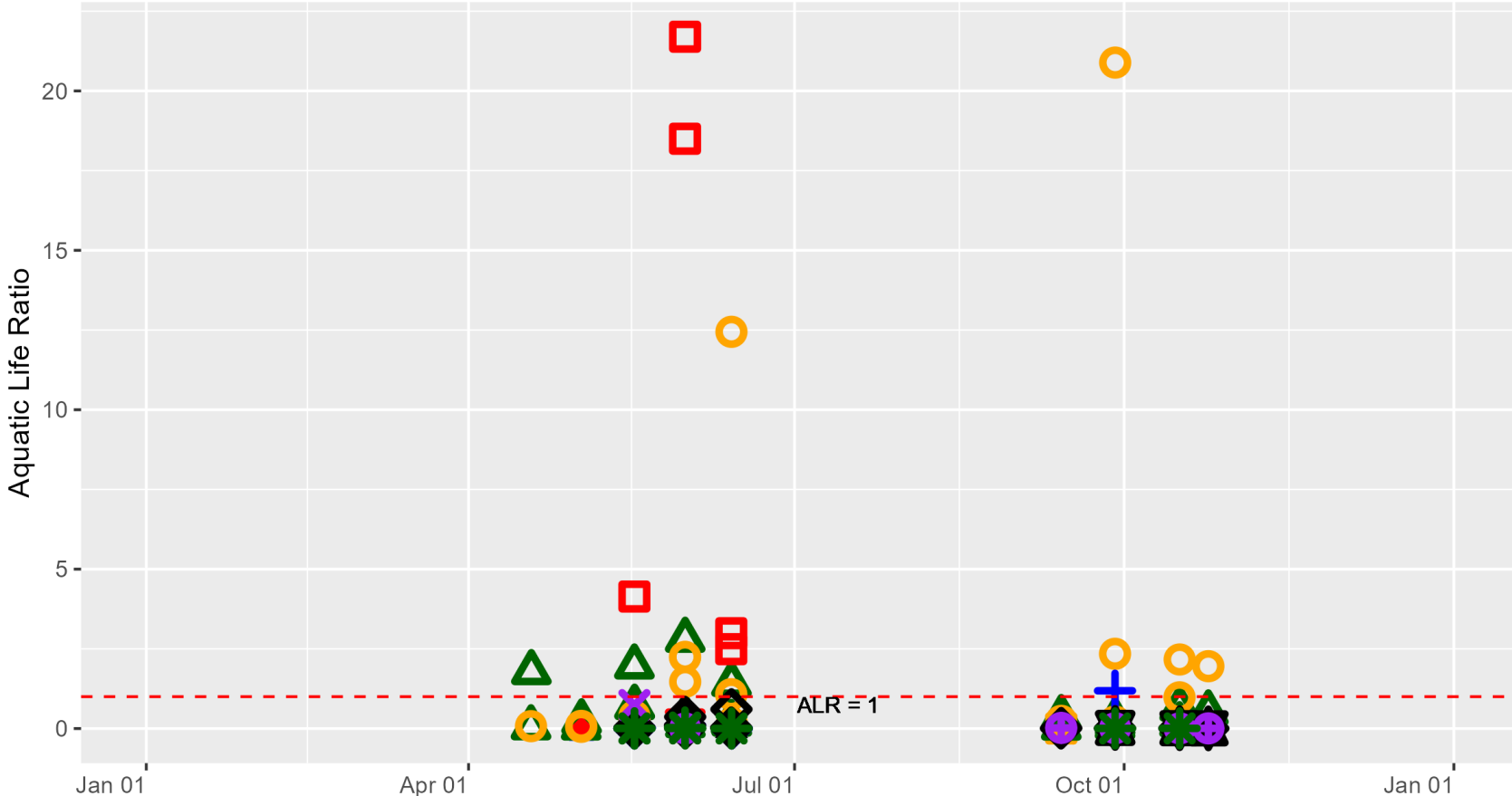
## Total Number of Pesticide Benchmark Exceedances in the Middle Deschutes PSP 2023



# Middle Deschutes 2023 Aquatic Life Ratio of Detected Chemicals



# Middle Deschutes 2023 Aquatic Life Ratio of Detected Chemicals

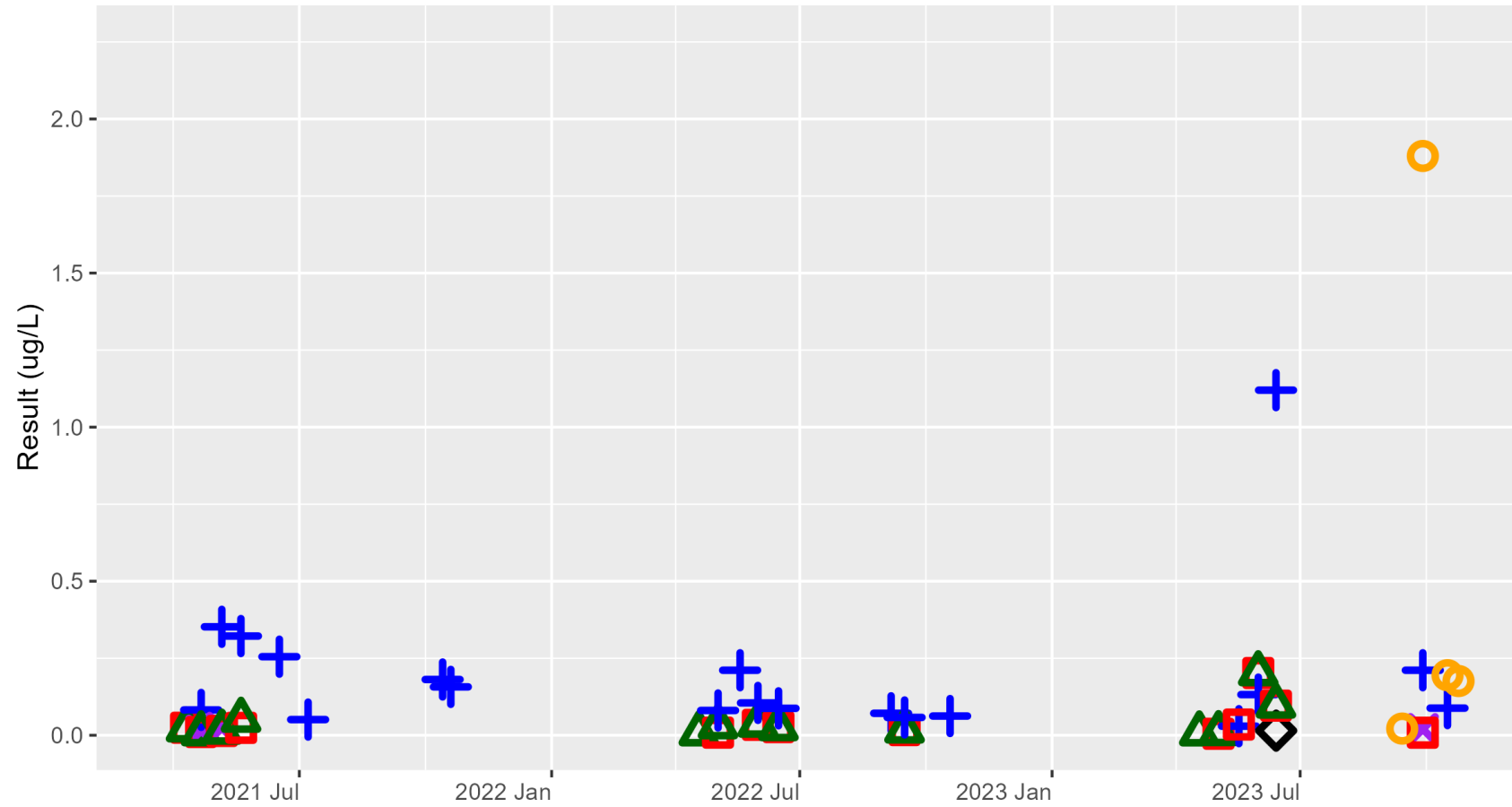


- |              |              |              |               |                     |
|--------------|--------------|--------------|---------------|---------------------|
| 2,4-D        | Dimethenamid | Hexazinone   | Metribuzin    | Propiconazole       |
| 2,4-DB       | Dimethoate   | Imidacloprid | Oxyfluorfen   | Sulfometuron methyl |
| Azoxystrobin | Diuron       | Linuron      | Pendimethalin | Terbacil            |
| Dicamba      | Glyphosate   | Metolachlor  | Prometryn     |                     |



# Middle Deschutes 2021-2023 Linuron

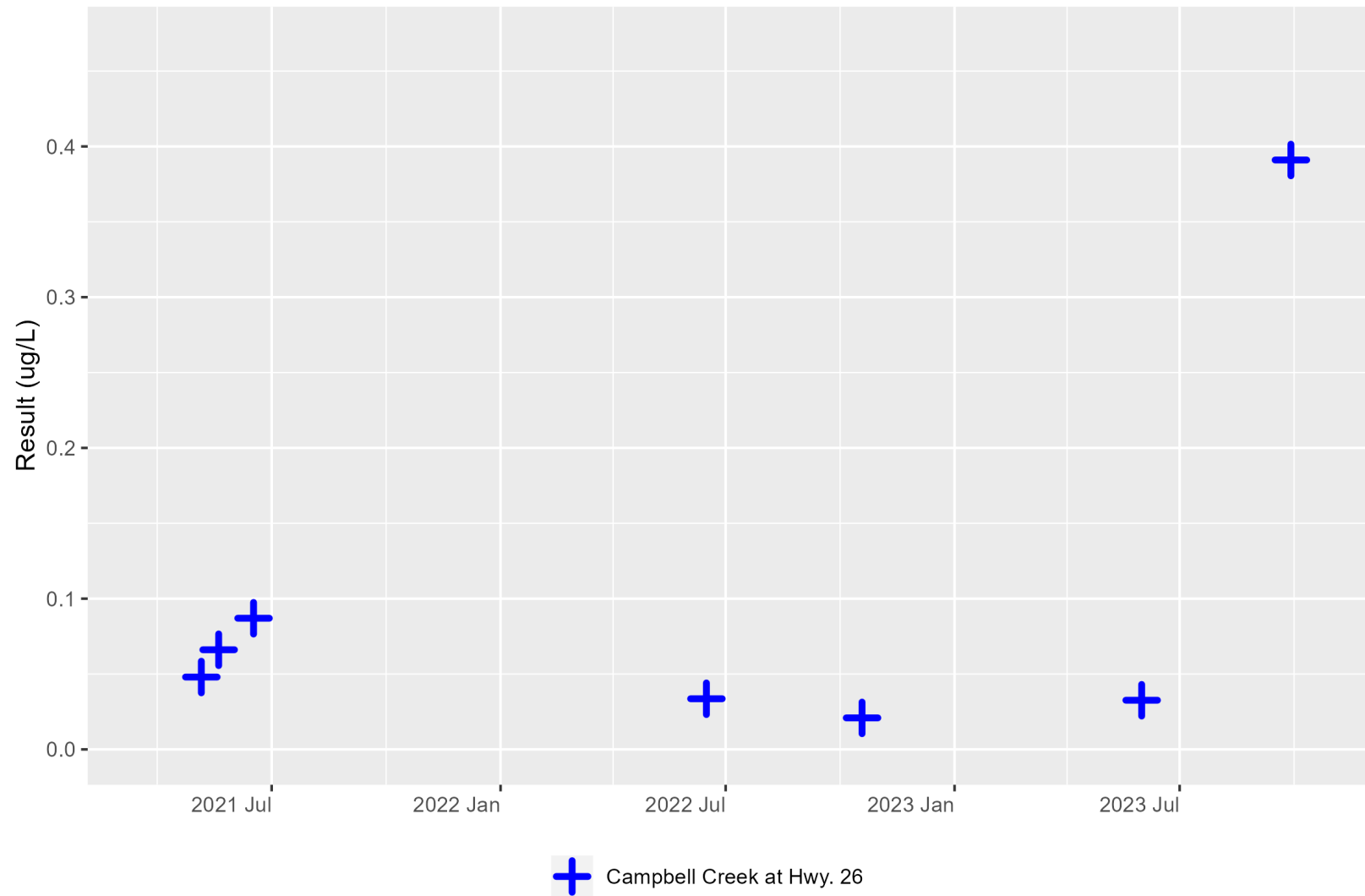
minimum benchmark: 0.09



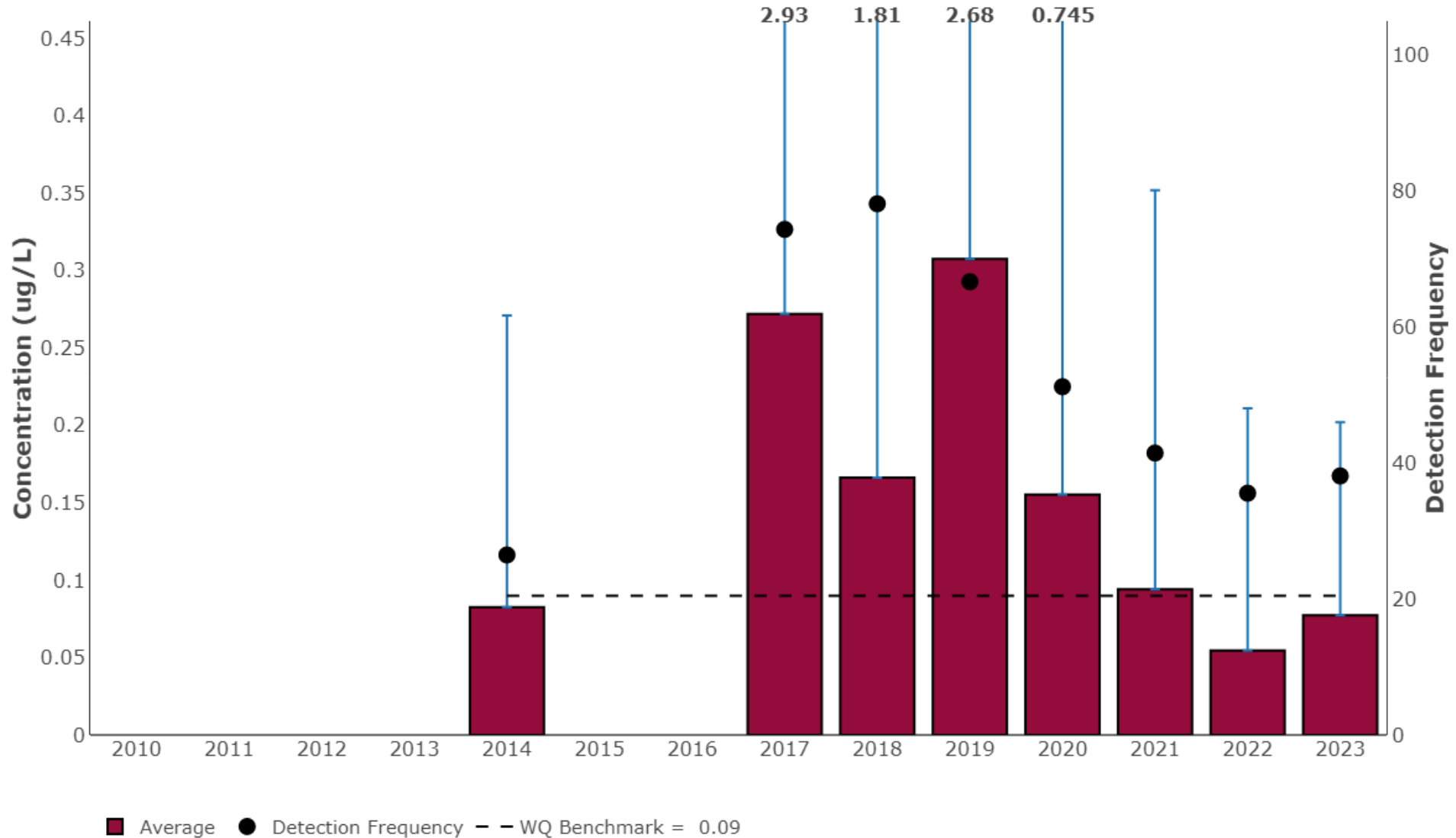
- + Campbell Creek at Hwy. 26
- x Campbell Creek at Mouth (below Pelton Dam Road)
- △ Culver Drain above Pond at Crooked River Campground
- Culver Drain below Crooked River Campground
- ◇ Mud Springs at upstream side of bridge at Gateway, OR
- Rattlesnake Creek at bluff

# Middle Deschutes 2021-2023 Oxyfluorfen

minimum benchmark: 0.33

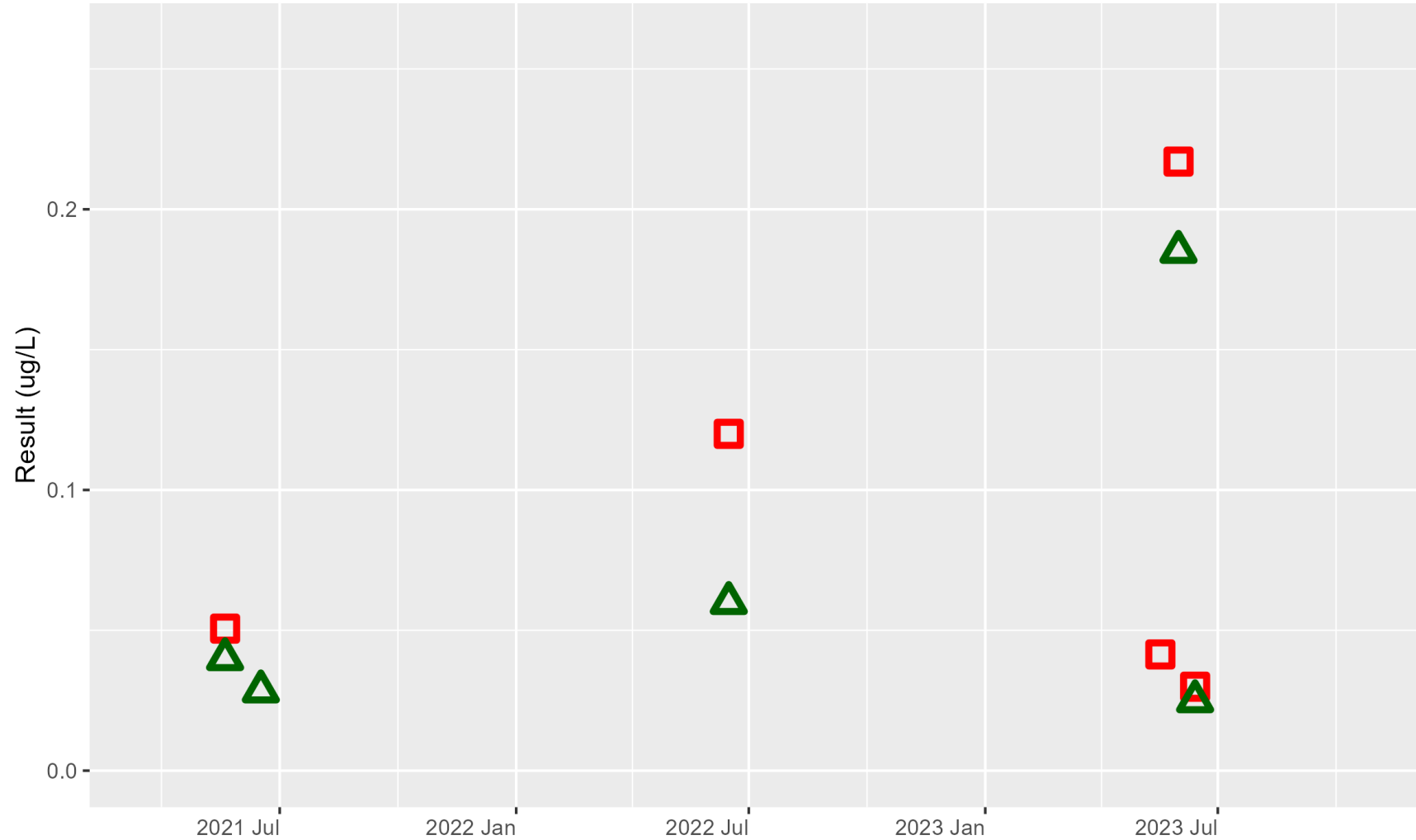



## Middle Deschutes Linuron Average and Maximum Concentration of Detections 2014 - 2023




# Middle Deschutes 2021-2023 Imidacloprid

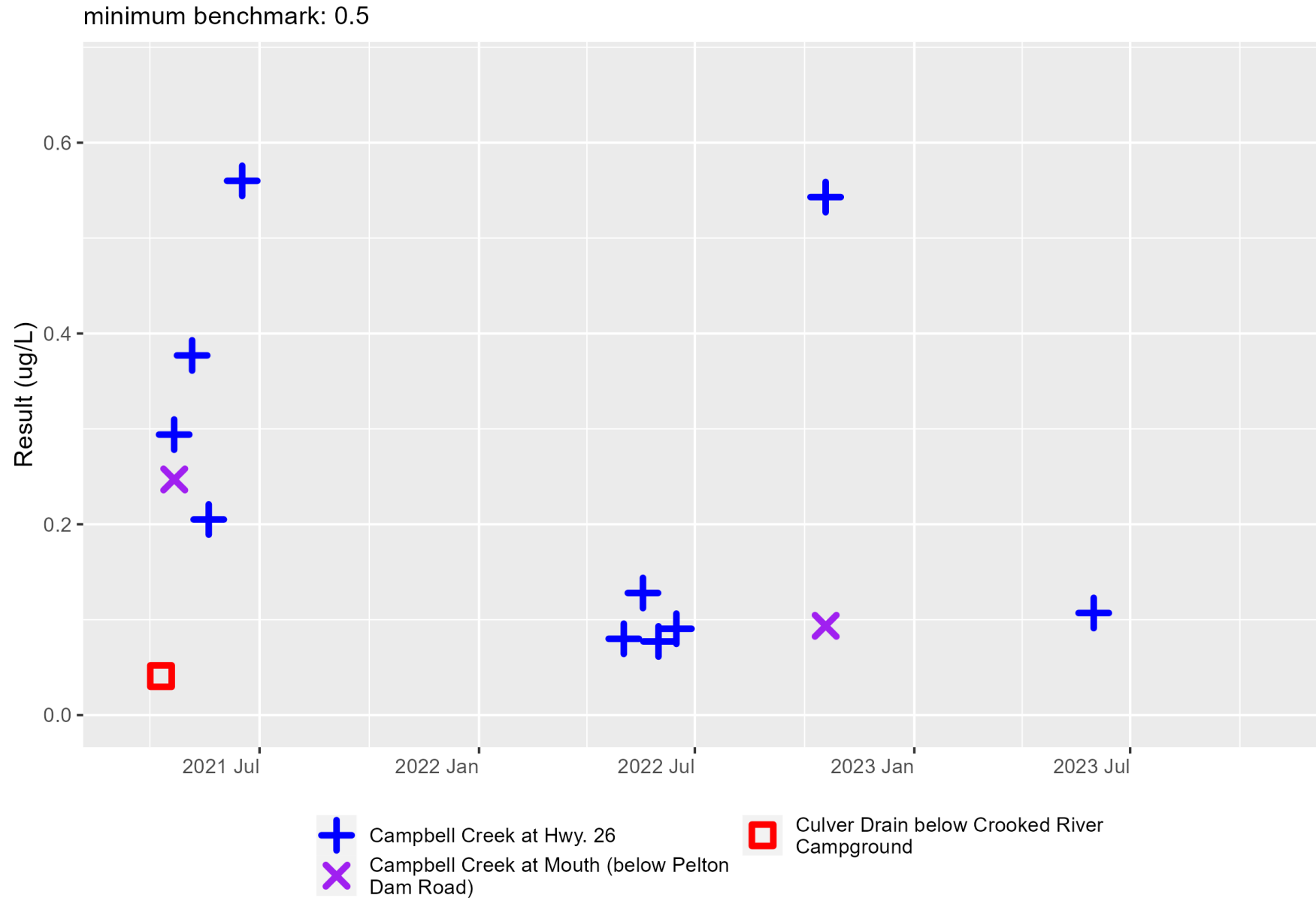
minimum benchmark: 0.01



 Culver Drain above Pond at Crooked River Campground

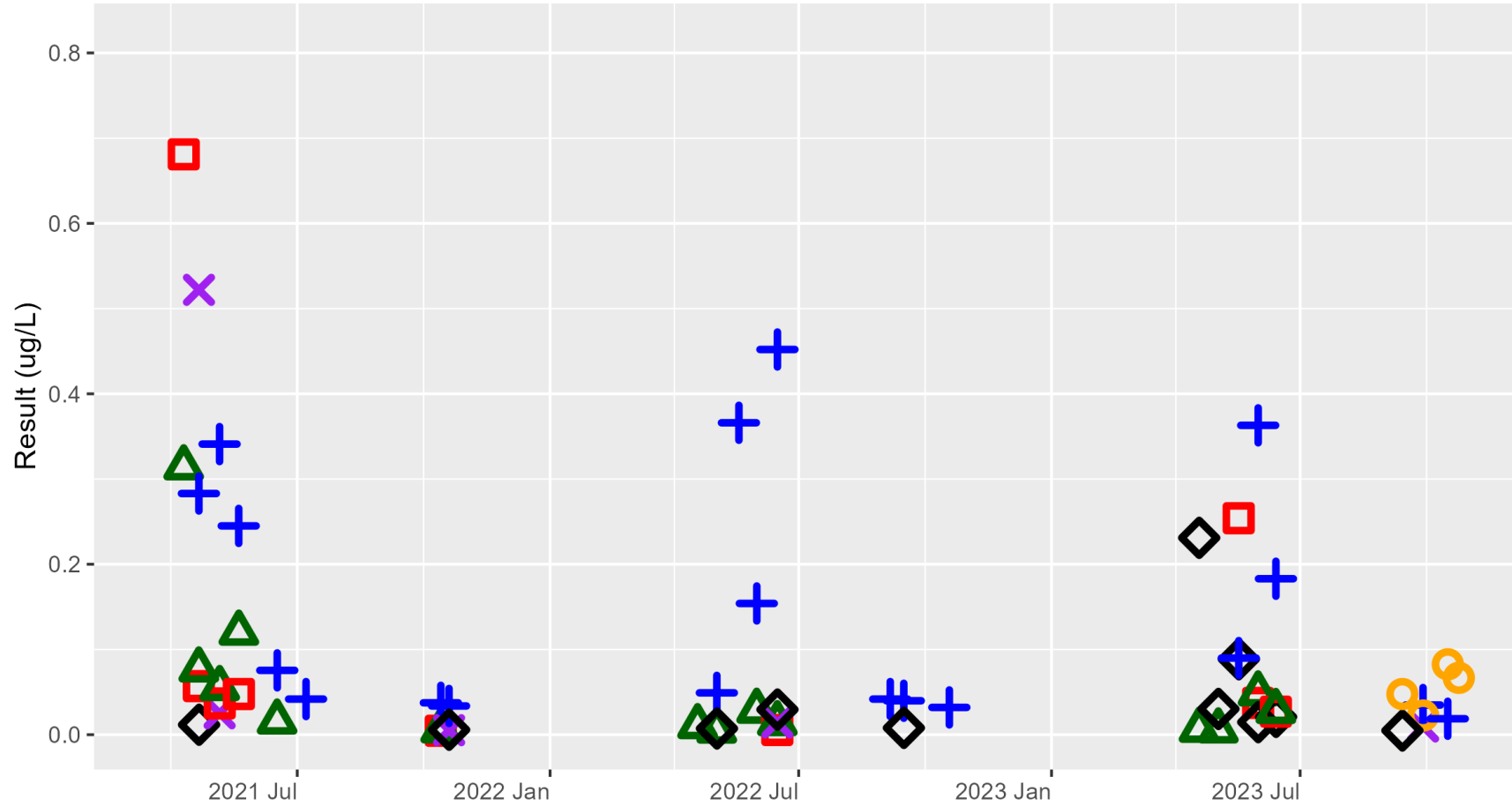
 Culver Drain below Crooked River Campground

# Middle Deschutes 2021-2023 Dimethoate



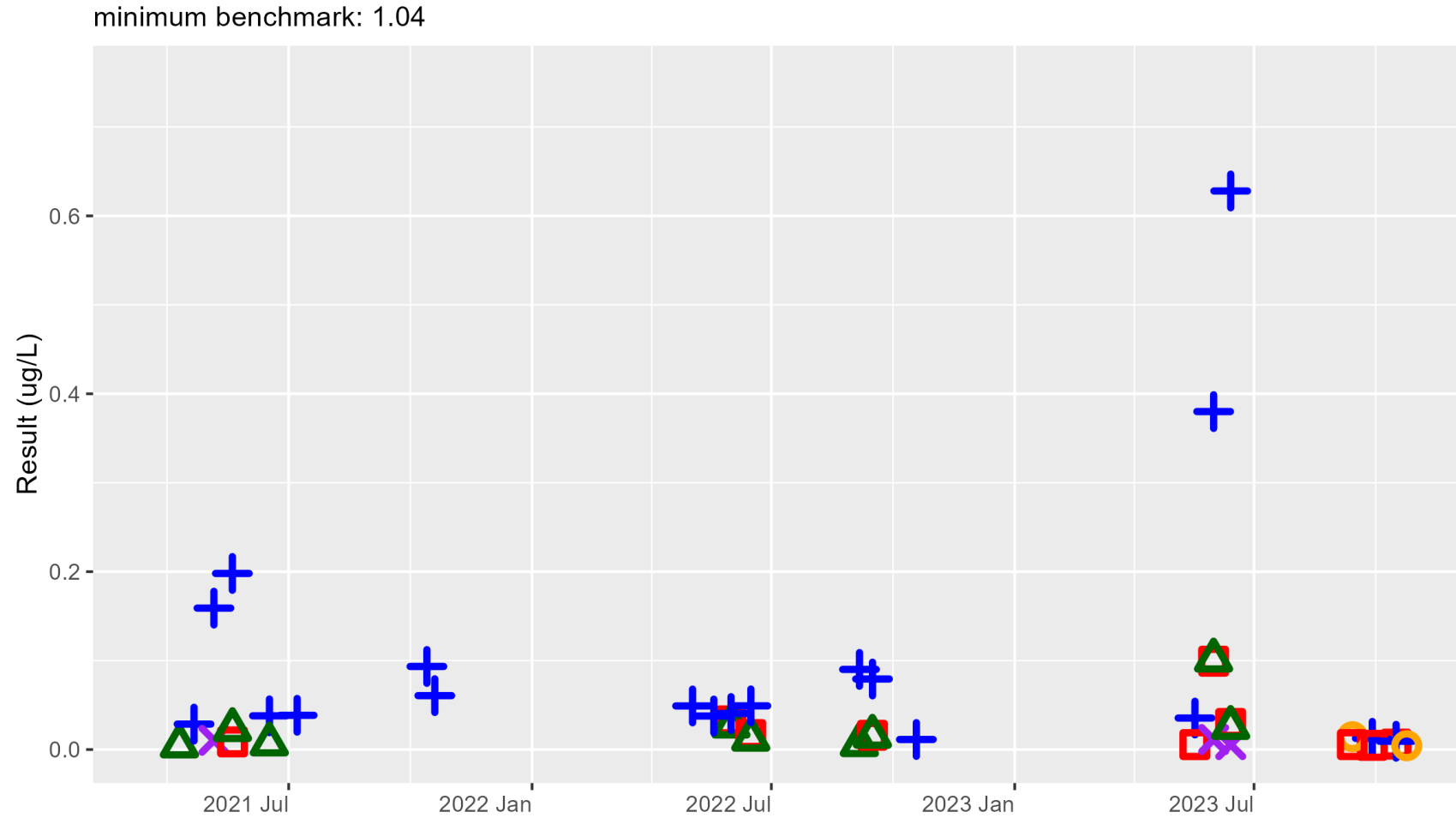
# Middle Deschutes 2021-2023 Diuron

minimum benchmark: 0.13



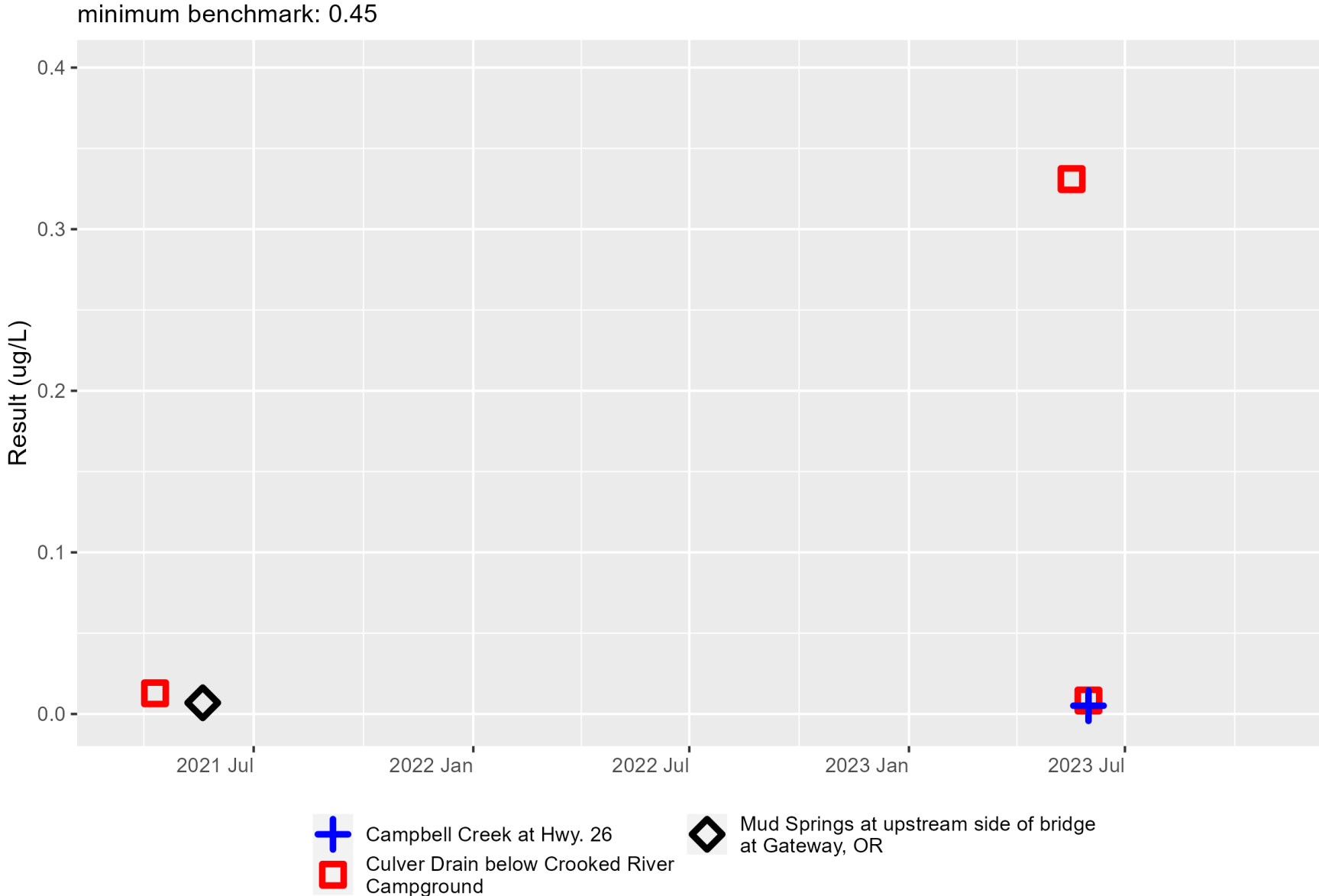
- + Campbell Creek at Hwy. 26
- x Campbell Creek at Mouth (below Pelton Dam Road)
- △ Culver Drain above Pond at Crooked River Campground
- Culver Drain below Crooked River Campground
- ◇ Mud Springs at upstream side of bridge at Gateway, OR
- Rattlesnake Creek at bluff

# Middle Deschutes 2021-2023 Prometryn



- + Campbell Creek at Hwy. 26
- x Campbell Creek at Mouth (below Pelton Dam Road)
- Δ Culver Drain above Pond at Crooked River Campground
- Culver Drain below Crooked River Campground
- Rattlesnake Creek at bluff

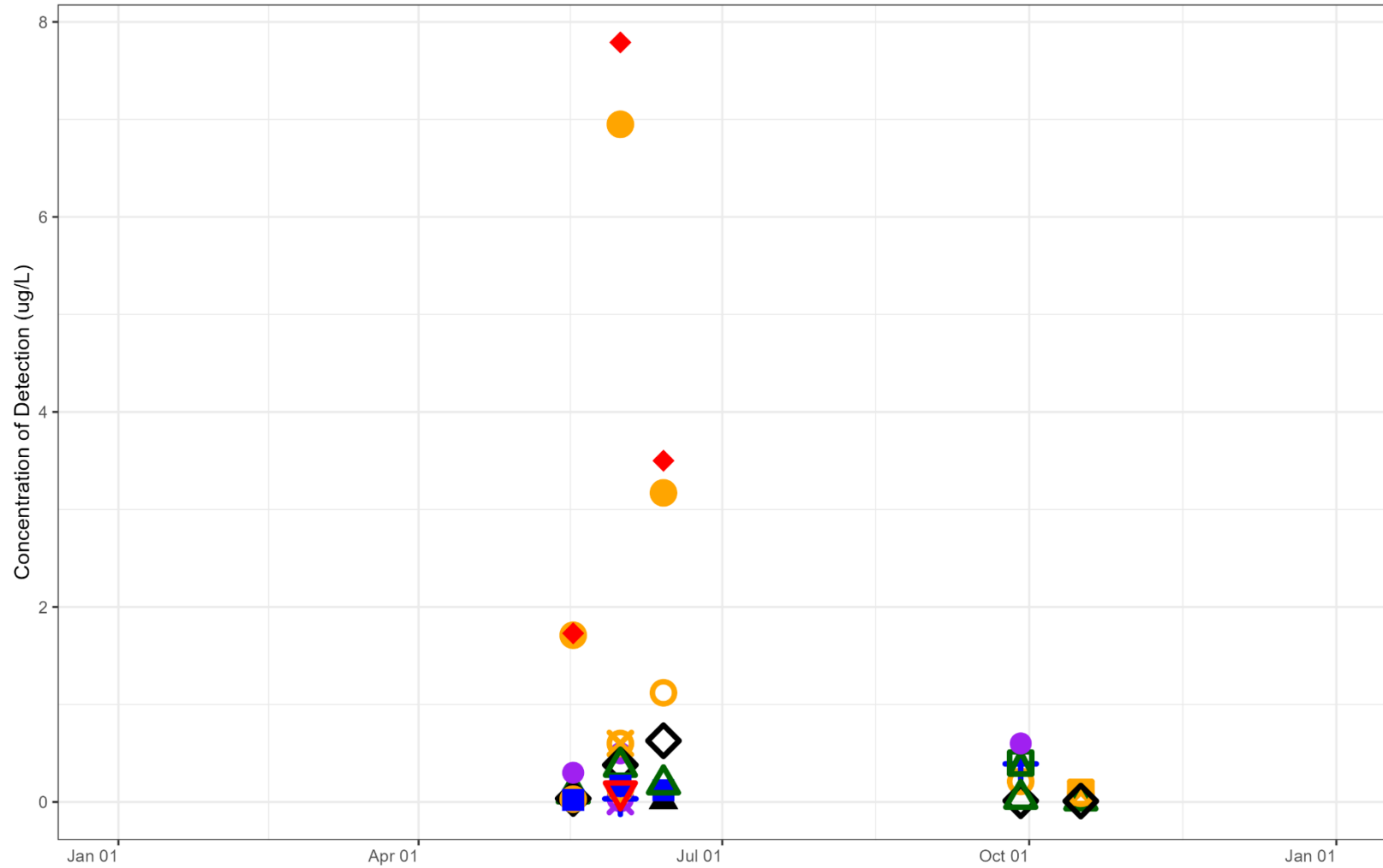
# Middle Deschutes 2021-2023 Sulfometuron methyl



- + Campbell Creek at Hwy. 26
- ◻ Culver Drain below Crooked River Campground
- ◻ Mud Springs at upstream side of bridge at Gateway, OR

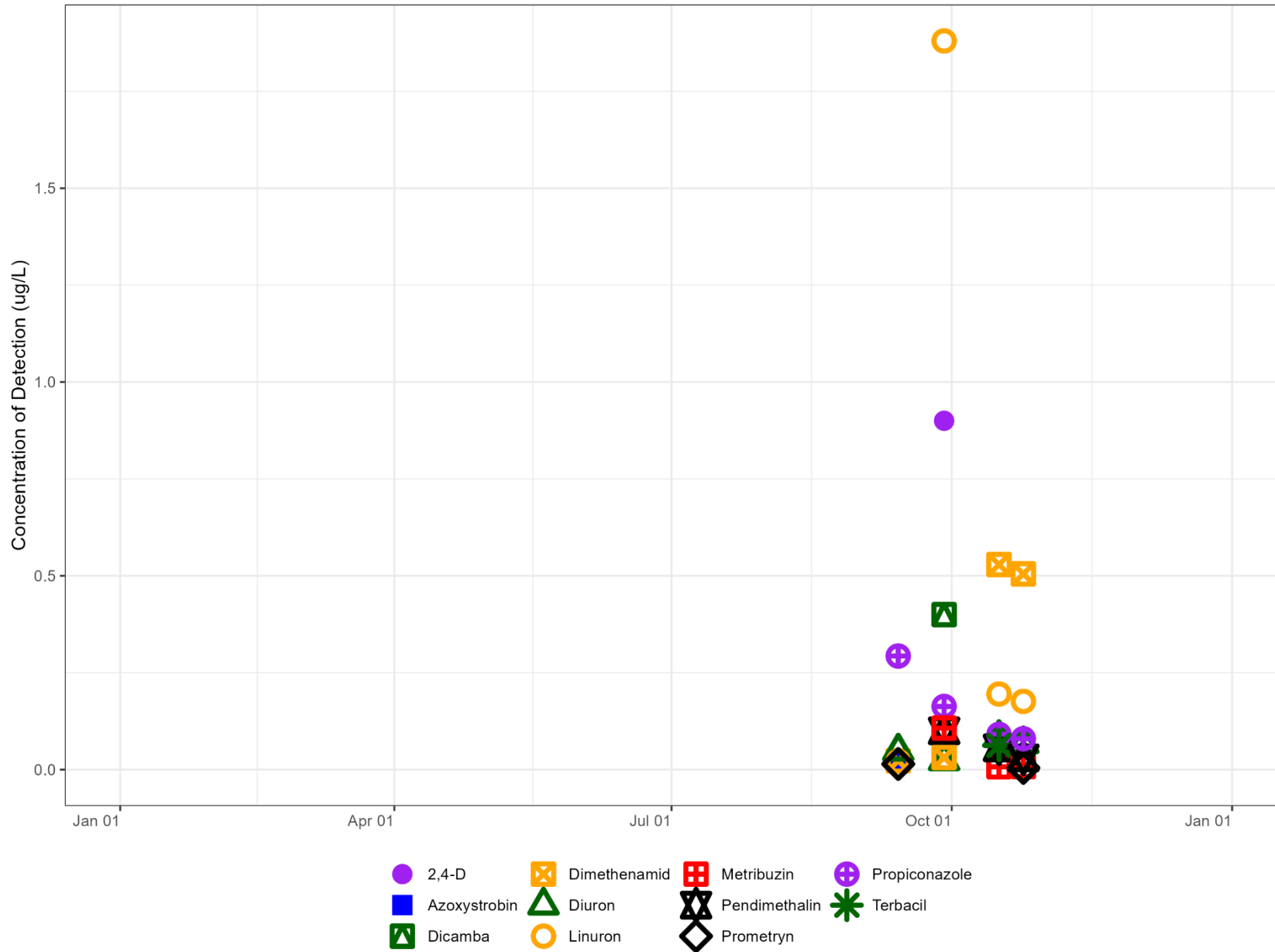


Campbell Creek at Hwy. 26  
2021-2023



- (RS)-AMPA (Aminomethyl phosphonic acid)
- 2,4-D
- 2,4-DB
- Azoxystrobin
- Dicamba
- Dimethenamid
- Dimethoate
- Diuron
- Glyphosate
- Linuron
- Metolachlor
- Oxyfluorfen
- Pendimethalin
- Prometryn
- Propiconazole
- Sulfometuron methyl
- Terbacil

# Rattlesnake Creek at bluff 2023



# 2023 Sample Dates

PSP Name	Sample Date
Middle Deschutes	3/21/2023
Middle Deschutes	4/4/2023
Middle Deschutes	4/18/2023
Middle Deschutes	5/2/2023
Middle Deschutes	5/17/2023
Middle Deschutes	5/31/2023
Middle Deschutes	6/13/2023
Middle Deschutes	9/13/2023
Middle Deschutes	9/28/2023
Middle Deschutes	10/16/2023
Middle Deschutes	10/24/2023