Informing Pesticide Stewardship

MT PSPP's Monitoring of Pesticides in Montana's Waters

Montana Pesticide Stewardship Partnership Program

MT AWRA Conference
October 10, 2025

Chloe Czachor

FLATHEAD LAKE BIO STATION
UNIVERSITY OF MONTANA

Pesticide Stewardship Partnership Program

- A collaborative network in Western Montana working to reduce pesticide pollution in our waters through sustainable best practices.
- The PSPP supports:
  - Water quality monitoring
  - Community education and engagement
  - Activities to improve water quality

Montana Pesticide Stewardship Partnership Program

Meet the Team

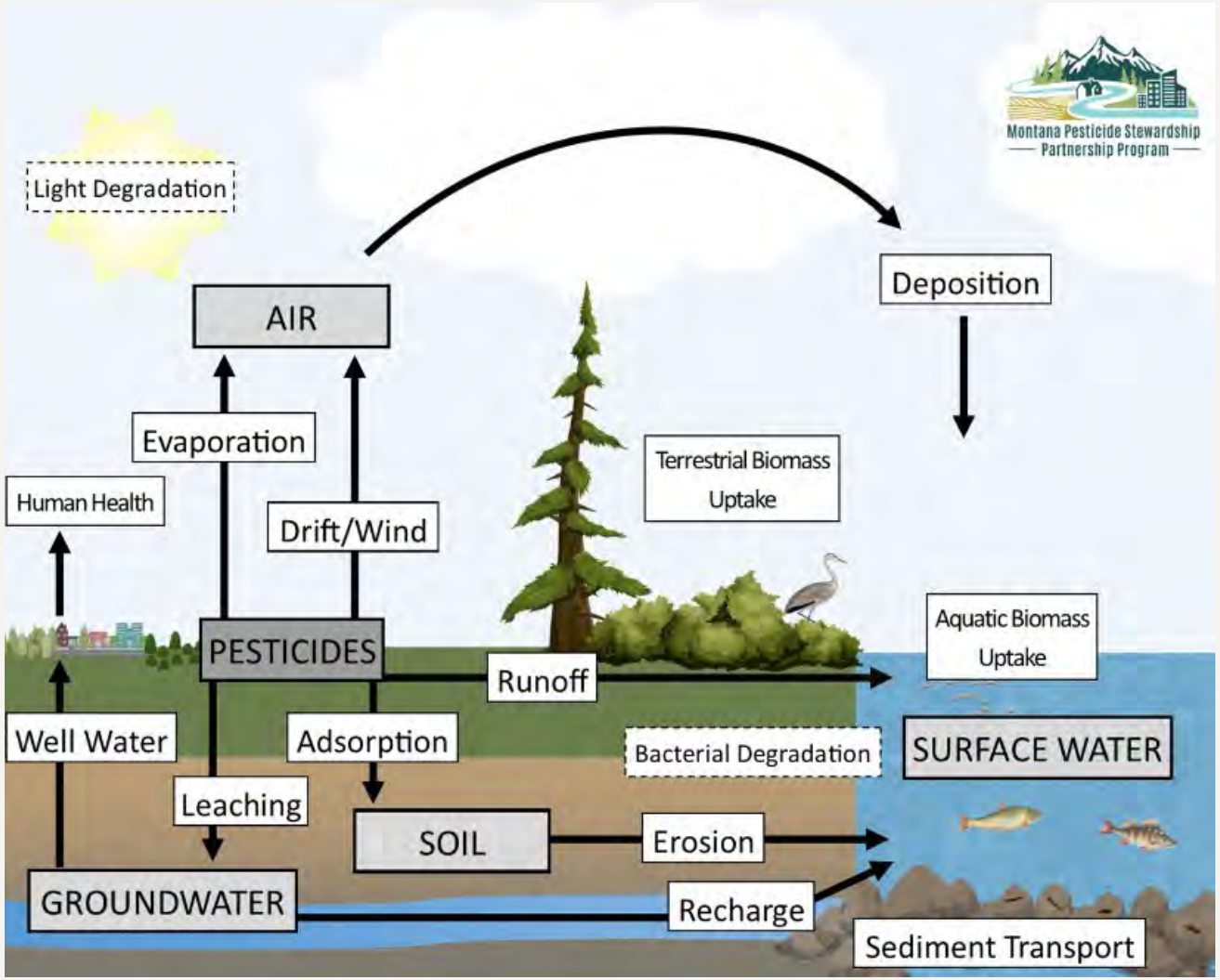
Janelle Groff
Reseach Coordinator

Rachel Malison
Assistant Research Professor
PSPP Principal Investigator

Chloe Czachor
Big Sky Watershed
Corps Member

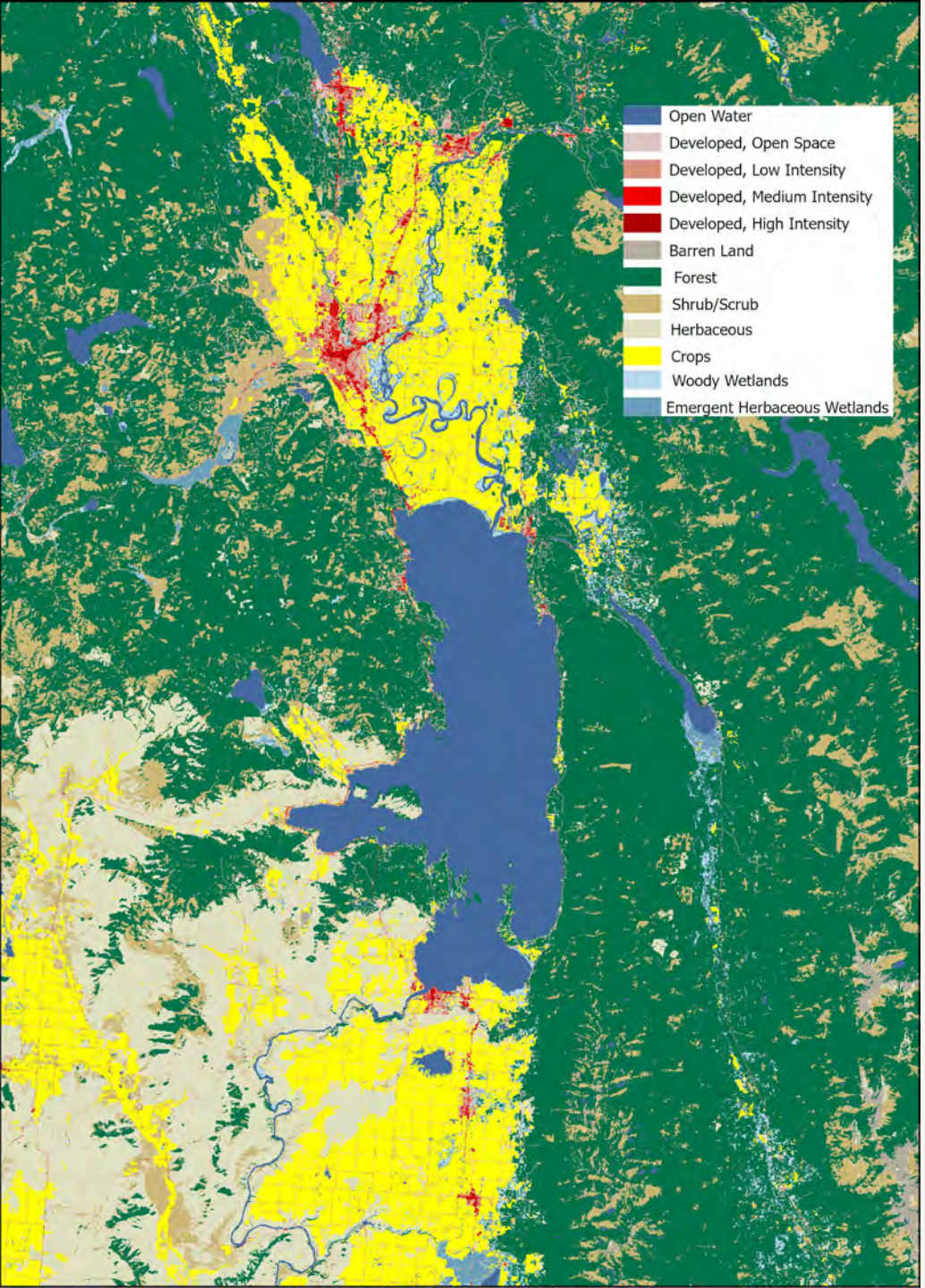
Why monitor?

- Land-water connections
- Emerging contaminants
- Lack of pesticide monitoring in MT



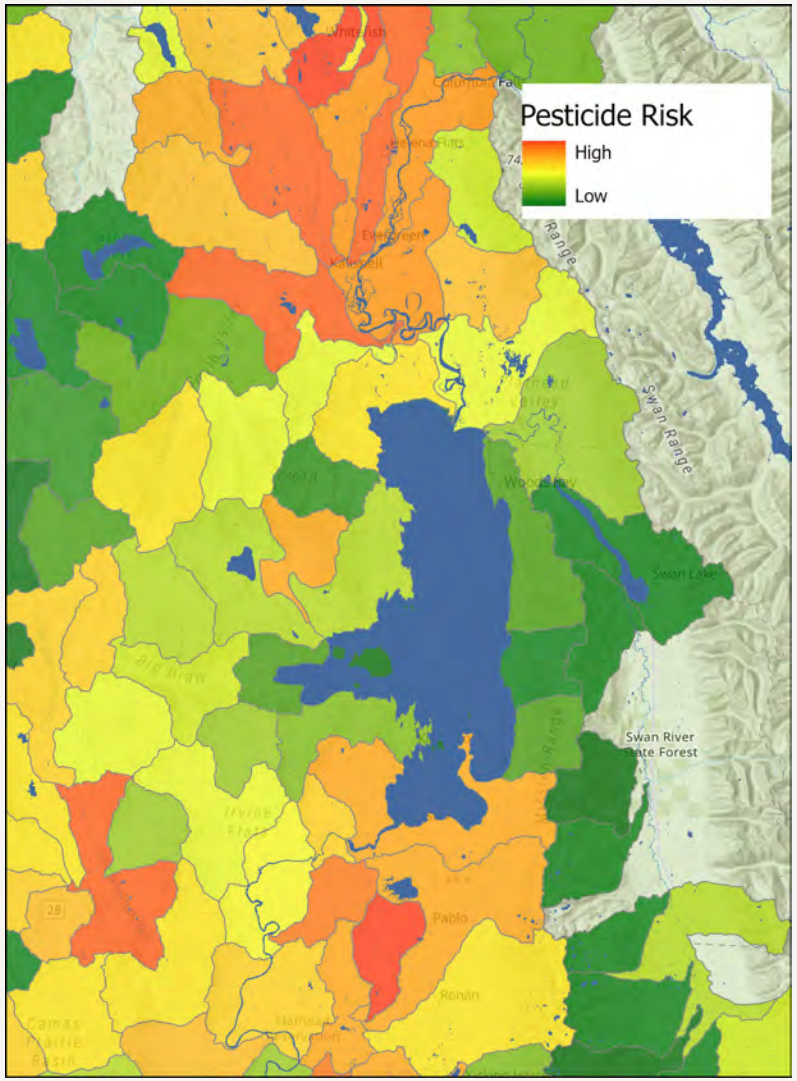
Monitoring Overview

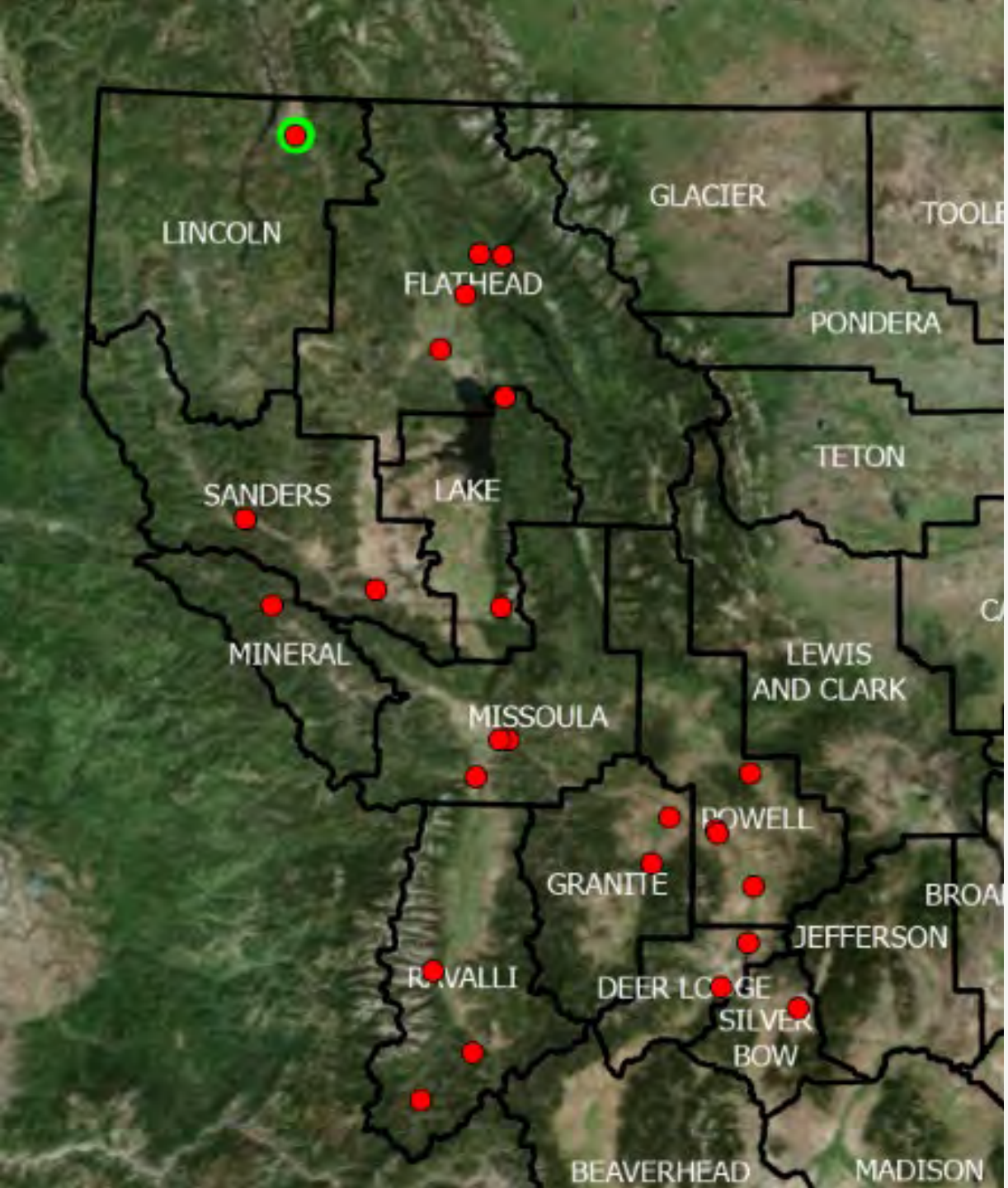
- Types of monitoring
  - Focal
  - Baseline
  - Hotspots
  - Partner inputs
- Timeline
  - 2024: Program development and QAPP
  - 2025: First year of sampling
    - End of April-End of November
  - 2026-2028: Continued sampling through year 5 of implementation grant



Site Selection Framework

- Created by Diane Whited, Research Scientist – GIS/Remote Sensing at FLBS

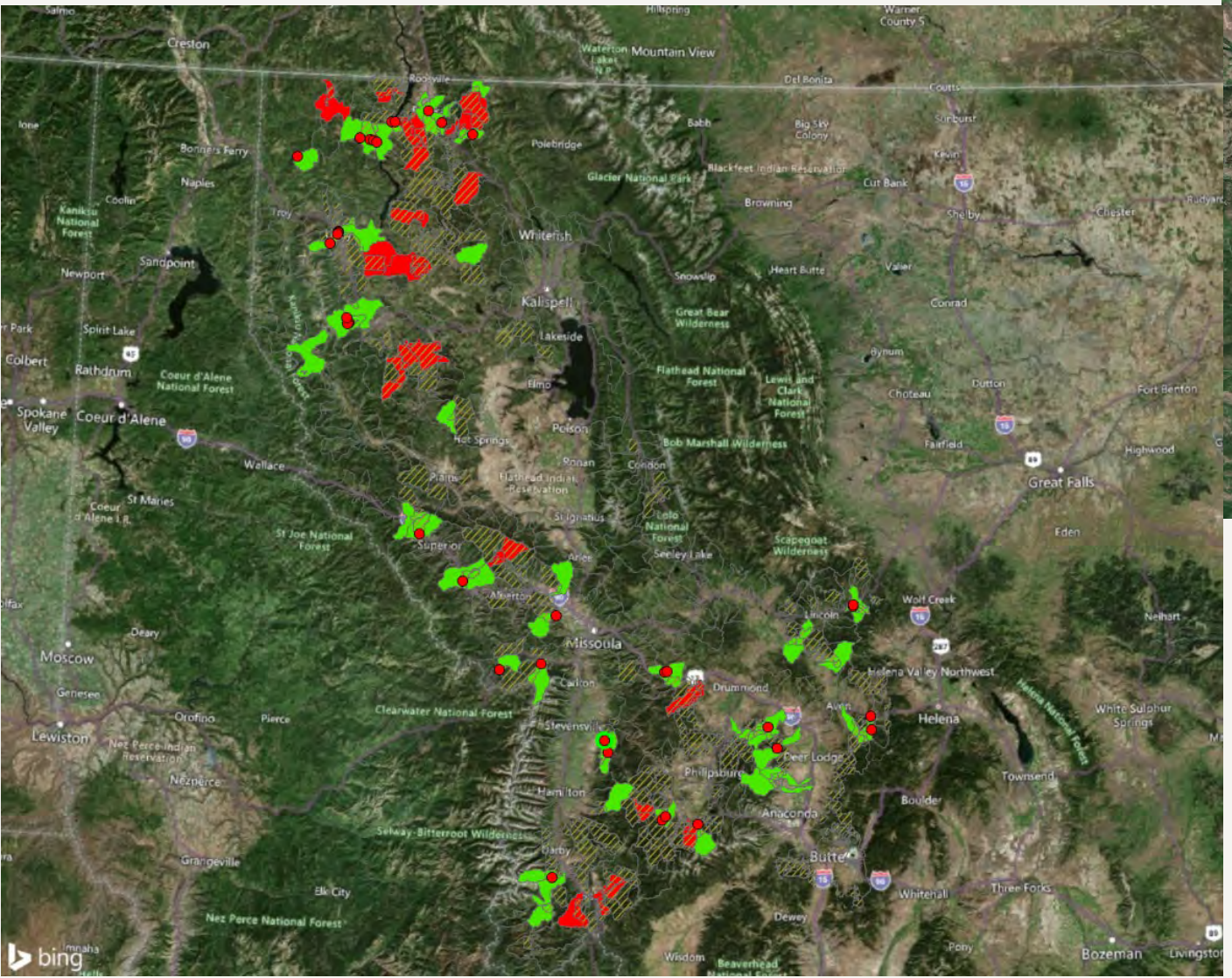


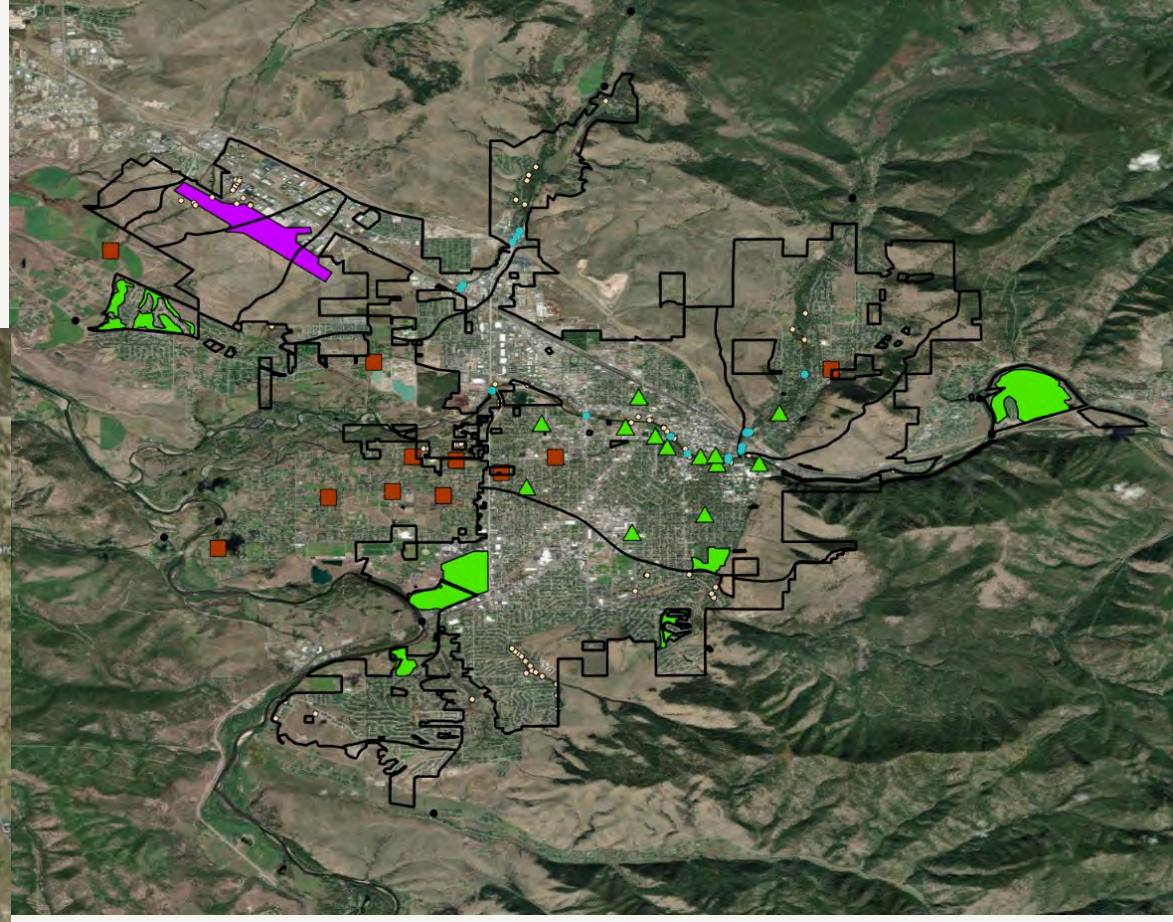


Focal Sites

- 25 gauging stations across 12 counties
- Selected by surrounding land use
  - Forest
  - Agriculture
  - Urban
  - Suburban
  - Mixed
- All sampled monthly, 12 sampled bimonthly
- Sampling at bridges and other public access sites

Baseline Sites





Categories

- Forest
- Agriculture
- Urban/suburban
- Discrete land uses

Field Work

- Collected over 500 samples since the end of April
- Volunteers, other BSWC members, FLBS staff
- Rivers, streams, ponds, wetlands, ditches


PWUF001-20250618


MSUB009-20250621


DLAF001-20250618


RASF001-20250617


MSFB003-20250701

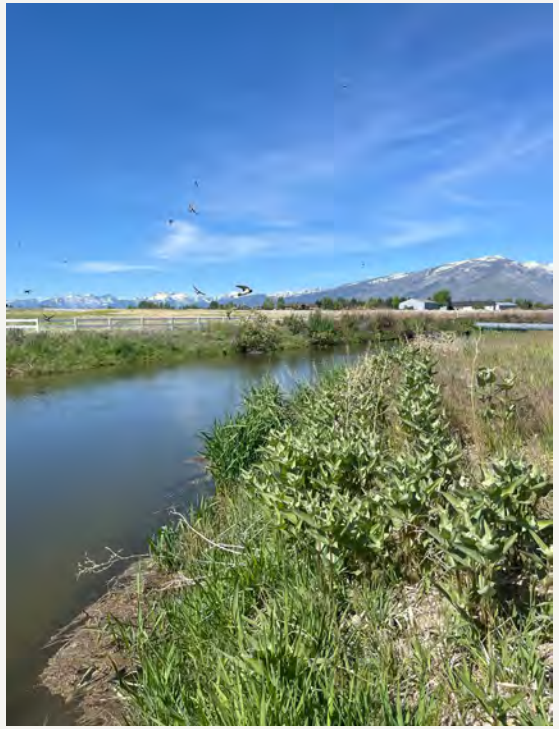

RAFF001-20250617

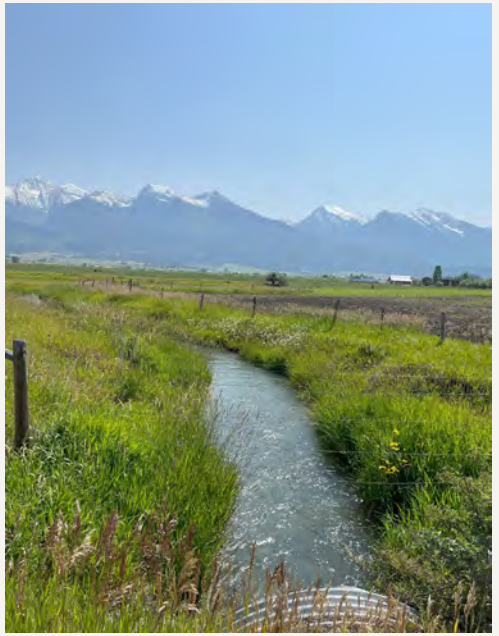

LAAB004-20250621


SBUF001-20250618


LAAB018-20250624


RAMF001-20250617



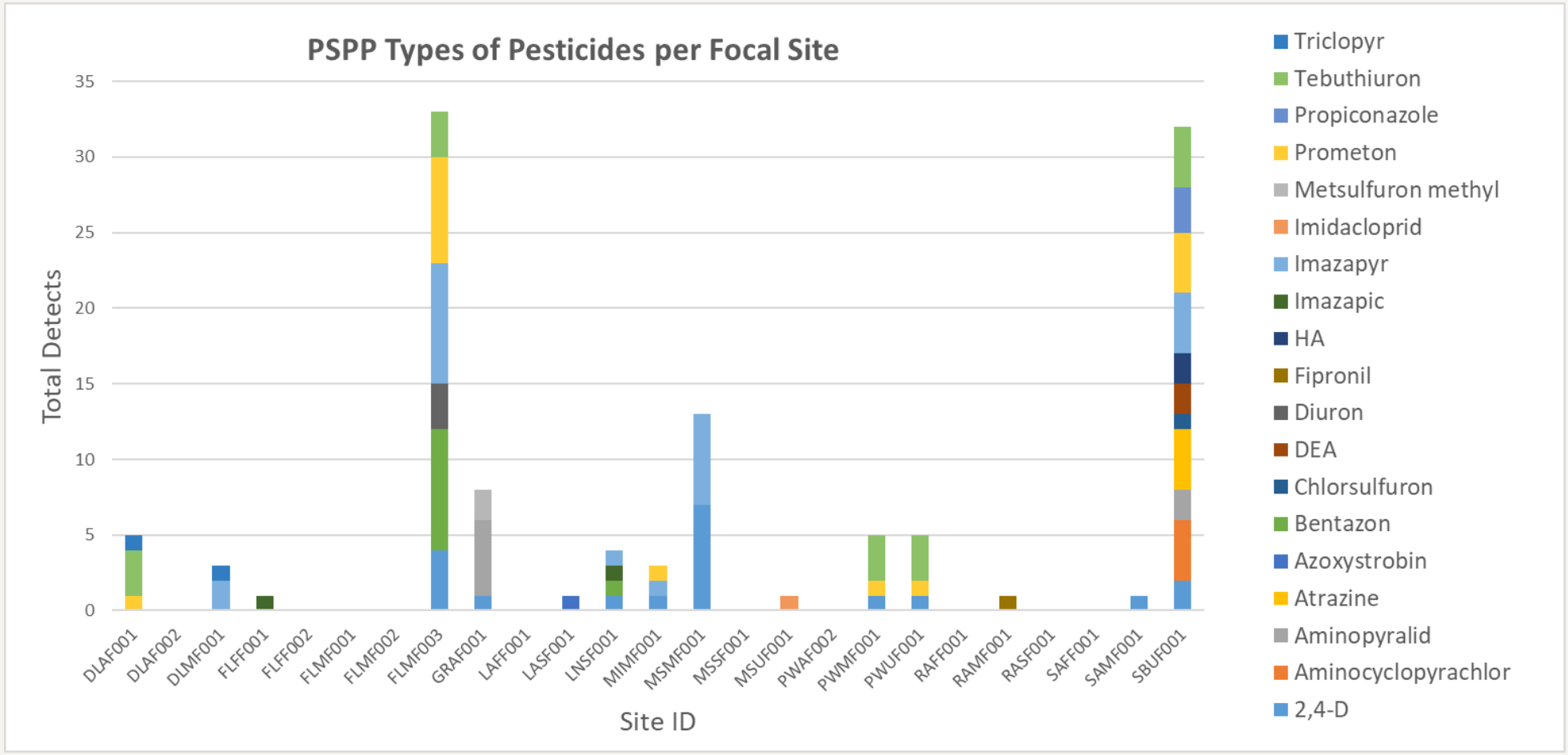


Lab analysis

- Majority of samples to Montana Department of Agriculture Lab on MSU Campus in Bozeman
  - Suite of 103 analytes
- Began sending samples to Anatek Labs mid-September
  - 148 analytes
  - 70 match with MDA
- Delivery to lab and shipping
  - Drive time
  - Broken bottles
    - Foam inserts

So… did we find any pesticides?

Focal Site Detections, April-August



Focal Site Detections, April-August

	April	May	June	July	August
Total Detects	16	28	56	6	10

Pesticide	Total Detects
2,4-D	19
Aminocyclopyrachlor	4
Aminopyralid	7
Atrazine	4
Azoxystrobin	1
Bentazon	9
Chlorsulfuron	1

Pesticide	Total Detects
DEA	2
Diuron	3
Fipronil	1
HA	2
Imazapic	2
Imazapyr	22
Imidacloprid	1

Pesticide	Total Detects
Metsulfuron methyl	2
Prometon	15
Propiconazole	3
Tebuthiuron	16
Triclopyr	2

Focal Site Detections, April-August

Site ID	Total Detects	Unique Detects
DLAF001	5	3
DLMF001	3	2
FLMF003	33	6
GRAF001	8	3
LNSF001	4	4
MIMF001	3	3
MSMF001	13	2
PWMF001	5	3
PWUF001	5	3
SBUF001	32	11

FLMF003

- Bentazon
- Imazapyr
- Prometon

SBUF001

- Atrazine
- Aminocyclopyrachlor
- Prometon
- Tebuthiuron

MSMF001

- 2,4-D
- Imazapyr

Detected Analyte Characteristics

2,4-D
- Herbicide
- Land and water use for broadleaved weeds
- Powder or liquid form
- Water-soluble
- Crop and non-crop uses

Aminocyclopyrachlor
- Herbicide
- Woody weeds
- Some cropland uses
- Lawns and recreational areas

Atrazine
- Herbicide
- Broadleaved weeds and grasses
- Water-soluble
- Used in cropland

Bentazon
- Herbicide
- Post-emergence application
- Used in cropland

Imazapyr
- Herbicide
- Broad range of control for grasses, broadleaved plants, woody weeds, some aquatic spp.
- Non-selective
- Non-cropland

Prometon
- Herbicide
- Broadleaved weeds and grasses
- Non-selective
- Applied pre- or post-emergence
- Non-cropland

Tebuthiuron
- Herbicide
- Broad range of herbaceous, woody, annual and perennial weeds
- Non-cropland

What’s next?

- Finish 2025 sampling end of November
- Data analysis in winter months
  - Inform and support education and outreach
- Updates and changes to next year's sampling
  - Learning as we go!

Education and Outreach

- Encourage community members to think more critically about what they and others are doing on the land and how that affects the water and ecosystem level processes
- Use data and detections to tailor messaging based on land use type and what different audiences would most resonate with
- Induce voluntary behavior change, reduce pesticide pollution in our waters

2025 PSPP Annual Meeting

- October 28-30th at the Flathead Lake Bio Station in Polson, MT
- Registration is open through Tuesday, October 14th
- A gathering of partners, scientists, educators, and community members working together to protect Montana's waters

Questions?

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