



Yakima Basin Science & Management Conference

**Pesticide Monitoring in Streams
the Yakima River Basin**

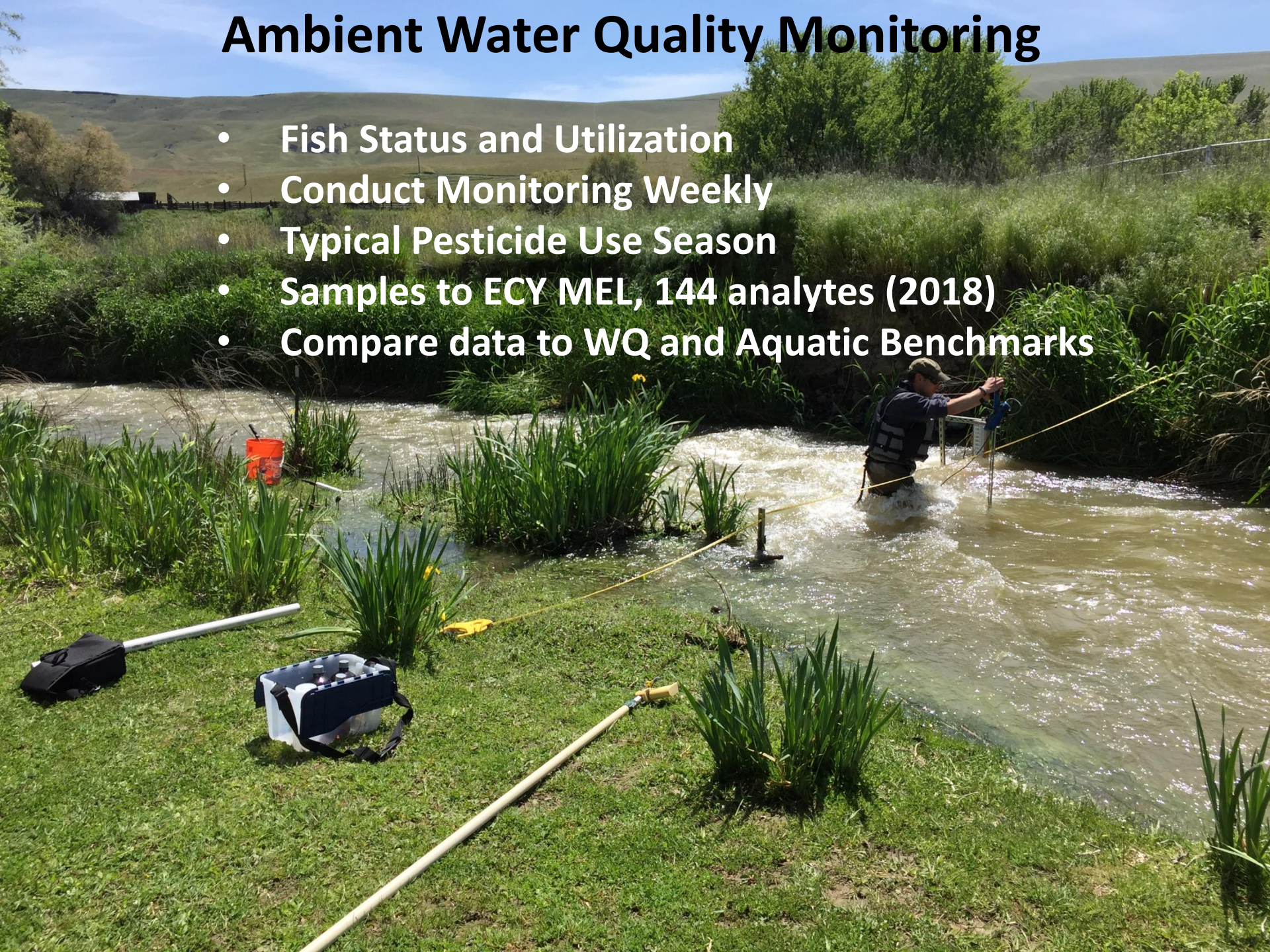
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Natural Resources Assessment Section

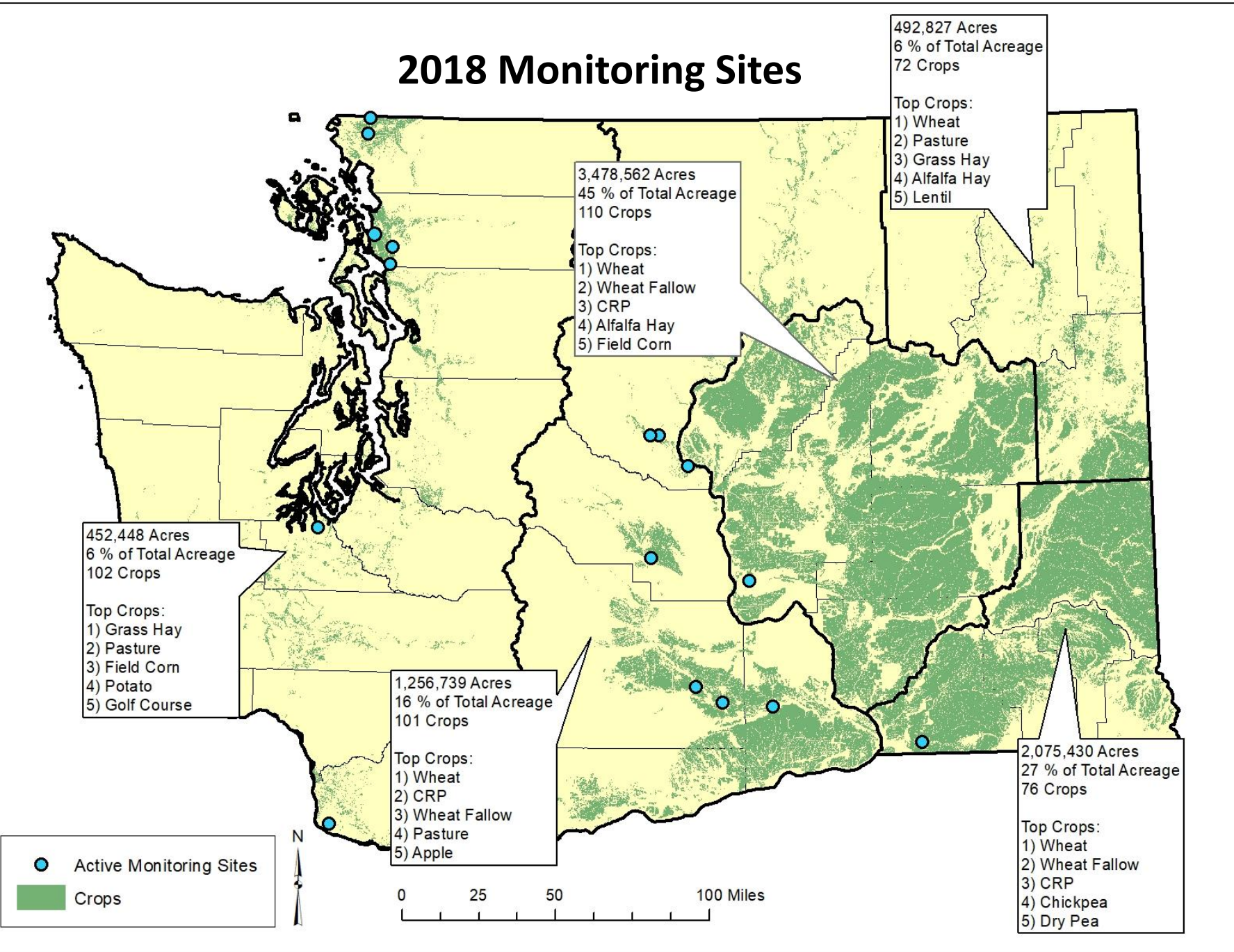
June 13, 2019

Ambient Water Quality Monitoring

- Fish Status and Utilization
- Conduct Monitoring Weekly
- Typical Pesticide Use Season
- Samples to ECY MEL, 144 analytes (2018)
- Compare data to WQ and Aquatic Benchmarks

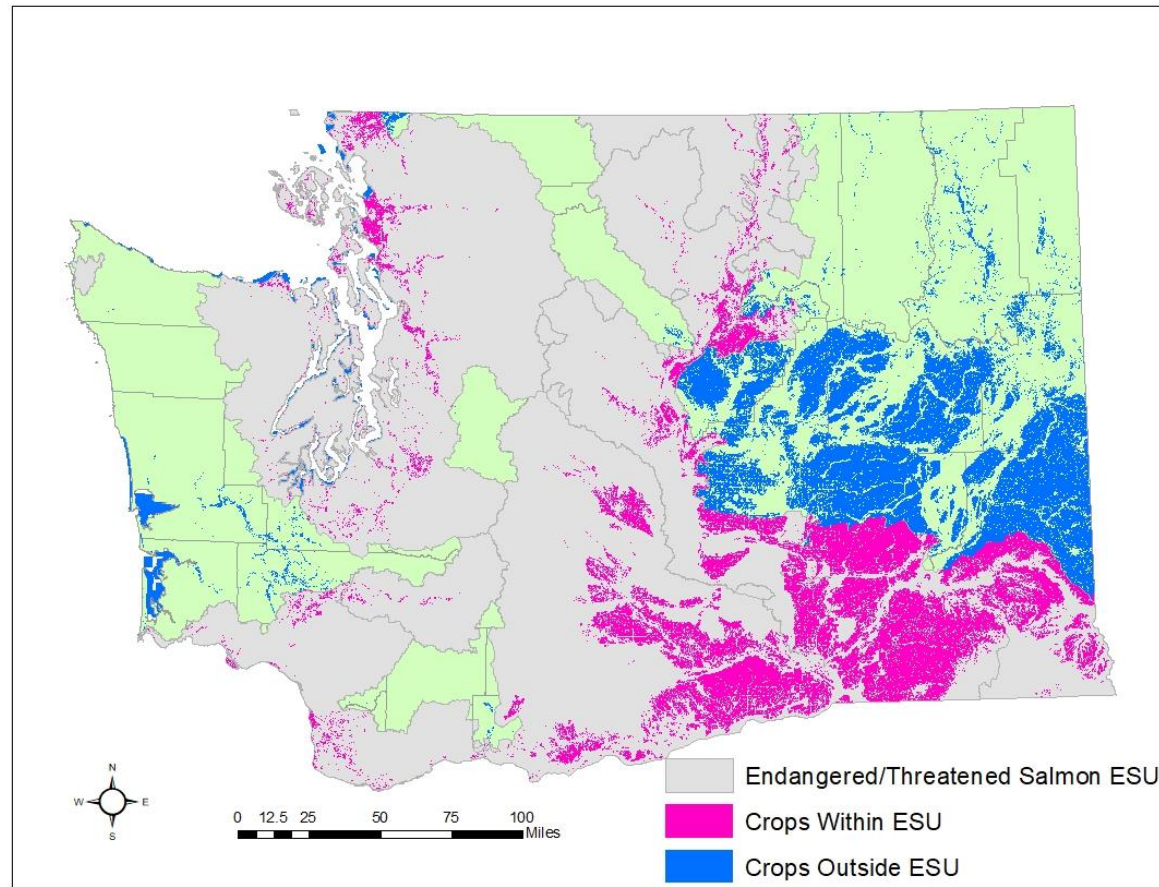


2018 Monitoring Sites



Why do we collect data?

- Assess possible pesticide affects on salmon/habitat
- Share results with federal, state and local partners
- Pesticide use and agricultural practices change
 - Identify trends
 - Compare to modeled estimates

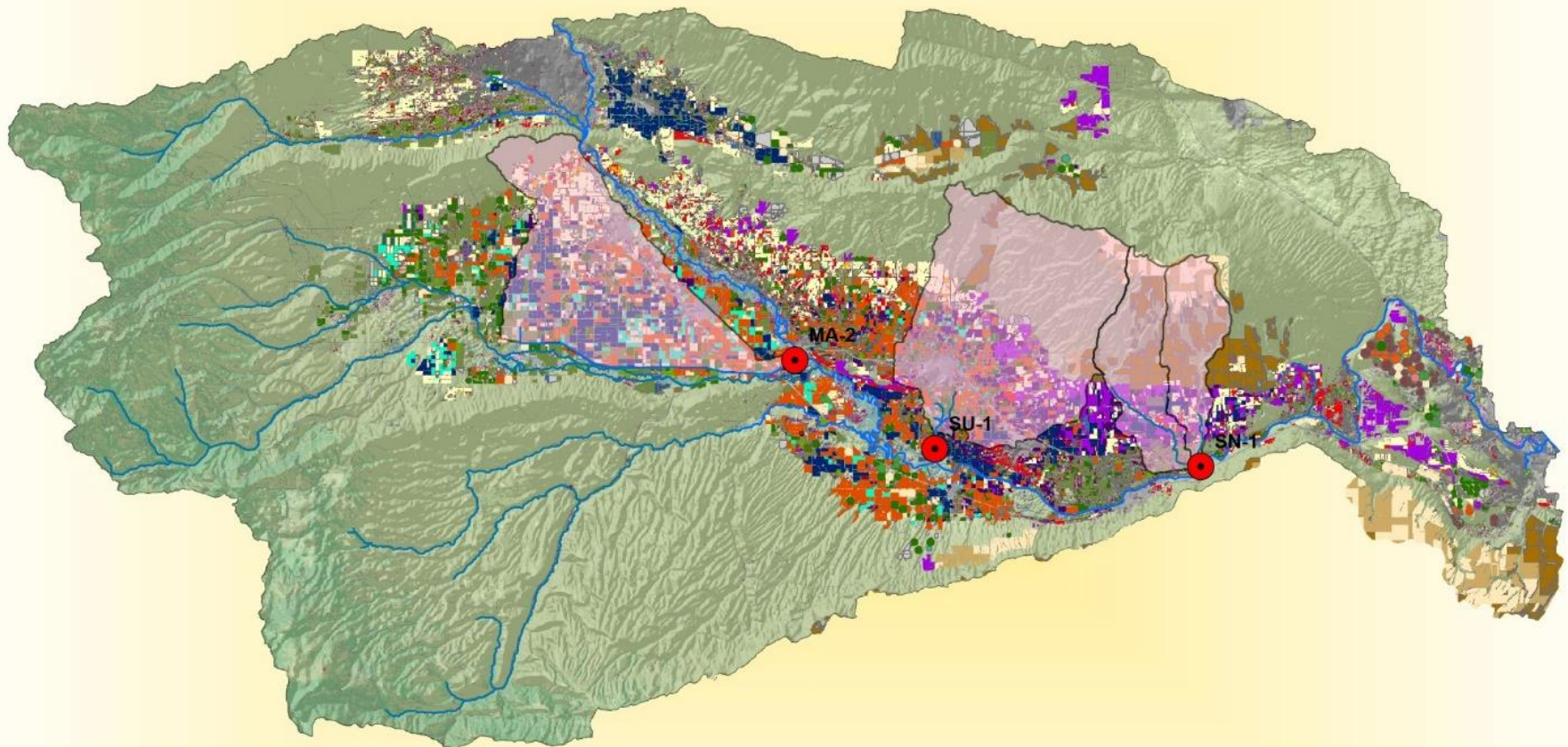




Lower Yakima Sub-Basins

Monitored Watershed	Hydrologic Unit Code (HUC)	County	Watershed Acres	Ag/Urban Acres	Land Use	Years Monitored
Marion Drain*	1703000304	Yakima	82,400	57,200	Agriculture	2003-Present
Sulphur Creek WW	1703000309	Yakima	102,300	41,700	Agriculture	2003-Present
Spring Creek*	170300031005	Benton	28,260	20,800	Agriculture	2003-2015
Snipes Creek	1703000310	Benton	50,300	31,200	Agriculture	2016-Present
Naneum Creek	1703000104	Kittitas	113,859	20,554	Agriculture	2017-Present

* denotes waterbody has had 2 to 3 different monitoring locations at some point during the SWMP history





EPA Aquatic Life LOC (ug/L)			
Fish		Invertebrate	
Acute	Chronic	Acute	Chronic
Chlorpyrifos - OP			
0.9	0.57	0.05	0.04
Malathion - OP			
2.05	8.6	0.049	0.06
Imidacloprid - Neonic			
114,500	9,000	0.385	0.01
Clothionidin - Neonic			
>50,750	9,700	11.0	0.05



Naneum Creek - 2018

Number of Chemicals Detected During Season= 28					
Maximum # of Detections at Once = 20					
Chemical	Exceedances	Detections	Dates of Exceedance(s)	Min (ug/L)	Max (ug/L)
Naneum Creek					
4,4'-DDD	1	1	July 17 only		0.001
Mostly Herbicides are detected and below LOC (including plant LOCs)					



Marion Drain - 2018

Number of Chemicals Detected During Season= 47

Maximum # of Detections at Once = 26

Chemical	Exceedances	Detections	Dates of Exceedance(s)	Min (ug/L)	Max (ug/L)
Marion Drain					
Chlorpyrifos	1	15	April 2 only	0.002	0.027
Clothionidin	9	29	Mar 21, 26, June 18, 25, Jul 10, 16, Oct 22, 29 Nov 5	0.008	0.036
Imidacloprid	2	2	June 11, Sept 4	0.005	0.008

Chlorpyrifos – EPA Aquatic LOC (ug/L)	
Invertebrates	
Acute	Chronic
0.05	0.04

Clothionidin– EPA Aquatic LOC (ug/L)	
Invertebrates	
Acute	Chronic
11.0	0.05



Sulphur Creek WW - 2018

Number of Chemicals Detected During Season= 42

Maximum # of Detections at Once = 27

Chemical	Exceedances	Detections	Dates of Exceedance(s)	Min (ug/L)	Max (ug/L)
Sulphur Creek WW					
Chlorpyrifos	3	9	Mar 21, April 2, 10	0.002	0.112
Imidacloprid	2	2	June 25, July 16	0.005	0.006

Chlorpyrifos – EPA Aquatic LOC (ug/L)	
Invertebrates	
Acute	Chronic
0.05	0.04



Snipes Creek - 2018

Number of Chemicals Detected During Season= 37

Maximum # of Detections at Once = 23

Chemical	Exceedances	Detections	Dates of Exceedance(s)	Min (ug/L)	Max (ug/L)
Snipes Creek					
Chlorpyrifos	8	13	Mar 21, 26, Apr 2, 10, 16, 24, June 4, 11	0.002	0.887
Imidacloprid	6	6	May 29, June 4, 11, 18, Aug 7, 13	0.007	0.228
Malathion	1	1	June 18 only		0.216

Chlorpyrifos – EPA Aquatic LOC (ug/L)			
Fish		Invertebrates	
Acute	Chronic	Acute	Chronic
0.9	0.57	0.05	0.04

Imidacloprid– EPA Aquatic LOC (ug/L)	
Invertebrates	
Acute	Chronic
0.385	0.01

Malathion– EPA Aquatic LOC (ug/L)	
Invertebrates	
Acute	Chronic
0.049	0.06



Marion Drain – Fall Sampling





Marion Drain - sample during fall chinook spawn - detections

MARION DRAIN 2 (MA-2), 2016 - Freshwater Criteria (pesticides in ug/L, TSS in mg/L)			
Month		Oct	Nov
Day of the Month	Use	31	7
Chlorantraniliprole	I	0.008	0.007
Clothianidin	I-N	0.032	0.031
Dacthal (DCPA)	H	0.049	
Monuron	H	0.003	
Pentachlorophenol	WP	0.027	0.026
Sodium Bentazon	H	0.079	0.082
Thiamethoxam	I-N	0.053	0.038
Triazine DEA degradate	D-H	0.009	0.010
Total Suspended Solids	N/A	11.0	10.0

MARION DRAIN 2 (MA-2), 2017 - Freshwater Criteria (pesticides in ug/L, TSS in mg/L)				
Month		Oct		Nov
Day of the Month	Use	23	30	7
Chlorantraniliprole	I		0.006	
Clothianidin	I-N	0.040	0.036	0.050
Sodium Bentazon	H		0.063	
Thiamethoxam	I-N	0.018	0.018	0.028
Total Suspended Solids	N/A	7.0	5.0	5.0

3 sampling events in 2018 – lower detection limits may reveal an even more diverse mixture



Marion Drain 2 (MA-2), 2018 - Freshwater Criteria (pesticides in ug/L)

Month		Oct		Nov
Day of the Month	Use	22	29	5
4,4'-DDD	D-OC		0.002	
Atrazine	H	0.005	0.005	0.005
Boscalid	F	0.006	0.006	0.005
Chlorantraniliprole	I	0.015	0.012	0.011
Clothianidin	I-N	0.033	0.033	0.032
Diuron	H			0.003
Ethoprop	I-OP		0.002	0.066
Fenarimol	F		0.008	
Fludioxonil	F	0.013	0.006	0.004
Hexazinone	H	0.003	0.004	0.003
N,N-Diethyl-m-toluamide (DEET)	IR	0.002	0.002	
Norflurazon	H	0.007	0.007	0.007
Pendimethalin	H	0.004		
Prometon	H	0.004	0.004	0.004
Simazine	H	0.005	0.006	0.005
Sodium Bentazon	H	0.012		0.013
Sulfentrazone	H	0.006	0.006	0.003
Terbacil	H	0.014	0.008	0.011
Thiamethoxam	I-N	0.05	0.047	0.04
Triadimefon	F		0.003	
Triazine DEA degradate	D-H	0.006		0.007

2018 Late Sampling



Thank you to:

- Roza-Sunnyside Irrigation Districts
 - Elaine Brouillard
 - Forrest Chapin
- Yakama Nation
 - Joe Herrera
 - Melinda Davis
- Kittitas County Water Purveyors
 - Kat Satnick



Thank you - Questions?

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Outreach to Pesticide Applicators

Be Informed:

- Read & follow the label
- Weather forecast
- Review WSDA POC's

Care for Equipment:

- Calibrate, maintain, inspect
- Properly dispose of pesticides

WastePesticide@agr.wa.gov

Environmental Hazards

This pesticide is toxic to fish, aquatic invertebrates, small mammals and birds. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment washwaters or rinsate. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.



Trade Name Examples

DuraGuard[®] ME

Microencapsulated Insecticide

Liquid Concentrate

ACTIVE INGREDIENT:	
Chlorpyrifos	20.0%
OTHER INGREDIENTS:	80.0%
TOTAL:	100.0%

EPA Reg. No. 499-367

EPA Est. No. 7969-M0-1

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

Chlorpyrifos

Imidacloprid

ACTIVE INGREDIENT:
Imidacloprid, 1-[(6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolodimimine 42.4%

INERT INGREDIENTS: 57.2%

TOTAL: 100.0%

Contains 4.38 pounds of imidacloprid per gallon, or 526 grams AI/liter. Shake well before using.
EPA Reg. No. 432-1449

ACTIVE INGREDIENT:
Imidacloprid, 1-[(6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolodimimine 48.7%

OTHER INGREDIENTS: 51.3%

TOTAL: 100.0%

EPA Reg. No. 264-968

ACTIVE INGREDIENT:
Imidacloprid, 1-[(6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolodimimine 42.8%

OTHER INGREDIENTS: 57.2%

TOTAL: 100.0%

EPA Reg. No. 264-827

Contains 4.6 pounds of active ingredient per gallon or 550 grams AI/liter.

SHAKE WELL BEFORE USING

ACTIVE INGREDIENT:
Imidacloprid, 1-[(6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolodimimine 60.0%

OTHER INGREDIENTS: 40.0%

TOTAL: 100.0%

Keep water soluble packets in this container and store in a cool dry place but not below freezing (32°F). Do Not Remove Packets From Container Except For Immediate Use.
EPA Reg. No. 432-1361-59807 EPA Est. indicated by second and third digits of the batch number on this package.
(98) = 33967-NJ-1 (85) = 065387-AR-002

**STOP - READ THE LABEL BEFORE USE
KEEP OUT OF REACH OF CHILDREN
CAUTION**

PRECAUCION AL USUARIO: Si usted no puede leer o entender inglés, no use este producto hasta que la etiqueta le haya sido explicada ampliamente. (TO THE USER: If you cannot read or understand English, do not use this product until the label has been fully explained to you.)

See inside booklet for First Aid and Directions for Use.

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