

Pesticide Stewardship Partnership

Mid-Coast Water Planning Partnership

Toledo Fire Hall

January 9th 2020

Pesticide Stewardship Partnership

Background

The program began in 1999 in the Hood River area as a collaborative to address pesticide and water quality concerns, and then expanded to other parts of the state

The Partnership utilizes local expertise combined with water quality sampling results to evaluate reasons for pesticide occurrences and recommend potential solutions to address those occurrences

The Partnership and the State Water Quality Pesticide Management Plan (WQPMP) activities are overseen by the Water Quality Pesticide Management Team

Goal: promote voluntary changes in pesticide use practices that improve water quality, thereby eliminating the need for regulatory based actions to address water quality concerns.

Pesticide Stewardship Partnership

Background

The Pesticide Stewardship Partnership is overseen by the Water Quality Pesticide Management Team (WQPMT)

The WQPMT consists of five agencies and Oregon State University:

Oregon Department of Agriculture (Chair) (5 members)
Oregon Department of Environmental Quality (3 members)
Oregon Department of Forestry (1 Member)
Oregon Health Authority (1 Member)
Oregon Watershed Enhancement Board (1 Member)
Oregon State University (1 Member)

Decisions are made with each agency receiving 1 vote
Final decisions are unanimous

Pesticide Stewardship Partnership

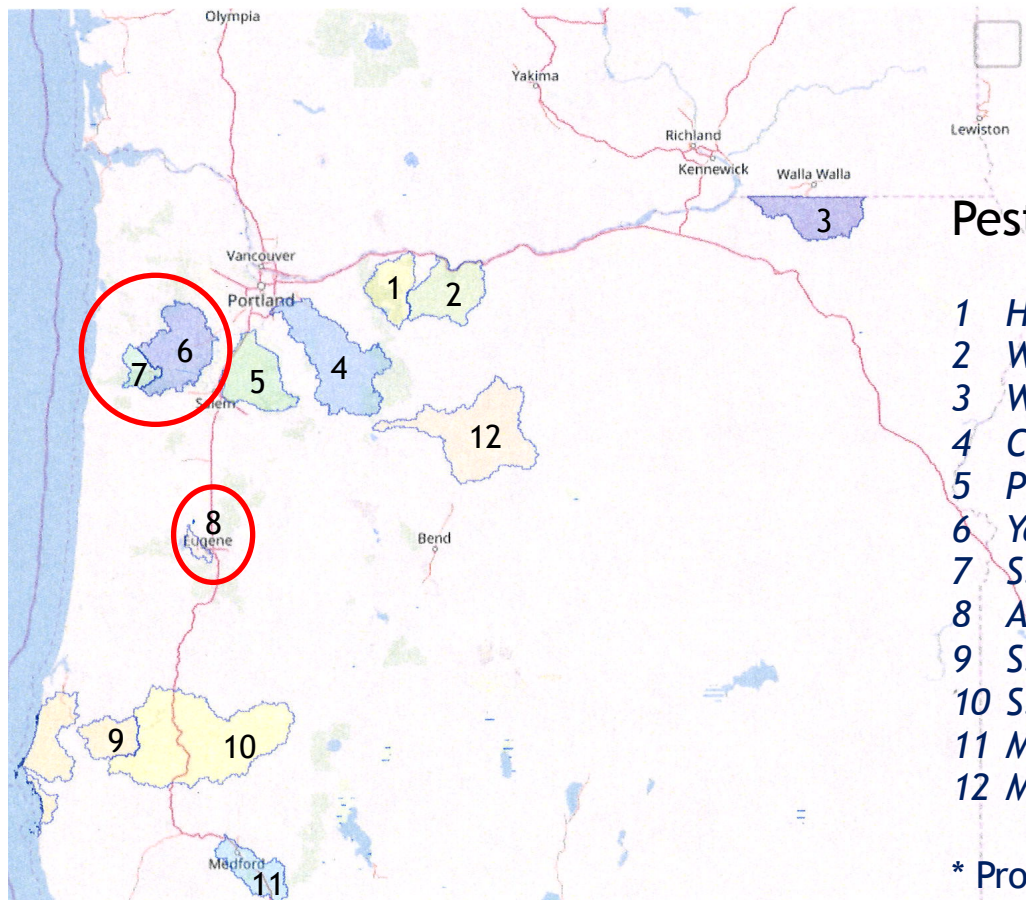
WQPMT Activities

Through the implementation of this WQPMP, the agencies have agreed to coordinate and facilitate support of the following Pesticide Stewardship Partnership related activities:

- ❖ Develop a process for annually identifying and tracking POC's and POI's
- ❖ Prioritize geographic areas for protection based on watershed vulnerability
- ❖ Support pesticide monitoring efforts
- ❖ Identify water quality benchmarks for “high risk” water contaminants
- ❖ Based on water quality data discuss and recommend possible management measures per the response outlined in the WQPMP
- ❖ Develop a joint communication strategy
- ❖ Share information related to ongoing edu./outreach programs
- ❖ Support development of pesticide related water quality education efforts
- ❖ Assess pesticide WQ mitigation recommendations from other agency plans

Pesticide Stewardship Partnership

Current and Historical Areas



Pesticide Stewardship Areas

1	<i>Hood River</i>	1999
2	<i>Wasco</i>	2002
3	<i>Walla Walla</i>	2005
4	<i>Clackamas</i>	2005
5	<i>Pudding</i>	2005
6	<i>Yamhill</i>	2007
7	<i>S. Yamhill</i>	2010 - 2016
8	<i>Amazon</i>	2011
9	<i>S. Coast*</i>	2014 - 2015
10	<i>S. Umpqua*</i>	2014 - 2019
11	<i>Middle Rogue</i>	2014 (2016 PSP)
12	<i>Middle Deschutes</i>	2014 (2019 PSP)

* Project or study areas

Pesticide Stewardship Partnership - Process



Step 1: WQPMT contacted by watershed group



Step 2: Several qualifiers must be met



Step 3: WQPMT meets with WS stakeholder group to define study



Step 4: Water sampling at agreed upon sites



Step 5: Data analysis and review, mgmt. measures developed



Step 6: Implement management measures and evaluate success

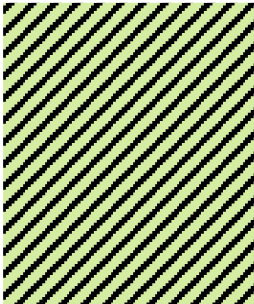
NO PROBLEM

Step 5A: Data indicates no issues



Decision Matrix Based on Water Monitoring Data (2019)

Detected concentration relative to aquatic life benchmarks (ALB) and frequency of detection

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

Each Pesticide Stewardship Partnership area will determine the level of concern for detected pesticides. Pesticides that are deemed of high concern in over 30% of The PSP areas will be designated as statewide pesticide of high concern or statewide Pesticides of concern (POC's)

Pesticide Stewardship Partnership Data Summaries

Pesticides Analyzed

Herbicides	56	Insecticides	42
Fungicides	11	Degradates	6
Legacy	18		

Total **134**

Current List of Pesticides of Concern

Chlorpyrifos ¹
Diazinon
Diuron ²
Imidacloprid
Malathion
Oxyfluorfen ³

1 Lorsban/Dursban
2 Karmax
3 Goal
4 Sevin
5 Outlook
6 Oust

Current List of Pesticides of Interest

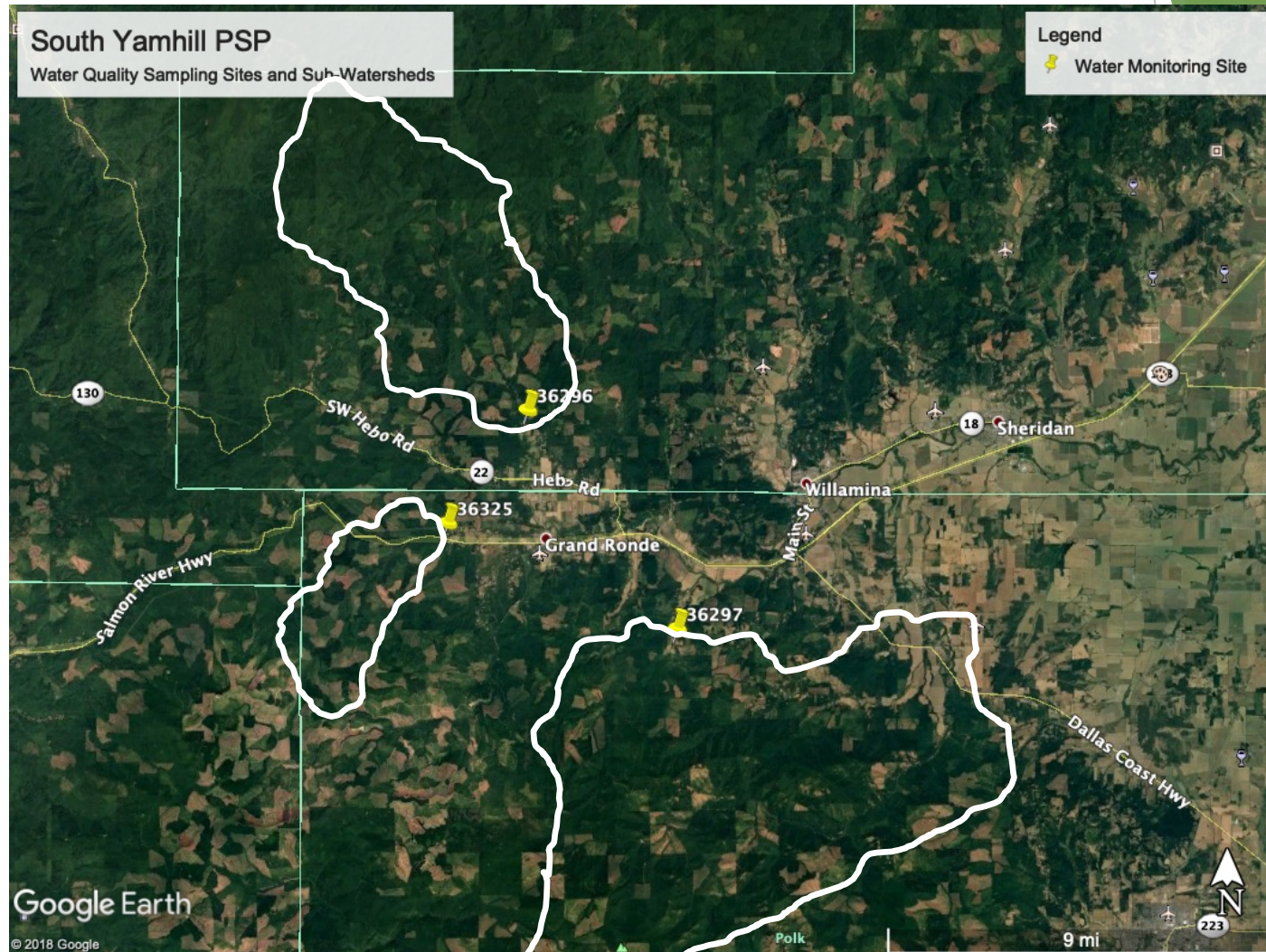
Atrazine
Bifenthrin
Carbaryl ⁴
Dimethenamid ⁵
Metolachlor
Sulfometuron-methyl ⁶
Simazine

South Yamhill PSP

History: In 2010 the Oregon Department of Environmental Quality (DEQ) and the Oregon Department of Forestry (ODF) began discussions with the Confederated Tribes of the Grand Ronde and forest landowners to evaluate potential impacts to surface water bodies from herbicides used in the commercial forestry industry.

The locations of these sites were selected to isolate (to the greatest extent possible) lands used solely for commercial forestry operations. Monitoring began in October 2010 at three sites and continued through 2016.

PSP Areas of Interest Mid-Coast Planning Partnership South Yamhill



South Yamhill PSP

Water Quality Monitoring Stations South Yamhill (2010-2016)

Station ID	Map Number	Description	Predominate Land Use	No. Detections	BM* Exceedances
36296	1	Agency Creek at Grand Ronde Rd	Forestry	7	0
36297	2	Gold Creek at Gold Creek Rd	Forestry	26	0
36325	3	Rogue River at Hwy 18	Forestry	13	0

Pesticide	Type	No. of Analysis	No. of Detections	Max. Conc. µg/L	% Greater than 10% of Benchmarks	% Greater than 50% of Benchmarks
AMPA	M	72	1	.0513	0	0
Atrazine	H	183	8	.109	3.3	1.1
DEET	R	168	3	.073	0	0
Desethylatrazine	M	153	8	.00679	0	0
Fluridone	H	168	1	.0313	.64	0
Hexazinone	H	168	3	.0303	1.8	1.8
Imazapyr	H	157	1	.126	.64	0
Metsulfuron methyl	H	54	2	.0506	1.9	1.9
S-Ethyl dipropylthiocarbamate	M	168	15	.025	8.9	0
Sulfometuron-methyl	H	149	4	.0265	2.7	0

What Pesticides Have Been Detected Most Frequently In Commercially Forested Areas in Oregon?

What Are the Top 5 Pesticides or Pesticide Degradates by Land Use?

- Detection Frequency (minimum 30 samples)
- Concentrations Relative to EPA Benchmarks or DEQ Criteria (minimum 3 detects)
- What data sets were used:
 - Pesticide Stewardship Partnership stream samples (DEQ Lab)
 - 2015 USGS Pacific Northwest Stream Quality Assessment (Willamette Basin)

Detection Frequency in FORESTRY Areas		Aquatic Life Ratio in FORESTRY Areas	
Current Use Pesticide	% Samples Detected	Current Use Pesticide	Aquatic Life Ratio
Hexazinone (Velpar)	8%	Metsulfuron-methyl (Escort)	0.14
Diuron (Karmex, Direx) – <i>not used in forestry</i>	8%	Sulfometuron-methyl (Oust)	0.14
Atrazine	6%	Diuron (Karmex, Direx) – <i>not used in forestry</i>	0.12
Imazapyr (Arsenal, Chopper)	5%	Atrazine	0.09
Sulfometuron-methyl (Oust)	4%	Imazapyr (Arsenal, Chopper)	0.02

Bolded compounds = statewide Pesticides of Concern

ALR = Highest Detected Concentration / EPA ALB

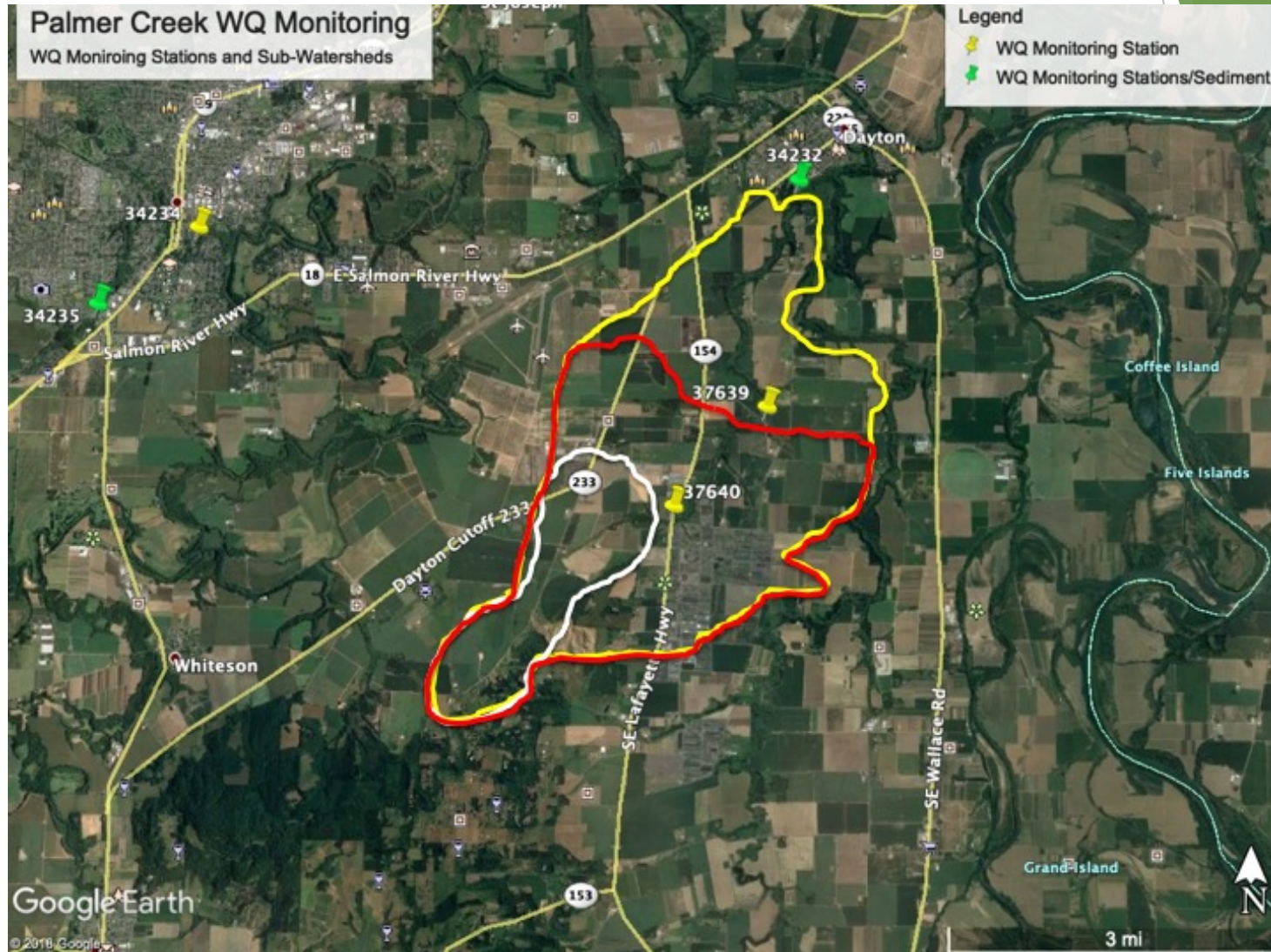
South Yamhill PSP

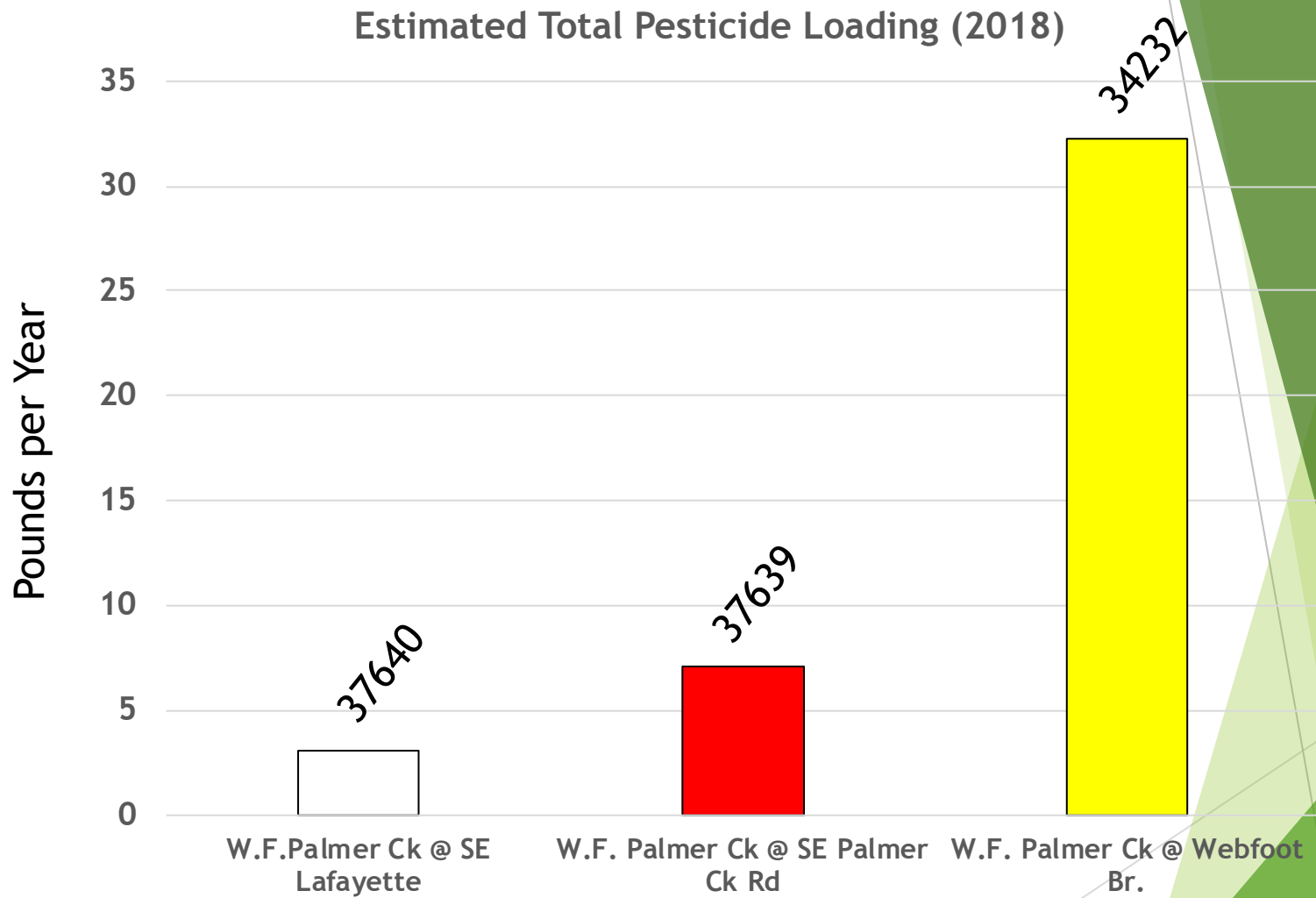
The data acquired during the seven years of water quality monitoring indicates that further water quality data (by itself) would not add to the level of understanding regarding the relationship between land use and pesticide applications. Given that there exists a low level of concern (based on current data), further investigation and resource expenditures are not warranted in the South Yamhill watershed and monitoring activities were discontinued as of spring 2017.

Data results reflect common findings in commercial forests:

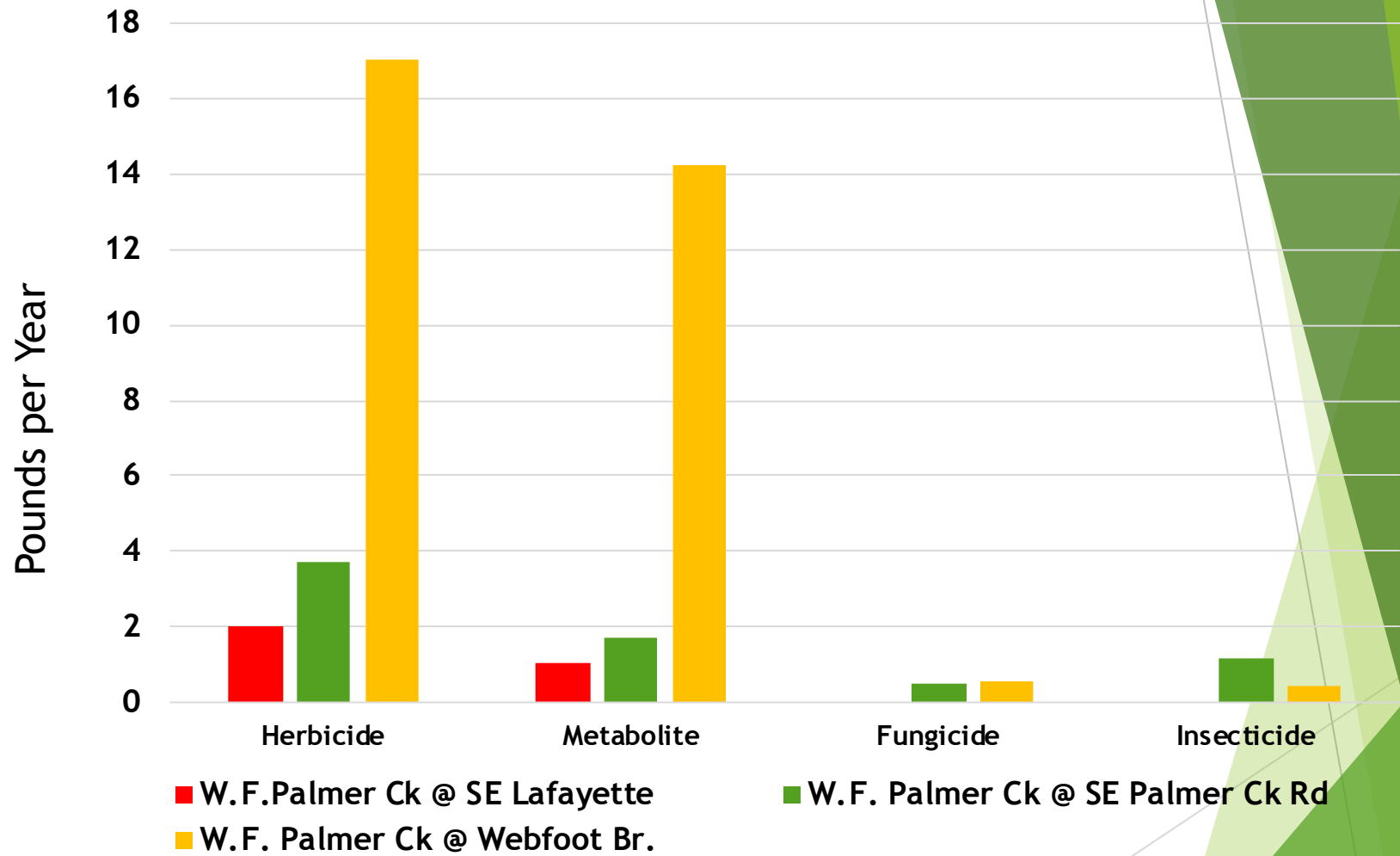
- ❖ Low, sporadic concentrations of herbicides
- ❖ Moderate to low frequency of herbicide detections

PSP Areas of Interest Mid-Coast Planning Partnership Greater Yamhill





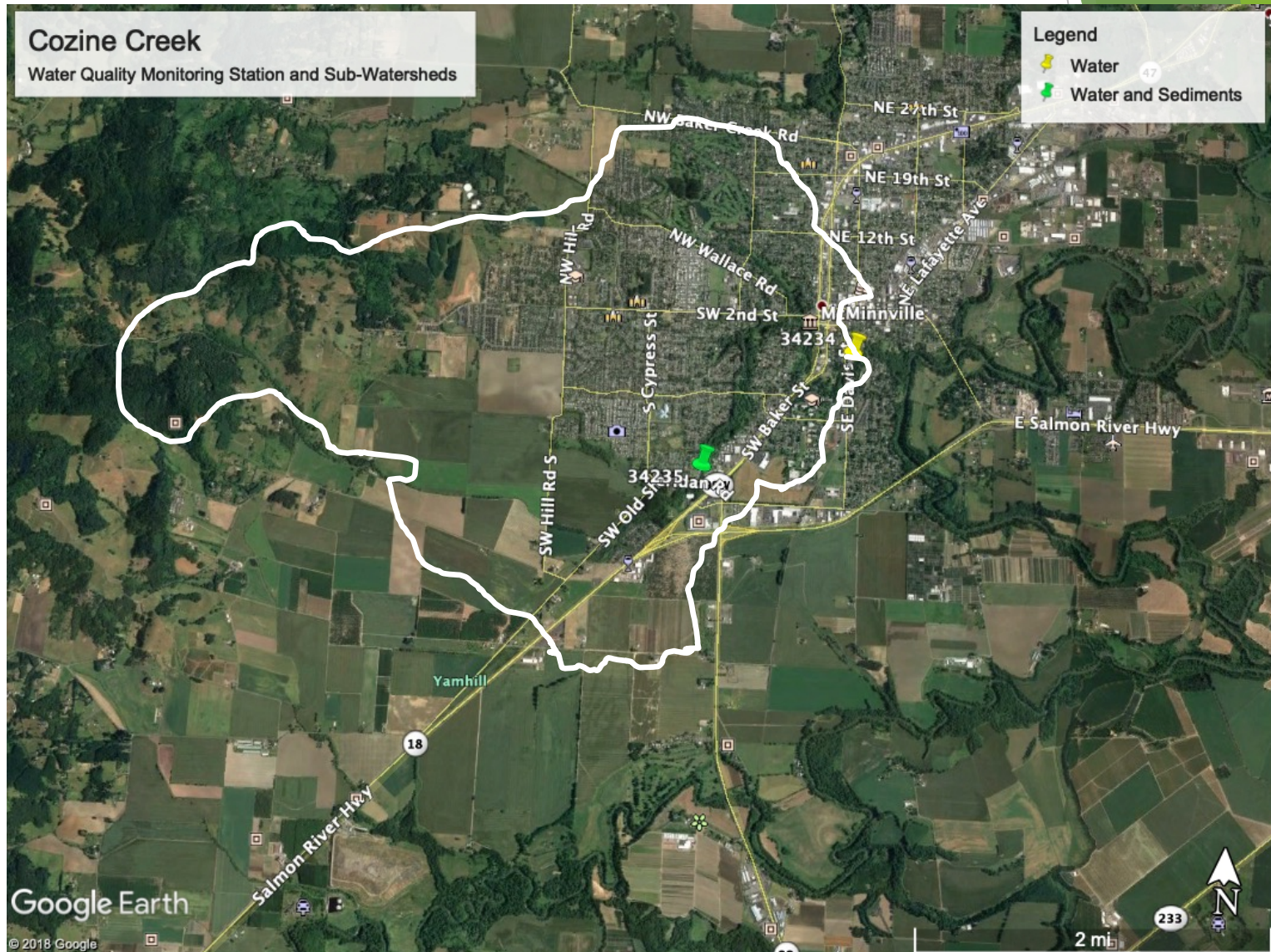
Estimated Total Pesticide Loading by Type (2018)



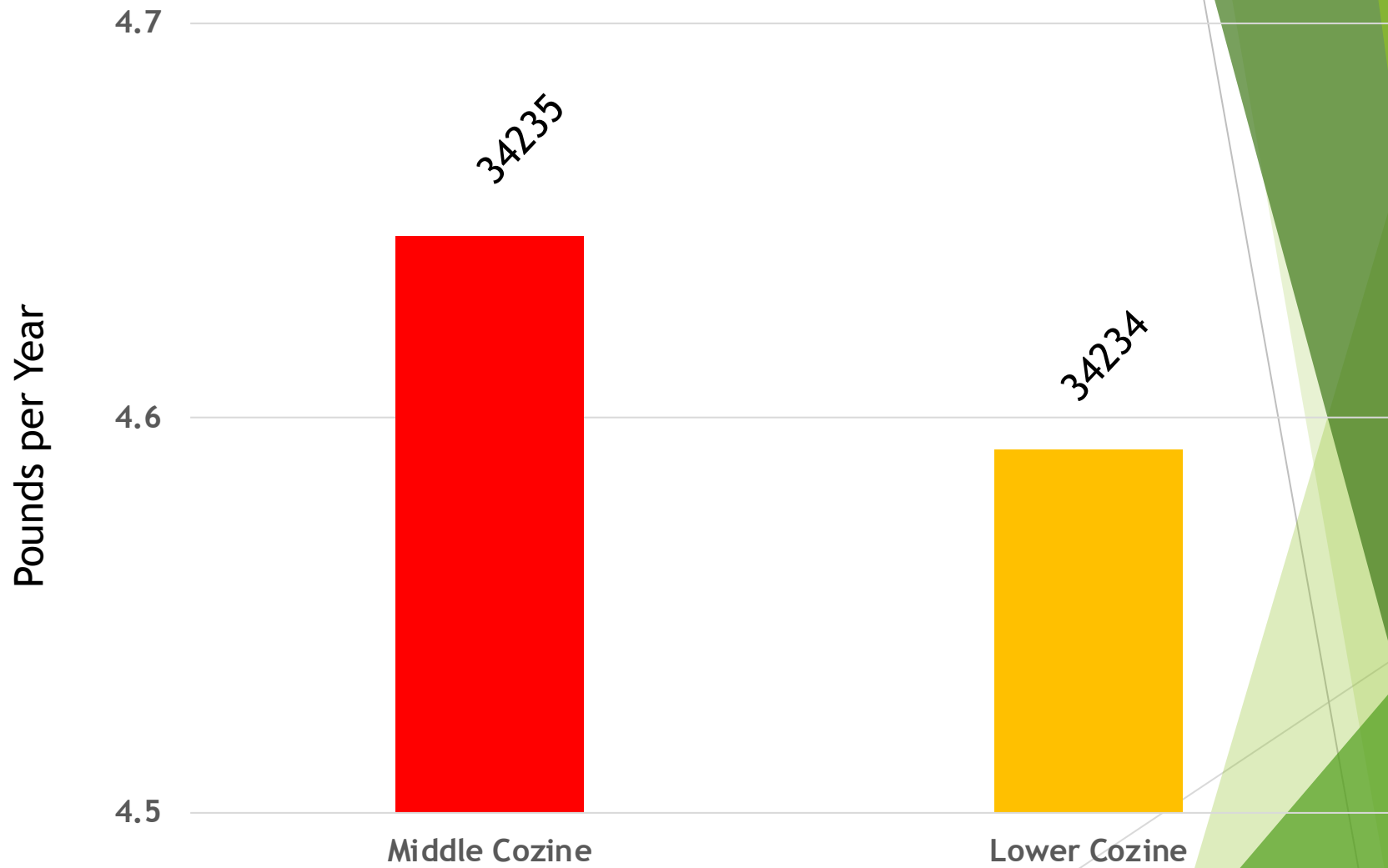
West Fork Palmer @ Webfoot Rd. Bridge (34232) 2017	Number of Detections	Benchmark Exceedences
2-Chloro-4-isopropylamino-6-amino-s-triazine	0	
2,4-D	2	
2,6-dichlorobenzamide	13	
Acephate	3	
Acetamiprid	2	
Aminomethylphosphonic acid (ampa)	13	
Atrazine	12	
Azoxystrobin	9	
Bifenthrin	2	2
Carbaryl	0	
Chlorpyrifos	2	2
Chlorothalonil	0	
Deisopropylatrazine	13	
Desethylatrazine	11	
Diazinon	4	2
Dicamba	4	
Dimethenamid	12	
Dimethoate	0	
Diuron	13	
Ethoprop	4	
Glyphosate	13	
Imazapyr	3	
Imidacloprid	9	9
Malathion	0	
Metolachlor	12	
Metribuzin	5	
Metsulfuron methyl	0	
Napropamide	1	
Norflurazon	9	
Oxyfluorfen	4	
Pendimethalin	4	
Pronamide	0	
Propiconazole	12	
Pyraclostrobin	3	
S-Ethyl dipropylthiocarbamate	4	
Simazine	13	1
Sulfometuron-methyl	7	
Trifluralin	2	
Total Detections	220	16

West Fork Palmer @ Webfoot Rd. Bridge (34232) 2019	Number of Detections	Benchmark Exceedences
2-Chloro-4-isopropylamino-6-amino-s-triazine	2	
2,4-D	4	
2,6-dichlorobenzamide	9	
Acephate	4	
Acetamiprid	0	
Aminomethylphosphonic acid (ampa)	8	
Atrazine	9	
Azoxystrobin	7	
Bifenthrin	0	
Carbaryl	0	
Chlorpyrifos	1	1
Chlorothalonil	0	
Deisopropylatrazine	9	
Desethylatrazine	5	
Diazinon	1	1
Dicamba	2	
Dimethenamid	7	
Dimethoate	1	
Diuron	9	1
Ethoprop	1	
Glyphosate	7	
Imazapyr	4	
Imidacloprid	3	3
Malathion	1	1
Metolachlor	7	
Metribuzin	6	
Metsulfuron methyl	6	
Napropamide	0	
Norflurazon	4	
Oxyfluorfen	4	
Pendimethalin	1	
Pronamide	6	
Propiconazole	7	
Pyraclostrobin	7	
S-Ethyl dipropylthiocarbamate	0	
Simazine	9	
Sulfometuron-methyl	4	1
Trifluralin	0	
Total Detections	155	8

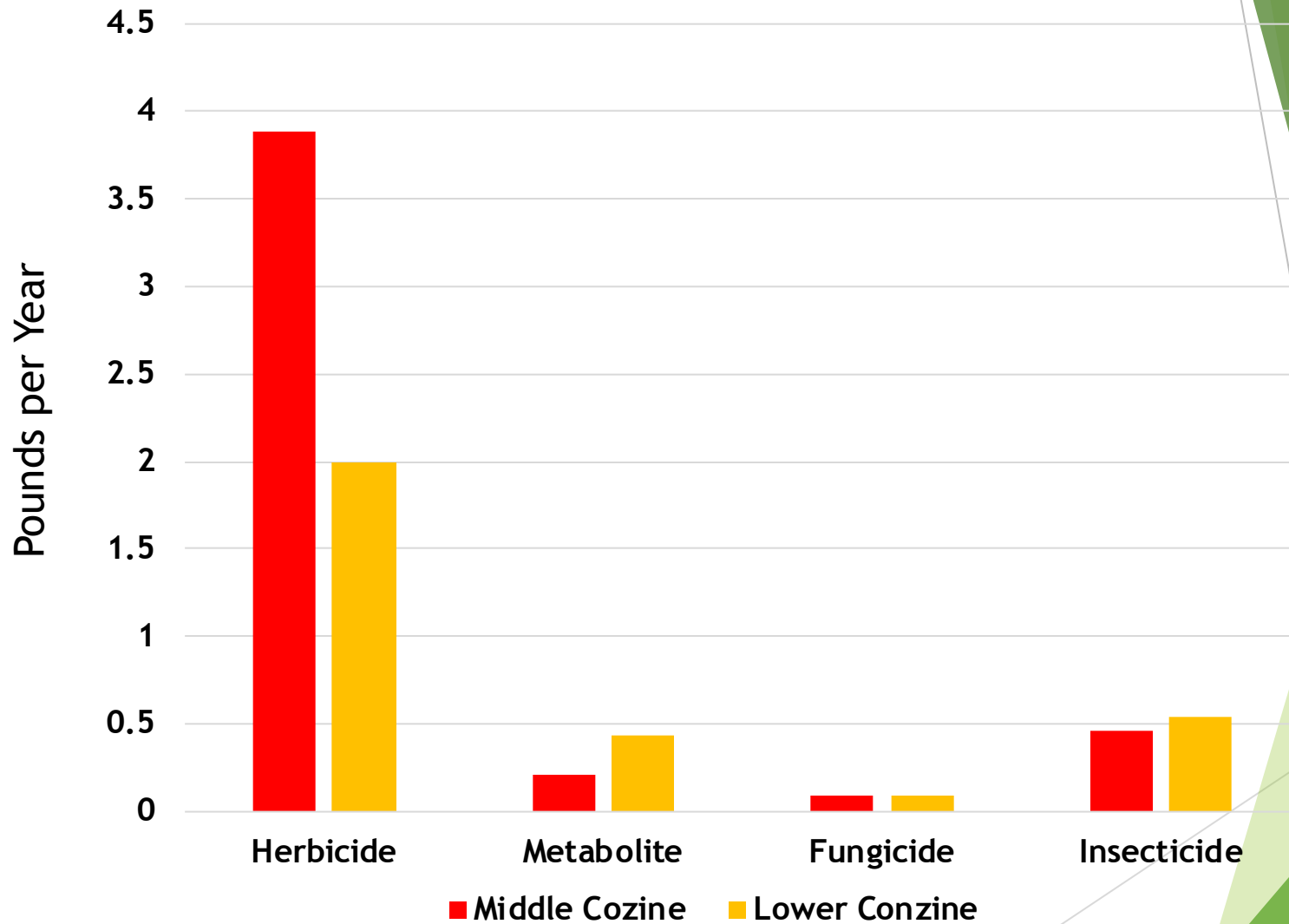
PSP Areas of Interest Mid-Coast Planning Partnership Greater Yamhill



Estimated Total Pesticide Loading (2018)



Estimated Total Pesticide Loading by Type (2018)



Yamhill PSP Middle Cozine Creek

Middle Cozine @ Old Sheridan Road (34235)	Number of	Benchmark
2017	Detections	Exceedences
2,4-D	1	
2,6-dichlorobenzamide	12	
Atrazine	0	
Azoxystrobin	1	
Carbaryl	2	1
Chlorpyrifos	3	
DEET	0	
Desethylatrazine	2	
Dimethenamid	1	
Diuron	13	
Imazapyr	1	
Imidacloprid	13	13
Metolachlor	11	
Metribuzin	5	
Metsulfuron methyl	2	
Oxyfluorfen	0	
Pendimethalin	5	
Propiconazole	10	
S-Ethyl dipropylthiocarbamate	1	
Simazine	1	
Sulfometuron-methyl	8	
Tebuthiuron	2	
Total Detections	94	

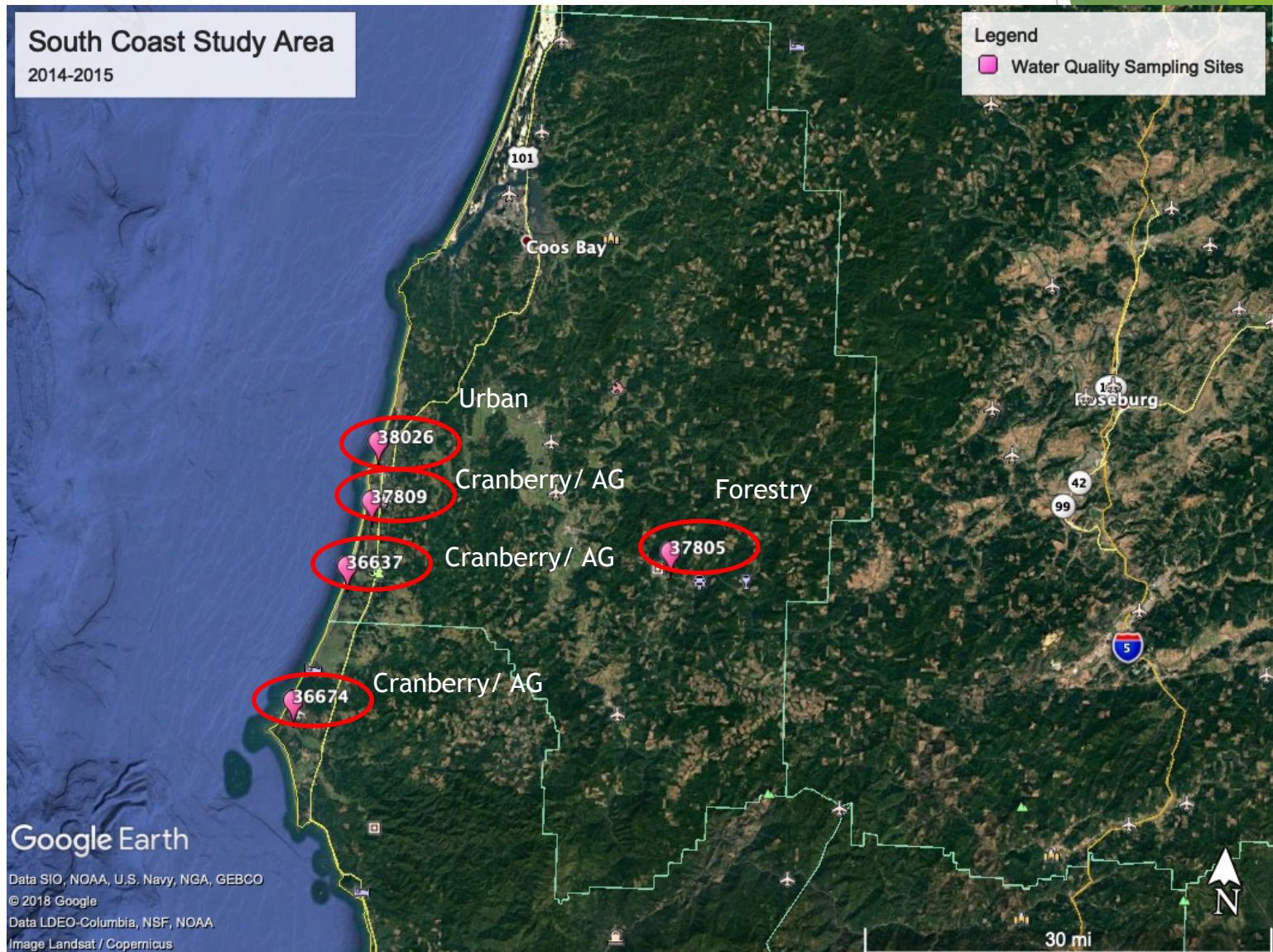
Middle Cozine @ Old Sheridan Road (34235)	Number of	Benchmark
2019 (less Fall)	Detections	Exceedences
2,4-D	0	
2,6-dichlorobenzamide	9	
Atrazine	0	
Azoxystrobin	4	
Carbaryl	0	
Chlorpyrifos	0	
DEET	0	
Desisopropylatrazine	7	
Dimethenamid	0	
Diuron	9	
Imazapyr	4	
Imidacloprid	6	6
Metolachlor	9	
Metribuzin	8	
Metsulfuron methyl	6	
Oxyfluorfen	1	
Pendimethalin	6	
Propiconazole	5	
S-Ethyl dipropylthiocarbamate	0	
Simazine	8	
Sulfometuron-methyl	5	
Tebuthiuron	4	
Total Detections	91	

Yamhill PSP Lower Cozine Creek

Lower Cozine Creek @ Davis Bridge (34234)	Number of	Benchmark
2017	Detections	Exceedences
2,4-D	2	
2,6-dichlorobenzamide	12	
Atrazine	3	
Azoxystrobin	0	
Carbaryl	4	
Chlorothalonil	1	
Chlorpyrifos	1	
DEET	0	
Deisopropylatrazine	0	
Dichlobenil	1	
Diuron	13	
Ethoprop	1	
Imazapyr	1	
Imidacloprid	13	13
Metolachlor	6	
Metribuzin	2	
Metsulfuron methyl	0	
Pendimethalin	3	
Propiconazole	5	
S-Ethyl dipropylthiocarbamate	1	
Silvex	1	
Simazine	1	
Sulfometuron-methyl	7	
Tebuthiuron	2	
Total Detections	80	

Lower Cozine Creek @ Davis Bridge (34234)	Number of	Benchmark
2019 (less Fall)	Detections	Exceedences
2,4-D	0	
2,6-dichlorobenzamide	9	
Atrazine	1	
Azoxystrobin	3	
Carbaryl	2	
Chlorothalonil	0	
Chlorpyrifos	0	
DEET	2	
Deisopropylatrazine	7	
Dichlobenil	0	
Diuron	9	
Ethoprop	0	
Imazapyr	3	
Imidacloprid	6	6
Metolachlor	9	
Metribuzin	4	
Metsulfuron methyl	4	
Pendimethalin	2	
Propiconazole	6	
S-Ethyl dipropylthiocarbamate	0	
Silvex	0	
Simazine	8	
Sulfometuron-methyl	7	
Tebuthiuron	7	
Total Detections	89	

PSP Areas of Interest Mid-Coast Planning Partnership South Coast



South Coast PSP Study

Southern Stations

36674

Legend

Water Monitoring Station

AG/No Detections

30672

Forestry/No Detections

37849

Grants Pass

SP3

SP4SP1

SP2

Medford

38280

1112

388

38

Google Earth

Data LDEO-Columbia, NSF, NOAA

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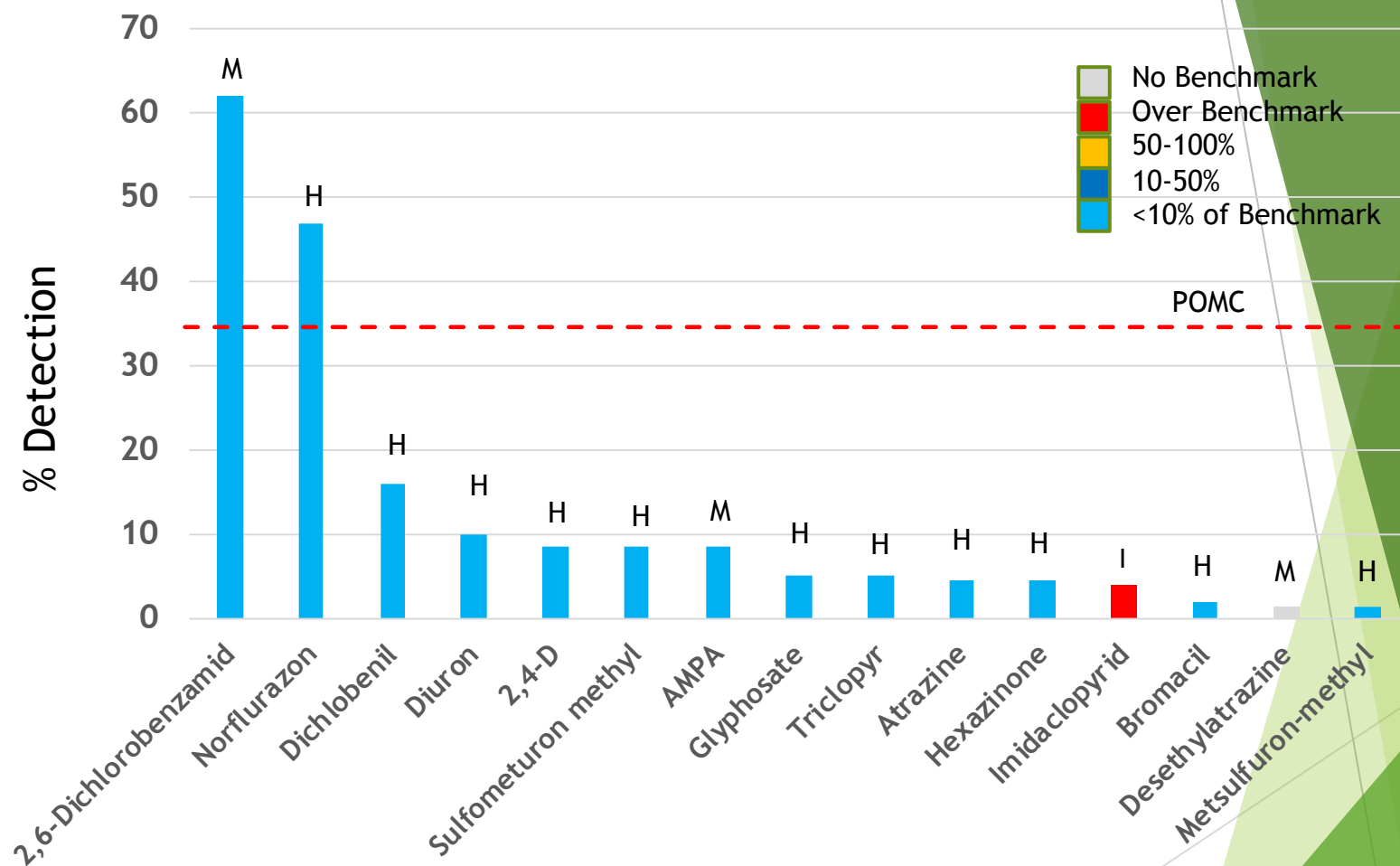
Image Landsat / Copernicus

Data SIO, NOAA, U.S. Navy, NGA, GEBCO



30 mi

South Coast PSP Study Area Detection Frequency



PSP Areas of Interest Mid-Coast Planning Partnership South Coast

Seven stations sampled (mix of urban, AG, and forestry)

Results of the two-year study indicated that pesticides (both herbicides and insecticides) were entering nearby waterbodies

Frequencies of one herbicide and metabolite were high (45-60%)

Concentrations (with the exception of imidacloprid) were well below US EPA Aquatic Life Benchmarks

Under new rating matrix at least 1 herbicide, 1 insecticide and 1 metabolite would reach a moderate level of concern

At this point there are no plans to return to S. Coast for follow-up

Potential for coastal study in the future in mid to north Oregon Coast

Questions?

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