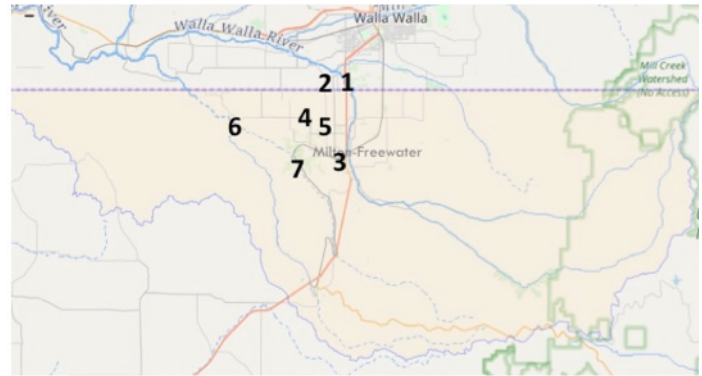




WALLA WALLA

Pesticide Stewardship Partnership 2015-17 Biennial Summary

► **History:** The Walla Walla Pesticide Stewardship Partnership (PSP) began in 2005. The sizable amount of apple acreage in the Walla Walla Watershed near Milton-Freewater, and the use of organophosphates, was a primary factor in initiating a PSP. By 2006, multiple monitoring locations were established along tributaries to the Little Walla Walla River. In addition, monitoring stations were designated on the main stem of the Walla Walla River and the Little Walla Walla River in Milton-Freewater. Since 2015, in cooperation with pea and wheat growers interested in having their farms certified as Salmon Safe, monitoring was expanded further upstream to include Pine and Dry Creeks to encompass pea and wheat growing areas. Pesticide detections throughout the watershed have generally been decreasing over the past several years, with only one organophosphate insecticide (chlorpyrifos) being detected in the early spring every year at the distributary locations.



Water Quality Monitoring Locations 2015-17

► **Land Use:** The Walla Walla PSP encompasses 480 square miles and is dominated by agriculture land use. The largest city within the watershed is Milton-Freewater with a population of 7,066 (2017 Portland State University estimates). Based on 2011 National Land Coverage Data (NLCD) the breakdown of land use in the watershed is 42.2% agriculture, 30.1% forest, 24.2% other and 3.1% urban. The designation as “other” includes rangeland, wetlands, scrubland, etc.

► **Pesticide Monitoring:** As part of the PSP program, water quality is monitored for pesticide residues beginning in March and continuing through June and again in September and continuing through November. During the timeframe July 1, 2015 – June 30, 2017 water quality samples were collected from seven locations.

WATER QUALITY MONITORING STATIONS 2015-17 BIENNIUM

Station ID	Map Number	Description	Predominate Land Use	No. Detections	BM* Exceedances
32008	1	Walla Walla River at Peppers Bridge	Mixed	0	0
32010	2	W. Prong Little WW R (S of Stateline)	Orchard	12	3
32012	3	L. Walla Walla River at the Frog	Mixed	0	0
33083	4	L. Walla Walla R Mid-West Branch	Orchard	12	3
37084	5	L. Walla Walla R West Branch Crockett	Orchard	14	3
37695	6	Pine Creek at Schubert Bridge	Pea, Wheat	18	0
37696	7	Dry Creek at Seven Hills Road	Pea Wheat	6	0

*BM = US EPA Aquatic Life Benchmark for pesticides

WATER QUALITY DATA SUMMARY FOR ALL SAMPLE LOCATIONS 2015-17 BIENNIUM

Pesticide	Type	Benchmark Value µg/L	No. of Analysis	No. of Detections	Max. Conc. µg/L	Average Conc. µg/L	Percent Detections	Percent of Benchmark (Max. Conc.)
2,4-D	H	299.2	29	1	.1	.00000	3.4	0.0
Acetamiprid	I	2.1	120	1	.068	.00012	.8	3.2
AMPA	M	249500	29	7	.848	.04960	21.1	0.0
Carbaryl	I	.5	120	11	.0811	.00200	9.2	16.2
Chlorpyrifos	I	.041	120	12	8.04	.07610	10.0	19609.8
Desethylatrazine	M	NA	120	8	.0079	.00038	6.7	NA
Diuron	H	2.4	120	6	.011	.00041	5.0	.5
Glyphosate	H	1800	29	4	1.23	.06540	13.8	.1
Imidacloprid	I	.01	120	1	.0293	.00024	.8	293
Metribuzin	H	8.1	120	3	.0535	.00058	.8	.7
Metsulfuron methyl	H	.36	120	2	.00678	.00011	1.7	1.9
Pendimethalin	H	5.2	120	1	.0375	.00031	.8	.7
Propiconazole	F	21	120	1	.0323	.00027	.8	0.0
Pyralostrobin	F	1.5	120	2	.0127	.00016	1.7	.8
Simazine	H	2.24	120	1	.00546	.00005	.8	.2

Pesticides highlighted in red are of high concern, pesticides highlighted in yellow are of moderate concern based upon frequency of detection and maximum detected concentration during the period July 1, 2015 through June 30, 2017 as compared to the U.S. Environmental Protection Agency's aquatic life benchmarks. F = fungicide, H = herbicide, I = insecticide, M = metabolite (breakdown product).

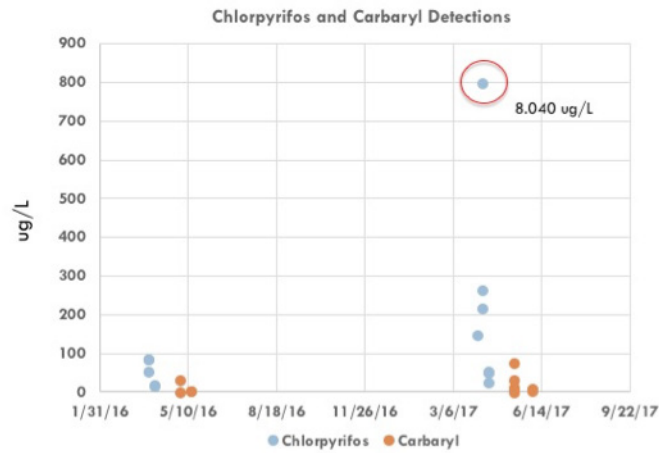
Water quality monitoring during the period July 1, 2015 through June 30, 2017 indicates the presence of several pesticides. With the exception of the insecticide chlorpyrifos none of the detections have exceeded established U.S. Environmental Protection Agency (EPA) aquatic life benchmarks. Chlorpyrifos was detected at three sampling locations where the primary land use is orchards. This is also the case for the insecticide carbaryl which was detected in approximately 9% of the samples analyzed. At least one sample was detected at 16% of the aquatic life benchmark.

PESTICIDES OF CONCERN DETECTED IN THE WALLA WALLA PESTICIDE STEWARDSHIP PARTNERSHIP

Pesticide	Common Trade Names	Pesticide Classification
Chlorpyrifos	Dursban, Lorsban , Piridane	Insecticide
Imidacloprid	Amire, Gaucho, Premier, Provado	Insecticide

The detections of chlorpyrifos and carbaryl appear during pre-emergent periods running from late March until mid-June. There were no detections of either insecticide noted outside this timeframe.

Imidacloprid was detected once during biennium. It is highlighted as a pesticide of moderate concern due to the fact that the EPA benchmark was lowered to .01 ug/L in 2017. Previously, the EPA established benchmark value was set at 1.05 ug/L which would not have raised the pesticide in the Walla Walla PSP to a level of moderate concern.



► **Detection of Metabolites:** Metabolites are “breakdown” products of pesticides. They occur generally after the original pesticide has undergone chemical change due to interactions with the environment or soil microbes. One metabolite aminomethylphosphonic acid (AMPA) was detected at a frequency above 20%. A second metabolite (desethylatrazine) was detected at a frequency below 10%.

Aminomethylphosphonic acid (AMPA) is a metabolite of the herbicide glyphosate. Glyphosate is sold under a variety of names. It has an established EPA aquatic life benchmark of 249,500 µg/L. At this time, EPA has not established a human health benchmark. AMPA was detected 21% of the samples analyzed.

Desethylatrazine is a metabolite of the herbicides atrazine and simazine. Atrazine is sold under many names the most common being Aatrex. Simazine is commonly sold under the name Princep. At this time, there is no EPA aquatic life benchmark or human health benchmark established for desethylatrazine. Desethylatrazine was detected in 6.7% of the samples analyzed.

► **Sediment Data:** Sediment analysis was conducted at the three sites in 2014 and 2015. The purpose for these analyses was to determine if pesticide residues bound to soil particles in waterbodies pose a potential threat to aquatic life. Previous sample results indicated the presence of DDT and its degradates. These chemicals were not detected at a level above that considered of concern for aquatic life. One sample with an estimated pore water concentration of .00053 µg/L at Pine Creek at Johnson Road on November 1, 2015 of 4,4-DDE did exceed the Oregon Department of Environmental Quality’s human health water quality criteria of .000022 µg/L.

► **Groundwater Studies:** In 2016, DEQ investigated 60 water supply wells within the Walla Walla basin in which the PSP area was included. The results of that study indicated no exceedances of human health or aquatic life benchmarks for any currently used pesticide.

GROUNDWATER STUDY RESULTS

Pesticide	Winter (N=60)	Fall (N=60)	Total (N=120)
atrazine	4	4	8
carbaryl	1	0	1
DCPA metabolite	1	3	4
deisopropylatrazine	4	5	9
desethylatrazine	18	18	36
endosulfan II	1	0	1
metribuzin	1	0	1
metsulfuron-methyl	1	0	1
norfluron	1	0	1
simazine	3	5	8
Total Detections	34	35	70

► **Projects Funded and Improvements Made:** The Walla Walla PSP has been active in the identification and implementation of management measures designed to address the results of water quality analysis. In 2012 significant increases in the detection of the herbicide diuron were noted and traced to its application in irrigation canals. The irrigation district worked with the PSP partners and discontinued its use along ditch banks resulting in significant decrease of diuron detections. In the spring of 2016 and 2017, spikes in the detection of chlorpyrifos were traced to lapses in application methodologies by a small number of applicators, who have since corrected practices. Installation of wind and weather stations in the PSP for use by growers has contributed to the reduction of spray drift resulting in decreases of detected pesticide residues in monitored waterbodies. A five-year trend analysis of pesticide concentrations indicates a downward trend in the pesticides carbaryl, diuron, glyphosate, and simazine. An upward trend in was noted for the atrazine/simazine degradate, desethylatrazine and the glyphosate degradate AMPA.

During the 2015-17 biennium ,the Walla Walla Basin Watershed Council (WWBWC) was awarded \$4,800 to continue monitoring and maintenance of the weather station.

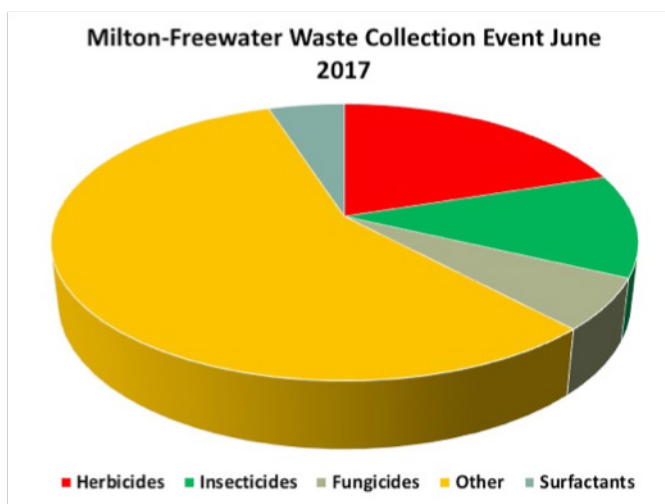
During the 2015-17 biennium, the PSP program began emphasizing the collection of stream discharge data for all WQ sampling stations. The addition of discharge data will allow for a more thorough evaluation of WQ data. The Walla Walla PSP has installed discharge monitoring devices at all WQ monitoring locations. The discharge data collected at each site is published online and is available at <https://www.wwbwc.org/monitoring/surfacewater.html>

Generally, there has been progress in reducing the frequency and number of pesticide residues detected in streams. However, there has been a notable increase in the frequency and magnitude of detections for the insecticide chlorpyrifos. Because this is one of the few currently used pesticides with a water quality criterion, reducing the detection frequency and magnitude is of utmost importance.

COMPARISON OF ANALYTICAL RESULTS 2013-15 AND 2015-17 BIENNIAL MONITORING

Station Number	2013-15% Detections	Number of BM Exceedances	Number of Individual Pesticides	2015-17 % Detections	Number of BM Exceedances	Number of Individual Pesticides
32008	3.6	0	1	0	0	0
32010	11	3	9	14.5	4	5
33083	18	3	6	11.7	4	7
37084	20.5	5	10	14.3	4	5
37695	33	0	10	20	0	7
37696	33	0	6	8.9	1	5

In June 2017, a pesticide waste collection event was held in Milton-Freewater, at which 10,340 pounds of waste or unusable pesticides were removed from the watershed and legally disposed. This event was somewhat unusual in that a significant amount of tree fruit preservation coating was brought in for disposal. Under the current guidelines for waste pesticide collection, developed by the WQPMT, this material is considered agricultural waste material that qualifies for acceptance into the program.



*Produced by the Oregon Water Quality Pesticide Management Team.
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