



SOUTH YAMHILL

Pesticide Stewardship Partnership 2015-17 Biennial Summary

► **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 South Yamhill was selected because of the connection to the on-going Pesticide Stewardship Partnership (PSP) work in the central part of the Yamhill River Basin (near the city of McMinnville) and the level of private forest management activities by multiple land owners.



Water Quality Monitoring Locations 2015-17

DEQ and ODF met with forest land owners as well as officials from the Confederated Tribes of the Grand Ronde to identify appropriate sites to conduct water quality monitoring. 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.

► **Land Use:** The South Yamhill PSP encompasses 140 square miles. A majority of the land use is classed as commercial forestry. Three sub-watersheds, Agency Creek (25 square miles), Gold Creek (5.5 square miles), and Rogue River (5.9 square miles) were selected for water quality monitoring. These three sub-watersheds constitute 26% of the land area within the SYPSP. The watershed is rural with no major towns or cities lying within its boundaries. Based on 2011 National Land Coverage Data (NLCD), the breakdown of land use in the watershed is 52% forest, 35.4% other, 6.8% agriculture and 5.8% urban.

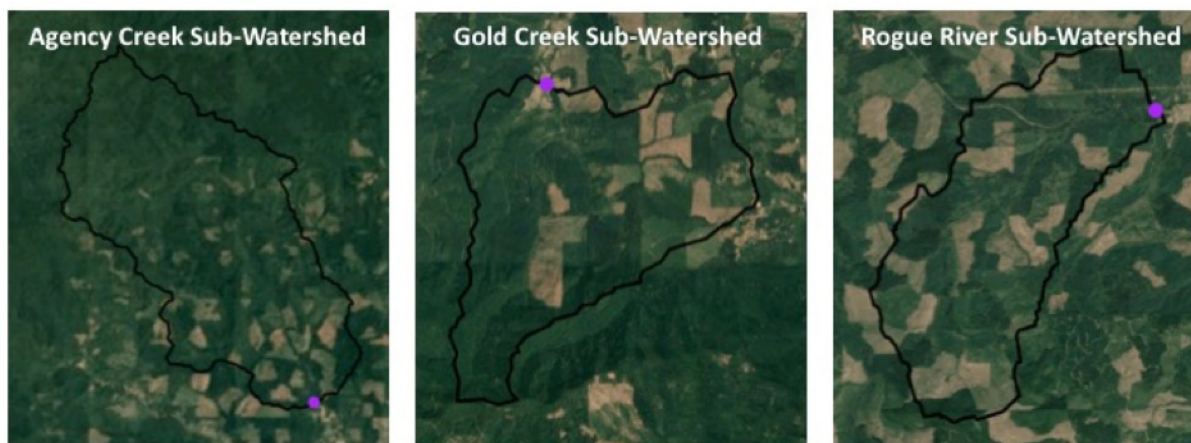
► **Pesticide Monitoring:** As part of the PSP program, water quality is monitored for pesticide residues beginning in March and continuing through June, and again in September and continuing through November. During the timeframe of August 26, 2015 through October 3, 2016, water quality samples were collected from three locations. Water quality sampling was suspended in 2017 pending an evaluation of data collected since 2010.

WATER QUALITY MONITORING STATIONS 2015-17 BIENNIUM

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

*BM = US EPA Aquatic Life Benchmark for pesticides

SOUTH YAMHILL PSP SUB-WATERSHED AREA AND MONITORING STATIONS



Each of the three monitoring locations were selected to maximize the potential for detecting any herbicide residues that may have entered streams as a result of application higher up in the watersheds.

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.)
AMPA	M	249500	21	1	.0513	.0024	4.8	0
DEET	R	37500	33	1	.073	.0022	3	0
Metsulfuron methyl	H	.36	27	2	.0506	.0022	7.4	14
Sulfometuron-methyl	H	.45	33	3	.0265	.0015	9.1	5.9

*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 as compared to the EPA aquatic life benchmark.
F = fungicide, H = herbicide, I = insecticide, M = metabolite (breakdown product)*

Water quality monitoring during the timeframe August 26, 2015 through October 3, 2016 indicated the presence of four pesticides all of which are attributed to commercial forestry operations. There were no exceedances of an US Environmental Protection Agency's (EPA) aquatic life benchmark. The following graphs illustrate the sporadic nature of pesticide detections compared with monitoring dates during the course of the study (2010-2016). The graph also illustrates the low levels at which pesticide residues were detected in each of the sub-watershed areas.

► **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 below 20%. A second metabolite 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 249500 µg/L (this high benchmark indicates a relatively low toxicity to aquatic life). At this time, EPA has not established a human health benchmark.

► **Projects Funded and Improvements Made:** The activities within the South Yamhill PSP has been focused on the collection and analysis of water quality at the three sampling locations. Evaluation of water quality data collected from 2010 through 2014 indicated a need to better understand pesticide application practices and timing within the watershed so that water quality sample collection could be scheduled to coincide with pesticide applications. In 2014, information was provided to DEQ that improved upon the understanding of the specific herbicides used and a more refined application timing employed. Water quality sampling conducted since 2014, and including that collected during the 2015-17 biennium, has continued to indicate few detections at low concentrations. Too few detections of any pesticide were collected to conduct a trend analysis on either the watershed as a whole or the individual monitoring stations.

Due to the sporadic nature of pesticide applications employed by the commercial forestry, it is difficult to conduct water quality sampling that coincides with pesticide applications. It is likely that given the difficulties in coordinating herbicide applications with water quality sampling scheduling, continued water quality monitoring activities are not expected to yield results that differ from those collected thus far.

► **Actions Taken:** 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 are discontinued as of spring 2017.