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# Peshastin Creek

Summary of 2015 Surface Water Monitoring Program Results  
Washington State Department of Agriculture  
Natural Resources Assessment Section  
September 2016

## Introduction

The Washington State Department of Agriculture has monitored pesticide concentrations in surface water throughout the state since 2003. Water samples were collected during the typical pesticide use season (March through September). In 2015, 14 sites were monitored in Washington, three of which are in the Wenatchee River Watershed. State and federal agencies use this data to evaluate water quality and make exposure assessments for pesticides registered for use in Washington State.

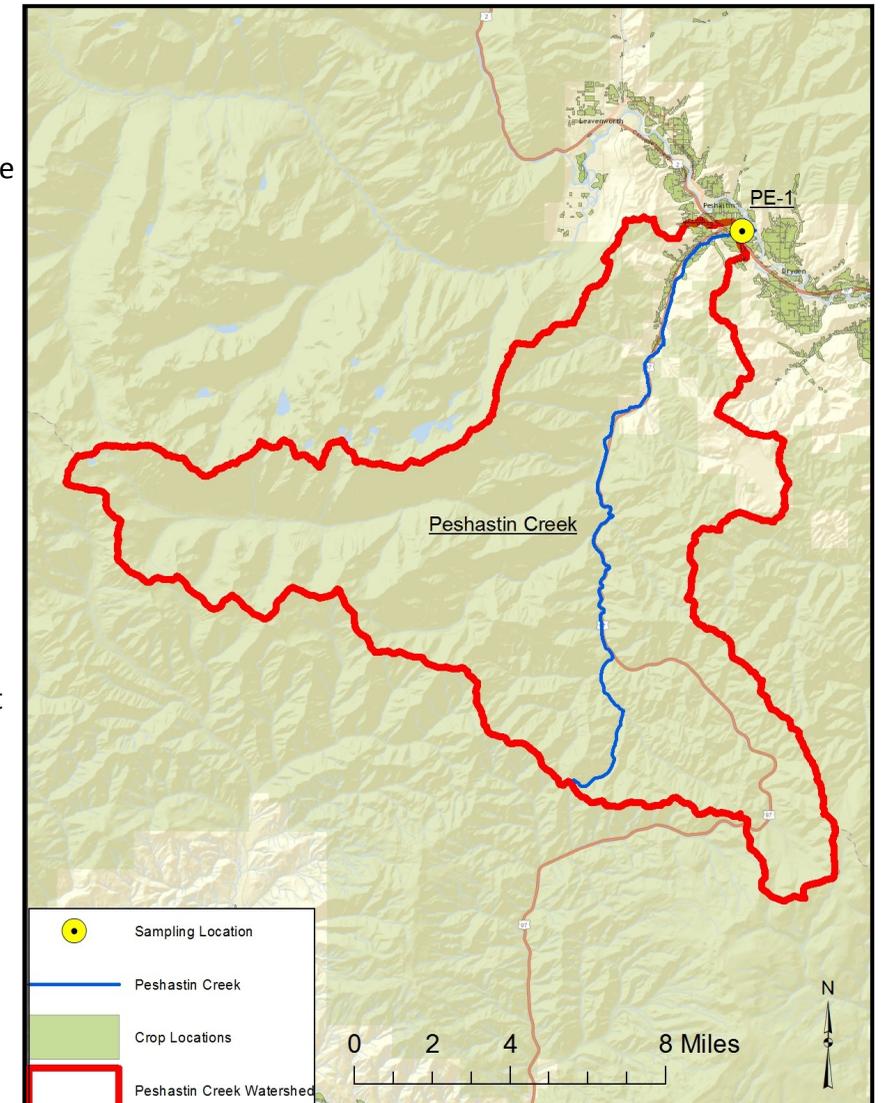
## Study Area

Water has been tested from Peshastin Creek from 2003 through 2015. The watershed drains about 86,243 total, with less than 1% (707 acres) of the watershed being devoted to agriculture. The main crops are pasture, apple, and cherry. Peshastin Creek has dense riparian vegetation on its banks along most of the reach, which aids in preventing pesticides from contaminating the stream. Peshastin Creek provides habitat for spring chinook, summer steelhead and bull trout.\*

\* Washington State Department of Fish and Wildlife

## Sampling Details

- Samples were collected for 25 weeks, from March 10 through August 25.
- Water samples were tested for 206 chemicals: current and legacy insecticides, herbicides, fungicides, rodenticides, wood preservatives, and pesticide degradates.
- Sample analysis for pesticides and total suspended solids was conducted at Manchester Environmental Laboratory in Port Orchard, WA.
- General water quality parameters; dissolved oxygen, conductivity, pH, water temperature, and streamflow were measured at every sampling event.
- Air and water temperature (measured every 30 minutes) was monitored for the entire sampling season.
- For a short period of time, 5 weeks, additional water samples were collected and analyzed for glyphosate and its degradate, AMPA.
- Drought conditions resulted in less than normal streamflow throughout the season.
- Juvenile fish, of an unknown species, were periodically observed at the site during sample collection.



This table shows the pesticides detected, with dates and concentrations. They are color coded to identify which assessment criteria were surpassed. The assessment criteria used here are state and federal water quality criteria, reduced by half for safety. This 0.5 safety factor is used to make sure the criteria protect aquatic life and water quality issues are found early. Watersheds with detections above the criteria are prioritized for more monitoring and educational outreach. See <http://agr.wa.gov/PestFert/natresources/SWM> for more information.

Assessment Criteria																													
Additional level of protection for endangered species	Month and Day	Analyte Name †	Use‡	Mar				Apr				May				Jun				Jul				Aug					
				10	17	25	31	7	14	21	28	5	12	19	27	2	9	16	23	30	7	14	21	28	4	11	18	25	
May affect fish survival at sensitive life stages																													
May affect invertebrate survival		Boscalid	F														0.32												
Nearing a pesticide state water quality standard		Chlorpyrifos	I-OP			0.026																							
May affect fish growth or reproduction with prolonged exposure		Difenoconazole	F	0.005																									
May affect fish growth or reproduction with prolonged exposure		Fludioxonil	F																										
May affect invertebrate growth or reproduction with prolonged exposure		Methoxychlor	I-OC									0.036																	
May affect invertebrate growth or reproduction with prolonged exposure		DEET	IR																			0.016							
May affect invertebrate growth or reproduction with prolonged exposure		Propyzamide	H														0.04												
May affect aquatic plant growth		Temperature	N/A	45.5	44.4	46.3	46.9	45	48.3	51.1	52.1	52.9	52.9	56.2	59.2	60.2	<b>67.1</b>	<b>67.3</b>	<b>69.9</b>	<b>78.1</b>	<b>78.5</b>	<b>74.1</b>	<b>76.6</b>	<b>74.5</b>	<b>82.6</b>	<b>80.1</b>	*	*	
May affect aquatic plant growth or reproduction with prolonged exposure		Dissolved oxygen	N/A	12.41	12.12	12.4	11.76	12.05	12.2	11.35	11.35	11.56	10.88	11.04	10.66	10.44	10.12	9.99	10.05	9.18	9.33	9.81	9.35	10.07	9.3	9.3	9.53	9.83	
Below all identified criteria		Percipitation	N/A	0	0.24	0.25	0	0.11	0.05	0	0	0	0.12	0.33	0	0	0	0	0	0.07	0	0	0	0	0	0	0	0	
Below all identified criteria		Streamflow	N/A	170	451	255	286	192	142	190	153	168	189	192	145	124	87.5	44.3	32.4	29	13.7	7.9	7.5	4.6	3.8	2.9	7.1	2.1	
Below all identified criteria		Total suspended solids	N/A	3	15	3	3	2	2	5	4	3	7	5	4	4	4	2	2	4	2	2	1	1	1	1	2	1	
No published criteria available		‡ F: Fungicide, H: Herbicide, I: Insecticide, IR: Insect repellent, N/A: Not applicable, OC: Organochlorine, *Equipment malfunction. †Units are as follows: pesticides, µg/L; temperature, °F; dissolved oxygen mg/L; percipitation, week total inches; streamflow, cfs; and total suspended solids, mg/L. <b>Bold:</b> Indicates a temperature or dissolved oxygen value above state water quality standards.																											
Not detected (below detection limit)																													
No Data																													

### Results Summary

- Only 1 of the 7 pesticide detections were found at concentrations above an assessment criterion.
- Chlorpyrifos which was detected for the first time in Peshastin Creek in 2014, was detected again in late March of 2015 at a concentration which may affect invertebrate survival.
- Common products containing chlorpyrifos are Lorsban and Dursban.
- Chlorpyrifos is currently a pesticide of concern in Washington, and was detected in Peshastin Creek for the first time last year.
- Water temperature was within the healthy range for designated salmonid spawning, rearing, and migration habitat until early June through the end of August. 2015 was also an unusually hot and dry year with low stream flows.
- Dissolved oxygen levels remained in the healthy range for salmonid spawning, rearing, and migration habitat for the entire sampling season.

### Recommendations

- Read and follow label directions to protect water quality.
- Eliminate drift and runoff to adjacent surface water.
- Exhibit care especially when applying pesticides in spring (e.g. chlorpyrifos) before vegetation along streams is leafed out.
- Maintain, inspect, and calibrate application equipment.
- Manage irrigation to prevent runoff, and check the weather forecast before application to prevent runoff due to rainfall.
- Implement best management practices, including conservation buffers, vegetative filter strips, maintain groundcover to reduce erosion, sediment basins, and setbacks from water.
- Growers and private landowners should continue to maintain riparian vegetation along Peshastin Creek.