

# PUGET SOUND

## National Estuary Program

### CLALLAM COUNTY PIC PROGRAM

The Pollution Identification and Correction (PIC) Program aims to keep people and the environment healthy by keeping bacterial pollution out of Clallam County waters.

### Tracer Dye Testing

Tracer dyes are one tool used to explore potential pollution sources. When we can't see exactly where water travels over and under the ground, dyes can help show those pathways.



### How Does it Work?

- Charcoal packets are placed in a waterway
- Dyes are introduced at a point assumed to be "upstream" or "up-gradient"
- Charcoal packets in the water are collected and replaced over a series of weeks
- Collected packets are analyzed in a laboratory to see if they've absorbed dyes from the water
- If/when dye shows up in charcoal packets we can gain clues as to its travelled path

### Meadowbrook (Dungeness) Slough Testing

Dye testing was performed in Meadowbrook Slough in July through September of 2017. Dyes were added to sinks, toilets, showers, and other fixtures of participating homeowners to explore possible connections to Meadowbrook Slough. A total of six households were tested in two rounds of three.



In the first round of testing, a fluorescent red dye (called Rhodamine WT) from Mapes St. showed up in the slough with a very strong signal. This means wastewater from the fixtures tested likely does not receive adequate treatment before it enters Meadowbrook Slough. Also of note: a non-trivial amount of fluorescent yellow dye was detected in a single charcoal packet "upstream" from where yellow dye was used on Abernathy St. This packet may have picked up antifreeze from cars as the very same fluorescent yellow tracer dye used is what manufacturers put in antifreeze to make it yellow.

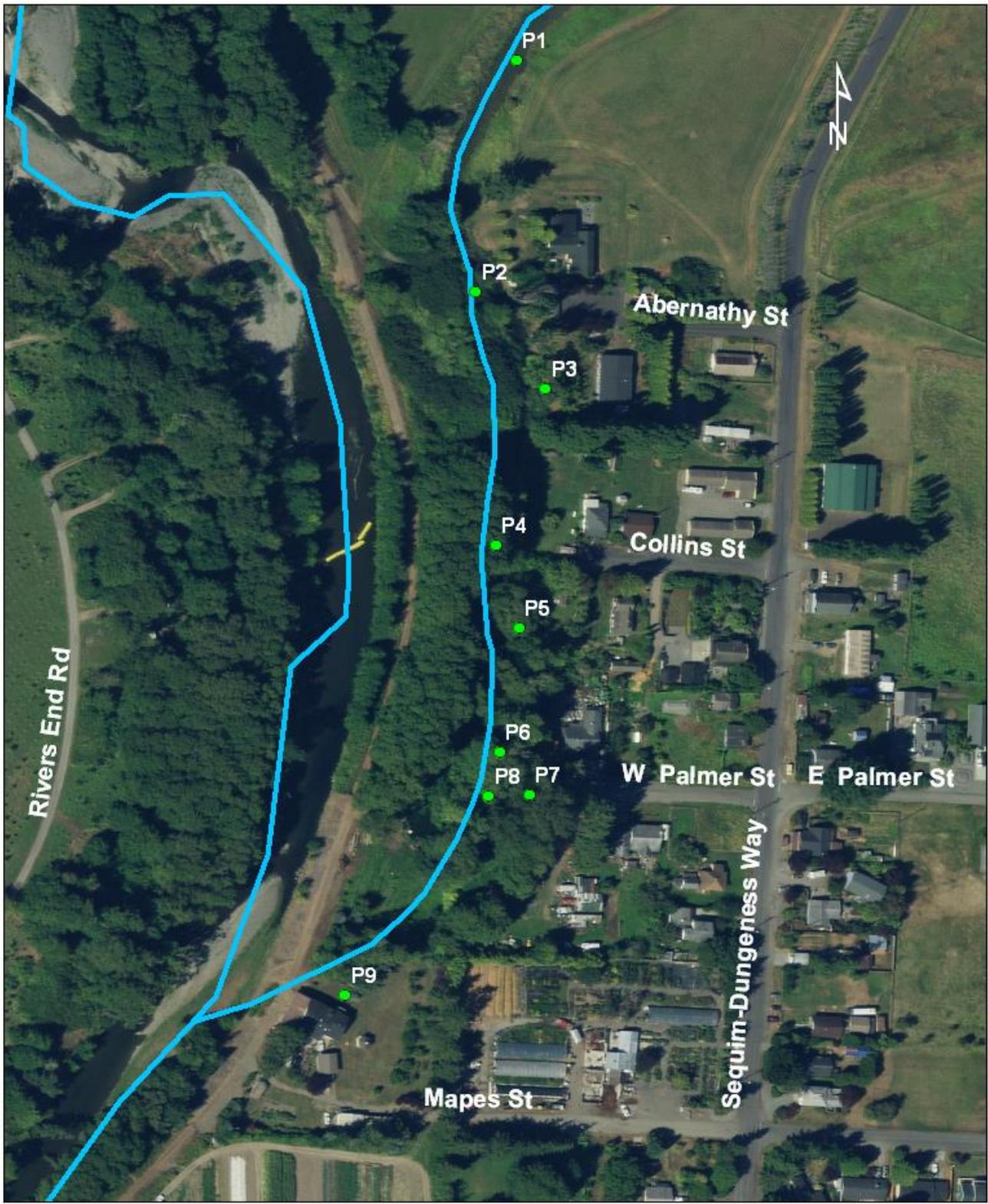
#### FOR MORE INFORMATION

[clallam.net/HHS/EnvironmentalHealth/PICProject.html](http://clallam.net/HHS/EnvironmentalHealth/PICProject.html)  
Jacob Melly, Clallam County Env. Health Services  
[jmelly@co.clallam.wa.us](mailto:jmelly@co.clallam.wa.us), 360.417.2415



# Meadowbrook Slough Dye Testing

Charcoal Packet Locations



0 25 50 100 Meters

Summer 2017

### Certificate of Analysis

**Date of certificate:** August 21, 2017

**Client:** Clallam County Environmental Health  
111 E. 3rd Street  
Port Angeles, WA 98362

**Project name:** PIC Pilot

**Contact person:** Andy Perham (aperham@co.clallam.wa.us)  
Jacob Melly (jmelly@co.clallam.wa.us)

**Samples collected by:** Jacob Melly

**Date samples shipped:** August 9, 2017

**Date samples rec'd at OUL:** August 10, 2017

**Date analyzed by OUL:** August 15 & 16, 2017

**Included with certificate of analysis:**

Table of results, copy of sample collection data sheets, discrepancy sheet and analysis graphs

**Results for charcoal samplers analyzed for the presence of fluorescein, eosine and rhodamine WT (RWT) dyes.**

Peak wavelengths are reported in nanometers (nm); dye concentrations are reported in parts per billion (ppb).

OUL Number	Station Number	Station Name	Date/Time Placed	Date/Time Collected	Fluorescein		Eosine		RWT	
					Peak (nm)	Conc. (ppb)	Peak (nm)	Conc. (ppb)	Peak (nm)	Conc. (ppb)
C4447	P1	Packet 1	7/12/17 NT	7/19/17 1050	ND		ND		ND	
C4448	P2	Packet 2	7/12/17 NT	7/19/17 1110	ND		ND		ND	
C4449	P3	Packet 3	7/12/17 NT	7/19/17 1115	ND		ND		ND	
C4450	P4	Packet 4	7/12/17 NT	7/19/17 1130	ND		ND		ND	
C4451	P6	Packet 6	7/12/17 NT	7/19/17 1150	ND		ND		ND	
C4452	P7	Packet 7	7/12/17 NT	7/19/17 1200	ND		ND		ND	
C4453	P8	Packet 8	7/12/17 NT	7/19/17 1215	516.0 *	0.228	ND		ND	
C4454	P9	Packet 9	7/12/17 NT	7/19/17 1430	519.8 *	1.64	ND		ND	
C4455	P1	Packet 1	7/19/17 1050	7/26/17 1045	ND		ND		ND	
C4456	P2	Packet 2	7/19/17 1110	7/26/17 1055	514.2 *	0.187	ND		ND	
C4457	P3	Packet 3	7/19/17 1115	7/26/17 1100	ND		ND		ND	
C4458	P4	Packet 4	7/19/17 1130	7/26/17 1120	ND		539.6 *	0.125	ND	
C4459	P6	Packet 6	7/19/17 1150	7/26/17 1135	ND		ND		ND	

OUL Number	Station Number	Station Name	Date/Time Placed	Date/Time Collected	Fluorescein		Eosine		RWT	
					Peak (nm)	Conc. (ppb)	Peak (nm)	Conc. (ppb)	Peak (nm)	Conc. (ppb)
C4460	Laboratory control charcoal blank									
C4461	P7	Packet 7	7/19/17 1200	7/26/17 1145	514.4	0.267	ND		ND	
C4462	P8	Packet 8	7/19/17 1215	7/26/17 1200	514.2 *	0.182	ND		ND	
C4463	P9	Packet 9	7/19/17 1430	7/26/17 1246	ND		ND		ND	
C4464	P1	Packet 1	7/26/17 1045	8/2/17 0950	ND		ND		ND	
C4465	P2	Packet 2	7/26/17 1055	8/2/17 1000	ND		ND		ND	
C4466	P3	Packet 3	7/26/17 1100	8/2/17 1005	ND		ND		ND	
C4467	P4	Packet 4	7/26/17 1120	8/2/17 1025	ND		ND		ND	
C4468	P6	Packet 6	7/26/17 1135	8/2/17 1030	ND		ND		ND	
C4469	P7	Packet 7	7/26/17 1145	8/2/17 1040	ND		ND		ND	
C4470	P8	Packet 8	7/26/17 1200	8/2/17 1050	ND		ND		ND	
C4471	P9	Packet 9	7/26/17 1246	8/2/17 1115	ND		ND		ND	
C4472	P1	Packet 1	8/2/17 0950	8/9/17 1030	ND		ND		ND	
C4473	P2	Packet 2	8/2/17 1000	8/9/17 1045	ND		ND		ND	
C4474	P3	Packet 3	8/2/17 1005	8/9/17 1055	ND		ND		567.6	2.25
C4475	P4	Packet 4	8/2/17 1025	8/9/17 1110	ND		ND		ND	
C4476	P6	Packet 6	8/2/17 1030	8/9/17 1120	ND		ND		568.0	69.1
C4477	P7	Packet 7	8/2/17 1040	8/9/17 1130	ND		ND		567.8	121
C4478	P8	Packet 8	8/2/17 1050	8/9/17 1135	ND		ND		ND	
C4479	P9	Packet 9	8/2/17 1115	8/9/17 1200	ND		ND		ND	
C4480	Laboratory control charcoal blank									

**Note:** Dye concentrations are based upon standards used at the OUL. The standard concentrations are based upon the as sold weight of the dye that the OUL uses. If the client is not using OUL dyes, the client should provide the OUL with a sample of the dye to compare to the OUL dyes.

**Footnotes:** ND = No dye detected NT = No time given

\* = A fluorescence peak is present that does not meet all the criteria for a positive dye result. However, it has been calculated as though it were the tracer dye.

**Thomas J. Aley, PHG and RG**



## Certificate of Analysis

**Date of certificate:** October 11, 2017

**Client:** Clallam County Environmental Health

111 E. 3rd Street

Port Angeles, WA 98362

**Project name:** PIC Project

**Contact person:** Andy Perham (aperham@co.clallam.wa.us)

Jacob Melly (jmelly@co.clallam.wa.us)

**Samples collected by:** JTM,AP, LA

**Date samples shipped:** October 3, 2017

**Date samples rec'd at OUL:** October 4, 2017

**Date analyzed by OUL:** October 9, 2017

**Included with certificate of analysis:**

Table of results, copy of sample collection

data sheets, discrepancy sheet and analysis graphs

**Results for charcoal samplers analyzed for the presence of fluorescein, eosine and rhodamine WT (RWT) dyes.**

Peak wavelengths are reported in nanometers (nm); dye concentrations are reported in parts per billion (ppb).

OUL Number	Station Number	Date/Time Placed	Date/Time Collected	Fluorescein		Eosine		RWT	
				Peak (nm)	Conc. (ppb)	Peak (nm)	Conc. (ppb)	Peak (nm)	Conc. (ppb)
C5835	P2	9/6/17 1208	9/12/17 1108	ND		ND		ND	
C5836	P3	9/6/17 1215	9/12/17 1115	ND		ND		ND	
C5837	P4	9/6/17 1225	9/12/17 1137	ND		ND		ND	
C5838	P5	9/6/17 1335	9/12/17 1234	ND		ND		ND	
C5839	P6	9/6/17 1240	9/12/17 1155	ND		ND		ND	
C5840	Laboratory control charcoal blank								
C5841	P8	9/6/17 1245	9/12/17 1210	ND		ND		ND	
C5842	P2	9/12/17 1108	9/19/17 0915	ND		ND		ND	
C5843	P3	9/12/17 1118	9/19/17 0925	ND		ND		ND	
C5844	P4	9/12/17 1138	9/19/17 0955	ND		ND		ND	
C5845	P5	9/12/17 1235	9/19/17 1035	ND		ND		ND	
C5846	P6	9/12/17 1158	9/19/17 1005	518.4 *	0.449	ND		ND	

OUL Number	Station Number	Date/Time Placed	Date/Time Collected	Fluorescein		Eosine		RWT	
				Peak (nm)	Conc. (ppb)	Peak (nm)	Conc. (ppb)	Peak (nm)	Conc. (ppb)
C5847	P8	9/12/17 1210	9/19/17 1015	ND		ND		ND	
C5848	P2	9/19/17 0915	9/26/17 0940	ND		ND		ND	
C5849	P3	9/19/17 0925	9/26/17 0950	ND		ND		ND	
C5850	P4	9/19/17 0955	9/26/17 1005	ND		ND		ND	
C5851	P5	9/19/17 1035	9/26/17 1040	ND		ND		ND	
C5852	P6	9/19/17 1005	9/26/17 1010	ND		ND		ND	
C5853	P8	9/19/17 1015	9/26/17 1025	ND		ND		ND	
C5854	P2	9/26/17 0940	10/3/17 1110	ND		ND		ND	
C5855	P3	9/26/17 0950	10/3/17 1120	ND		ND		ND	
C5856	P4	9/26/17 1005	10/3/17 1135	ND		ND		ND	
C5857	P5	9/26/17 1040	10/3/17 1210	ND		ND		ND	
C5858	P6	9/26/17 1010	10/3/17 1140	ND		ND		ND	
C5859	P8	9/26/17 1025	10/3/17 1155	ND		ND		ND	
C5860	Laboratory control charcoal blank								

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