

# Sampling Site Historical *E. coli* Data Analysis

**S1 Table.** Sampling site information and historical trends in single-day maximum *E. coli* exceedance across study area.

River Tributary	Site	Historical <i>E. coli</i> $\geq 406$ MPN/100mL			
		n	% $\pm$ SE	Trend	p-value
Kilchis	K1	230	28.3 $\pm$ 3.0		
	K2	227	34.4 $\pm$ 3.2	↓	0.01
	K3	229	0.4 $\pm$ 0.4		
	K4	234	0.4 $\pm$ 0.4		
	K5	234	2.1 $\pm$ 0.9		
	K6	229	1.3 $\pm$ 0.8		
Trask	TR1	234	12.4 $\pm$ 2.2		
	TR2	225	69.3 $\pm$ 3.1	↓	< 0.0001
	TR3	172	61.6 $\pm$ 3.7		
	TR4	175	58.3 $\pm$ 3.7		
	TR5	237	0.8 $\pm$ 0.6		
	TR6	237	3.4 $\pm$ 1.2		
	TR7	237	5.1 $\pm$ 1.4		
	TR8	237	59.5 $\pm$ 3.2	↓	< 0.0001
	TR9	237	7.2 $\pm$ 1.7		
	TR10	237	8.0 $\pm$ 1.8		
	TR11	236	77.5 $\pm$ 2.7		
	TR12	236	11.4 $\pm$ 2.1		
	TR13	237	15.2 $\pm$ 2.3		
	TR14	237	28.3 $\pm$ 2.9		
Tillamook	TL1	230	37.0 $\pm$ 3.2		
	TL2	231	5.2 $\pm$ 1.5		
	TL3	231	14.3 $\pm$ 2.3	↓	0.03
	TL4	231	13.0 $\pm$ 2.2		
	TL5	231	11.7 $\pm$ 2.1		
	TL6	231	27.3 $\pm$ 2.9	↓	< 0.0001
	TL7	231	26.4 $\pm$ 2.9	↓	< 0.0001
	TL8	231	16.0 $\pm$ 2.4		
	TL9	231	12.6 $\pm$ 2.2		

‘n’ denotes number of samples included in analysis.

‘%  $\pm$  SE’ indicates percent exceeding 406 MPN 100/mL threshold with standard error between 2005-2015.

↓ indicates a significant decrease in %  $\pm$  SE.

Trend represents sites where there was a significant temporal trend in probability of exceedance of the 406 MPN/100mL threshold ( $p \leq 0.01$ ), after accounting for differences between wet and dry seasons.

Historical *E. coli* data from recommended sites were obtained from the Oregon Department of Environmental Quality. Sample site trends in historical *E. coli* single-day maximum exceedance probabilities (406 MPN/100mL) were based on 10 years of routine monitoring by local water quality managers summarized in Table S1. Percent exceedances ranged from consistently acceptable water quality 0.4  $\pm$  0.4% (K4, K3) to chronically poor 77.5  $\pm$  2.7% (TR11). A

significant ( $p \leq 0.01$ ) decrease in the probability of an *E. coli* single-day maximum exceedance was observed for the K2, TR2, TR8, TL3, TL6, and TL7 sites (Table S1). All remaining sites showed no significant increase or decrease ( $p > 0.01$ ) in water quality exceedances. Temporal trends in *E. coli* exceedance probabilities were calculated using a Firth's logistic regression approach.