

Skagit County personnel (in this case, me) sampled throughout the Samish Basin on 12/28 near the upper end of a 220-cfs rise in the Samish River. The Storm Team also sampled this event. The river rise was triggered by moderate rainfall in the lowlands (0.24" at WSU-Mount Vernon) with apparently higher amounts in the uplands. Results and interpretation are below.

I sampled at the Samish River/Thomas Road site at 0800, then went to the headwaters and worked my way back down, finishing at Thomas Road again at 1105.

Here are the results:

Wednesday, 12/28/2011

<b>Location</b>	<b>Site Number</b>	<b>Fecal Coliform, cfu/100 mL</b>	<b>Duplicate</b>
Samish River at Hwy 9	11	70	
Samish River at upper Prairie Rd	SAM3PR	33	
Parsons Creek at mouth	PAR	33	
Samish River above Parsons Creek	SAMPAR	49	
Samish River at Double Creek Ln	SAMDCL	33	
Skarrup Creek at Double Creek Ln	SKAR	130	
Samish River at 1st Prairie Rd	SAM1PR	79	
Samish River at Grip Road	SAMGRIP	70	
Swede Creek at Grip Rd	8	31	
Samish River at F&S Grade Rd	SAMFS	130	
Weir Creek Prairie Rd	WCPR	79	
Friday Creek at Prairie Rd	6	79	
Samish River at Hwy 99	SAMH99	70	
Thomas Creek at F&S Grade Rd	4	Not sampled	
Thomas Creek at Hwy 99	3	79	
Samish River at Chuckanut Drive	SAMCD	70	
Samish River at Thomas Rd 0800	32	130	240
Samish River at Thomas Rd 1105	32	170	540
Alice Bay Pump Station	33	49	
Edison Slough at School	36	49	
Edison Pump Station	37	110	
North Edison Pump Station	38	1700	
Colony Creek at Colony Road	39	31	

Storm Team volunteers sampled at Thomas Road at 0830 and 1230 – thanks! Their results:

<b>Location</b>	<b>Site Number</b>	<b>Fecal Coliform, cfu/100 mL</b>
Samish River at Thomas Road 0830	32	250
Samish River at Thomas Road 1230	32	160

This event resulted in the precautionary closure of the Samish Bay shellfish beds on 12/28 due to a > 200 cfs rise in the river within 24 hours. The 200-cfs rise criteria for precautionary closing of the bay was developed using data from 2008-2010 and was highly effective in predicting the need for closures.

However, every County and Storm Team sample for this event showed total bacterial loading to the bay to be below the closure criteria. Based on these results, the closure was rescinded in the afternoon of 12/29.

Bacterial loading to the bay for this event varies by which sample result is used in the calculations. Below are the individual loading calculations for each sample and duplicate. The criteria for closing the bay is 4.7E+12, or in plain English, 4.7 trillion bacteria per day. The average loading for all samples for this event is 1.9 trillion bacteria per day, with a range of 0.9 to 4.3 trillion.

Samish River bacterial loading for 12/28/11, County and Storm Team samples.

<b>Sample</b>	<b>FC, cfu/100 ml</b>	<b>River flow, cfs</b>	<b>FC loading, cfu/day</b>
12/28/2011 0800	130	293	9.3E+11
12/28/2011 0800 duplicate	240	293	1.7E+12
12/28/2011 1105	170	325	1.4E+12
12/28/2011 1105 duplicate	540	325	4.3E+12
12/28/2011 0830 Storm Team	250	298	1.8E+12
12/28/2011 1230 Storm Team	160	340	1.3E+12

As mentioned above, the average loading for these samples was 1.9 trillion bacteria per day.

For perspective, on 12/28/10, one year ago, we had a sample of 500 cfu at 270 cfs flow for a loading of 3.3 trillion. This occurred despite a flat hydrograph and only 0.07" of rainfall.

The most recent comparable event occurred on November 12-13 of this year, with a river rise of 170 cfs brought on by 0.33" of lowland rain. That event produced a fecal coliform count of 530 cfu (the higher of two duplicates) and a loading of 3.5 trillion.

Additional rains Wednesday night and Thursday brought the river up about 50 cfs by Thursday morning. We took more Samish River/Thomas Road samples yesterday morning (12/29) and this morning (12/30). Results from those samples will be distributed when available.

Thanks to Bill Bowen, Bob Pare, and Jack Sekora for the Storm Team samples and Pete Haase for distribution of same.

Thursday, 12/29/11

The river was at 325 cfs when we sampled Wednesday late morning. It rose to 356 cfs Wednesday afternoon, declined slightly, then rose further to 418 cfs early Thursday morning from a minor rain event (0.07" at WSU-Mount Vernon). We sampled at 0800 when the river was at 411 cfs. The results:

<b>Location</b>	<b>Site Number</b>	<b>Fecal Coliform, cfu/100 mL</b>	<b>Duplicate</b>
Samish River at Thomas Road 0800	32	46	33

Obviously good news – not only did the closure get rescinded based on Wednesday results, the Thursday results showed that the river coliform counts declined significantly despite a little additional rainfall and a modest river rise.