

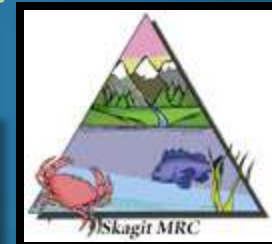


Samish Department of Natural Resources Environmental Monitoring in Fidalgo Bay

Funded by:



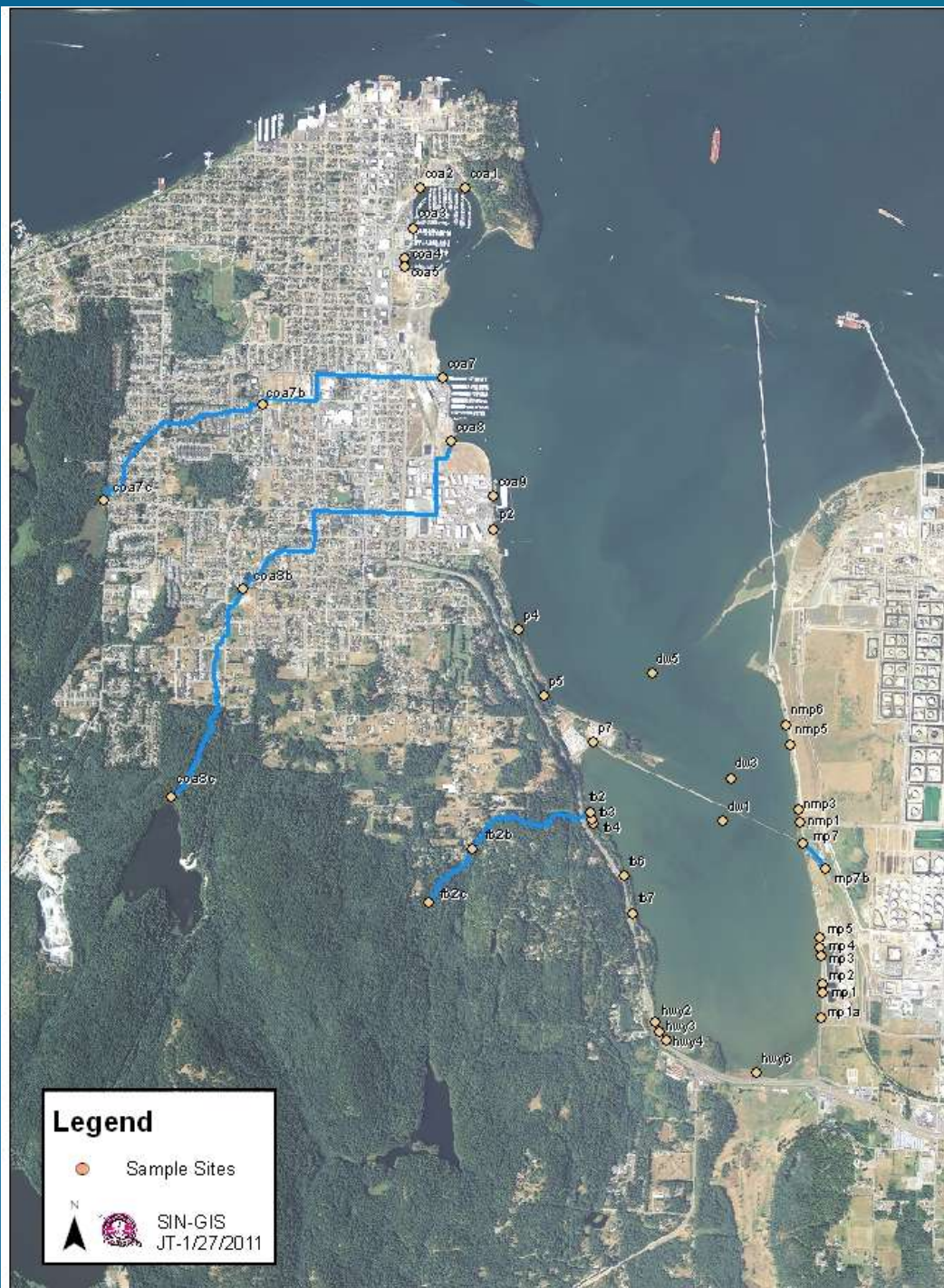
Past Funding Provided By:



Monitoring Scope:

- Bulk of data collected under a BOR funded grant started in 2005-2008
 - Identified all stormwater outfalls into Fidalgo Bay and began monitoring for Temp, DO, Cond, pH, Salinity, and fecal coliform.
- Additional funding from the Skagit MRC started in the Spring of 2007
 - Allowed for sampling metals, pesticides, PCBs and nutrients at a subset of above sites starting in Spring of 2007 through Summer of 2009
- MET data collection began with initial funding from EPA in Spring of 2006 and funded by WaDNR in 2007 (unfunded now).
- Continuous Temperature Study in Eelgrass beds started Summer of 2008 with funding from WaDNR and currently funded by EPA.
- Watershed Mapping and Watershed Assessment Pilot Study funded by WaDNR (2007-2008)
- Current water quality work and watershed assessment study funded under EPA
 - Allows for continued outfall sampling and upland sampling

with Sites



Fidalgo Bay Continuous Temperature Study



Data Integration:

- As of January 2008, Data was integrated into a single MS Access database
 - -Now entering our sixth year of data collection
 - -Allows for trend analysis and enhanced site by site data analysis

- Enhanced ability to turn numbers into real information
 - -"trouble" drainages identified and intensive sampling to isolate inputs developed
 - -MRC study indicated need for nutrient data collection and analysis
 - Now in our second year of data collection for nutrients
 - Working to develop a first cut nutrient load into Fidalgo Bay

Microsoft Access

Table Tools

Home Create External Data Database Tools Datasheet

View Paste Copy Cut Copy Format Painter

Calibri 11

Font Rich Text Records Sort & Filter Window Find

Refresh All New Save Delete More Spelling Selection Advanced Toggle Filter

Size to Fit Form Switch Windows Find Replace Go To Select

- Tables
- FidalgoBayYSI_040107To083107
 - FidalgoBayYSI_090107To013108
 - FidalgoBayYSI_current
 - FidalgoBayYSI_pre033107
 - Station_090107To013108
 - Station_current
 - Station_pre033107
 - ViewDataTable

ViewDataTable

DateTime	Station	Temp	DO	DOConc	pH	Cond	SpCond	Salinity	Fec	Comments
12/11/2008 1:00:00 PM	MP5	8.96	106.3	12.28	7.87	0.386	0.557	0.27	0	
12/11/2008 12:53:53 PM	MP7	7.54	85.3	10.19	7.54	0.441	0.662	0.32	0	
12/11/2008 12:48:57 PM	NMP1	9.08	91.7	10.56	7.74	0.337	0.485	0.24	0	
12/11/2008 12:42:39 PM	NMP3	8.51	103.3	12.07	7.89	0.291	0.424	0.21	0	
12/11/2008 12:21:58 PM	FB6	8.23	94.7	11.15	8.07	0.183	0.269	0.13	0	
12/11/2008 12:14:23 PM	FB3	7.62	106	12.66	7.87	0.149	0.223	0.11	0	
12/11/2008 11:40:45 AM	P8	8.54	20.3	2.37	7.22	0.618	0.901	0.45	0	
12/11/2008 11:19:11 AM	P6	10.74	95.5	10.58	7.65	0.394	0.542	0.26	0	
12/11/2008 11:15:31 AM	P5	8.25	105.8	12.45	7.78	0.199	0.292	0.14	0	
12/11/2008 11:06:52 AM	P4	9.04	83.1	9.59	7.48	0.296	0.426	0.21	0	
12/1/2008 11:50:54 AM	DW1	8.99	80.2	7.68	7.62	31.723	45.701	29.39	2	
12/1/2008 11:47:05 AM	DW2	9.01	81.7	7.82	7.61	31.688	45.621	29.33	1	
12/1/2008 11:43:34 AM	DW3	8.98	77.6	7.42	7.58	31.837	45.872	29.51	1	
12/1/2008 11:40:00 AM	DW4	9.01	79.2	7.57	7.55	31.809	45.798	29.46	1	Replicate also <2
12/1/2008 11:32:22 AM	DW5	9.01	79.6	7.6	7.47	31.87	45.879	29.52	2	
11/25/2008 12:06:31 PM	MP3	5.68	101.6	12.74	7.91	0.244	0.387	0.19	4	sampled on opposite side of rd
11/25/2008 12:02:08 PM	MP5	7.39	98.6	11.84	7.84	0.233	0.35	0.17	500	
11/25/2008 11:56:38 AM	MP7	7.26	83	9.99	7.56	0.428	0.648	0.32	80	Replicate 30
11/25/2008 11:49:49 AM	NMP1	7.88	85.7	10.16	7.69	0.28	0.416	0.2	300	
11/25/2008 11:45:00 AM	NMP3	8.3	94.8	11.14	7.74	0.244	0.358	0.17	11	
11/25/2008 11:36:23 AM	NMP5	7.43	105.4	12.66	7.76	0.171	0.257	0.12	22	
11/25/2008 11:28:00 AM	NMP6	7.36	101.7	12.23	8.01	0.146	0.221	0.11	80	
11/25/2008 11:07:11 AM	FB3	7.29	104	12.53	7.99	0.151	0.228	0.11	4	
11/25/2008 10:59:34 AM	P6	10.2	93.4	10.47	7.55	0.435	0.607	0.3	1	
11/25/2008 10:55:07 AM	P5	8.4	103.4	12.12	7.8	0.123	0.179	0.09	170	
11/25/2008 10:46:00 AM	P4	9.56	78.3	8.92	7.32	0.28	0.396	0.19	1	Replicate also <2
11/17/2008 12:46:37 PM	DW1	9.17	84.4	8.04	7.68	31.992	45.859	29.51	1	
11/17/2008 12:43:41 PM	DW2	9.13	82.6	7.87	7.67	31.973	45.879	29.53	1	
11/17/2008 12:40:49 PM	DW3	9.08	84.8	8.1	7.65	31.873	45.799	29.46	4	
11/17/2008 12:37:16 PM	DW4	9.11	85.3	8.13	7.59	31.937	45.852	29.5	8	Replicate <2
11/17/2008 12:33:05 PM	DW5	9.22	80.6	7.67	7.49	32.119	45.977	29.6	1	
11/10/2008 1:13:58 PM	MP1A	16.04	98.7	9.72	8.37	0.209	0.252	0.12	30	Rain event
11/10/2008 1:08:08 PM	MP2	14.17	101.7	10.43	8.13	0.311	0.392	0.19	17	Rain event
11/10/2008 1:03:24 PM	MP3	12.05	99.1	10.66	8.02	0.248	0.329	0.16	80	Rain event
11/10/2008 12:58:48 PM	MP5	13.51	91.3	9.5	7.78	0.38	0.487	0.24	30	Rain event
11/10/2008 12:48:30 PM	MP7	11.32	74.4	8.12	7.5	0.483	0.654	0.32	50	Replicate 48; Rain event
11/10/2008 12:41:56 PM	NMP1	13.54	69.4	7.22	7.58	0.352	0.451	0.22	240	Rain event

Record: 1 of 2039 No Filter Search

Results So Far

5 year water quality report
available on our website:
www.samishtribe.nsn.us

Samish Indian Nation-Department of Natural Resources



Fidalgo Bay Water Quality Summary Report
Fall 2005-Spring 2010

Prepared: August 2010

Funded by:



PugetSoundPartnership
FOR SOUND, AIR, COASTAL, AND WATER



Results So Far

Samish Indian Nation

Department of Natural Resources

First year Continuous
Temperature Results
www.samishtribe.nsn.us

(year 2 and three updates
on the way!)



Continuous Temperature Monitoring in Fidalgo Bay

Year 1- Methods and First year Results

June 2009

Results So Far Fecal Coliform

- Complexity of State Water Quality Standards
 - Marine vs. Freshwater standards
 - Some drainages are seasonally marine
 - Tides and timing
 - Seasonal flow issues
 - Ephemeral inputs
- Nearly every drainage has failed State Water Quality Standards for fecal Coliform
 - Most are seasonal failures
 - Of those, most are wet season failures
 - Some are summer failures though
 - Most fail on the 10% rule (no more than 10% of the samples used to calculate geomean can be in excess of 200 fecal coliform colonies.
 - Several are consistent geomean failures
- Good News – deep water sites do not reflect fecal issues

Results So Far-General Parameters

- In General, State Standards are being met
 - Especially in the wet season
 - Higher flows, cooler temps
 - Dry season
 - Some DO issues as ephemeral streams run dry –natural conditions
 - Some high grab sample temps for same reason (not continuous in fresh water inputs)
- Continuous Marine Temperature Monitoring
 - Complexities of State Standards vs. characteristics of the bay
 - All monitored areas showed periods of time that exceeded State Standard of 16°C
 - Natural conditions?
 - Environmental effects?



Pre Oil Spill PAH work

- Summer of 2009-Funded by Puget Sound Partnership/EPA
 - Samples water column, sediment and clam tissue at 5 transects around Weaverling Spit
 - Used Tesoro-Ephemeral Data Collection Plan (EDCAP) co written by WaDOE and WaDFW spill response group and Tesoro Refineries
 - Received Ephemeral Data Collection training from WaDOE and WaDFW
 - Lab Analysis by Manchester Labs (WaDOE)
 - Two Samish DNR staff certified in HAZMAT enabling us to assist in the event of a spill anywhere in North Puget Sound
 - 5 pre stocked “GO KITS” located at the RV Park

Pre Oil Spill PAH work - Results

- Gave us ambient base levels of PAH's for Fidalgo Bay
 - Gives us a pre oil spill target to return to if there were a spill in the bay
 - Ambient data indicates no areas of concern for PAH's in tissue, water or sediment

And Then.....

Pre Oil Spill PAH work - Results



Pre Oil Spill PAH work - Results

- November 2009 with funding from Resources in Bellingham
 - Resampled 3 of the 5 original transects for PAHs in sediment and tissue to see if there were any ill effects to environmental conditions due to trestle fire (creosote pilings and plastic decking)
 - Slightly elevated levels of some PAH compounds in inner bay but no levels reaching health concerns
 - In fact, some PAH levels were decreased from July sample event

Future Work

- Continue to identify drainages that pose a threat to the overall health of Fidalgo Bay and positively work with landowners to address the issues.
- MRC sampling indicates possible nutrient load threat to the roll out of large scale sampling for nitrate/nitrite and Total P in outfalls and upland location (in progress).
- Develop fist cut nutrient loading for Fidalgo Bay.
- Continue continuous temperature study in the eelgrass beds and tide flats- analyze for adverse effects to biota and look for climate change trends.
- Continue gathering baseline MET data for use in climate change monitoring.

Questions??



We have to get back to work.....