

Research Question & Background

Our group was interested in the water quality of Dakota Creek as it flows into Drayton Harbor. The water quality has been occasionally tested since 1992 (Water Quality Screening in the Dakota, Bertrand, and Fishtrap Creek Watersheds Whatcom County, Washington, Dickes, 1992). Past concerns about livestock waste and failing septic systems have caused conservation groups to monitor the waters (California Creek and Drayton Harbor Microbial Source Tracking Pilot Study Monitoring Plan, Dec 2006; Whatcom County 2011 Water Quality Report and Priority Areas Fecal Coliform in Coastal Drainage, 2011). Our questions are; What is the current water quality of Dakota Creek and Drayton Harbor? and, How do they compare to the testing of the same waters in 1992?

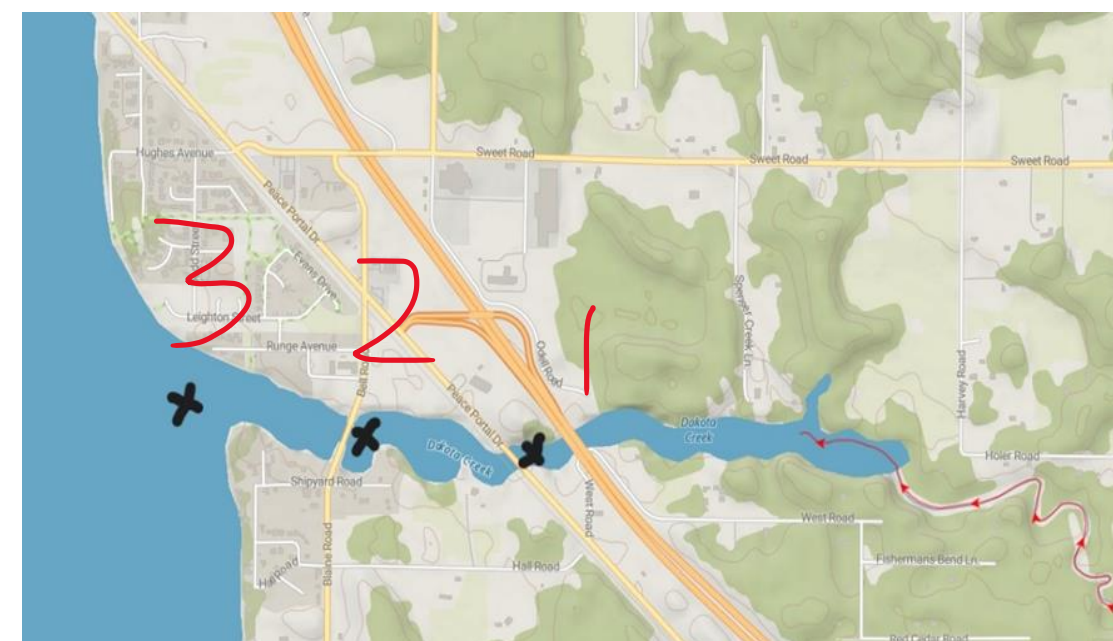
Methods

Materials & Location

Surface water samples were collected in Dakota Creek at the Portal Way bridge, & Blaine Road bridge, and then 30 meters into Drayton Harbor from the mouth of the creek.. We used: a handheld temperature strip; DO pills dissolved into water samples; & pH and Nitrates test strips.. This testing was done once at extreme low tide, and again at high tide.

Procedure

Surface samples were collected at midstream at each of the following locations,. See the map below. #1 = Portal Bridge, #2= Blaine Rd, #3= Drayton Harbor:



3. The Harbor



2. Blaine Rd



1. Portal Way

How Did It Measure Up?

Measure	Standard Range	Portal Way		Blaine Rd		Drayton Harbor	
		Low	High	Low	High	Low	High
Temp (C)	10-18 C in May ₁	20	20	20	15	15	20
Dissolved Oxygen (DO)	Rivers 8-12 mg/L; Harbors 4-8 mg/L ₂	4	4	8	4	4	2
pH level	7.5 – 8.5 ₃	7	7	6	7	7	7
Nitrates	< 1mg/L ₄	0	0	0	0	0	0

Table 1. Standards and Findings

Comparing 1992 to 2023

Measure	1992	2023
Temp (C)	9.7	20
D.O.	8.4	4.0
pH Level	7.0	7
Nitrate	.076	0

Table .2 A comparison of data from 1992 & 2023 on Dakota Creek at Portal Way Bridge, during low tide.

Discussion & Interpretations

Our findings (Table 1) were interesting. Water temperature readings were consistently higher than the normal range for May. The dissolved oxygen (DO) readings were the most concerning. Our readings ranged from 2 – 8 mg/L. According to the standard range, Drayton Harbor water was significantly hypoxic to marine life at high tide. When you compare data from 1992 to 2023 (Table 2) temperature and DO levels are significantly changed, and not for the better. The pH findings were also concerning as they were below the standard range at each location, both now and in 1992.

Limitations & Further Questions

Some limitations should be noted here. More sensitive testing equipment would give more precise results. Our data sample is very small both in number of days tested and number of sites along the creek tested. Also, deeper water testing in Drayton Harbor would be helpful.

Our findings lead to more questions. What has contributed to increased water temperatures? What factors are contributing to the low DO in the creek and bay?

Acknowledgements

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References Cited

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Dikes, 1992, Water Quality Screening in the Dakota, Bertrand, and Fishtrap Creek Watersheds Whatcom County, Washington.