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STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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M E M O R A N D U M

August 13, 1981

To: John Bernhardt

From: Art Johnson, Shirley Prescott

Subject: Water Quality Measurements in Budd Inlet, July 2, 1981

On the afternoon of July 2, 1981 a series of temperature, salinity, D.O., pH, and total sulfide measurements were made at your request in the lower end of Budd Inlet. Station locations, sampling methods, and analytical results are shown in the attached table.

Our observations on reviewing the data are as follows:

1. Inlet waters were stratified with respect to temperature, salinity, D.O., and pH.
2. Sulfide was not detected at any station except during the period LLW \pm 1 hour. A single, very high reading of 2.2 mg/L total sulfide was observed nearshore at the Fiddlehead Marina boat launch. A few sulfide readings in the 0.1-0.3 mg/L range were also observed at several nearby stations at existing temperatures and pHs. The undissociated H₂S fraction would have exceeded EPA's .002 mg/L protection criterion for fish and other aquatic life. The accompanying low DO concentrations, discussed below, would act to increase the hazard from sulfide.
3. DO ranged from 1.1 to 6.9 mg/L. Most readings were below the 5.0 mg/L Class B standard. Surface waters were generally depleted in oxygen relative to bottom waters; probably as a result of BOD exerted by the STP effluent. During the initial stage of flood tide DO decreased downstream of the outfall. At about LLW + 2 hours DO increased coincident with influx of less saline surface waters from the southeast (as indicated by drogue movements).

WATER QUALITY DATA COLLECTED IN THE VICINITY OF THE
LOTT STP BYPASS OUTFALL IN BUDD INLET, JULY 2, 1981^a

Station No.	Description	Time	Sampling Depth (Meters)	Temp. ^b (°C)	Salinity ^c (0/00)	D.O. ^b (mg/L)	pH ^d	Total ^e Sulfides (mg/L)
#1	Finger pier inside outfall	11:15	0.5	16.5	21.5	4.1	7.1	0
		12:50	"	-	-	-	-	0.3
		13:30	"	-	-	-	-	0.2
		14:00	"	-	-	-	-	0
		14:45	"	13.0	21.1	2.0	7.7	0
#2	North end gas dock	11:20	0.5	16.0	21.5	3.4	7.2	0
		12:45	"	-	-	-	-	0
		13:35	"	-	-	-	-	0
#3	10 meters west of outfall	11:30	0.5	16.0	21.5	3.4	7.2	0
		11:35	3	13.5	31.9	4.5	7.9	0
		12:40	0.5	-	-	-	-	0
		13:35	"	-	-	-	-	0
		14:15	"	19.0	21.4	3.5	7.5	0
		14:45	"	17.0	22.0	1.6	7.7	0
#4	South end gas dock	11:45	0.5	16.0	22.4	3.4	7.5	0
		11:55	2	14.0	31.6	3.9	7.9	0.1
		13:00	0.5	-	-	-	-	0
		13:40	"	-	-	-	-	0
		14:15	"	18.0	22.2	1.9	7.5	0
		14:50	"	18.0	16.4	6.9	7.8	0
-	At Fiddlehead boat ramp	13:55	0.5	20.0	22.1	1.1	7.3	2.2
		14:10	0.5	18.0	21.6	2.9	7.8	0

Budd Inlet, July 2, 1981 (continued)

Station No.	Description	Time	Sampling Depth (Meters)	Temp. ^b (°C)	Salinity ^c (0/00)	D.O. ^b (mg/L)	pH ^d	Total ^e Sulfides (mg/L)
#5	Third slip south of gas dock	12:10	0.5	17.0	22.0	4.0	8.0	0
		12:15	3	14.0	31.8	3.9	8.1	0
		13:05	0.5	-	-	-	-	0.1
		13:45	"	-	-	-	-	0.2
		14:20	"	19.5	21.7	1.6	8.0	0
		15:00	"	18.0	15.6	6.5	8.1	0
#6	North end Percival Landing	12:20	0.5	13.5	21.8	3.5	8.1	0
		12:25	2	15.0	31.5	4.3	8.2	0.1
		13:10	0.5	-	-	-	-	0
		13:50	"	-	-	-	-	0
		14:25	"	18.5	21.7	1.8	8.1	0
		15:05	"	18.0	14.7	5.9	8.2	0
#7	Percival Landing	12:30	0.5	18.0	31.5	3.9	8.2	0
		12:35	3	13.5	31.3	3.5	8.2	0
		13:15	0.5	-	-	-	-	0
		13:55	"	-	-	-	-	0
		14:30	"	19.5	20.4	5.3	8.0	0
		15:10	"	18.5	11.8	6.2	8.1	0
-	West side of Budd Inlet across from Fiddlehead Marina	14:40	0.5	19.0	21.4	2.7	7.5	0
		14:50	3	14.0	32.1	3.4	8.1	0

a. LLW 12:44 hours - 3.1 feet

b. IBC dissolved oxygen and temperature monitor (D.O. corrected for salinity)

c. Beckman induction salinometer.

d. Orion Research "ionalyzer."

e. La Motte-Pomeroy field kit.