

MEMORANDUM
Water Pollution Control Commission
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TO: Nelson Graham, Don Provost, Ron Lee

DATE: August 3, 1970

FROM: Bob Bishop

SUBJECT: Willapa River Survey

On August 4 and 5, 1970, a survey of the Willapa River was conducted at certain stations (Figure 1), to provide data for use in determining summer river conditions. The survey was conducted from 1430 to 1700 hours August 4, and from 0900 to 1100 hours August 5, when the high tide was 8.4 ft. at 1600 hours and the low tide was -0.2 ft. at 1018 hrs, respectively. Parameters measured were: total coliform bacteria, salinity, DO, temperature, conductivity, turbidity, pH (Tables 1,2, and 3). Station depth profiles for certain parameters were taken. Station 8 was located upstream from the log storage area. Station 10 was not sampled due to log storage in the area.

Chlorine flash and residual readings were taken at stations near the lagoons and primary STP at Raymond; all were less than .05 ppm. At station 12, the STP outfall effluent boil and visible surface layer was approximately 10 ft. in diameter at high tide and 20 ft. in diameter at low tide. The station 12 coliform samples were collected about four feet inside the effluent boil area. The station 13 samples were taken about 40 yards upstream from the visible effluent boil.

On 8-4-70, DO readings were recorded using a DO meter, however, when Winkler DO concentrations were determined for four stations, the meter readings were inaccurate when compared. The recorded DO meter readings were discarded. The four Winkler DO concentrations were quite representative of the survey area. On 8-5-70, Winkler DO's were determined for various depths at the stations (Table 3).

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WILLAPA RIVER

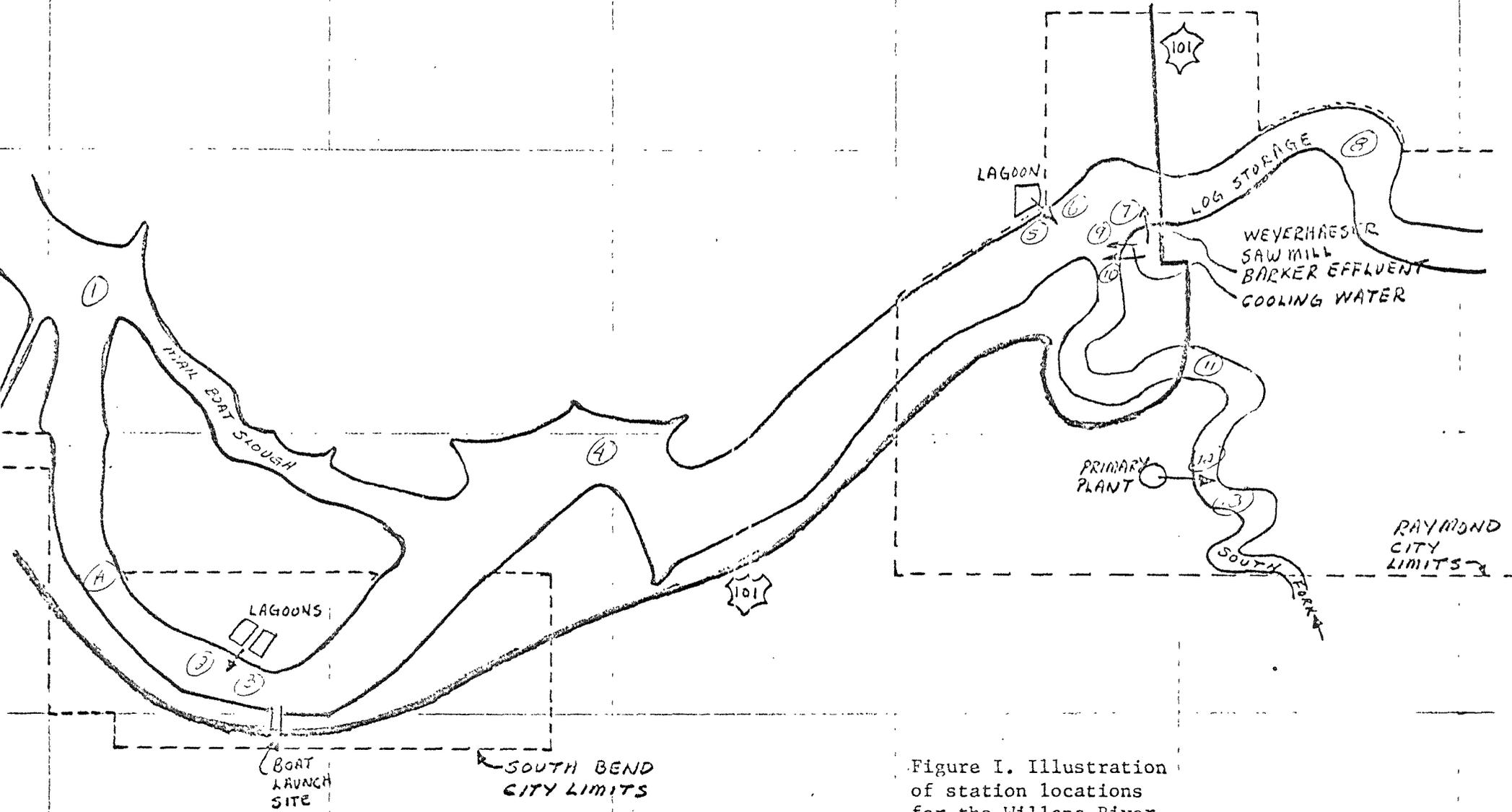


Figure I. Illustration of station locations for the Willapa River survey

Table 1. Total coliform sheen colonies per 100 ml for surface samples at the Willapa River survey stations, high and low tides.

Stations	high tide 8-4-70	low tide 8-5-70
1	20	180
14	20	130
2	20	200
3	80	370
4	80	410
5	160	690
6	170	380
7	320	120
9	200	450
11	350	830
12	5000	8000
13	200	1050
8	240	230

Table 2. Salinity, DO, temperature, conductivity, turbidity, pH, and sampling time for various depths at the Willapa River survey stations, high tide, 8-4-70.

Stations	depth	sampling depths	time daylight	sal. ppt.	DO ppm	Temp. °C	Cond. umhos/cm.	turb. JTU	pH
1	34 ft.	1 ft. 15	1450	24.5 24.8		18.8 18.5	38,500	8	7.9
14	34	1 15	1505	24.5 24.8	6.9	19.0 18.8	37,800	10	7.9
2	26	1 15	1510	24.0 24.2		19.1 18.8	38,200	10	7.9
3	24	1 15	1520	23.9 24.2		19.1 18.8	37,900	10	7.9
3 (main channel)	40	1 10 20 30		24.0 23.7 24.2 24.4		19.1 10.0 18.9 18.7			
4	38	1 10 20 30	1535	22.7 23.4 23.6 23.7	6.8	19.5 19.1 19.0 19.0	36,100	10.	7.8
5	36	1 10 20 30	1550	20.8 22.0 22.5 22.8		19.5 19.1 19.0 19.1	32,900	7.	7.6
6	34	1 15	1600	21.1 22.2		19.6 19.1	33,900	9	7.6
9	30	1 15	1605	20.8 22.1		20.0 19.3	33,000	8	7.6
11	18	1 15	1610	19.6 20.8		19.7 19.2	30,500	10	7.5
12	17	1 15	1620	19.3 20.1		19.5 19.1	30,800	13	7.4
13	17	1 15	142	19.6 20.6	6.2	19.8 19.2	30,900	8	7.5
7	30	1 15	1635	21.5 22.2		19.3 19.3	34,200	10	7.6
8	20	1 15 20	1645	19.6 20.2 19.9	6.0	19.4 19.5 19.3	31,100	8	7.5

Table 3. Salinity, DO, temperature, conductivity, turbidity, pH, and sampling time for various depths at the Willapa River survey stations, low tide, 8-5-70.

Stations	depth	sampling depths	time daylight	sal. ppt.	DO ppm	Temp. °C	Cond. umhos/cm.	turb. JTU	pH
1	30 ft.	1 ft. 15	0900	23.3 <u>23.2</u>	6.4	18.8 <u>18.8</u>	35,000	10	7.8
14	30	1 15	0905	22.9 <u>23.1</u>	6.3 6.1	19.0 18.7	34,800	12	7.4
2	22	1 15	0915	22.4 <u>22.7</u>	6.1 <u>6.1</u>	19.0 <u>18.9</u>	34,600	13	7.6
3	25	1 15	0925	22.1 <u>22.3</u>	6.2 <u>6.0</u>	19.1 <u>19.1</u>	35,500	11	7.6
4	28	1 20	0935	20.6 <u>20.8</u>	6.0 <u>5.7</u>	19.2 <u>19.1</u>	32,000	11	7.6
5	26	1 15	0945	17.1 <u>17.5</u>	5.8 5.8	19.0 <u>19.3</u>	27,800	11	7.3
6	25	1 15	0950	17.4 <u>17.7</u>	5.7 <u>5.6</u>	19.3 <u>19.5</u>	27,500	9	7.3
9	24	1 15	0955	16.3 <u>17.7</u>	5.8 5.5	20.3 19.4	27,100	10	7.3
11	7	1 5	1005	10.9 <u>11.8</u>	6.1	18.3 <u>18.4</u>	18,100	11	7.4
12	6	1 5	1015	9.7 <u>10.0</u>	6.7	18.4 18.3	13,200	63	7.0
13	10	1 8	1020	9.4 <u>10.0</u>	6.9	18.4 <u>18.2</u>	15,500	12	7.1
7	15	1 10	1035	16.7 <u>17.4</u>	6.2 5.4	19.4 19.2	27,100		
8	15	1 12	1050	11.3 <u>12.7</u>	6.2 5.7	19.8 19.3	14,400	6	7.3