

Memo to: Ron Robinson

WA-11-1030

Subject: Eatonville Sewage Lagoon
Mashel River Survey

From: Ronald C. Devitt *RCD*

I. Objective:

To determine the effect of Eatonville sewage lagoon effluent on the Mashel River in the vicinity of the outfall.

II. Introduction:

On June 5, 1973 I collected samples from the unchlorinated lagoon at Eatonville and from the Mashel River above and below the city's discharge.

III. Sampling Locations: (See attached sketch)

- Station 1. Mashel River upstream - 15 yards above outfall.
- Station 2. Combined effluent and small portion of river - 10 yards below outfall at concrete pier.
- Station 3. Mashel River downstream - 5 yards below highway bridge.
- Effluent - Sewage lagoon effluent at discharge weir.

DATA

A. Field

	Time	T(C°)	pH	Cond. (µmhos/cm)
Effluent	1030	19.5	7.2	170
Station 1	1050	15.6	7.1	40
Station 2	1110	17.7	7.4	48
Station 3	1130	15.8	7.4	45

B. Lab Chemical *

Station:	Eff.	#1	#2	#3
pH	7.1	7.2	7.2	7.2
Turbidity (JTU)	15	1	2	2
Conductivity (µmhos/cm) @25°C	280	72	66	60
COD	113	4	8	4
BOD (unfiltered)	25	<2	3	<2
BOD (filtered)	16			
N03-N (filtered)	.02	.02	.03	.02
N02-N (Filtered)	ND	ND	ND	ND
NH3-N (Unfiltered)	.02	.10	.18	.08
T. Kjeldahl-N (Unfiltered)	5.20	.20	.66	.26
O-P04-P (Filtered)	3.24	.22	.18	.08

Total Phos. - P				
(Unfiltered)	6.30	.30	.50	.28
Total Solids	214	117	91	48
Total Non Vol. Solids	100	48	59	2
Total Suspended Solids	53	6	9	7
Total Sus. Non Vol.				
Solids	2	3	2	0

* Data in ppm unless otherwise noted.

C. <u>Lab Coliform</u>		(Colonies/100mls)		
Time	Station	Total	Fecal	Fecal Streptococci
1030	Effluent	>160,000	2,200	340
1041	#1	400	<40	<40
1045	#2	11,000	210	<40
1050	#3	2,500	40	<40
1140	Effluent	600,000	2,000	420
1141	#1	180	<40	<40
1145	#2	11,000	200	<40
1150	#3	2,300	40	<40

IV. Discussion of Data

A. Field

Field results indicate a slight increase in pH, temperature and conductivity caused by the sewage effluent.

B. Lab Chemical

No significant deterioration in water quality was noted. Since there was living Daphnia and algae in the effluent sample, an unfiltered and filtered BOD were run. The filtered represents the suspended BOD.

C. Coliform

The numbers of coliform in the unchlorinated sewage lagoon effluent were gross. "Apparent" water quality violations were obvious downstream.

No doubt this effluent should be chlorinated.

The fecal coliform:fecal streptococci ratio of the effluent was 2200/340 (6.5) at 1030 hours and 2000/420 (4.8). These numbers again exhibit the fact that human sewage fecal:fecal streptococci ratio is greater than 4.4 and can be a useful biological tool in water pollution work. No "real" numbers were obtained for fecal strep in the receiving waters, so the use of the ratio would have been limited to identifying that the discharge was of human origin.

VI. Observations

The entire surface of the lagoon was covered with duckweed (see picture). Settleable solids were nil and those present were small Daphnia.

City personnel were scything the grass on the lagoon banks.

There was no way to determine the flow of the effluent because the surface of the weir had several breaks.

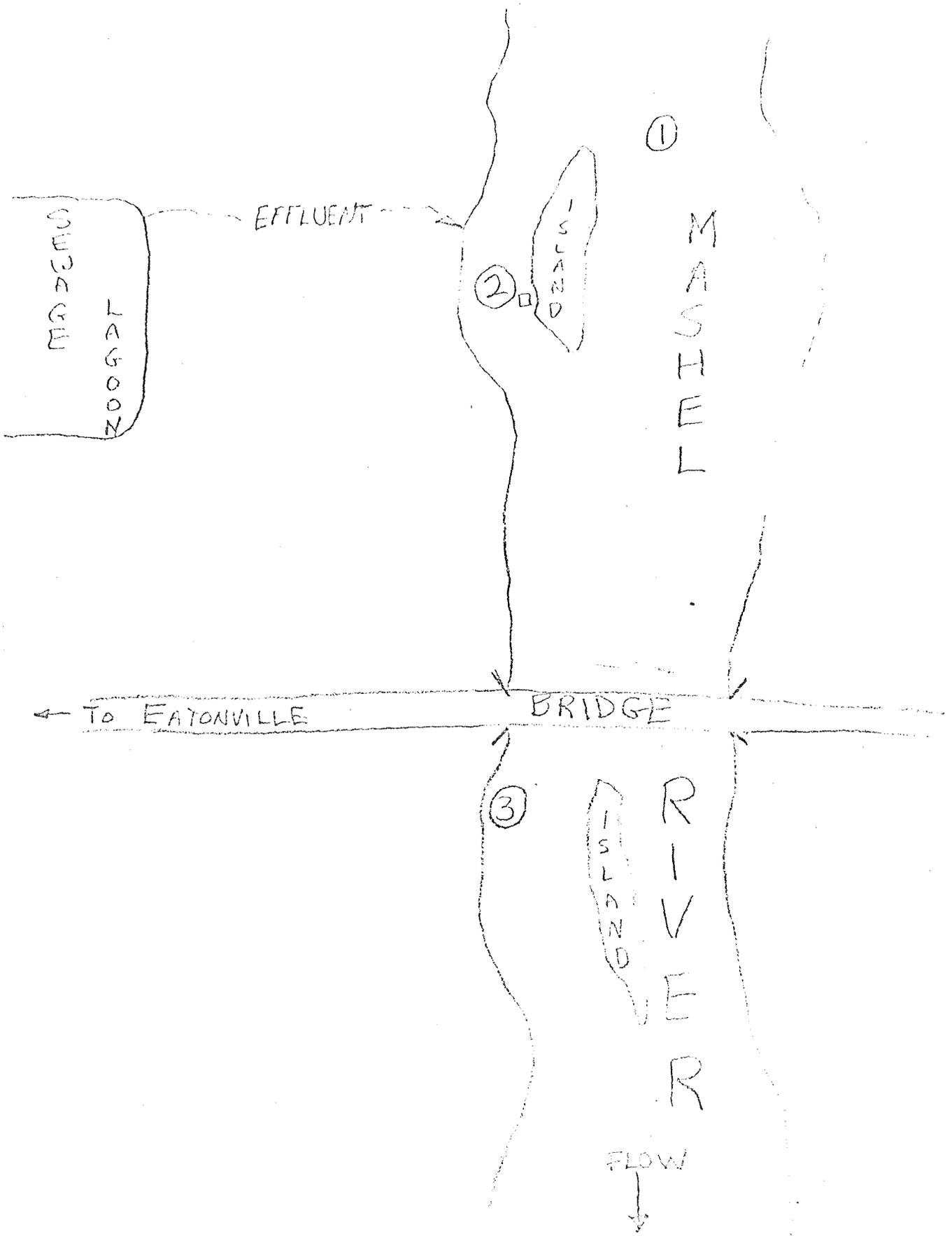
There were no warning signs on the fence.

VII. Summary and Conclusion

The unchlorinated sewage discharge from Eatonville lagoon was obviously contributing gross numbers of coliform to the Mashel River and causing a violation of water quality for that parameter.

The discharge should be disinfected.

N



Not to Scale