MEMORANDUM

Department of Ecology

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For Action	
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Other	

TO: Dan Neal

Publication No. 74-e42

WA-44-1020

FROM: Scott Jeane

SUBJECT: Waterville Sewage Lagoon, Douglas Co., WA

The City of Waterville (population 1005) is serviced by a single cell sewage lagoon. The lagoon is located approximately 1.5 miles south of the city. On July 26, 1972, I visited the lagoon and completed an investigation of its operation. The influent and effluent were examined and composited at 30 minute intervals.

Analysis

Physical parameters measured included flow, temperature, pH, conductivity, solids, and oxygen demand. (see tables 1 and 2) The pH increase is due to alga activity. The lack of decrease in COD is mainly due to large numbers of aquatic organisms (daphnia, mosquitoe larvae) present in the effluent samples. A laboratory error prevented analysis on more than one of the bacteria samples. The presence of horses around the lagoon is beneficial in control of vegetation growing upon the lagoon's dikes.

Recommendations

The only problem observed was the growth of 2 species of aquatic plants within the lagoon. (see figure 1) Physical removal of the plants is preferred over chemical to prevent interferring with the natural biological operation of the lagoon.

SJ:bj

Attachments

Fig. 1. Waterville sewage Lagoon.

Table 1 Analysis of Waterville Sewage Lagoon
Composite Samples, 7/26/72

	Influent	Effluent
pH	7.3	8.0
Turbidity (J.T.U.)	15	10
Conductivity (μmhos/cm)	788	747
COD (ppm)	240	220
BOD (ppm)	60	20
Total Solids (ppm)	534	524
Total Nonvolatile Solids	347	374
Total Suspended Solids	80	11
Total Suspended Nonvol. Solids	17	1
Total Coliform (Colonies/100 ml)	---	40,000

Table 2 Analysis of Influent and Effluent of
Waterville Sewage Lagoon, 7/26/72

Influent

Time	Flow	°C Temp.	pH	Conductivity ppm NaCl	Settleable Solids ml/l
0910	0.39	14.1	7.2	320	10
1000	0.35	14.3	7.2	325	7
1030	0.39	14.4	7.2	320	9
1100	0.35	14.6	7.2	345	7.5
1130	0.33	14.6	7.2	280	5.0
1200	0.35	14.5	7.2	280	4.0
1235	0.32	14.6	7.2	300	3.5
1300	0.39	15.3	7.4	280	2.5
1330	0.32	15.2	7.2	250	2.5
1355	0.33	14.7	7.2	280	---
Maximum	0.39	15.3	7.4	345	10
Minimun	0.32	14.1	7.2	250	2.5
Average	0.35	14.6	7.2	298	5.6

Effluent

Time	Flow	°C Temp	pH	Conductivity ppm NaCl	Settleable Solids ml/L
0945		18.2	7.7	275	1.0
1035		18.4	7.6	280	0.05
1145		19.7	7.7	300	N.D.
1245		20.7	7.8	280	N.D.
1340		21.9	7.8	275	N.D.
1415		22.1	7.8	270	N.D.
Maximum		22.1	7.8	300	---
Minimum		18.2	7.6	270	---
Average		20.2	7.7	280	---

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: S. Jeane

COPIES TO: R. Devitt

LAB FILES

DATA SUMMARY

Source Waterville STP Collected By S.T.

Date Collected 7-26 Goal, Pro./Obj. 3.2.23

Log Number: 7226-	93	94	98	99	700						STORET
Station:	INF	EFF	1035	1245	1445						
pH	7.3	8.0									00403
Turbidity (JTU)	15.	10.									00070
Conductivity (umhos/cm)@25C	788.	747.									00095
COD	240.	220.									00340
BOD (5 day)	60.	20.									00310
~~Total~~ Fecal Coliform (Col./100ml)			<40,000	<40,000	<40,000						31504
~~Fecal~~ TOTAL Coliform (Col./100ml)			<20,000	<20,000	40,000						31616
NO3-N (Filtered)											00620
NO2-N (Filtered)											00615
NH3-N (Unfiltered)											00610
T. Kjeldahl-N (Unfiltered)											00625
O-PO4-P (Filtered)											00671
Total Phos.-P (Unfiltered)											00665
Total Solids	534.	524.									00500
Total Non Vol. Solids	347.	374.									
Total Suspended Solids	80.	11.									00530
Total Sus. Non Vol. Solids	17.	1.									
K	.23	--									
L	61.	-									

Note: All results are in PPM unless otherwise specified. ND is "None Detected"
Convert those marked with a * to PPB (PPM **X** 10^3) prior to entry into STORET

Summary By Stephen D. Roll Date 8-16-72