

MEMORANDUM

January 14, 1976

To: John Glynn

From: Allen Moore

Subject: Stanwood STP Efficiency Study

An efficiency study was done at the Stanwood lagoons on August 12, 1975. The influent was largely from the Twin City Foods plant which was processing peas. The influent BOD was 1380 and effluent BOD was 200 - a reduction of 86%. The weather was dry and sunny so that plenty of oxygen production was going on in the lagoons to keep them aerobic. Therefore, there was also very little odor from the lagoons. Bacteria reduction was very good. Fecal strep sample from the Stillaguamish River show some influence from the STP. Otherwise the operation couldn't be much better.

AWM:ee

STP Survey Report Form

Efficiency Study

City Stanwood Plant Type Lagoon Pop. Served 1370 Design 2.12 MGD
 Capacity
 Receiving Water Stillaguamish River Perennial Intermittent _____
 Date 12 Aug. 75 Survey Period Slough 0930 - 1630 Survey Personnel Allen Moore
 Comp. Sampling Frequency Hourly Sampling Alequot Flow Max. Flow x 1000 - sample in m
 Weather Conditions (24 hr) sunny, warm Are facilities provided for complete by-
 pass of raw sewage? _____ Yes No/Frequency of bypass _____
 Reason for bypass _____ Is bypass chlorinated? _____ Yes _____ No
 Was DOE Notified? _____ Discharge - Intermittent _____ Continuous _____

Plant Operation

Total flow 466,000 gal or 1.6 MGD How measured Totalizer
 Maximum flow 1.7 MGD Time of Max. 1330 - 1530
 Minimum flow 1.5 MGD Time of Min. 0930
 Pre Cl₂ _____ #/day Post Cl₂ 240 lbs peak pea processing #/day
 season

Field Results

Influent

Effluent

Determinations	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp °C	23.0	22.0		22.0	25.0	21.5		23.75
pH (Units)	6.9	6.6		6.7	7.0	6.7		6.8
Conductivity (µmhos/cm ²)	3200	1900		2100	1750	1475		1675
Settleable Solids (mls/l)	7.0	5.0	6.3	7.0	T	T	T	T

Laboratory Results on Composites

Laboratory No.	Influent	Effluent	% Reduction	lbs/day
	<u>75-3768</u>	<u>75-3769</u>		
5-Day BOD ppm	<u>1380</u>	<u>200</u>	<u>86</u>	<u>2668.8</u>
COD ppm	<u>2040</u>	<u>560</u>	<u>73</u>	
T.S. ppm	<u>2560</u>	<u>1090</u>	<u>57</u>	
T.N.V.S. ppm	<u>1150</u>	<u>686</u>	<u>40</u>	
T.S.S. ppm	<u>472</u>	<u>214</u>	<u>55</u>	<u>2855.6</u>
N.V.S.S. ppm	<u>134</u>	<u>< 1</u>	<u>< 1</u>	
pH (Units)	<u>5.1</u>	<u>7.0</u>		
Conductivity (µmhos/cm ²)	<u>2200</u>	<u>1400</u>		
Turbidity (JTU's)	<u>150</u>	<u>75</u>		

Laboratory Bacteriological Results

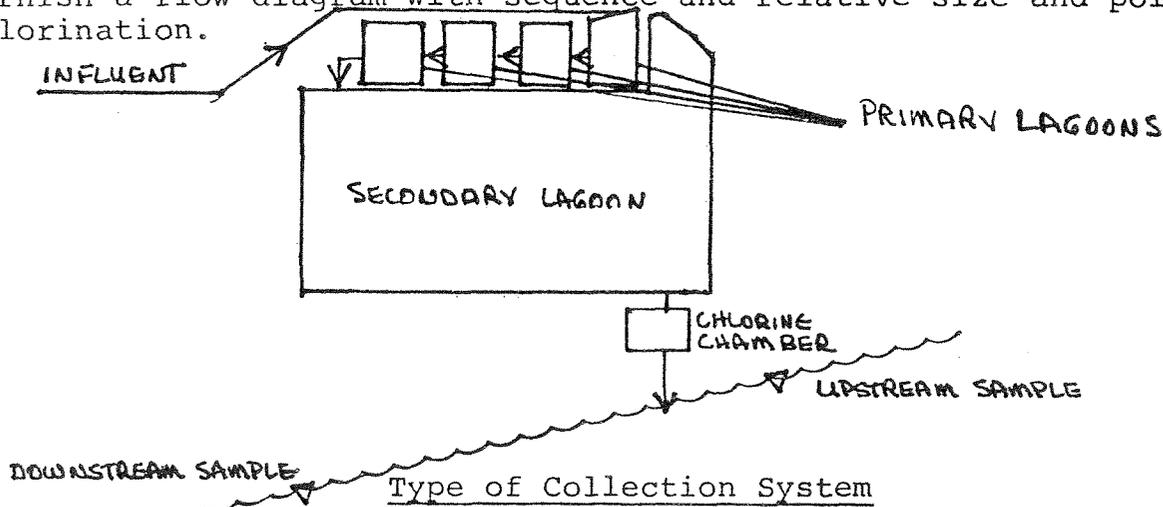
Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl ₂ Residual
		Total Coliform	Fecal Coliform	Fecal Strep	
75-3772	0930	3000 est	50 est		
75-3773	1130	1000 est	100 est		
75-3774	1330	1000 est	<50		
75-3775	1530	200 est	<50		
*75-3776	1700	>40,000	120 est	220	
**75-3777	1700	>40,000	<10	550	

* Stillaguamish River upstream of outfall
 ** Stillaguamish River downstream of outfall
Additional Laboratory Results

		*	**
NO ₃ -N ppm -	.50	.02	.15
NO ₂ -N ppm -	.70	ND	.30
NH ₃ -N ppm -	2.5	.05	.04
T. Kjeldahl-N ppm -	29	2.6	4.6
O-PO ₄ -P ppm -	.46	.12	.23
T-PO ₄ -P ppm -	3.7	.52	1.6

Operator's Name Harold "Pug" Lund Phone No. _____

Furnish a flow diagram with sequence and relative size and points of chlorination.



Combined Separate Both

Estimate flow contributed by surface or ground water (infiltration)

_____ none _____ MGD

Plant Loading Information

Annual average daily flow rate (mgd) _____

Peak flow rate (mgd) _____

Dry _____

Dry _____

Wet _____

Wet _____

COMMENTS: 1.2 MGD 100 days - pea and corn harvest processing

.300 MGD rest of year.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

ORIGINAL TO: AWM
COPIES TO: J. G. LYNN
LAB FILES

Source STANWOOD STP

Collected By A. MOORE

Date Collected 8-12-75

Goal, Pro./Obj. _____

Log Number:	75-3768	69	70	71	72	73	74	75	76	77	STORET
Station:	INF.	EFF.	STILL. RIVER.	RIVER below STP	EFF. 0930	EFF. 1130	EFF. 1330	EFF. 1530	STILL. RIVER @ 1700	STILL. RIVER @ 1700	
pH	5.1	7.0									00403
Turbidity (JTU)	150.	75.									00070
Conductivity (umhos/cm)@25°C	2200.	1400.									00095
COD	2,040	560.									00340
BOD (5 day)	1380.	200.									00310
Total Coliform (Col./100ml)					EST 3000	EST 1,000	EST 1,000	EST 200	40000	40,000	31504
Fecal Coliform (Col./100ml)					EST 50	EST 100	<50	<50	EST 120	<10	31616
NO3-N (Filtered)		.50	.02	.15							00620
NO2-N (Filtered)		.70	N.D.	.30							00615
NH3-N (Unfiltered)		2.5	.05	.04							00610
T. Kjeldahl-N (Unfiltered)		29.	2.6	4.6							00625
O-PO4-P (Filtered)		.46	.12	.23							00671
Total Phos.-P (Unfiltered)		3.7	.52	1.6							00665
Total Solids	2560.	1090.									00500
Total Non Vol. Solids	1150.	686.									
Total Suspended Solids	472	214									00530
Total Sus. Non Vol. Solids	131	<1.									
<u>FECAL STREP (col/100ml)</u>									220.	550	

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 P. Pell Date 8-28-75