

M E M O R A N D U M

January 14, 1976

To: John Glynn

From: Allen Moore

Subject: Oak Harbor STP Efficiency Survey

An efficiency survey was done on the Oak Harbor primary STP on October 7, 1975. Even though the plant was operating well below its design capacity the quality of effluent was fairly poor. BOD reduction was only 27%. Chlorination provided a very good level of disinfection. The plant as a whole is very well maintained and neat. I discovered that one of the employees has been working for quite some time and has been unwilling to become certified. Possibly this should be looked into. Apparently several serious errors have been committed through negligence. A constant check on the flow showed the flow recorder to be low by about .2 MGD. The totalizer was even further off. Flow readings were all from my own measurements.

AWM:ee

STP Survey Report Form

Efficiency Study

City Oak Harbor Plant Type Type III Pop. Served 6000 Design 1.5MGD  
 Receiving Water Oak Harbor /Primary Perennial X Intermittent \_\_\_\_\_  
 Date 7 Oct. 75 Survey Period 1000 - 1600 Survey Personnel Allen Moore  
 Comp. Sampling Frequency 1/2 hour Sampling Alequot Flow MGD X 1000 ml  
 Max. Flow MGD \_\_\_\_\_  
 Weather Conditions (24 hr) sunny to cloudy Are facilities provided for complete by-  
 pass of raw sewage? X Yes \_\_\_\_\_ No/Frequency of bypass Not in 2 years  
 Reason for bypass \_\_\_\_\_ Is bypass chlorinated? \_\_\_\_\_ Yes \_\_\_\_\_ No  
 Was DOE Notified? \_\_\_\_\_ Discharge - Intermittent \_\_\_\_\_ Continuous \_\_\_\_\_

Plant Operation

Total flow 171,250 gal/6 hr or .685 MGD How measured 90° V-notch weir  
 Maximum flow .86 MGD Time of Max. 1030  
 Minimum flow .56 MGD Time of Min. 1530  
 Pre Cl<sub>2</sub> \_\_\_\_\_ #/day Post Cl<sub>2</sub> 60 #/day

Field Results

Influent

Effluent

Determinations	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp °C	20.0	19.0		19.5	20.0	19.0		19.5
pH (Units)	7.9	7.2		7.5	8.1	7.4		7.6
Conductivity (µmhos/cm <sup>2</sup> )	1350	1000		1250	1550	1025		1300
Settleable Solids (mls/l)	18.0	11.0	14.5	14.5	1.0	.6	.88	.95

Laboratory Results on Composites

Laboratory No.	Influent	Effluent	% Reduction	lbs/day
	<u>75-4635</u>	<u>75-4636</u>		
5-Day BOD ppm	<u>193</u>	<u>146</u>	<u>27</u>	<u>834</u>
COD ppm	<u>400</u>	<u>290</u>	<u>27.5</u>	
T.S. ppm	<u>713</u>	<u>643</u>	<u>10</u>	
T.N.V.S. ppm	<u>414</u>	<u>419</u>	<u>-1.2</u>	
T.S.S. ppm	<u>191</u>	<u>104</u>	<u>46</u>	<u>594</u>
N.V.S.S. ppm	<u>31</u>	<u>21</u>	<u>32</u>	
pH (Units)	<u>7.6</u>	<u>7.4</u>		
Conductivity (µmhos/cm <sup>2</sup> )	<u>1040</u>	<u>980</u>		
Turbidity (JTU's)	<u>---</u>	<u>---</u>		

Laboratory Bacteriological Results

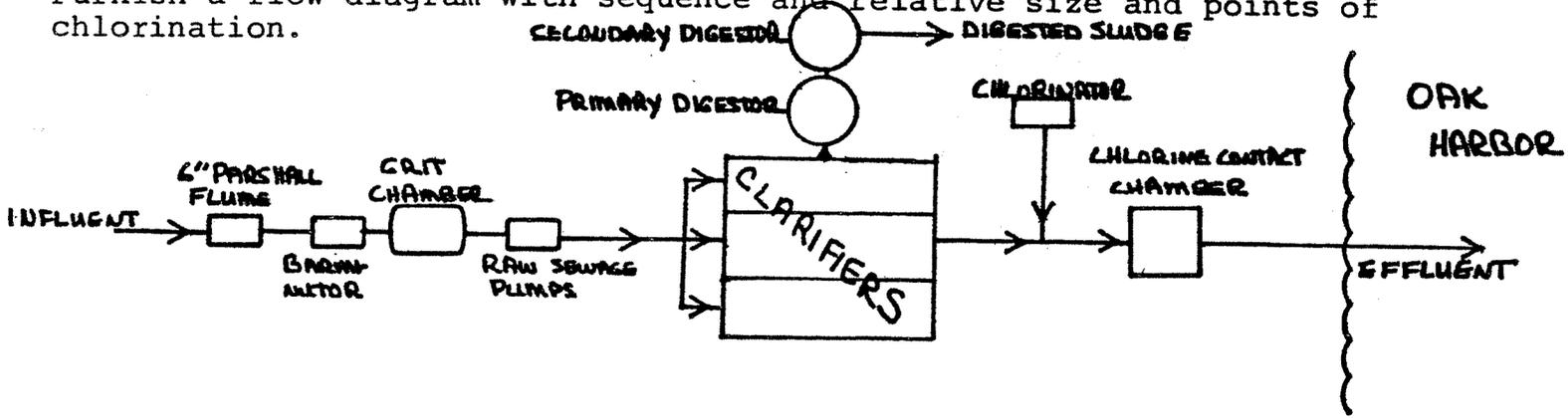
Lab No.	Sampling Time	Total Coliform	Colonies/100 ml (MF) Fecal Coliform	(MF) Fecal Strep	Cl <sub>2</sub> Residual
75-4637	1000	>40,000	< 10		0.2
4638	1100	*	Est. 20		0.15
4639	1200	*	Est. 20		0.10
4640	1300	Est. 40	< 20		0.50
4641	1430	Est. 240	Est. 10		0.15
** 4642	1510	2200	Est. 50		
4643	1600	Est. 40	< 20		0.15

\* Not reported due to lab contamination      \*\* Receiving water sample  
Additional Laboratory Results

NO <sub>3</sub> -N ppm	-	0.02
NO <sub>2</sub> -N ppm	-	ND
NH <sub>3</sub> -N ppm	-	26
T. Kjeldahl-N ppm	-	42
O-PO <sub>4</sub> -P ppm	-	7.0
T-PO <sub>4</sub> -P ppm	-	11.4

Operator's Name Mr. Croft Phone No. 675-3776

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



Type of Collection System

Combined     Separate     Both

Estimate flow contributed by surface or ground water (infiltration)

\_\_\_\_\_ MGD

Plant Loading Information

Annual average daily flow rate (mgd)

Peak flow rate (mgd)

Dry .2 MGD

Dry \_\_\_\_\_

Wet .5 MGD

Wet 1.6 MGD

COMMENTS: \_\_\_\_\_

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

ORIGINAL TO: .A.M.  
COPIES TO:  
.....  
.....  
LAB FILES .....

Source OAK HARBOR STP

Collected By A. Moore

Date Collected 10-7-75

Goal, Pro./Obj. \_\_\_\_\_

Log Number:	75- 4635	36	37	38	39	40	41	42	45	STORET
Station:	INF	EFF	1000	1100	1200	1300	1430	1510	1600	
pH	7.6	7.4								00403
Turbidity (JTU)										00070
Conductivity (umhos/cm)@25C	1040	980								00095
COD	400	290								00340
BOD (5 day)	198	146								00310
Total Coliform (Col./100ml)			>40,000	*	*	EST 40	EST 240	2200	EST 40	31504
Fecal Coliform (Col./100ml)			<10	EST 20	EST 20	<20	EST 10	EST 50	<20	31616
NO3-N (Filtered)		0.02								00620
NO2-N (Filtered)		ND								00615
NH3-N (Unfiltered)		26.								00610
T. Kjeldahl-N (Unfiltered)		42.								00625
O-PO4-P (Filtered)		7.0								00671
Total Phos.-P (Unfiltered)		11.4								00665
Total Solids	713	643								00500
Total Non Vol. Solids	414	419								
Total Suspended Solids	191	104								00530
Total Sus. Non Vol. Solids	31	21.								

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

\* NOT REPORTED DUE TO LAB CONTAMINATION  
Summary By Stephen P. Bell Date 10-17-75