

MEMORANDUM

March 26, 1976

To: Ron Robinson  
 From: Douglas Houck  
 Subject: Sequim STP Class II Inspection

On January 13, 1976, Phil Williams and I met Bill Meyers and Russ Roberston at Sequim's sewage treatment plant.

We installed a sampler after the comminutor and before and after the final clarifier. The effluent sample was not chlorinated. A 250 ml sample was taken every 30 minutes by each sampler. The construction and calibration of their 6 inch Parshall flume was acceptable. The flow recorder was within four percent of the actual value. I reviewed the laboratory procedures which were pertinent to their NPDES permit. At the time of the survey Sequim was just beginning to acquire the necessary laboratory equipment needed to run the required tests. They ran the split BOD<sub>5</sub> sample using the Hach method and the suspended solids test via Standard Methods. Chlorine residual as determined by the DPD method was analyzed at two locations. The first location was the manhole ten feet from the application point for chlorine. A residual of 0.6 ppm was found. The second location was approximately 300 yards downstream from the first location. It is here that the city of Sequim takes their bacteriological grab samples. A residual of 0.4 ppm was found. These residuals seem quite adequate as shown by the count of fecal coliforms. The following table shows DOE's and Sequim's laboratory results along with the monthly average permit limitations.

	DOE		Sequim		NPDES Permit
	<u>Inf.</u>	<u>Eff.</u>	<u>Inf.</u>	<u>Eff.</u>	<u>Monthly Average</u>
BOD <sub>5</sub> (mg/l)	148	19	175	30	30
T.S.S. (mg/l)	178	5	250	50	30
Fecal Coliform (100 ml)		Est 90			200
Flow (MGD)	0.375		0.36		0.57

The table shows that the Hach BOD<sub>5</sub> method gives poor correlation with Standard Methods for small concentrations of BOD's. The city of Sequim felt that they misplaced the decimal point on their T.S.S. effluent value as they normally average about 5 ppm. It is recommended that the city of Sequim do more correlations between Standard Methods and the Hach method for BOD especially at the lower ranges.

DH:ee

STP Survey Report Form

Efficiency Study

City Sequim Plant Type Oxidation Ditch Pop. Served 2425 Design Capacity \_\_\_\_\_  
 Receiving Water E. Sequim Bay Perennial X Intermittent \_\_\_\_\_  
 Date 1-13/14-76 Survey Period 24 hrs Survey Personnel Houck, Williams, Robinson  
 Comp. Sampling Frequency 30 min. Sampling Alequot 250 ml  
 Weather Conditions (24 hr) Overcast, cool Are facilities provided for complete by-pass of raw sewage? X Yes \_\_\_\_\_ No/Frequency of bypass \_\_\_\_\_  
 Reason for bypass \_\_\_\_\_ Is bypass chlorinated? X Yes \_\_\_\_\_ No  
 Was DOE Notified? X Discharge - Intermittent \_\_\_\_\_ Continuous \_\_\_\_\_

Plant Operation

Total flow \_\_\_\_\_ How measured 6" Parshall flume  
 Maximum flow 550,000 gals Time of Max. 0845 & 1400  
 Minimum flow 80,000 gals Time of Min. 0300  
 Pre Cl<sub>2</sub> \_\_\_\_\_ #/day Post Cl<sub>2</sub> 10 #/day

Field Results

Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp °C				10.5				7.6
pH (Units)				7.4				6.6
Conductivity (µmhos/cm <sup>2</sup> )								
Settleable Solids (mls/l)								

Laboratory Results on Composites

	Influent	Effluent	% Reduction
Laboratory No.	<u>76-0143</u>	<u>0145</u>	
5-Day BOD ppm	<u>148</u>	<u>19</u>	<u>87%</u>
COD ppm	<u>280</u>	<u>45</u>	<u>84%</u>
T.S. ppm	<u>453</u>	<u>293</u>	<u>35%</u>
T.N.V.S. ppm	<u>256</u>	<u>212</u>	<u>17%</u>
T.S.S. ppm	<u>178</u>	<u>5</u>	<u>97%</u>
N.V.S.S. ppm	<u>46</u>	<u>2</u>	<u>96%</u>
pH (Units)	<u>7.4</u>	<u>6.6</u>	
Conductivity (µmhos/cm <sup>2</sup> )			
Turbidity (JTU's)			

Laboratory Bacteriological Results

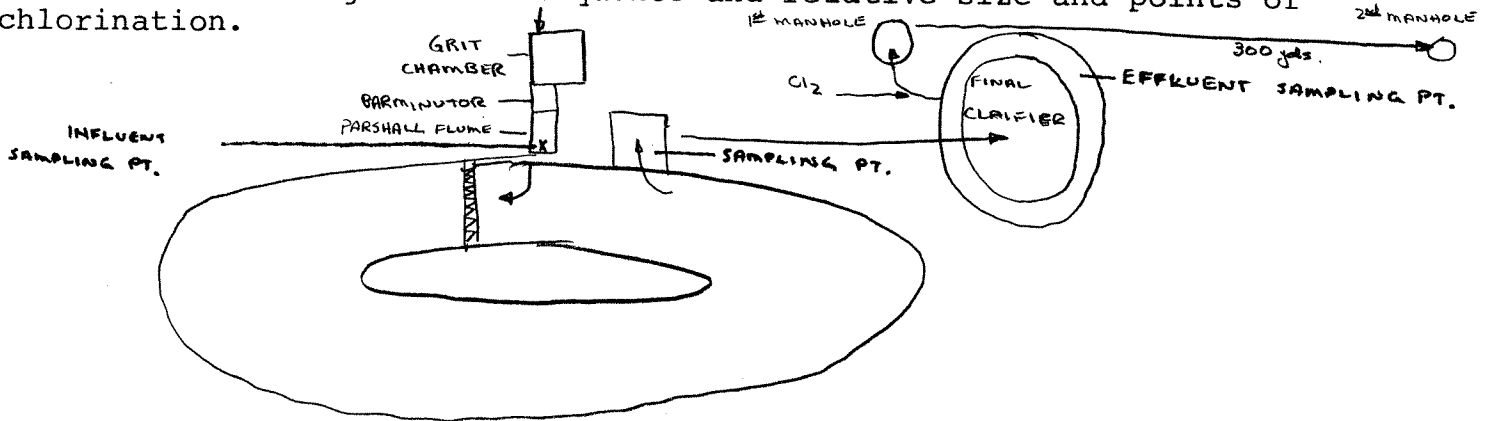
Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl <sub>2</sub> Residual
		Total Coliform	Fecal Coliform	Fecal Strep	
					0.6 @ manhole
					0.4 @ 400 yds downstream
76-0146	1000		<10		
0147	1030		Est 90		

Additional Laboratory Results

NO <sub>3</sub> -N ppm	-	10.0	
NO <sub>2</sub> -N ppm	-	0.30	
NH <sub>3</sub> -N ppm	-	1.2	
T. Kjeldahl-N ppm	-	--	
O-PO <sub>4</sub> -P ppm	-	5.8	
T-PO <sub>4</sub> -P ppm	-	6.4	

Operator's Name Bill Meyers Phone No. 683-4908

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 250,000

Dry \_\_\_\_\_

Wet 400,000

Wet \_\_\_\_\_

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

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

ORIGINAL TO:  
..O.H.....  
COPIES TO:  
.....  
.....  
.....  
LAB. FILES.....

OLYMPIA LABORATORY

DATA SUMMARY

Source Sequim STP

Collected By D. Houck

Date Collected 1-13/14-76

Log Number: 76-0143      144      145      146      147

Station:	INF	END O <sub>2</sub> DITCH	FINAL EFF	1000	1030					
pH										
Turbidity (NTU)										
Sp. Conductivity (umhos/cm)										
COD	280.	1530.	45.							
BOD (5 day)	148.	940.	19.							
Total Coliform (Col./100ml)										
Fecal Coliform (Col./100ml)				<10	EST 90					
NO <sub>3</sub> -N (Filtered)			10.0							
NO <sub>2</sub> -N (Filtered)			0.30							
NH <sub>3</sub> -N (Unfiltered)			1.2							
T. Kjeldahl-N (Unfiltered)										
O-PO <sub>4</sub> -P (Filtered)			5.8							
Total Phos.-P (Unfiltered)			6.4							
Total Solids	453	1920	293							
Total Non. Vol. Solids	256	679	212							
Total Suspended Solids	178	1630	5							
Total Sus. Non Vol. Solids	46	460	2							

Note: All results are in PPM (mg/L) unless otherwise specified. ND is "None Detected"  
" < " is "Less Than" and " > " is "Greater Than"