

MEMORANDUM

September 12, 1975

To: Clar Pratt and John Milton

From: Shirley Prescott

Subject: Lyle STP Efficiency Study

On July 8, 1975, a routine efficiency study was conducted by Scott Jeane and myself.

In checking flow over the weir we found the meter to be registering 41% low. Our measurement indicated a flow of .017 mgd while the meter registered .010. A total flow of 0.0186 MGD was arrived at by taking the totalizer reading and multiplying by the correction factor.

Our survey results indicate the plant was meeting secondary treatment requirements on this date with a 92% reduction in BOD and 95% reduction in total suspended solids (see attached survey form).

Four fecal coliform samples were collected and all analyses were less than 10 colonies per 100 mls. The chlorine residual ranged from 0.1 in 15 seconds to 0.75 ppm in 3 minutes.

The composite effluent pH was 7.2.

Nutrient analyses indicate that the plant discharged 0.54 mg/l (0.08 #/day) of NH_3 and 23.3 mg/l (3.61 #/day) of total PO_4 . Total nitrogen (Kjeldahl) daily loading was 0.29 #/day or 1.90 mg/l.

A copy of the plant test sheet is attached showing their testing schedule. They are not running BOD's because of the lack of refrigeration and room. They do have the other necessary equipment.

Possibly the Lyle STP could arrange with the Bingen STP for BOD analysis. Bingen has ample space and refrigeration but lacks the rest of the equipment. In this way, they could both have the needed BOD information.

The Lyle plant is fairly new and the grounds are fenced and locked. The buildings are well kept and very clean, but extremely cramped. The office-lab area is broom-closet size. There is no toilet facility on the grounds.

There is a metal, quonsut-hut type of storage building on the grounds which they hope to remodel; including insulation, flooring, wiring, plumbing, etc. which will help alleviate some of their problems.

Keith Selen is the certified operator of record and Ed Babcock is the daily operator. Ed normally spends about 2 hours a day or more if circumstances dictate. Keith lives in Goldendale and checks on the plant about twice a week.

During this survey, sludge was pumped to a new drying bed. Apparently the bed had not been conditioned and within 30 minutes the liquid was seeping out on an adjacent road. The diking around the bed held well and was not leaking. It was apparently seepage down through the bed. The road was probably 2-3 feet lower than the drying bed.

The aeration basin (#1 only, in use at this time) is located where the operator is subjected to spray whenever the aerators are in operation and the wind blows, which seems to be most of the time. It seems rather an unhealthy situation. Mr. Babcock was just recovering from an apparent skin infection on his face and eyes which his doctor felt was job connected. The same situation was true at Bingen. Possibly some thought should be given to some type of windbreak or other protection for the operators or others who come in daily contact with this type situation.

SP:ee

STP Survey Report Form

Efficiency Study

City Lyle Plant Type Extended aeration Pop. Served 375 Design Capacity 75,000
 Receiving Water Columbia River Perennial Yes Intermittent _____
 Date July 8, 1975 Survey Period 0830 - 1600 Survey Personnel Shirley Prescott
 Comp. Sampling Frequency hourly Sampling Alequot 800 ml
 Weather Conditions (24 hr) clear & dry 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 00186 MGD (See report) How measured TOTALIZER
 Maximum flow _____ Time of Max. _____
 Minimum flow _____ Time of Min. _____
 Pre Cl₂ _____ #/day Post Cl₂ ? #/day

Field Results

Influent

Effluent

Determinations	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp °C	21.5	20.		21.0	22.5	21.0		22
pH (Units)	7.7	7.3		7.4	7.2	7.1		7.2
Conductivity (µmhos/cm ²)	1390	700		862	710	690		700
Settleable Solids (mls/l)	12.0	3.75	8.25	8.0	trace	trace	trace	trace

Laboratory Results on Composites

Laboratory No.	Influent	Effluent	% Reduction	lbs/day
	<u>75-2824</u>	<u>2825</u>		
5-Day BOD ppm	<u>252.0</u>	<u>21.0</u>	<u>.92</u>	<u>3.26</u>
COD ppm	<u>363.0</u>	<u>28.0</u>		
P.S. ppm	<u>700.0</u>	<u>449.0</u>		
P.N.V.S. ppm	<u>401.0</u>	<u>348.0</u>		
P.S.S. ppm	<u>150.0</u>	<u>7.</u>	<u>.95</u>	<u>1.09</u>
I.V.S.S. ppm	<u>24.0</u>	<u><1.</u>		
pH (Units)	<u>7.9</u>	<u>7.7</u>		
Conductivity (µmhos/cm ²)	<u>850.0</u>	<u>590.0</u>		
Turbidity (JTU's)	<u>100.0</u>	<u>6.0</u>		

Laboratory Bacteriological Results

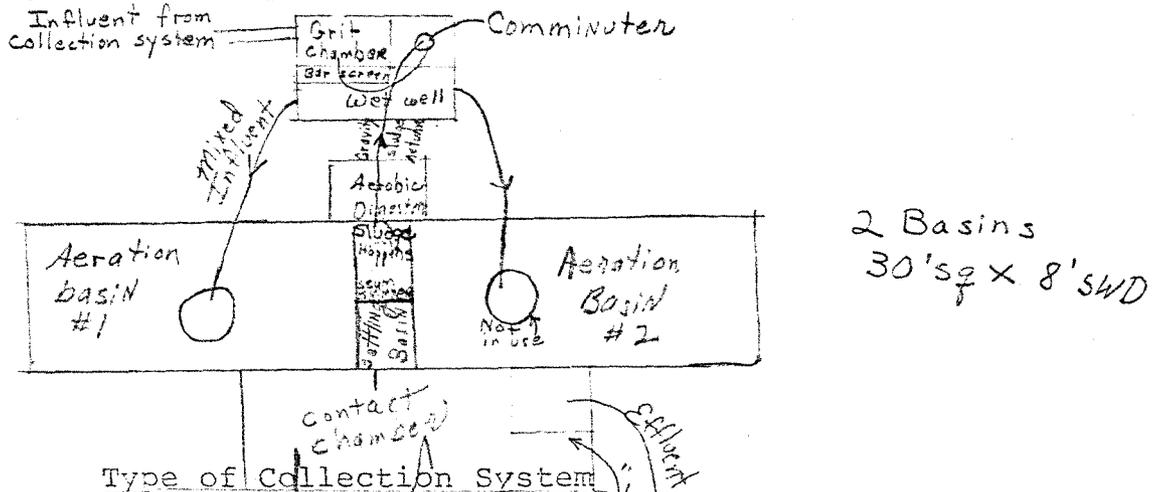
Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl ₂ Residual	
		Total Coliform	Fecal Coliform	Fecal Strep	15 sec.	3 min.
2826	0900	40	< 10		.1	.4
2827	1045	<20	< 10		.2	.5
2828	1245	<20	< 10		.2	.75
2829	1445	<20	<10		.2	.75

Additional Laboratory Results

	mg/L	lbs/day
NO ₃ -N ppm -	0.24	.04
NO ₂ -N ppm -	N.D.	N.D.
NH ₃ -N ppm -	.54	.08
T. Kjeldahl-N ppm -	1.90	.29
O-PO ₄ -P ppm -	16.4	2.54
T-PO ₄ -P ppm -	23.3	3.61

Operator's Name Keith Selen 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)

0 MGD

Plant Loading Information

Annual average daily flow rate(mgd)

Peak flow rate(mgd)

Dry .011 mgd (operators figures)

Dry .014

Wet _____

Wet .014

COMMENTS: _____

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

ORIGINAL TO:
G.S.I.
COPIES TO:
.....
.....
LAB FILES

Source Lyle STP

Collected By G.S. JEAN II

Date Collected 7-8-75

Goal, Pro./Obj. _____

Log Number:	75- 2824	25	26	27	28	29	STORET				
Station:	INP Comp	WPP Comp	EFF 0900	1045	1245	1445					
pH	7.9	7.7									00403
Turbidity (JTU)	100.	6.									00070
Conductivity (umhos/cm)@25°C	850.	590.									00095
COD	363	28									00340
BOD (5 day)	252.	21.									00310
Total Coliform (Col./100ml)	-	-	EST 40	<20	<20	<20					31504
Fecal Coliform (Col./100ml)	-	-	<10	<10	<10	<10					31616
NO3-N (Filtered)		0.24									00620
NO2-N (Filtered)		N.D.									00615
NH3-N (Unfiltered)		.54									00610
T. Kjeldahl-N (Unfiltered)		1.90									00625
O-PO4-P (Filtered)		16.4									00671
Total Phos.-P (Unfiltered)		23.3									00665
Total Solids	700	449									00500
Total Non Vol. Solids	401	348									
Total Suspended Solids	150	7									00530
Total Sus. Non Vol. Solids	24	<1.									

Note: All results are in PPM unless otherwise specified. ND is "None Detected"
Convert those marked with a * to PPB (PPM X 10³) prior to entry into STORET

Summary By Stephen P. Roll Date 7-30-75