

April 10, 1974

State of
Washington
Department
of Ecology



Memo to: Rhys Sterling

From: Grover Scott Jeane II

Subject: Moses Lake STP Efficiency Study.

The twelfth of March, 1974, I completed an eight hour efficiency study of the Moses Lake sewage treatment plant. The results are summarized in Table I.

The plant's effluent closely approaches the proposed EPA standards. T.S.S. and COD were reduced approximately 25%. Fecal coliform values were all below 10 colonies per 100 ml. The 3 minute chlorine residual averaged 0.9 ppm. The trickling filter efficiency was evaluated as good. At the present time the high nutrient levels in the discharge pose the greatest threat to the aquatic environment of the receiving water (Table I).

I was very impressed with the operator and his abilities.

GSJ:jmh

TABLE 1
(EFFICIENCY STUDY)

City Moses Lake Plant Type Secondary Population 4.0 MGD
Served Capacity

Receiving Water Moses Lake Engineer _____

Date 3-12-74 Survey Period 8 hour Survey Personnel Scott Jeane

Comp. Sampling Frequency per hour Weather Conditions Windy and clear.
(last 48 hours)

Sampling Aliquot proportional to flow - 1200 ml @ 1.6 MGD

PLANT OPERATION

Total Flow 466,000 Gal for 7 hr and 15 min. How Measured Totalizer

Max. (Flow) 1.9 MGD Time of Max. 1000 hr. Min. 1.4 MGD Time of Min. 1400 hr.

Pre Cl₂ 30 #/day Post Cl₂ 62 #/day

FIELD RESULTS

Influent

Effluent

Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C	14.3	13.9	14.2	14.2	13.0	12.3	12.7	12.9
pH	7.9	7.4	--	7.6	7.8	7.6	--	7.7
Conductivity (umhos/cm)			940				890	
Settleable Solids	9.0	8.0	8.5	--	Trace	Trace	Trace	--

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent	% Reduction
5-Day BOD	*	*	
COD	287	72	25.1
T.S.			
T.N.V.S.			
I.S.S.	162	36	22.2
N.V.S.S.			
pH	7.6	7.9	
Conductivity	940	890	
Turbidity	64	17	26.6

* Laboratory error-results not available.

BACTERIOLOGICAL RESULTS

Used prepared laboratory bacteria bottles.

Na₂S₂O₃ added to sample _____ After _____ min.

LAB #	SAMPLING TIME	COLONIES/100 MLS (MF)		15 sec 180 sec Cl Residual	
		Total	Fecal	ppm	(after secs)
74-745	1000	940	<10	0.5	1.1
746	1100	5000	<10	0.4	1.0
747	1200	1320	<10	0.4	0.9
748	1400	7500	<10	0.3	0.7
749	1500	6900	<10	0.3	0.7

Operator's Name Amos Dodgen Phone # RO 5-5122

Comments: The operator is very proficient at running both the plant and
all required chemical and biological test. A snail and fly problem
exists at the trickling filter. Correction procedures are being
utilized.

Effluent Composite Nutrients

NO₃-N = 6.35 mg/l
 NO₂-N = 0.05 mg/l
 NH₃-N = 3.6 mg/l
 T-K-N = 6.1 mg/l
 O-PO₄-P = 1.40 mg/l
 T-PO₄-P = 4.50 mg/l

Trickling filter grab

COD = 100 mg/l
 BOD = 40 mg/l
 T.S.S. = 82 mg/l

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO:
JEANNE
COPIES TO:
.....
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LAB FILES

DATA SUMMARY

Source MOSES LAKE STA

Collected By G. Scot JEANNE #

Date Collected 3/12/74

Goal, Pro./Obj. _____

Log Number:	74	742	743	744	745	746	747	748	749			STORET
Station:	INF	EFF	EFF	FILT	1000	1100	1200	1400	1500			
pH	7.6	7.9										00403
Turbidity (JTU)	64	17										00070
Conductivity (umhos/cm)@25°C	940	890										00095
COD	287	72	100									00340
BOD (5 day)	*	*	49									00310
Total Coliform (Col./100ml)				940	5000	1320	7500	6900				31504
Fecal Coliform (Col./100ml)				<10	<10	<10	<10	<10				31616
NO3-N (Filtered)		6.35										00620
NO2-N (Filtered)		.05										00615
NH3-N (Unfiltered)		3.6										00610
T. Kjeldahl-N (Unfiltered)		6.1										00625
O-PO4-P (Filtered)		1.40										00671
Total Phos.-P (Unfiltered)		4.50										00665
Total Solids	688	555	613									00500
Total Non Vol. Solids	422	414	423									
Total Suspended Solids	162	36	82									00530
Total Sus. Non Vol. Solids	32	8	27									

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

* BOD RESULTS LOST

Summary By Mary Kolcomb Date 3/29/74