

April 16, 1974

WA-41-3000

State of
Washington
Department
of Ecology



Memo to: Howard Bunten, Rhys Sterling

From: Allen Moore

Subject: Efficiency Study at the Ephrata STP.

An efficiency study was conducted at the Ephrata STP on March 12, 1974. The influent and effluent were composited every hour from 0930 to 1530 hours. Because of no actual discharge at that time, "effluent" was sampled where it flowed from #3 to #4 lagoon. The coliform data reflects no chlorination which is done only during the land sprinkler irrigation disposal, therefore, no receiving waters. Note the high BOD in the effluent. The test well immediately downhill of the irrigation field is regularly monitored by the Health Department and shows no sign of infiltration.

Weed control along the banks of the lagoon was very good. A high concentration of algae was apparent from the yellow-green color of the water. The operator expressed concern about the algae which becomes much more concentrated during summer.

AM:jmh

STP Survey Report Form

Efficiency Study

City Ephrata STP Plant Type Lagoon Land Irr. Pop. Served Design 15,000
 Receiving Water LAND Irrigation Perennial Intermittent X Capacity
 Date 3-12-74 Survey Period 0930-1530 hours Survey Personnel Allen Moore
 Comp. Sampling Frequency Hourly Sampling Alequot Flow MGD x 1000=ml sampled
 Weather Conditions (24 hr) Rain-Windy Are facilities provided for complete by-
 pass of raw sewage? X Yes No/Frequency of bypass _____
 Reason for bypass POWER OUTAGE Is bypass chlorinated? Yes X No
 Was DOE Notified? YES Discharge - Intermittent X Continuous _____

Plant Operation

Total flow .160 MGD - 6 hours How measured Totalizer
 Maximum flow .8 MGD Time of Max. 0900-1030 hours
 Minimum flow .6 MGD Time of Min. 1530 hours
 Pre Cl₂ 0 #/day Post Cl₂ 0* #/day

*No Irrigation-No Chlorination

Field Results

Influent

Effluent

<u>Determinations</u>	<u>Influent</u>			<u>Effluent</u>				
	<u>Max.</u>	<u>Min.</u>	<u>Mean</u>	<u>Median</u>	<u>Max.</u>	<u>Min.</u>	<u>Mean</u>	<u>Median</u>
Temp °C	18.0	16.5		17.5	9.5	8.2		8.5
pH (Units)	9.2	8.2		8.4	8.0	7.5		7.8
Conductivity (µmhos/cm ²)	--	--		--	--	--		--
Settleable Solids (mls/l)	21	15	18	17	.5	.5	.5	.5

Laboratory Results on Composites

<u>Laboratory No.</u>	<u>Influent</u>	<u>* Effluent</u>	<u>% Reduction</u>
	<u>74-0750</u>	<u>74-0751</u>	
5-Day BOD ppm	<u>195</u>	<u>64</u>	<u>67%</u>
COD ppm	<u>490</u>	<u>131</u>	<u>73%</u>
T.S. ppm	<u>774</u>	<u>518</u>	<u>33%</u>
T.N.V.S. ppm	<u>422</u>	<u>343</u>	<u>19%</u>
T.S.S. ppm	<u>247</u>	<u>74</u>	<u>70%</u>
N.V.S.S. ppm	<u>242</u>	<u>14</u>	<u>94%</u>
pH (Units)	<u>8.2</u>	<u>7.7</u>	
Conductivity (µmhos/cm ²)	<u>910</u>	<u>870</u>	
Turbidity (JTU's)	<u>96</u>	<u>28</u>	

*No actual effluent discharged during survey. Sample taken where flow goes from Lagoon 3

Laboratory Bacteriological Results

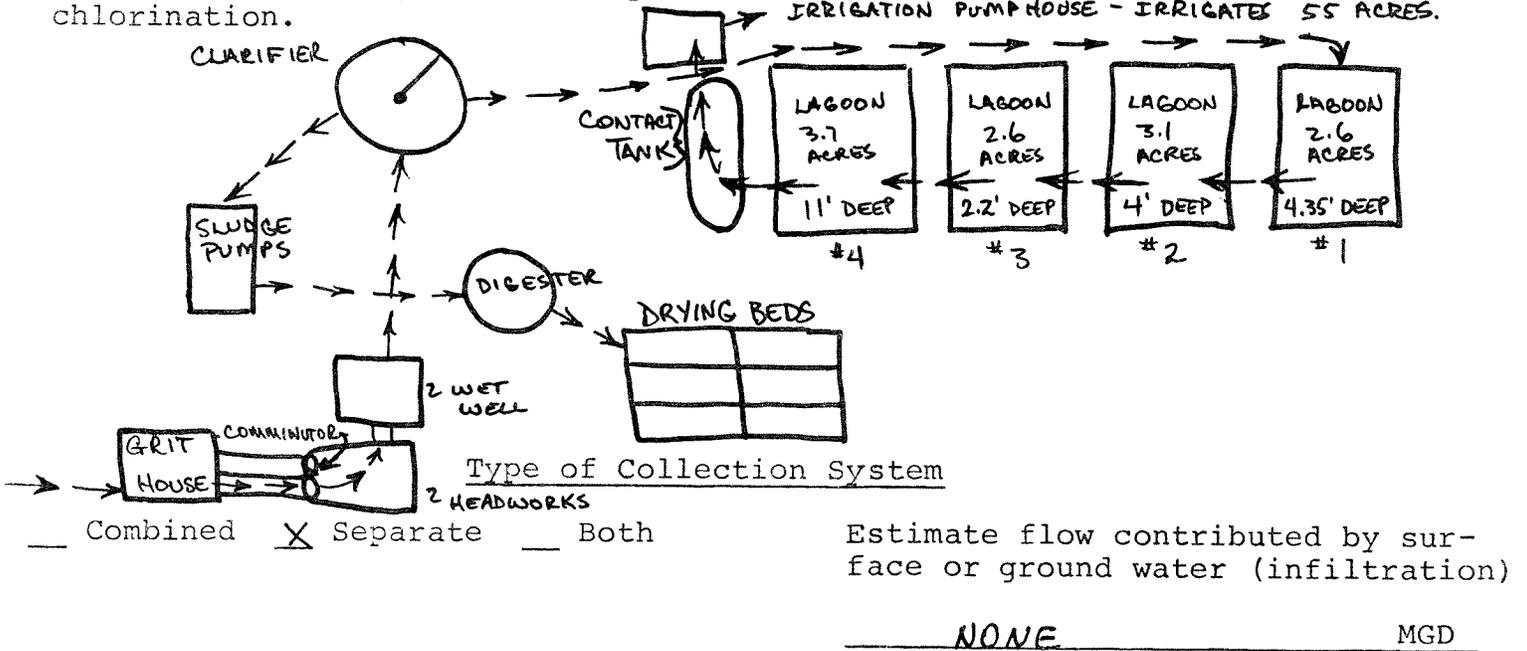
Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl ₂ Residual
		Total Coliform	Fecal Coliform	Fecal Strep	
74-0752	0930	>40,000	>4000		0
753	1030	>40,000	>4000		0
754	1130	>40,000	>4000		0
755	1230	>40,000	>4000		0
756	1330	>40,000	>4000		0
757	1430	>40,000	>4000		0

Additional Laboratory Results

NO ₃ -N ppm	-	4.56	
NO ₂ -N ppm	-	.20	
NH ₃ -N ppm	-	19.1	
T. Kjeldahl-N ppm	-	24.6	
O-PO ₄ -P ppm	-	3.50	
T-PO ₄ -P ppm	-	7.50	

Operator's Name Donald S. Grubb Phone No. _____

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



Plant Loading Information

Annual average daily flow rate (mgd) _____ Peak flow rate (mgd) _____
 Dry 483 MGD _____ Dry 1.0 MGD _____
 Wet _____ Wet 1.5 MGD _____

COMMENTS: Chlorination only when effluent pumped for spray irrigation to 55 acre field. Because of no irrigation during survey, no Chlorination. Effluent held in last of 4 lagoons prior to irrigation for period up to 26 days. Effluent irrigated during 8 hr. working day. Coliform run at request of STP operator.

U.S. DEPARTMENT OF THE INTERIOR
 FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
 SEWAGE TREATMENT PLANT OPERATION AND MAINTENANCE
 PRACTICES QUESTIONNAIRE

FORM APPROVED
 BUDGET BUREAU NO. 42-R1527

CHECK ONE 1ST AUDIT RE-AUDIT DATE OF AUDIT **MARCH 12, 1974** PLANT DESCRIPTION CODE (For Official Use Only)

1. PROJECT (State, Number) **DODSON RD, EPHRATA, WASH.** SCOPE OF PROJECT (new plant, additions, etc.)
 2. PLANT LOCATION (City, county) **DODSON RD, EPHRATA, WASH.** IDENTIFICATION OF AREAS SERVED

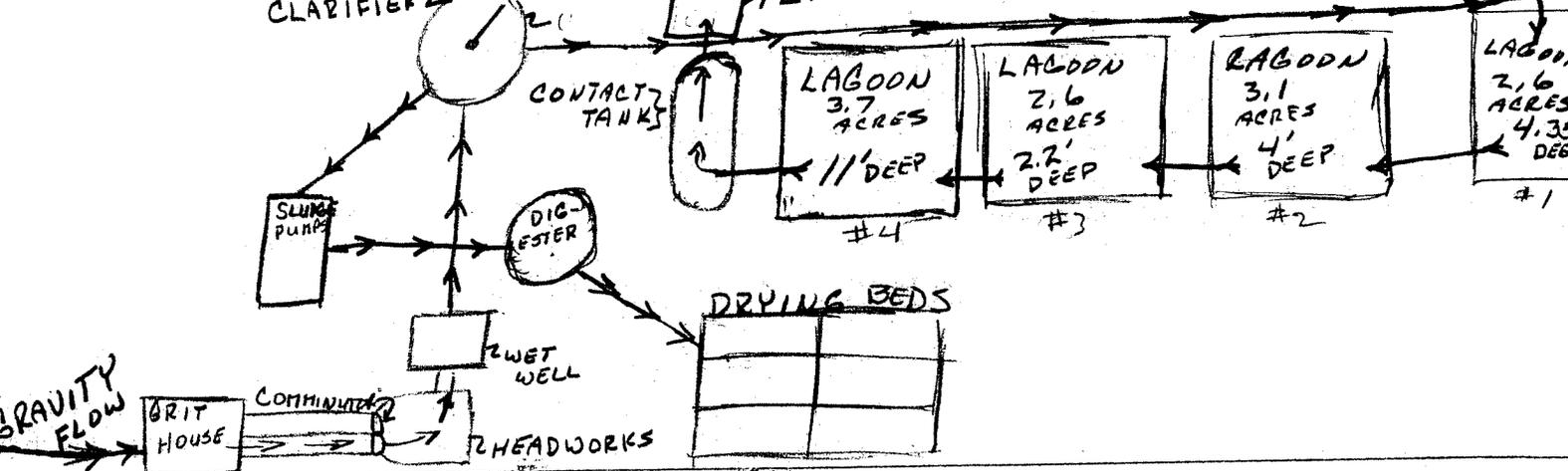
3. POPULATION
 3A. FRACTION OF AREA POPULATION SERVED (%) **100%** 3B. PLANT DESIGN (population equivalent) **1.5 MGD 15,000 PERSONS** 3C. SERVED BY PLANT (domestic) **CITY OF EPHRATA**
 4. TYPE OF COLLECTION SYSTEM

4A. COMBINED SEPARATE BOTH 4B. ESTIMATED FLOW CONTRIBUTED BY SURFACE OR GROUND WATER (infiltration, mgd) **NONE**

5. YEAR COMMUNITY BEGAN SEWAGE TREATMENT **1938?** 6. YEAR PRESENT SYSTEM PLACED IN OPERATION
 6A. SEWER **1938** 6B. PLANT **1956** 6C. ANCILLARY WORKS **IRRIGATION AND LAGOONS 1973**

7A. SIZE OF PLANT SITE (acres) **72** 7B. APPROXIMATE AREA LEFT FOR EXPANSION (acres) **11**

8A. IN THE SPACE PROVIDED BELOW FURNISH A SIMPLIFIED FLOW DIAGRAM OR A WRITTEN DESCRIPTION OF THE PLANT UNITS IN FLOW SEQUENCE. INCLUDE THE METHOD OF ULTIMATE SLUDGE DISPOSAL. SHOW APPROXIMATE SURFACE AREA OF STABILIZATION PONDS AND NUMBER OF CELLS. INDICATE WHETHER FLOW TO AND FROM PLANT IS BY PUMPING OR GRAVITY.



8B. NOTE ANY SIGNIFICANT OR UNIQUE PROCESSING CONDITIONS.

55 ACRES OF LAND DISPOSAL

9. RECEIVING STREAM
 9A. NAME OF STREAM **NONE**
 9B. STREAM FLOW IS PERENNIAL INTERMITTENT NATURAL REGULATED INTERSTATE INTRASTATE COASTAL

B. CURRENT PERFORMANCE AND PLANT LOADING INFORMATION
 1A. ANNUAL AVERAGE DAILY FLOW RATE (mgd) **.483 MGD** 1B. PEAK FLOW RATE (mgd)
 DRY WEATHER **1 MGD** WET WEATHER **1.5 MGD** 1C. MINIMUM FLOW RATE (mgd) **.300 MGD**
 2. AVERAGE BOD OF RAW SEWAGE (5 DAY 20°C) (ppm) **176.4** 3. AVERAGE SETTLEABLE SOLIDS OF RAW SEWAGE (MLSS) (mg/l) **12.5**
 4. AVERAGE SUSPENDED SOLIDS OF RAW SEWAGE (mg/l) ***** 5. AVERAGE COLIFORM DENSITY OF RAW SEWAGE (mpn/100 ml) *****
 6. ANNUAL AVERAGE PLANT REDUCTION %
 6A. BOD (%) **75.1** 6B. SETTLEABLE SOLIDS (%) **99** 6C. SUSPENDED SOLIDS (%) ***** 6D. COLIFORM DENSITY (%) *****

FWPCA-12 (Rev. 4-68)
*** JUST RECEIVED LAB EQUIPMENT TO RUN TESTS**

7A. DOES PLANT HAVE STANDBY POWER GENERATOR FOR MAJOR PUMPING FACILITIES? YES NO

7B. ADEQUATE ALARM SYSTEM FOR POWER OR EQUIPMENT FAILURES? YES NO

8. ARE CHLORINATION FACILITIES PROVIDED? YES NO
IF YES, ANSWER 8A THRU G

IF YES, IS CHLORINATION CONTINUOUS? YES NO
IF NO, EXPLAIN REASON FOR INTERMITTENT CHLORINATION

8A. PURPOSE OF CHLORINATION USUALLY
CHLORINATION FOR SPRINKLING SYSTEM, 8 HRS A DAY

DISSINFECTON

8B. TYPE OF CHLORINATOR

WALLACE & TIERNAN V-NOTCH

8C. POINT OF APPLICATION OF CHLORINE

BEFORE LAND DISPOSAL

8D. CAN BYPASSED SEWAGE BE CHLORINATED?

YES NO

8E. AVERAGE FEED RATE OF CHLORINE (lb/day)

2.0 - PER 8 HOURS

8F. CHLORINE RESIDUAL IN EFFLUENT

1.0 PPM AT END OF 30 MINUTES

8G. MINIMUM SUPPLY OF CHLORINE STORED ON PREMISES (lb)

1 TON CYLINDER WITH 150 LB STANDBY

9. ARE FACILITIES PROVIDED FOR COMPLETE BYPASS OF RAW SEWAGE?

YES NO IF YES, ANSWER A THRU G BELOW, ANSWER H IN EITHER CASE.

9A. FREQUENCY (times monthly)

ONLY ON POWER OUTAGE

9B. AVERAGE DURATION (hours)

9C. REASON FOR BYPASSING

9D. ESTIMATED FLOW RATE DURING BYPASS IS

WITHIN HYDRAULIC CAPACITY OF PLANT
 BEYOND HYDRAULIC CAPACITY OF PLANT BY

9E. DOES SEWAGE OVERFLOW IN DRY WEATHER?

YES NO

9F. TYPE OF DIVERSION STRUCTURE

BY-PASS DITCH

9G. AGENCIES NOTIFIED OF BYPASS ACTION

NOTED ON REPORTS TO STATE ECOLOGY

9H. DO OPERATORS HAVE OPTION TO BYPASS INDIVIDUAL PLANT UNITS? (If no, has this caused any operational problems?)

YES NO

BY-PASS CLARIFIER TO LAGOONS

10A. ARE BACK FLOW DEVICES PROVIDED AT ALL CONNECTIONS TO CITY WATER SUPPLY? (If no, explain)

YES NO

PRIVATE WELL FOR PLANT

10B. CHECK TYPE OF BACK FLOW PREVENTION DEVICE

DOUBLE CHECK VALVE PRESSURE OPERATED PHYSICAL DISCONNECT OTHER(specify)

11. USES OF TREATMENT PLANT EFFLUENT

FOR LAND DISPOSAL ON CITY PROPERTY

12. USES OF RECEIVING STREAM WITHIN 10 MILES OF OUTFALL

13. HAVE THERE BEEN ANY ODOR COMPLAINTS BEYOND THE PLANT PROPERTY? (If yes, explain)

YES NO

14. OBSERVED APPEARANCE AND CONDITION OF EFFLUENT, RECEIVING STREAM, OR DRAINAGE WAY

15. STABILIZATION PONDS

A. WEEDS CUT AND VEGETATIVE GROWTH IN PONDS ELIMINATED? YES NO

B. BANKS AND DIKES MAINTAINED (erosion etc.)? YES NO

C. FENCING AND "WARNING - POLLUTED WATER" SIGNS PRESENT AND IN GOOD REPAIR? YES NO

D. FREQUENCY OF INSPECTION BY OPERATOR. **DAILY**

E. WATER DEPTH (feet) **NOTE FRONT PAGE - 8A** HIGH LOW MEDIUM

Lagoon #4 depth is kept at 4 ft or lower during summer while pumping to land disposal sight.

F. ADEQUATE CONTROL OF DEPTH? YES NO

G. SEEPAGE REPORTED? YES NO

H. ANY REPORTS OF GROUND WATER CONTAMINATION FROM POND (If yes, give details)? YES NO

WELL ON PLANT SITE - TESTS SENT MONTHLY TO STATE

I. MOSQUITO BREEDING PROBLEM? YES NO

IF YES, NAME OF SPECIES IF KNOWN

J. CAN SURFACE RUN-OFF ENTER POND? YES NO

C. SUPERVISORY SERVICES

1. IS A CONSULTING ENGINEER RETAINED OR AVAILABLE FOR CONSULTATION ON OPERATING AND MAINTENANCE PROBLEMS?

YES NO IF YES IS IT ON: CONTINUING BASIS OR UPON REQUEST BASIS

IF CONTINUING BASIS, WHAT IS THE FREQUENCY OF VISITS:

2. DO OPERATORS AND OTHER PERSONNEL ROUTINELY ATTEND SHORT COURSES, SCHOOLS OR OTHER TRAINING ACTIVITIES?

YES NO

COLUMBIA BASIN SECTION OF NWPCA & STATE ECOLOGY

FALL OF 1972

IF YES, CITE COURSE SPONSOR AND DATE OF LAST COURSE ATTENDED

AT PRESENT TAKING A CORRESPONDENCE COURSE FROM SACRAMENTO STATE COLLEGE

IF NO, DO YOU KNOW OF ANY COURSES AVAILABLE TO SERVE THIS AREA?

3A. ARE ALL EQUIPMENT AND PARTS OF THE PRESENT PLANT STILL IN OPERATION?

YES NO (If no, explain)

B. ARE PROCESSING UNITS OPERATING AT DESIGN EFFICIENCY?

YES NO (If no, explain)

4. HAVE THERE BEEN ANY DIFFICULTIES WITH THE SEWAGE TREATMENT PLANT?

A. STRUCTURAL YES NO (If yes explain)

B. MECHANICAL YES NO (If yes, explain)

C. OPERATIONAL YES NO (If yes, explain)

D. BASED ON OPERATING EXPERIENCE TO DATE WHAT IF ANY CHANGES WOULD YOU RECOMMEND TO IMPROVE OPERATION OF THE PLANT?

AN AREATOR SOME PLACE IN THE SYSTEM

E. LABORATORY CONTROL

Enter test codes opposite appropriate items. If any of the below tests are used to monitor industrial wastes place an "X" in addition to the test code.

CODES

1 - 7 or more per week 3 - 1, 2, or 3 per week 5 - 2 or 3 per month 7 - Quarterly 9 - Annually
 2 - 4, 5 or 6 per week 4 - as required 6 - 1 per month 8 - Semi-Annually

ITEM	RAW	PRIMARY EFFLUENT	MIXED LIQUOR	FINAL	SLUDGE		DIGESTOR	RECEIVING STREAM
					RAW	SUPER-NATANT		
1. BOD	6			6				
2. SUSPENDED SOLIDS	6	6						
3. SETTLEABLE SOLIDS	2	2						
4. SUSPENDED VOLATILE	---	---						
5. DISSOLVED OXYGEN	2	2		2				
6. TOTAL SOLIDS	6	6						
7. VOLATILE SOLIDS	---	---						
8. pH	2	2		2			2	
9. TEMPERATURE	2			2			2	
10. COLIFORM DENSITY	---	---						
11. RESIDUAL CHLORINE	---	---						
12. VOLATILE ACIDS							2	
13. M. B. STABILITY	---	---						
14. ALKALINITY	2	2					2	
15.								
16.								
17.								
18.								
19.								

F. OPERATION AND MAINTENANCE COST FOR PLANT

YEAR OF OPERATION	SALARIES/WAGES	ELECTRICITY	CHEMICALS	MAINTENANCE	OTHER ITEMS	TOTAL
MOST CURRENT YEAR 19						
PRIOR YEAR 1973	23,824.00	3,000		500.00	2,500.00	
PRIOR YEAR 1972				total Budget for 1973 was		52,449.00
PRIOR YEAR 1971						

EVALUATION PERFORMED BY	TITLE	ORGANIZATION

INFORMATION FURNISHED BY	TITLE	ORGANIZATION	DATE
DONALD S. GRUBB	CHIEF PLANT OPER	CITY OF EPHRATA	3-12-73

G. NOTATIONS BY EVALUATOR

1. ADDITIONAL REMARKS (If remarks refer to a particular item, identify by number)

2. GENERAL COMMENTS ON HOUSEKEEPING AND MAINTENANCE

3. REQUIREMENTS OF HIGHER AUTHORITY

3A. DOES THE PLANT PROVIDE THE DEGREE OF TREATMENT PRESENTLY REQUIRED BY THE STATE? (If no, explain)

YES NO

3B. ARE THERE ANY PENDING ACTIONS (enforcement conferences, change in water quality standards, etc.) THAT WOULD REQUIRE UPGRADING OF TREATMENT BY THIS PLANT?

YES NO (If yes, explain)

3C. NUMBER OF STATE INSPECTIONS OF PRESENT PLANT TO DATE.

4. IS ANY FOLLOW-THRU ACTION REQUIRED TO (1) CORRECT DEFICIENCIES IN THE PLANT OR ITS OPERATION OR (2) RESOLVE INDUSTRIAL WASTE PROBLEMS? (If yes, describe required corrective action) YES NO