

February 1, 1974

Memo to: Howard Bunten

From: Jim Armstrong

Subject: Liberty Lake Sewage Treatment Plant.



On December 11, 1973, an efficiency study was conducted at the Liberty Lake Sewage Treatment Plant. The survey lasted from 0900 hours to 1600 hours with samples taken every one half hour.

The plant grounds are in good shape and the gate is kept locked but there is no fence on the back side.

The plant effluent flows out beyond the plant grounds and then goes into the ground or is evaporated. A fecal coliform sample from beyond the plant grounds was 350 colonies per 100 mls.

The effluent BOD was 120 ppm with a 62% reduction and the effluent suspended solids was 46 ppm with a reduction of 60%.

The fecal coliforms from within the plant were all less than 200 colonies per 100 mls. except for the first sample which was 4000 colonies per 100 mls. The chlorine residual for the first sample was only $\lt .2$ after 3 minutes.

The only test run by the plant operator is chlorine residual and this is not done every day.

Future plans call for using the effluent for irrigation purposes.

JA:jmh

STP SURVEY REPORT FORM
(EFFICIENCY STUDY)

City Liberty Lake Plant Type Secondary Population 414 Design 1300
 Served Capacity
 Receiving Water None Engineer _____
 Date 12-11-73 Survey Period 0900-1600 hrs. Survey Personnel J. Armstrong
 Comp. Sampling Frequency 1/2 hour Weather Conditions Rain
 (last 48 hours)
 Sampling Alequot _____

PLANT OPERATION

Total Flow NA How Measured _____
 Max. (Flow) _____ Time of Max. _____ Min. _____ Time of Min. _____
 Pre Cl₂ _____ #/day Post Cl₂ 7 #/day

FIELD RESULTS

Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C	11.8	8.6	10.7	11.0	8.8	8.2	8.5	8.6
pH	8.0	7.2	--	7.4	7.4	6.8	---	7.0
Conductivity (umhos/cm)	--	--	--	--	--	--	--	--
Settleable Solids	16	1	6.2	1.5	.3	.1	.2	.1

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent	% Reduction
	73-4517	73-4518	
5-Day BOD	130	49	62%
COD	190	120	37%
T.S.	372	265	29%
T.N.V.S.	171	136	20%
T.S.S.	118	46	60%
N.V.S.S.	ND	ND	ND
pH	7.8	7.5	--
Conductivity	510	450	--
Turbidity	56	25	55%

Liberty Lake

BACTERIOLOGICAL RESULTS

Na₂S₂O₃ added to sample Previous to _____ after Sampling _____ min.

LAB #	SAMPLING TIME	COLONIES/100 MLS (MF)		Cl Residual	
		Total	Fecal	ppm	(after secs.)
73-4519	0935	> 4 x 10 ⁴	> 4000	<.2	3 min.
20	1040	1400	<200	1	"
21	1205	< 400	<200	1	"
22	1305	<400	<200	1	"
23	1440	<400	<200	1	"
24	1450	<400	<200	1	"
25	1600	> 5 x 10 ⁴	350	receiving water	

Operator's Name _____ Phone # _____

Comments: The only nutrient tests run by the laboratory were
NH₃-N and T-Kjeldahl-N.

Nutrients	ppm
NH ₃ -N (Unfiltered)	4.3
T-Kjeldahl-N (Unf.)	15

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO:
 ..P.L.F.F.....
 COPIES TO:

 LAB FILES

DATA SUMMARY

Source LIBERTY LAKE

Collected By J ARMSTRONG

Date Collected 12-11-73

Goal, Pro./Obj. _____

Log Number:	23-	4517	18	19	20	21	22	23	24	25	STORET
Station:		WF	EFF	0935	1040	1205	1305	1440	1450	1600	
pH		7.8	7.5								00403
Turbidity (JTU)		56.	25.								00070
Conductivity (umhos/cm)@25°C		510.	450.								00095
COD		190	120								00340
BOD (5 day)		130	49								00310
Total Coliform (Col./100ml)		-	-	>4x10 ⁴	1400	<400	<400	<400	<400	>5x10 ⁴	31504
Fecal Coliform (Col./100ml)		-	-	>4000	<200	<200	<200	<200	<200	350	31616
NO3-N (Filtered)											00620
NO2-N (Filtered)											00615
NH3-N (Unfiltered)		-	4.3								00610
T. Kjeldahl-N (Unfiltered)		-	15								00625
O-PO4-P (Filtered)											00671
Total Phos.-P (Unfiltered)											00665
Total Solids		372	265								00500
Total Non Vol. Solids		171	136								
Total Suspended Solids		118	46								00530
Total Sus. Non Vol. Solids		ND	ND								

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. Noll Date 1-17-74

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

FORM APPROVED
 BUDGET BUREAU NO. 75-11527

CHECK ONE: 1ST AUDIT RE-AUDIT

DATE OF AUDIT: 12/11/73

PLANT DESCRIPTION CODE (For Official Use Only)

A. GENERAL INFORMATION

1. PROJECT (State, Number): Liberty Lake Spillway

SCOPE OF PROJECT (new plant, additions, etc.): Portion of town of Liberty Lake

2. PLANT LOCATION (City, county): Liberty Lake Spillway

IDENTIFICATION OF AREAS SERVED: Portion of town of Liberty Lake

3. POPULATION: 1300

3A. FRACTION OF AREA POPULATION SERVED (%): 60%

3B. PLANT DESIGN (population equivalent): 1300

3C. SERVED BY PLANT (Domestic): 180 units 2 3/4 per unit

4. TYPE OF COLLECTION SYSTEM:

4A. COMBINED SEPARATE BOTH

4B. ESTIMATE FLOW CONTRIBUTED BY SURFACE OR GROUND WATER (infiltration, mgd):

5. YEAR COMMUNITY BEGAN SEWAGE TREATMENT: 1923

6. YEAR PRESENT SYSTEM PLACED IN OPERATION: 1960

6A. SEWER: 176 ft

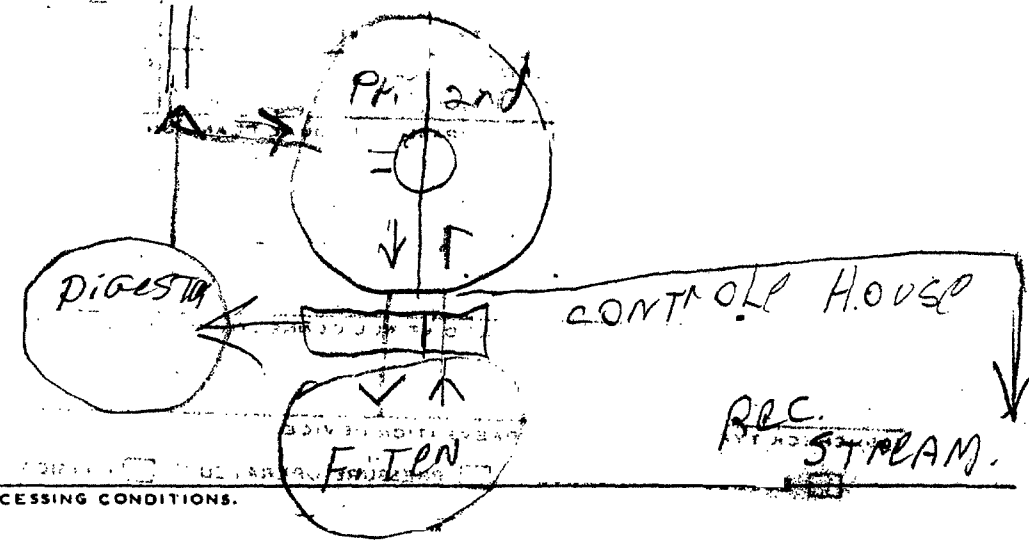
6B. PLANT: 176 ft

6C. ANCILLARY WORKS:

7A. SIZE OF PLANT SITE (acres): 1.5

7B. APPROXIMATE AREA LEFT FOR EXPANSION (acres): 26 acres

8A. IN THE SPACE PROVIDED BELOW FURNISH A SIMPLIFIED FLOW DIAGRAM OR A BRIEF 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.

9. RECEIVING STREAM

9A. NAME OF STREAM: Stream goes to ground water and evaporation

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)	1B. PEAK FLOW RATE (mgd) DRY WEATHER	1C. MINIMUM FLOW RATE (mgd) WET WEATHER
2. AVERAGE BOD OF RAW SEWAGE (mg/l)	3. AVERAGE SETTLEABLE SOLIDS OF RAW SEWAGE (mg/l)	
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 (%)	6B. SETTLEABLE SOLIDS (%)	6C. SUSPENDED SOLIDS (%)
6D. COLIFORM (%)		

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

8A. PURPOSE OF CHLORINATION

Disinfection

8D. TYPE OF CHLORINATOR
Wahlbacher-Tierne

8C. POINT OF APPLICATION OF CHLORINE
Final Eff.

8D. CAN BYPASSED SEWAGE BE CHLORINATED? YES NO

8E. AVERAGE FEED RATE OF CHLORINE (lb/day)
6-2

8F. CHLORINE RESIDUAL IN EFFLUENT
1 PPM AT END OF *3* MINUTES

8G. MINIMUM SUPPLY OF CHLORINE STORED ON PREMISES (lb)
2 tanks at 65

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)
None

9B. AVERAGE DURATION (hours)

9C. REASON FOR BYPASSING

9D. ESTIMATED FLOW RATE DURING BYPASS
 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

9G. AGENCIES NOTIFIED OF BYPASS ACTION

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

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

10B. CHECK TYPE OF BACK FLOW PREVENTION DEVICE
 DOUBLE CHECK VALVE PRESSURE OPERATED PHYSICAL DISCONNECT OTHER (specify)

11. USES OF TREATMENT PLANT EFFLUENT
In spring to be used on Alfalfa

12. USES OF RECEIVING STREAM WITHIN 10 MILES OF OUTFALL
None

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

5. ARE OPERATING RECORDS MAINTAINED? (If maintained, check general items included) YES NO

REPORTED? YES NO

TO WHOM?

FREQUENCY	WEATHER	FLOW	SLUDGE HANDLED	CHEMICALS USED	REGISTER	GRIT HANDLED	ELEC. USED	COST DATA	AIR USED	MAINTENANCE	OTHER
DAILY											
WEEKLY											
MONTHLY											
ANNUALLY											

6. ARE LABORATORY RECORDS MAINTAINED? (check appropriate box)

NOT AT ALL DAILY WEEKLY MONTHLY ANNUALLY

IF MAINTAINED CHECK FORM OF RECORD BELOW:

LOG BOOK TABULAR SHEET SEPARATE BY OPERATION CONTROL CHARTS GRAPHS

WHAT PLANT AND/OR LABORATORY EQUIPMENT, GAGES AND METERS ARE CALIBRATED PERIODICALLY?

7. IS LABORATORY TESTING ADEQUATE FOR THE CONTROL REQUIRED FOR THIS SIZE AND TYPE OF PLANT?

YES NO (If no, explain)

None
No tests are run

8. INDUSTRIAL WASTES DISCHARGED TO MUNICIPAL SYSTEM:

B. POPULATION EQUIVALENT (BOD) OF INDUSTRIAL WASTES (pc)

D. VOLUME OF INDUSTRIAL WASTES (mgd)

F. MAIN DIFFICULTY EXPERIENCED WITH INDUSTRIAL WASTE (explain)

A. NUMBER AND TYPES OF INDUSTRIES DISCHARGING TO SYSTEMS

C. POPULATION EQUIVALENT (SS) OF INDUSTRIAL WASTES (pc)

E. COMPOSITION AND CHARACTERISTICS OF INDUSTRIAL WASTES

9. HAVE INDUSTRIAL EFFLUENT PROBLEMS BEEN SOLVED?

YES NO (If yes, how?)

9A. METHOD OR METHODS USED TO ASSESS INDUSTRIAL WASTE TREATMENT COST (check appropriate box)

NO CHARGE BY CITY PROPERTY TAX WATER USE ASSESSMENT CHARGE BASED ON FLOW
 CHARGED BASED ON BOD CHARGE BASED ON SS OTHER METHODS (describe)

COMMENT ON HOW CHARGE IS COLLECTED (fixed charge, sliding scale, etc.)

9B. IS INDUSTRIAL WASTE ORDINANCE IN EFFECT AND ENFORCED? YES NO

10. WHO PROVIDED INITIAL INSTRUCTION IN THE OPERATION OF THE PLANT?

Walter Woodward

11. IS A MANUAL OF PRACTICE OR INSTRUCTIONS AVAILABLE?

YES NO

IF YES, WHO WROTE AND PROVIDED IT?

Woodward and Industry

12. ESTIMATE OF MAN-HOURS PER WEEK DEVOTED TO LABORATORY WORK AND MAINTENANCE OF RECORDS AND REPORTS

None

D. PLANT PERSONNEL (Annual Average Staff for Most Recent Year Reported in Section "F")

JOB CATEGORY	NUMBER	TOTAL NET HOURS PER WEEK	TOTAL NUMBER CERTIFIED OR LICENSED	RANGE IN YEARS PRESENT PLANT	RANGE IN YEARS OF EXPERIENCE
1. SUPERINTENDENT					
2. OPERATORS	1	25	2	4	
3. LABORATORY TECHNICIANS					
4. LABORERS					
5. PART-TIME LABORERS					
6. TOTAL					

Pages 7 and 9 of this publication are too illegible to be viewed online. To request a printed copy of this publication, please contact the Environmental Assessment Program at the Washington State Department of Ecology.