

April 9, 1974

State of
Washington
Department
of Ecology



Memo to: Ron Robinson, Mike Price

From: Pat Lee

Subject: Efficiency Study at Aberdeen STP.

An efficiency study was conducted on the Aberdeen STP on February 6, 1974. The influent and effluent were composited on the half hour proportionate to flow for eight hours after comminution and the primary clarifier respectively.

The laboratory and field results (summarized on the efficiency study form) show that the Aberdeen Plant is not accomplishing much in the area of waste treatment. Mr. Daracunas, the chief operator, is aware of the problems of his plant and lays the blame on the hydraulic overloading of the plant. I can only agree as while I was there, a purple material appeared in the influent and also showed up in the effluent less than half hour later. A retention time for the clarifier of less than half hour will not provide adequate treatment.

PL:jmh

STP SURVEY REPORT FORM

(EFFICIENCY STUDY)

City Aberdeen Plant Type Primary Population 18,500 Design 18,500
 Served Capacity
 Receiving Water Grays Harbor, North Channel Engineer Mike Price
 Date 2-6-74 Survey Period 0800-1600 Survey Personnel Pat Lee
 Comp. Sampling Frequency half hour Weather Conditions clear
 (last 48 hours)
 Sampling Alequot (flow in MGD) 100 ml = S.A.

PLANT OPERATION

Total Flow 2,460,000 Gallons in 8 hr. How Measured Totalizer
 Max. (Flow) 7.8 MGD Time of Max. 1500 Min. 5.0 Time of Min. 0800
 Pre Cl₂ 0 #/day Post Cl₂ 120 #/day

FIELD RESULTS

g Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C	9.4	7.0	---	8.5	9.0	7.0	---	8.4
pH	7.2	6.9	---	7.1	7.1	6.8	---	7.0
Conductivity (umhos/cm)	250	170	---	200	250	175	---	250
Settleable Solids	5.0	2.0	3.4	3.0	30.0	.3	4.8	0.7

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent	% Reduction
	74-381	74-382	
5-Day BOD	40	40	
COD	150	140	7.
T.S.	263	244	7.
T.N.V.S.	132	122	7.
T.S.S.	107	84	21.
N.V.S.S.	32	25	21.
pH	6.6	6.8	--
Conductivity	260	260	--
Turbidity	28	20	--

Aberdeen

BACTERIOLOGICAL RESULTS

Na₂S₂O₃ added to sample Before Sampling after _____ min.

LAB #	SAMPLING TIME	COLONIES/100 MLS (MF)		Cl Residual	
		Total	Fecal	ppm	(after secs.)
74-383	1000	>40000	5500	<.05	180
384	1115	>40000	>4000	<.05	"
385	1430	>40000	1700	<.05	"
386	1530	120,000	700	<.05	"

Operator's Name Veto Daracunas Phone # _____

Comments: NO₃-N = 3.97

NO₂-N = .03

NH₃-N = 2.8

T.Kjeldahl-N = 6.7

O-PO₄-P = .08

T-PO₄-P = 2.0

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

ORIGINAL TO: ..P.Lee.....
COPIES TO:
.....
LAB FILES.....

Source Aberdeen STP

Collected By P. Lee

Date Collected 2-6-74

Goal, Pro./Obj. _____

Log Number:	24-	381	382	383	384	385	386					STORET
Station:	INF	EFF	1000	1115	1430	1530						
pH	6.6	6.8										00403
Turbidity (JTU)	28.	20.										00070
Conductivity (umhos/cm)@25°C	260	260										00095
COD	150	140										00340
BOD (5 day)	<90*	<50*										00310
Total Coliform (Col./100ml)	-	-	>4x10 ⁴	>4x10 ⁴	>4x10 ⁴	EST 1.2x10 ⁵						31504
Fecal Coliform (Col./100ml)	-	-	EST 5500	>4000	1700	EST 700						31616
NO3-N (Filtered)	-	3.97										00620
NO2-N (Filtered)	-	.03										00615
NH3-N (Unfiltered)	-	2.8										00610
T. Kjeldahl-N (Unfiltered)	-	6.7										00625
O-PO4-P (Filtered)	-	.08										00671
Total Phos.-P (Unfiltered)	-	2.0										00665
Total Solids	263	244										00500
Total Non Vol. Solids	132	122										
Total Suspended Solids	107	84										00530
Total Sus. Non Vol. Solids	32	25										
Chlorides	21.	21.										

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

* Both ESTIMATED = 38.

Summary By Stephen D. Roll Date 3-5-74

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

FORM APPROVED
BUDGET BUREAU NO. 42-111527

CHECK ONE: <input type="checkbox"/> 1ST AUDIT <input checked="" type="checkbox"/> RE-AUDIT	DATE OF AUDIT <i>February 6, 1974</i>	PLANT DESCRIPTION CODE (For Official Use Only) <i>Primary</i>
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A. GENERAL INFORMATION

1. PROJECT (State, Number) <i>Washington</i>	SCOPE OF PROJECT (new plant, additions, etc.) <i>Routine</i>
2. PLANT LOCATION (City, county) <i>Aberdeen Grays Harbor</i>	IDENTIFICATION OF AREAS SERVED <i>Aberdeen</i>

3. POPULATION

3A. FRACTION OF AREA POPULATION SERVED (%) <i>100</i>	3B. PLANT DESIGN (population equivalent) <i>18,500</i>	3C. SERVED BY PLANT (domestic) <i>18,500</i>
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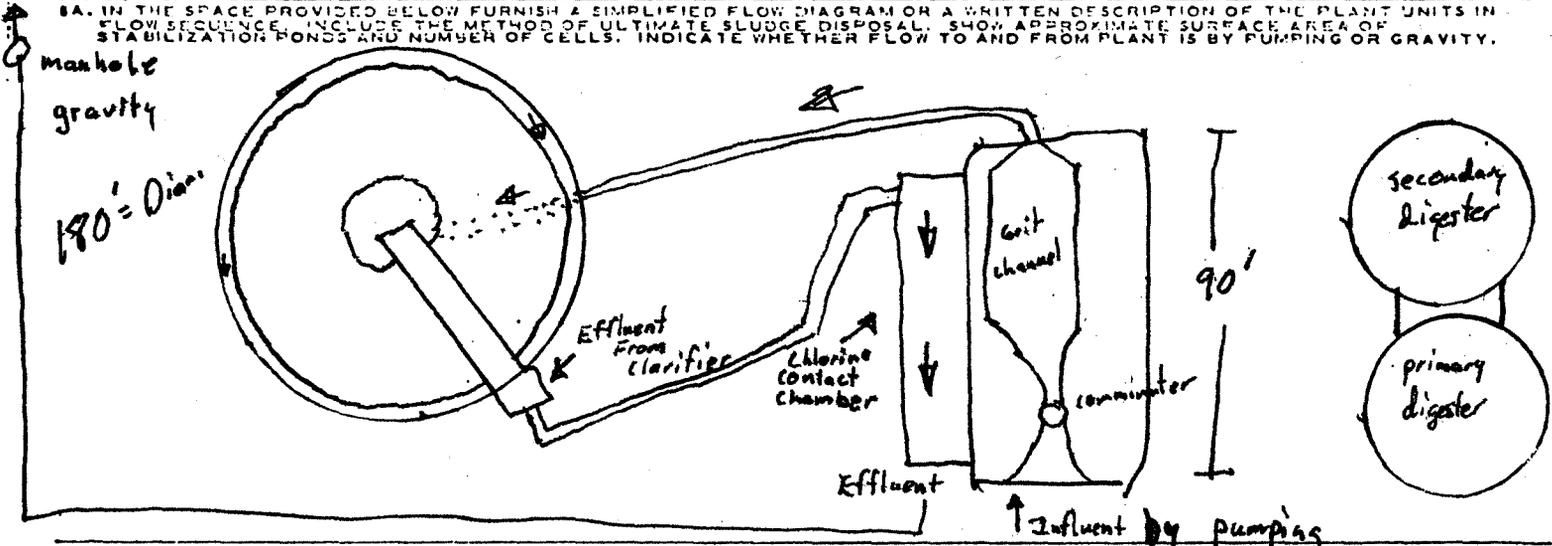
4. TYPE OF COLLECTION SYSTEM

4A. <input type="checkbox"/> COMBINED <input type="checkbox"/> SEPARATE <input checked="" type="checkbox"/> BOTH	4B. ESTIMATE FLOW CONTRIBUTED BY SURFACE OR GROUND WATER (infiltration, mgd) <i>4.5 mgd</i>
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5. YEAR COMMUNITY BEGAN SEWAGE TREATMENT <i>1960</i>	6. YEAR PRESENT SYSTEM PLACED IN OPERATION		
	6A. SEWER <i>N 1900</i>	6B. PLANT <i>1960</i>	6C. ANCILLARY WORKS <i>—</i>

7A. SIZE OF PLANT SITE (acres) <i>3</i>	7B. APPROXIMATE AREA LEFT FOR EXPANSION (acres) <i>2</i>
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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.

9. RECEIVING STREAM

9A. NAME OF STREAM <i>North Channel of Grays Harbor</i>			
9B. STREAM FLOW IS <input checked="" type="checkbox"/> PERENNIAL <input type="checkbox"/> INTERMITTENT <input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> REGULATED	<input type="checkbox"/> INTERSTATE	<input type="checkbox"/> INTRASTATE	<input checked="" type="checkbox"/> COASTAL

B. CURRENT PERFORMANCE AND PLANT LOADING INFORMATION

1A. ANNUAL AVERAGE DAILY FLOW RATE (mgd) <i>6</i>	1B. PEAK FLOW RATE (mgd) DRY WEATHER: <i>6</i> WET WEATHER: <i>12 mgd</i>	1C. MINIMUM FLOW RATE (mgd) <i>3</i>
2. AVERAGE BOD OF RAW SEWAGE (5 DAY 20°C) (ppm)	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 (ppm)	

5. ANNUAL AVERAGE PLANT REDUCTION

6A. BOD (%)	6B. SETTLEABLE SOLIDS (%)	6C. SUSPENDED SOLIDS (%)	6D. COLIFORM (%)
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7A. DOES PLANT HAVE STANDBY POWER GENERATOR FOR MAJOR PUMPING FACILITIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	7B. ADEQUATE ALARM SYSTEM FOR POWER OR EQUIPMENT FAILURES? <input type="checkbox"/> YES <input type="checkbox"/> NO <i>High Water Alarm</i>
8. ARE CHLORINATION FACILITIES PROVIDED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, ANSWER 8A THRU G	IF YES, IS CHLORINATION CONTINUOUS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF NO, EXPLAIN REASON FOR INTERMITTENT CHLORINATION

8A. PURPOSE OF CHLORINATION
Disinfection

8B. TYPE OF CHLORINATOR
Wallace + Tiernan

8C. POINT OF APPLICATION OF CHLORINE
effluent

8D. CAN BYPASSED SEWAGE BE CHLORINATED? YES NO

8E. AVERAGE FEED RATE OF CHLORINE (lb/day)
120

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

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

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)	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

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
none

12. USES OF RECEIVING STREAM WITHIN 10 MILES OF OUTFALL
varied

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

13. STABILIZATION PONDS

A. WEEDS CUT AND VEGETATIVE GROWTH IN PONDS ELIMINATED?

YES NO

D. BANKS AND DIKES MAINTAINED (erosion etc.)?

YES NO

C. FENCING AND REPAIRING - POLLUTED WATER? SIGNS PRESENT AND IN GOOD REPAIR?

YES NO

U. FREQUENCY OF INSPECTION BY OPERATOR

E. WATER DEPTH (feet)

_____ HIGH _____ LOW _____ MEDIUM

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

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

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

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)

Chlorinator doesn't seem to hold vacuum

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?

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

REPORTED TO WHOM? YES NO
 DOE

FREQUENCY	WEATHER	FLOW	SLUDGE HANDLED	CHEMICALS USED	DIGESTER	GRIT HANDLED	ELEC. USED	COST DATA	AIR USED	MAINTENANCE	OTHER
DAILY	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					
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)

B. INDUSTRIAL WASTES DISCHARGED TO MUNICIPAL SYSTEM **NO**

A. NUMBER AND TYPES OF INDUSTRIES DISCHARGING TO SYSTEMS

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

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

D. VOLUME OF INDUSTRIAL WASTES (mgd)

E. COMPOSITION AND CHARACTERISTICS OF INDUSTRIAL WASTES

F. MAIN DIFFICULTY EXPERIENCED WITH INDUSTRIAL WASTE (explain)

G. 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?

Stevens + Thompson

11. IS A MANUAL OF PRACTICE OR INSTRUCTIONS AVAILABLE?

YES NO

IF YES, WHO WROTE AND PROVIDED IT?

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

9

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

JOB CATEGORY	NUMBER	TOTAL MAN-HOURS PER WEEK	TOTAL NUMBER CERTIFIED OR LICENSED	RANGE IN YEARS EMPLOYED AT PRESENT PLANT	RANGE IN YEARS OF EXPERIENCE IN TREATMENT
1. SUPERINTENDENT					
2. OPERATORS	3	120	2	9 yrs 4 yrs 1 yrs	9 yrs 4 yrs 1 yr
3. LABORATORY TECHNICIANS					
4. LABORERS					
5. PART-TIME LABORERS					
6. TOTAL	3	120	2	14	14

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								
2. SUSPENDED SOLIDS	6			6				
3. SETTLEABLE SOLIDS	1			1				
4. SUSPENDED VOLATILE								
5. DISSOLVED OXYGEN	1			1				
6. TOTAL SOLIDS	6			6				
7. VOLATILE SOLIDS								
8. pH	6			6			6	
9. TEMPERATURE	6			1				
10. COLIFORM DENSITY								
11. RESIDUAL CHLORINE				1				
12. VOLATILE ACIDS							3	
13. M. B. STABILITY								
14. ALKALINITY							3	
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 19						
PRIOR YEAR 19						
PRIOR YEAR 19						

EVALUATION PERFORMED BY	TITLE	ORGANIZATION
Pat Lee	EIT	DOE

INFORMATION FURNISHED BY	TITLE	ORGANIZATION	DATE
Vito Daracunas	Chief Operator	City of Aberdeen	2/6/74