Publication No. 74-e01

February 5, 1974

WA-PS-0010

Memo to: John Glynn, Ron Pine, Files.

From: Darrel Anderson

Subject: Shelter Bay STP Efficiency Survey.

On January 9, 1974, I conducted an efficiency survey at the Shelter Bay STP near LaConnor in Skagit County. Security and plant appearance are good.

Due to low population of the community during the winter months, I decided it best to take grab samples from the influent and effluent instead of an eight hour survey. I have recommended to Ron Pine that the Shelter Bay STP be rescheduled for evaluation during the summer months when peak use occurs.

DA:jmh

STP SURVEY REPORT FORM

(EFFICIENCY STUDY)

Oxidation

City Shelter Bay Plant Type Ditch Population Served 50 (winter) Design Capacity 600

Receiving Water Swinomish Slough Engineer ----

Date 1/9/74 Survey Period Grab Samples Survey Personnel D. Anderson

Comp. Sampling Frequency ---- Weather Conditions (last 48 hours) Cold, clear.

Sampling Alequot -----

PLANT OPERATION

Total Flow Approx. .01 MGD How Measured "V" notched wier (90°)

Max. (Flow) ---- Time of Max. ------ Min. ------ Time of Min. ------

Pre Cl_2 ------ #/day Post Cl_2 ------ #/day

FIELD RESULTS

	Influent				Effluent			
Determinations	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C	7.5	----	----	----	1.7	----	----	----
pH	7.7	----	----	----	8.0	----	----	----
Conductivity (umhos/cm)	950	----	----	----	950	----	----	----
Settleable Solids	----	----	----	----	---	----	----	----

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent 74-0058	Effluent 74-0059	% Reduction
5-Day BOD	30	11	64%
COD	110	50	55%
T.S.	467	428	09%
T.N.V.S.	310	300	04%
T.S.S.	123	50	60%
N.V.S.S.	56	21	62%
pH	7.8	7.9	
Conductivity	730	740	
Turbidity	18	9	

Shelter Bay

BACTERIOLOGICAL RESULTS

$Na_2S_2O_3$ added to sample before sampling after _____ min.

LAB #	SAMPLING TIME	COLONIES/100 MLS (MF)	Cl Residual 5 sec ppm	Cl Residual 3 min. (after secs.)
74-0060	1000	est. 10	.3	1.0
0061	1030	<10	.3	1.0

Operator's Name Jake Lye Phone # 466-3183

Comments:

	Influent	effluent
Chlorides	31	29
NO_3-N (filt)	--	2.4
NO_2-N (filt)	--	.10
NH_3-N (unfilt)	--	4.7
T-Kjeldahl-N (unfilt)	--	5.2
$O\text{-}PO_4$-P (filt)	--	.18

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Shelter Bay STP

Collected By D Andersen

Date Collected 1-9-74

Goal, Pro./Obj.

Log Number: 74-	0058	59	60	61							STORET
Station:	INF	EFF	1000	1080							
pH	7.8	7.9									00403
Turbidity (JTU)	18.	9.									00070
Conductivity (umhos/cm)@25°C	730.	740.									00095
COD	110.	50.									00340
BOD (5 day)	30	11									00310
Total Coliform (Col./100ml)	-	-	640	<20							31504
Fecal Coliform (Col./100ml)	-	-	EST 10	<10							31616
NO3-N (Filtered)	-	2.4									00620
NO2-N (Filtered)	-	.10									00615
NH3-N (Unfiltered)	-	4.7									00610
T. Kjeldahl-N (Unfiltered)	-	5.2									00625
O-PO4-P (Filtered)	-	.18									00671
Total Phos.-P (Unfiltered)	-	3.50									00665
Total Solids	467	428									00500
Total Non Vol. Solids	310	300									
Total Suspended Solids	123	50									00530
Total Sus. Non Vol. Solids	56	21									
Chlorides	31.	29.									

Note: All results are in PPM unless otherwise specified. ND is "None Detected"
Convert those marked with a * to PPB (PPM X 10^3) prior to entry into STORET

Summary By Stephen D. Roll Date 1-25-74

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-R1527

CHECK ONE	DATE OF AUDIT	PLANT DESCRIPTION CODE (For Official Use Only)
☒ 1ST AUDIT ☐ RE-AUDIT	1-9-74	

A. GENERAL INFORMATION

1. PROJECT (State, Number)	SCOPE OF PROJECT (new plant, additions, etc.)
2. PLANT LOCATION (City, county) SHELTER BAY	IDENTIFICATION OF AREAS SERVED

3. POPULATION

3A. FRACTION OF AREA POPULATION SERVED (%)	3B. PLANT DESIGN (population equivalent)	3C. SERVED BY PLANT (domestic)
100 %	600	100

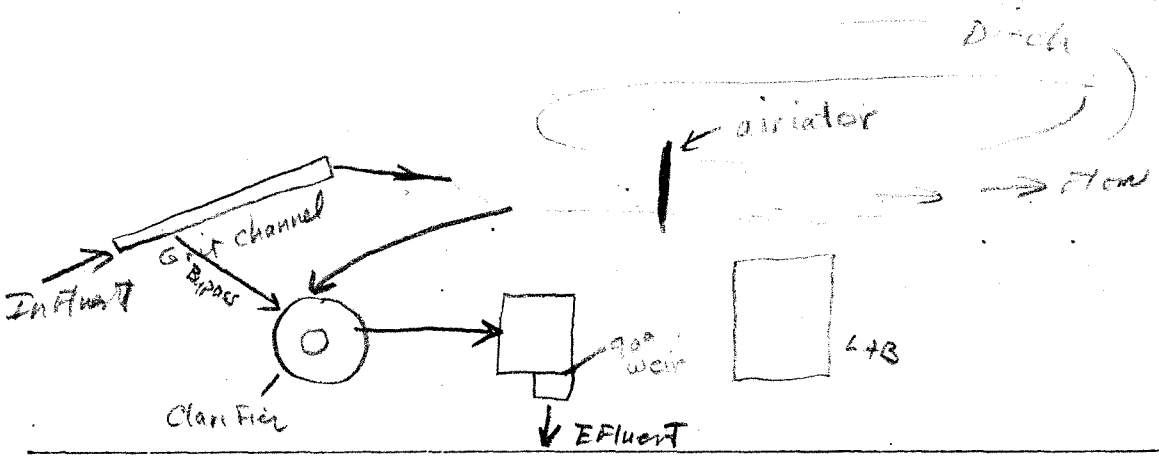
4. TYPE OF COLLECTION SYSTEM

4A.	4B. ESTIMATED FLOW CONTRIBUTED BY SURFACE OR GROUND WATER (infiltration, m.g.d)
☒ COMBINED ☐ SEPARATE ☐ BOTH	

5. YEAR COMMUNITY BEGAN SEWAGE TREATMENT	6. YEAR PRESENT SYSTEM PLACED IN OPERATION		
	6A. SEWER	6B. PLANT	6C. ANCILLARY WORKS
1970	1969	1970	

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

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: Swinomish Slough

9B. STREAM FLOW IS		
☐ PERENNIAL ☐ INTERMITTENT	☐ NATURAL ☐ REGULATED	☐ INTERSTATE ☐ INTRASTATE ☐ COASTAL

B. CURRENT PERFORMANCE AND PLANT LOADING INFORMATION

1A. ANNUAL AVERAGE DAILY FLOW RATE (m.g.d)	1B. PEAK FLOW RATE (m.g.d)		1C. MINIMUM FLOW RATE (m.g.d)
	DRY WEATHER	WET WEATHER	

2. AVERAGE BOD OF RAW SEWAGE (5 DAY 20°C) (ppm)	3. AVERAGE SETTLEABLE SOLIDS OF RAW SEWAGE (ml/l)

4. AVERAGE SUSPENDED SOLIDS OF RAW SEWAGE (mg/l)	5. AVERAGE COLIFORM DENSITY OF RAW SEWAGE (MPN per 100 ml)

6. ANNUAL AVERAGE PLANT REDUCTION

6A. BOD (%)	6B. SETTLEABLE SOLIDS (%)	6C. SUSPENDED SOLIDS (%)	6D. COLIFORM DENSITY (%)

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

8D. TYPE OF CHLORINATOR
Wallace Tiernan

8C. POINT OF APPLICATION OF CHLORINE

8D. CAN BYPASSED SEWAGE BE CHLORINATED?
☑ YES ☐ NO

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

8F. CHLORINE RESIDUAL IN EFFLUENT
_____ PPM AT END OF _____ 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

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

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*)

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*)

Aerator pump

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?