Publication No. 73-e24

November 28, 1973

State of Washington
Department of Ecology

Memo to: Howard Steeley and Gerry Calkins

From: Jim Armstrong

Subject: Lone Oak Sewage Treatment Plant Efficiency Survey.

On October 25, 1973, an efficiency study was conducted at the Lone Oak Sewage Treatment Plant near Longview, Washington. The survey started at 0930 hours and was completed at 1730 hours. Composite samples were taken every one half hour.

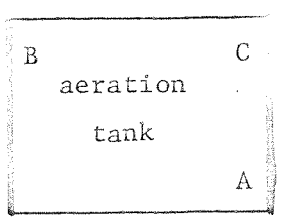
The plant is well fenced and locked at all times.

The effluent BOD was less than 20 and the suspended solids were 20.

The color was 180 for the influent and 67 for the effluent. The reduction was 63%. The results for nutrients from the effluent were as follows:

Test	Results
NO_3-N (Filtered)	6.98
NO_2-N (Filtered)	.03
NH_3-N (Unfiltered)	1.4
T-Kjeldahl-N (Unfiltered)	3.2
O-PO_4-P (Filtered)	9.0
Total Phosphates - P (Unfiltered)	32.0

Dissolved oxygen was recorded for the aeration tank at three places.



Stations for D.O. test.

The values for dissolved oxygen were as follows:

Aerated (ppm)			Non-Aerated (ppm)		
Station	Surface	Depth	Station	Surface	Depth
A	2.3	2.4	A	2.0	2.0
B	1.4	1.7	B	0.1	0.7
C	1.6	2.2	C	0.5	1.0

The following are the results of the settleability tests.

Time	Results
1230 - 1300	410 mls.
1330 - 1400	425 mls.
1530 - 1600	410 mls.

JA:jmh

STP SURVEY REPORT FORM

(EFFICIENCY STUDY)

City Lone Oak Plant Type Extended Aeration Population Served 100 Design Capacity 100

Receiving Water City of Longview Drainage Engineer Howard Steeley

Date 10-25-73 Survey Period 0930-1730 hrs. Survey Personnel Jim Armstrong

Comp. Sampling Frequency Every 1/2 hour Weather Conditions Intermittent rain and sun. (last 48 hours)

Sampling Alequot 500 mls.

PLANT OPERATION

Total Flow _____ How Measured _____

Max. (Flow) 14500 GPD Time of Max. 1230 & 1630 Min. 3750 GPD Time of Min. 1400 - 1500 1600

Pre Cl_2 _____ #/day Post Cl_2 _____ #/day

FIELD RESULTS

Determinations	Influent Max.	Influent Min.	Influent Mean	Influent Median	Effluent Max.	Effluent Min.	Effluent Mean	Effluent Median
Temp. °C	16.8	15.8	16.3	16.4	15.6	14.6	15.4	15.4
pH	9.4	7.8		8.0	7.4	7.1		7.2
Conductivity (umhos/cm)								
Settleable Solids	13	1	7	7	<.1	<.1	<.1	<.1

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent	% Reduction
5-Day BOD	141	<20	86%
COD	250	35	85%
T.S.	458	313	32%
T.N.V.S.	206	203	1%
T.S.S.	185	20	89%
N.V.S.S.	42	7	83%
pH	7.7	7.1	
Conductivity	510	460	
Turbidity	63	6	90%

Lone Oak

BACTERIOLOGICAL RESULTS

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

LAB #	SAMPLING TIME	COLONIES/100 MLS (MF)	Cl Residual	
			ppm	(after secs.)
73-3966	1006	<40	.4	15
3967	1109	<40	.4	15
3968	1704	<40	.4	15

Operator's Name _____ Phone # _____

Comments: _____

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: V. ARMSTRONG

COPIES TO:

LAB FILES

DATA SUMMARY

Source Lone Oak STP

Collected By J.A.

Date Collected 10/25/73

Goal, Pro./Obj.

Log Number: 73-	3964	65	66	67	68	69	70				STORET
Station:	INF	EFF	1006	1109	1310	1204	1755				
pH	7.7	7.1									[illegible]
Turbidity (JTU)	63.	6.									00070
Conductivity (μmhos/cm)@25°C	510	460									00095
COD	230	35									00340
BOD (5 day)	141	<20									00310
Total Coliform (Col./100ml)			<100	<100	1800	<100	7000.				31504
Fecal Coliform (Col./100ml)			<40	<40	<40	<40	800.				31616
NO3-N (Filtered)	-	6.98									00620
NO2-N (Filtered)	-	.03									00615
NH3-N (Unfiltered)	-	1.4									00610
T Kjeldahl-N (Unfiltered)	-	3.2									00625
O-PO4-P (Filtered)	-	9.0									00671
Total Phos.-P (Unfiltered)	-	32.									00665
Total Solids	458	313									00500
Total Non Vol. Solids	206	203									
Total Suspended Solids	185	20									00530
Total Sus. Non Vol. Solids	42	7									
Color	180	67									

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 [illegible] Date 11-20-73

Exhibit E

U.S. DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

SEWAGE TREATMENT PLANT OPERATION AND MAINTENANCE PRACTICES QUESTIONNAIRE

FORM APPROVED
BUDGET BUREAU NO. 43-R1527

CHECK ONE: ☐ 1ST AUDIT ☐ RE-AUDIT

DATE OF AUDIT:

PLANT DESCRIPTION CODE (For Official Use Only)

A. GENERAL INFORMATION

1. PROJECT (State, Number): Lake Park

SCOPE OF PROJECT (new plant, additions, etc.):

2. PLANT LOCATION (City, county): [illegible]

IDENTIFICATION OF AREAS SERVED: [illegible]

3. POPULATION

3A. FRACTION OF AREA POPULATION SERVED (%): [illegible]

3B. PLANT DESIGN (population equivalent): [illegible]

3C. SERVED BY PLANT (domestic): [illegible]

4. TYPE OF COLLECTION SYSTEM

4A. ☐ COMBINED ☒ SEPARATE ☐ BOTH

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

5. YEAR COMMUNITY BEGAN SEWAGE TREATMENT: '67

6. YEAR PRESENT SYSTEM PLACED IN OPERATION

6A. SEWER: '67

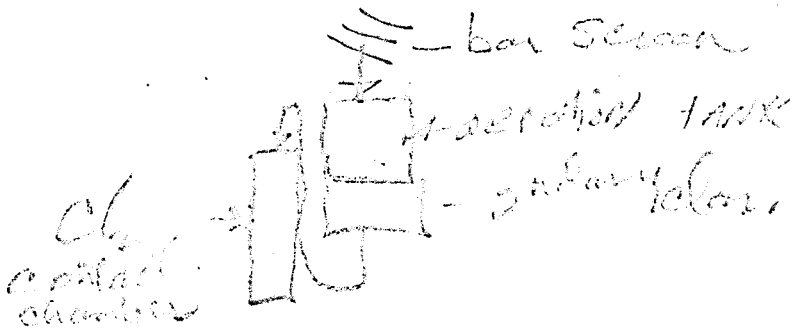
6B. PLANT: '67

6C. ANCILLARY WORKS:

7A. SIZE OF PLANT SITE (acres): .001

7B. APPROXIMATE AREA LEFT FOR EXPANSION (acres): 50'

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.

PACKAGE PLANT

9. RECEIVING STREAM

9A. NAME OF STREAM: Cone Cr.

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): [illegible]

1B. PEAK FLOW RATE (mgd): DRY WEATHER [illegible] WET WEATHER [illegible]

1C. MINIMUM FLOW RATE (mgd): [illegible]

2. AVERAGE BOD OF RAW SEWAGE (5 DAY 20°C) (ppm): 154

3. AVERAGE SETTLEABLE SOLIDS OF RAW SEWAGE (ml/l): [illegible]

4. AVERAGE SUSPENDED SOLIDS OF RAW SEWAGE (mg/l): 1.8%

5. AVERAGE COLIFORM DENSITY OF RAW SEWAGE (per 100 ml): [illegible]

6. ANNUAL AVERAGE PLANT REDUCTION

6A. BOD (%): 82

6B. SETTLEABLE SOLIDS (%): [illegible]

6C. SUSPENDED SOLIDS (%): [illegible]

6D. COLIFORM (%): [illegible]

FWPCA-12 (Rev. 3-68)

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