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M E M O R A N D U M

May 10, 1976

To: Ron Robinson

From: Douglas Houck

Subject: Port Angeles STP
Class II Inspection

On January 6, 1976 we arrived at the Port Angeles sewage treatment plant. Three composite samplers were installed and adjusted to take a 250 ml alequot every 30 minutes. The first sampler was located after the barminutor and the other two samplers were located before and after chlorination. The plant has no chlorine contact chamber per se but uses its discharge pipe to serve the same purpose. The grab samples for fecal coliform and chlorine residual were taken from a manhole located approximately 300 yards from the application point of chlorine.

In reviewing their laboratory procedures several deficiencies were noted. They were not using the four nutrient buffers to make up the dilution water for their BOD_5's and the temperature of their hot water bath was only 44.0°C.

The accuracy of the plant's 36-inch Parshall flume was checked and found to be correct within 2 percent. This is quite good.

On the 7th I returned to pick up and split the composite samples and take a fecal grab sample along with a grab sample of their digested sludge to be analyzed for heavy metals. The following table shows DOE's and Port Angeles' results along with their NPDES monthly average limitations. Port Angeles reported only BOD_5 values.

	DOE		Port Angeles		NPDES
	Inf.	Eff.	Inf.	Eff	Monthly Avg.
BOD_5 (mg/l)	100	80	160	100	133
TSS (mg/l)	133	47			100
Fecal Coliform (colonies/100 ml)		Est 90			700
Chlorine Residual (mg/l)		2.4			Min. 0.5

Although well within their permit limitations the results show that there wasn't good correlation between Port Angeles' and DOE's BOD_5 values. This should be something that should be looked into on the next Class II inspection.

DH:ee

STP Survey Report Form

Efficiency Study

City Pt. Angeles Plant Type Primary Pop. Served 16,000 Design Capacity 24,400

Receiving Water Puget Sound Perennial X Intermittent ____

Date 1-6/7-76 Survey Period 24 hrs. Survey Personnel Houck, Robinson

Comp. Sampling Frequency 30 min. Sampling Alequot 250 ml

Weather Conditions (24 hr) dry, cool Are facilities provided for complete by-pass of raw sewage? X Yes ____ No/Frequency of bypass 1-2/yr.

Reason for bypass oil slick Is bypass chlorinated? X Yes ____ No

Was DOE Notified? Yes Discharge - Intermittent ____ Continuous X

Plant Operation

Design Total flow 10.1 MGD How measured Sparling recorder (Parshall 36")

Maximum flow 5.0 MGD Time of Max. 0900

Minimum flow ____ Time of Min. 0230

Pre Cl_2 - - #/day Post Cl_2 339 - 100 #/day

Field Results

Determinations	Influent Max.	Influent Min.	Influent Mean	Influent Median	Effluent Max.	Effluent Min.	Effluent Mean	Effluent Median
Temp °C				9.9				
pH (Units)				6.8				6.8
Conductivity (µmhos/cm^2)								
Settleable Solids (mls/l)								

Laboratory Results on Composites

	Influent	Effluent	% Reduction
Laboratory No.	76-0041	76-0043	
5-Day BOD ppm	100	<80	>20.0%
COD ppm	160	145	9.4%
T.S. ppm	348	318	8.6%
T.N.V.S. ppm	140	188	- 92.0%
T.S.S. ppm	133	47	64.7%
N.V.S.S. ppm	22	2	90.9%
pH (Units)			
Conductivity (µmhos/cm^2)			
Turbidity (JTU's)			

Laboratory Bacteriological Results

Lab No.	Sampling Time	Colonies/100 ml (MF) Total Coliform	Fecal Coliform	Fecal Strep	Cl_2 Residual
	1000		Est. 90		2.4

Additional Laboratory Results

NO_3-N ppm -	0.74
NO_2-N ppm -	0.02
NH_3-N ppm -	6.3
T. Kjeldahl-N ppm -	
O-PO_4-P ppm -	2.5
T-PO_4-P ppm -	3.9

Operator's Name Ken Rodocker Phone No. 457-0411

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

Type of Collection System

X Combined X Separate X Both

Estimate flow contributed by surface or ground water (infiltration)

Study done this year 3 MGD

Plant Loading Information

Annual average daily flow rate(mgd)

~~Dry~~ 1.5 MGD

~~Wet~~

Peak flow rate(mgd)

Dry

Wet

COMMENTS:

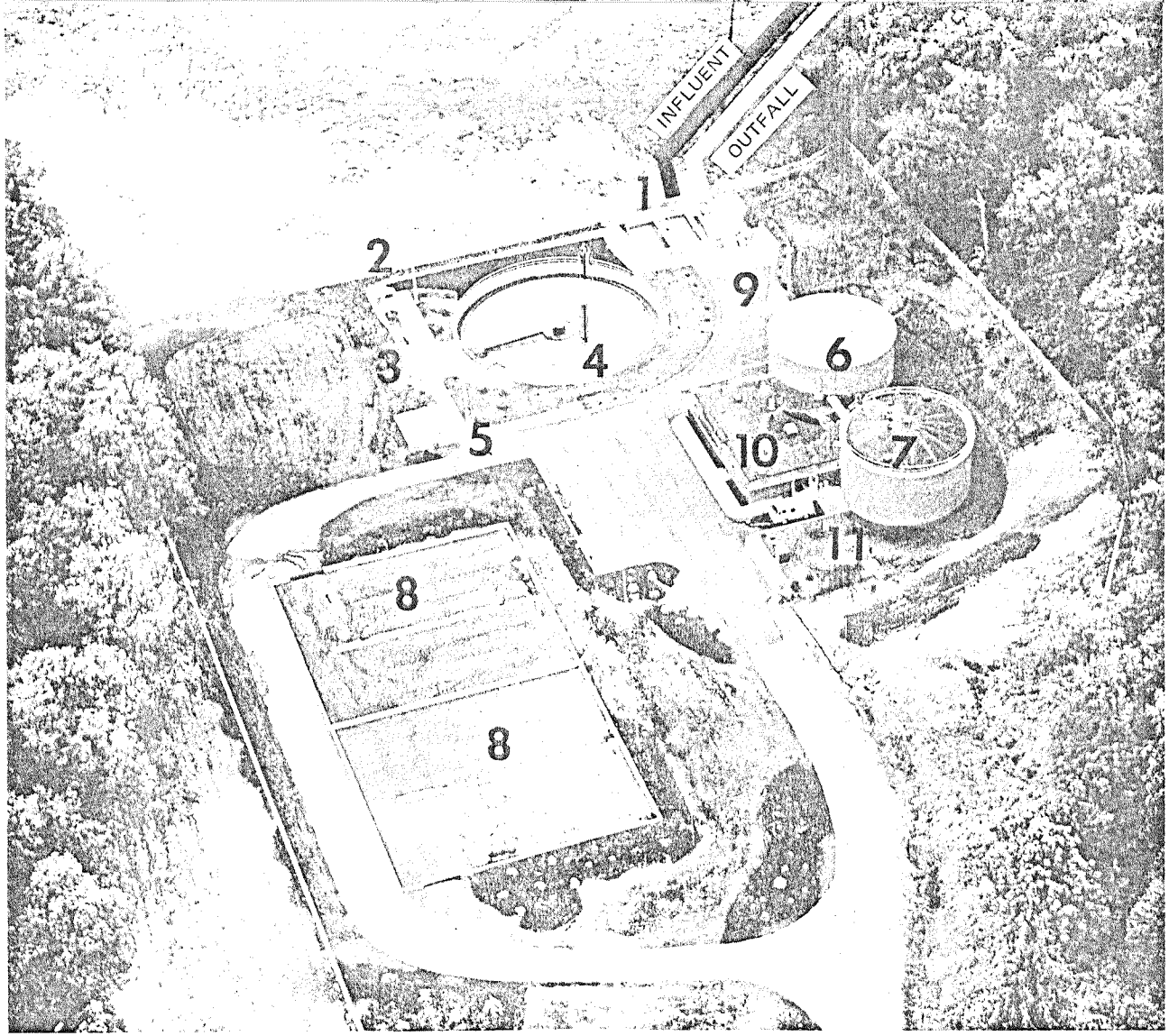
LANT

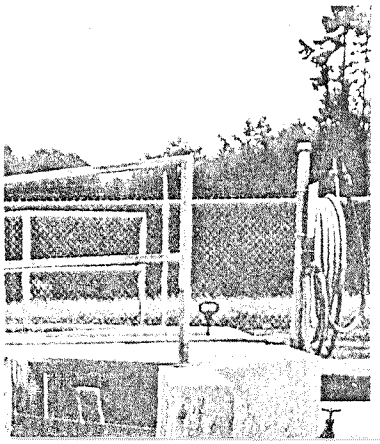
and interceptor system enters
r influent sewer at the grit
y that of a combined system,
ınd other heavy inert material.
material in advance of pumps
nachine wear and excessive
ık and digesters. In the grit
gh to allow heavy particles to
eep lighter organic material in
tment unit. The collected grit
lisposal by landfill.

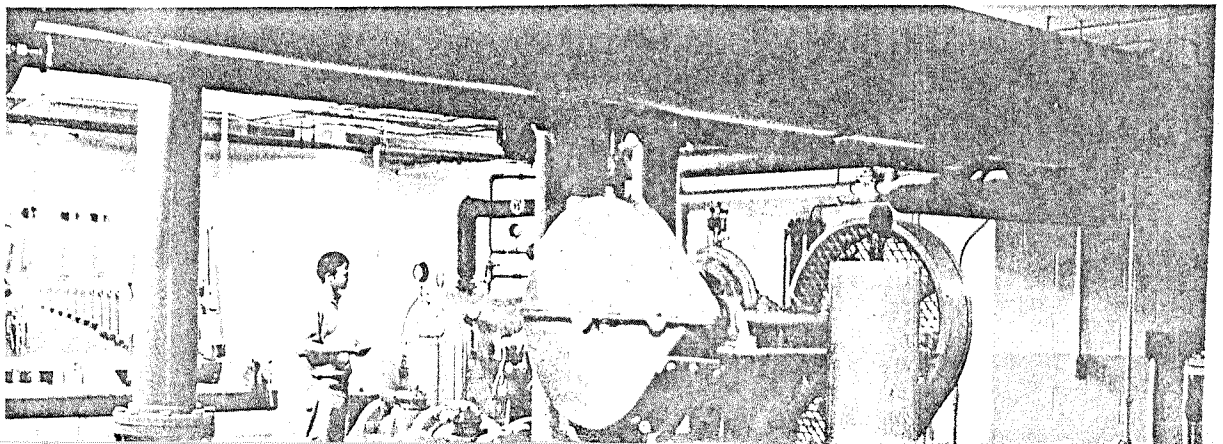
various other kinds of clogging
ds are shredded in the sewage
1/4-inch maximum. Generally,
or clog pumps or treatment
tter, and allow disinfectants to

the flow measuring flume (3).
recorded, and is the basis for

e, the flow is to the clairifer
remove as much as possible of
een 40 and 60 percent. It is
300 parts per million (0.03
l causes the major problems
al is accomplished by allowing
s. As the solids settle to the
usly raked to the center well
to the primary digester (6).
is chlorinated and discharged





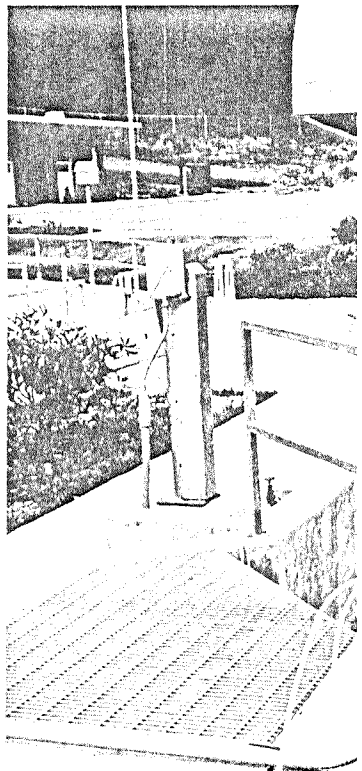


DESCRIPTION (CONTINU

Sludge collected in the
water (95 percent plus) be
The digesters (6 and 7) serv
along with the more impo
matter. This is done by allo
for certain bacteria. The di
facilitate better control of
continually mixed and kept
more rapid decomposition
digested sludge is automatic
(7) where further decomposi
sludge is stored and dried in
in liquid form to tank trucks

Major products of digestio
gas. The methane gas is
secondary digester (7) and is
is used to keep the primary
gas is burned at the waste ga

Complete laboratory facili
(10) for treatment process ev
also contains the chlorinatio
and control piping system.



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

OLYMPIA LABORATORY

ORIGINAL TO: D. Houck
COPIES TO: R. Robinson
LAB. FILES

DATA SUMMARY

Source Port Angeles STP Collected By D. Houck

Date Collected 1-6/7-76

Log Number:	76-0041	42	43	44	45
Station:	INF	UNCHLOR. eff	CHLOR. eff	0945	ANAEROBIC DIGEST. SLUDGE
pH					
Turbidity (NTU)					
Sp. Conductivity (umhos/cm)					
COD	160.	130.	145.		
BOD (5 day)	100	<80.	<80.		
Total Coliform (Col./100ml)					
Fecal Coliform (Col./100ml)				EST 90	
NO3-N (Filtered)			0.74		
NO2-N (Filtered)			0.02		
NH3-N (Unfiltered)			6.3		
T. Kjeldahl-N (Unfiltered)					
O-PO4-P (Filtered)			2.5		
Total Phos.-P (Unfiltered)			3.9		
Total Solids	348	290	318		
Total Non. Vol. Solids	140	172	188		
Total Suspended Solids	133	48	47		
Total Sus. Non Vol. Solids	22	1	2		
Copper (mg/kg)					33.
Cadmium "					0.8
Zinc "					170.
Chromium "					9.2
Lead "					46.

Note: All results are in PPM (mg/L) unless otherwise specified. ND is "None Detected"
"<" is "Less Than" and ">" is "Greater Than"

ECY 040-2-32