MEMORANDUM

Publication No. 73-e64

TO: Mike Price

FROM: Grover Scott Jeane II

SUBJECT: Wilkeson STP Efficiency Study

DATE: February 20, 1973

State of Washington Department of Ecology

On January 22, 1973, I visited the Wilkeson extended airation lagoon and conducted a 6-hour efficiency study.

Our standard STP efficiency sampling scheme was used (see attached DOE form). BOD and COD composite samples demonstrated a decrease of 94 and 77%. While the chlorine residual was slightly below standard (0.3 ppm) the total coliform levels were well within acceptable limits. No increase in chlorine is necessary as long as residual does not drop any lower. High chlorine levels could have a deleterious effect on the small receiving stream.

The operator (Bob Olson) was enthusiastic in pursuit of his responsibilities. The equipment and grounds are well maintained.

The only problems noted are:

a. The pump station at the plant has an overflow (to the creek) that cannot be chlorinated.

b. The only other pump station in town also has an overflow to the creek.

c. The collection system seems to be suffering from ground water infiltration.

Enclosed and partially completed are the "Sewage Treatment Plant Operation and Maintenance Practices Questionnaire" for Wilkeson and Carbonado. Please have Ron Robinson or yourself complete these and forward to the appropriate federal authority with a completed copy to me for our files.

GSJ:bj

Enclosure

(EFFICIENCY STUDY)

City Wilkeson **Plant Type** Lagoon Extended Airation **Population Served** 325 **Design Capacity** 325

Receiving Water Wilkeson Creek **Engineer**

Date 1-22-73 **Survey Period** 1000 - 1600 hr. **Survey Personnel** G. Scott Jeane II

Comp. Sampling Frequency Hourly **Weather Conditions** (last 48 hours) Dry, partly sunny

Sampling Alequot flow rate/20

PLANT OPERATION

Total Flow 5,400 gal. in 5 hours **How Measured** Totalizer

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

Pre Cl_2 #/day **Post Cl_2** 0.7 #/day

FIELD RESULTS

Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C	8	8	8	8	5	4	4.2	4
pH	7.0	6.9	6.9	6.9	7.1	6.9	7.0	7.0
Conductivity (umhos/cm)	220	140	193	200	165	150	161	165
Settleable Solids	10	3.0	4.9	3.5	0.3	Tr.	---	---

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent	% Reduction
	73-239	73-240	
5-Day BOD	69	<4	94
COD	173	39	77
T.S.	243	146	40
T.N.V.S.	170	107	37
T.S.S.	60	10	83
M.V.S.S.	14	3	79
pH	7.0	7.6	--
Conductivity	300	220	--
Turbidity	35	5	--

Wilkeson STP

BACTERIOLOGICAL RESULTS

$Na_2S_2O_3$ added to sample _____ After in bottle min.

LAB #	SAMPLING TIME	COLONIES/100 MLS (MF)	Cl Residual	
			ppm	(after ~~sec~~)
73-243	1100	1100	0.15	
73-244	1200	1000	0.3	3 to 5 min.
73-245	1400	1100	0.3	

Operator's Name Bob Olson Phone # 829-1631

Buckely Equipt. Shop

Comments:

Well maintained installation, conscientious operator.

Total and fecal coliform samples were taken in the receiving water above and below the discharge. No increase was observed.

upstream = 220 - <100

downstream = 220 - <100

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: L.G.S. Jeane

COPIES TO:

LAB FILES

DATA SUMMARY

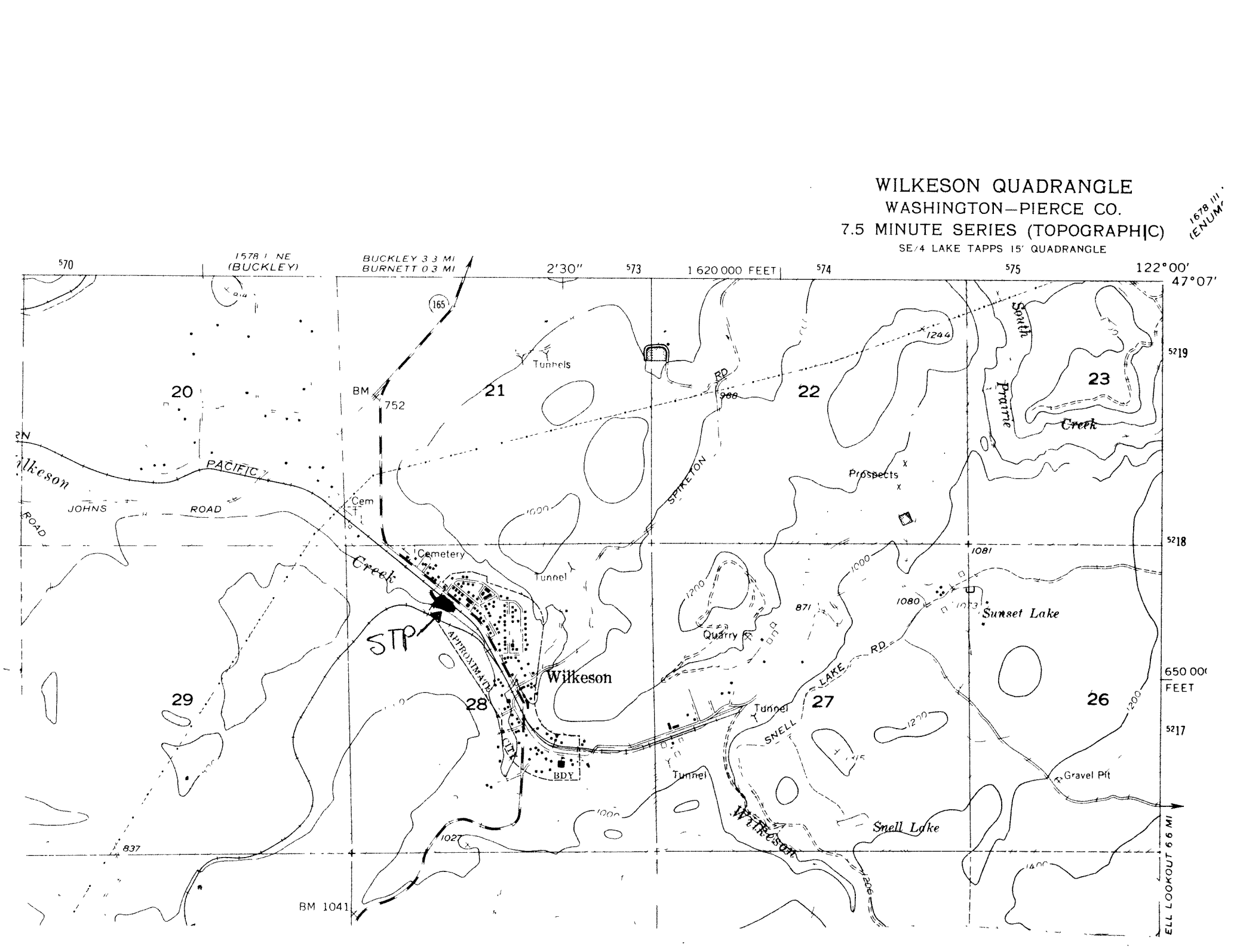
Source Wilkenson STP Collected By G.S.J.

Date Collected 1-22-73 Goal, Pro./Obj. 3.2.23

Log Number: 73-	239	240	241	242	243	244	245				STORET
Station:	INF COMP	EFF COMP	So. Par. CR. UPST.	→ DOWNST.	EFF 1100	EFF 1200	EFF 1400				
pH	7.0	7.6									00403
Turbidity (JTU)	35.	5.									00070
Conductivity (umhos/cm)@25°C	300	220									00095
COD	173	39.									00340
BOD (5 day)	69	<4.									00310
Total Coliform (Col./100ml)			220	220	1100	1000	1100				31504
Fecal Coliform (Col./100ml)			<100	<100	<200	<200	<200				31616
NO3-N (Filtered)											00620
NO2-N (Filtered)											00615
NH3-N (Unfiltered)											00610
T. Kjeldahl-N (Unfiltered)											00625
O-PO4-P (Filtered)											00671
Total Phos.-P (Unfiltered)											00665
Total Solids	243	146									00500
Total Non Vol. Solids	170	107									
Total Suspended Solids	60.	10.									00530
Total Sus. Non Vol. Solids	14	3.									

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 2-6-73


WILKESON QUADRANGLE
WASHINGTON—PIERCE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 LAKE TAPPS 15' QUADRANGLE
1678 III NE (ENUM)
1578 I NE (BUCKLEY)
BUCKLEY 3.3 MI
BURNETT 0.3 MI
2'30"
1 620 000 FEET
570
573
574
575
122°00'
47°07'
5219
5218
5217
650 000 FEET
ELL LOOKOUT 6.6 MI
20
21
22
23
29
28
27
26
BM 752
BM 1041
Tunnels
Tunnel
Cemetery
Cem
PACIFIC
JOHNS
ROAD
SPIKETON
RD
Prospects
South Prairie Creek
Creek
Quarry
Sunset Lake
LAKE
SNELL
Gravel Pit
Snell Lake
Wilkeson
APPROXIMATE
CITY
BDY
STP
165
1244
988
1000
1200
1081
1080
871
837
1027
1400