November 21, 1973

**Publication No. 73-e68**

WA-37-1047

State of Washington
Department of Ecology

Memo to: John Arnquist and John Hodgson

From: Grover Scott Jeane II

Subject: Union Gap STP Efficiency Survey, Conducted October 17, 1973.

The plant is old but well kept. The sludge recirculation pump and the clarifier sludge pump are not operating. The digester has a cracked top and is not heated. The recording apparatus is incorrectly installed. Repair of this equipment is being held in abeyance until the regional sewage plant is completed.

The plant's effluent meets the Federal primary plant requirements but does not meet DOE secondary standards for BOD and TSS percent reduction. The standard influent and effluent analysis was completed (see attached STP survey form). In addition the influent was tested for total sulfides five times. Three tests were negative (<0.1 ppm) and twice the effluent was too colored to complete the test. Dye from a cardboard container manufacturer colored the effluent different colors several times during the day.

The maximum flow measured during the survey was 0.69 MGD. The temperature, pH and settleable solids of the influent and effluent were normal. The BOD was reduced 73% to 87 mg/1. The T.S.S. was reduced 60% to 110 mg/1 which is 3 times greater than the proposed Federal Standards. Conductivity increased 60% to 1200 $\mu$mhos/cm$^2$. No apparent reason for this increase was observed. The turbidity of the effluent was 78 JTU's. This high turbidity has a large impact on the aesthetic quality of Wide Hollow Creek. The nutrient analysis of the effluent revealed 0.2 mg/1 of $NO_3$-N, 0.1 mg/1 of $NO_2$-N, 0.13 mg/1 of O-$PO_4$-P and 1.3 mg/1 of T-$PO_4$-P. The O-$PO_4$-P is in the range of potential algae blooms. The operator was requested to attempt to complete the Federal STP form which is attached.

A stream side survey of the receiving water (Wide Hollow Creek) was undertaken to 1/2 mile below the discharge point. The stream is very discolored by the STP discharge. Three dead fish were observed (1 sucker, 2 unidentified) and at the further most downstream boundary of the survey, 3 live suckers were observed. No dead fish were observed above the outfall. I do not believe the fish were killed as a result of the sewage discharge. If a toxic substance had passed through the STP the trickling filter biota would have been upset. This condition was not observed. Use of caged freshwater mussels may provide some more specific information as to the source of toxicity. If this technique may be of use, please contact me.

GSJ:jmh

STP SURVEY REPORT FORM

(EFFICIENCY STUDY)

City Union Gap Plant Type Primary with Trickling filters Population Served Design Capacity

Receiving Water Wide Hollow Creek Engineer

Date October 17, 1973 Survey Period 0930 to 1700 hours Survey Personnel Scott Jeane

Comp. Sampling Frequency Approx. every 1/2 hr.(last 48 hours) Weather Conditions Clear and cool

Sampling Alequot 1000 ml Min.-proportional to flow.

PLANT OPERATION

Total Flow How Measured By ruler, at effluent parshall flume

Max. (Flow) 0.69 MGD Time of Max. 1035 & 1530 hrs. Min. 0.64 MGD Time of Min. 0930 & 1130 hrs

Pre $Cl_2$ #/day Post $Cl_2$ 20 #/day

FIELD RESULTS

| Determinations | Influent Max. | Influent Min. | Influent Mean | Influent Median | Effluent Max. | Effluent Min. | Effluent Mean | Effluent Median |
|---|---|---|---|---|---|---|---|---|
| Temp. °C | 19.6 | 17.0 | 18.9 | 19.2 | 18.4 | 15.5 | 17.2 | 17.6 |
| pH | 7.0 | 6.7 | --- | 6.8 | 7.5 | 7.2 | --- | 7.4 |
| Conductivity (umhos/cm) | * | | | | * | | | |
| Settleable Solids | 10 | 2 | 4.8 | 3 | 1.0 | 0.5 | 0.8 | 0.6 |

LABORATORY RESULTS ON COMPOSITE IN PPM

| Laboratory Number | Influent 73-3839 | Effluent 73-3840 | % Reduction |
|---|---|---|---|
| 5-Day BOD | 320 | 87 | 73% |
| COD | 480 | 170 | 65% |
| T.S. | 774 | 768 | 1% |
| T.N.V.S. | 372 | 556 | 49% increase |
| T.S.S. | 278 | 110 | 60% |
| N.V.S.S. | 60 | 24 | 60% |
| pH | 7.0 | 7.1 | |
| Conductivity | 750 | 1200 | 60% increase |
| Turbidity | 145 | 78 | 46% |

* No conductivity meter available.

BACTERIOLOGICAL RESULTS

$Na_2S_2O_3$ added to sample After immediately min.

| LAB # | SAMPLING TIME | COLONIES/100 MLS (MF) | | Cl Residual | |
|---|---|---|---|---|---|
| | | Total | Fecal | ppm | (after secs) |
| 73-3841 | 1015 | <1000 | <400 | 0.75 | 3 min. |
| 42 | 1200 | <1000 | <400 | 0.75 | 3 min. |
| 43 | 1400 | <1000 | <400 | 1.00 | 3 min. |
| 44 | 1600 | <1000 | <400 | 1.2 | 3 min. |
| | | | | | |
| | | | | | |

Operator's Name See federal form. Phone #

Comments: 1) Sludge recirculation pump inoperative. 2) Digester not heated at present due to danger from gas leakage from cracked top. 3) Flow recording apparatus not correctly installed. 4) Dye from cardboard container plant discolors effluent.

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: ☐ 1ST AUDIT ☐ RE-AUDIT

DATE OF AUDIT: Oct 12, 1973

PLANT DESCRIPTION CODE (For Official Use Only)

## A. GENERAL INFORMATION

1. PROJECT (State, Number)

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

2. PLANT LOCATION (City, county): Union Gap Yakima County

IDENTIFICATION OF AREAS SERVED

## 3. POPULATION

3A. FRACTION OF AREA POPULATION SERVED (%): 100%

3B. PLANT DESIGN (population equivalent)

3C. SERVED BY PLANT (domestic)

## 4. TYPE OF COLLECTION SYSTEM

4A. ☐ COMBINED ☒ SEPARATE ☐ BOTH

4B. ESTIMATED FLOW CONTRIBUTED BY SURFACE OR GROUND WATER (infiltration, m.g.d)

5. YEAR COMMUNITY BEGAN SEWAGE TREATMENT: 1950

6. YEAR PRESENT SYSTEM PLACED IN OPERATION

| 6A. SEWER | 6B. PLANT | 6C. ANCILLARY WORKS |
|---|---|---|
| 1950 | 1950 | |

7A. SIZE OF PLANT SITE (acres): 0.5

7B. APPROXIMATE AREA LEFT FOR EXPANSION (acres): 4.5

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.

See Attached

8B. NOTE ANY SIGNIFICANT OR UNIQUE PROCESSING CONDITIONS.

NONE.

## 9. RECEIVING STREAM

9A. NAME OF STREAM: Wide Hollow Creek

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 | |
| 0.5 (ESTIMATE) | 1.0 (EST.) | 1.4 (EST.) | 0.1 (EST.) |

2. AVERAGE BOD OF RAW SEWAGE (5 DAY 20°C) (ppm): NOT KNOWN

3. AVERAGE SETTLEABLE SOLIDS OF RAW SEWAGE (ml/l): 5

4. AVERAGE SUSPENDED SOLIDS OF RAW SEWAGE (mg/l): NOT KNOWN

5. AVERAGE COLIFORM DENSITY OF RAW SEWAGE (MPN per 100 ml): NOT KNOWN

## 6. ANNUAL AVERAGE PLANT REDUCTION

| 6A. BOD (%) | 6B. SETTLEABLE SOLIDS (%) | 6C. SUSPENDED SOLIDS (%) | 6D. COLIFORM DENSITY (%) |
|---|---|---|---|
| NOT KNOWN | 98% | NOT KNOWN | NOT KNOWN |

FWPCA-12 (Rev. 4-63)

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
Disinfection, odor control

8B. TYPE OF CHLORINATOR
Wallace & Tiernan 400 lbs capacity

8C. POINT OF APPLICATION OF CHLORINE
Control box preceding mixing tank

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

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

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

8G. MINIMUM SUPPLY OF CHLORINE STORED ON PREMISES (lb)
2000 lbs

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 |
|---|---|---|
| NOT APPLICABLE | NA | NA |

9D. ESTIMATED FLOW RATE DURING BYPASS IS
☐ WITHIN HYDRAULIC CAPACITY OF PLANT
☐ BEYOND HYDRAULIC CAPACITY OF PLANT BY NA

9E. DOES SEWAGE OVERFLOW IN DRY WEATHER?
☐ YES ☒ NO

9F. TYPE OF DIVERSION STRUCTURE
NA

9G. AGENCIES NOTIFIED OF BYPASS ACTION
NA

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 Only on pump water seal connections

10B. CHECK TYPE OF BACK FLOW PREVENTION DEVICE
☒ DOUBLE CHECK VALVE ☐ PRESSURE OPERATED ☐ PHYSICAL DISCONNECT ☐ OTHER(specify)

11. USES OF TREATMENT PLANT EFFLUENT
DISCHARGE TO RECEIVING WATER

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

13. HAVE THERE BEEN ANY ODOR COMPLAINTS BEYOND THE PLANT PROPERTY? (If yes, explain)
☒ YES ☐ NO
Odors from sludge drying operations.

14. OBSERVED APPEARANCE AND CONDITION OF EFFLUENT, RECEIVING STREAM, OR DRAINAGE WAY
Effluent — gray-brown in color w/ some visible suspended solids, little or no odor.
Receiving Stream — discolored by effluent.

15. STABILIZATION PONDS

A. WEEDS CUT AND VEGETATIVE GROWTH IN PONDS ELIMINATED? ☐ YES ☐ NO NOT APPLICABLE

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 Yakima Valley College, 1971

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)

Sludge recirculation pump inoperative

B. ARE PROCESSING UNITS OPERATING AT DESIGN EFFICIENCY? ☐ YES ☒ NO (If no, explain)

Digester is not heated at present due to danger from gas leakage.

4. HAVE THERE BEEN ANY DIFFICULTIES WITH THE SEWAGE TREATMENT PLANT?

A. STRUCTURAL ☒ YES ☐ NO (If yes explain) Cracked lid on digester

B. MECHANICAL ☒ YES ☐ NO (If yes, explain) failure of recirculation 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?

Repair digester lid & recirculation pump; heat & recirculate sludge.

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

REPORTED? ☒ YES ☐ NO

TO WHOM? STATE OF WASH. DEPT. OF ECOLOGY

| FREQUENCY | WEATHER | FLOW | SLUDGE HANDLED | CHEMICALS USED | DIGESTER | GRIT HANDLED | ELEC. USED | COST DATA | AIR USED | MAINTENANCE | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DAILY | | ✓ | | ✓ | ✓ | | | | | | |
| WEEKLY | | | AS REQ'D | | | | | | | | |
| 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?

pH METER

7. IS LABORATORY TESTING ADEQUATE FOR THE CONTROL REQUIRED FOR THIS SIZE AND TYPE OF PLANT?

☐ YES ☒ NO (If no, explain) BOD Testing not practiced

8. INDUSTRIAL WASTES DISCHARGED TO MUNICIPAL SYSTEM:

A. NUMBER AND TYPES OF INDUSTRIES DISCHARGING TO SYSTEMS

1 – hide processing plant ; 1 – cardboard container manufacturer

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

NOT KNOWN

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

NOT KNOWN

D. VOLUME OF INDUSTRIAL WASTES (mgd)

NOT KNOWN

E. COMPOSITION AND CHARACTERISTICS OF INDUSTRIAL WASTES

NOT KNOWN

F. MAIN DIFFICULTY EXPERIENCED WITH INDUSTRIAL WASTE (explain)

Dye from cardboard container manufacturer discolors effluent at times.

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.)

Fixed charge – % of water bill.

9B. IS INDUSTRIAL WASTE ORDINANCE IN EFFECT AND ENFORCED? ☒ YES ☐ NO

10. WHO PROVIDED INITIAL INSTRUCTION IN THE OPERATION OF THE PLANT?

Consulting Engineer

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

20

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 | 1 | 6 | 1 | 9 | 9 |
| 2. OPERATORS | 1 | 40 | 1 | 1 | 1 |
| 3. LABORATORY TECHNICIANS | | | | | |
| 4. LABORERS | | | | | |
| 5. PART-TIME LABORERS | | | | | |
| 6. TOTAL | 2 | 46 | 2 | | |

## 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
2 – 4, 5 or 6 per week
3 – 1, 2, or 3 per week
4 – as required
5 – 2 or 3 per month
6 – 1 per month
7 – Quarterly
8 – Semi-Annually
9 – Annually

| ITEM | RAW | PRIMARY EFFLUENT | FILTER ~~MIXED LIQUOR~~ UNDERFLOW | FINAL | SLUDGE RAW | SLUDGE SUPERNATANT | DIGESTOR | RECEIVING STREAM |
|---|---|---|---|---|---|---|---|---|
| 1. BOD | | | | | | | | |
| 2. SUSPENDED SOLIDS | | | | | | | | |
| 3. SETTLEABLE SOLIDS | 1 | 1 | | 1 | | | | |
| 4. SUSPENDED VOLATILE | | | | | | | | |
| 5. DISSOLVED OXYGEN | 1 | 1 | 1 | 1 | | | | |
| 6. TOTAL SOLIDS | | | | | | | | |
| 7. VOLATILE SOLIDS | | | | | | | | |
| 8. pH | 1 | 1 | 1 | 1 | | | | |
| 9. TEMPERATURE | 1 | | | | | | 1 | |
| 10. COLIFORM DENSITY | | | | | | | | |
| 11. RESIDUAL CHLORINE | | | | 1 | | | | |
| 12. VOLATILE ACIDS | | | | | | | | |
| 13. M. B. STABILITY | | | | | | | | |
| 14. ALKALINITY | | | | | | | | |
| 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 |
|---|---|---|
| | | |
| | | |
| | | |

| INFORMATION FURNISHED BY | TITLE | ORGANIZATION | DATE |
|---|---|---|---|
| PAUL BURLINGAME | ASST. TOWN SUPERINTENDENT | Town of Union Gap | 10/17/73 |
| JEFF W. DAVIS | SANITARY ENGINEER | Gray & Osborne, Inc., P.S. | 10/17/73 |

## G. NOTATIONS BY EVALUATOR

1. ADDITIONAL REMARKS *(If remarks refer to a particular item, identify by number)*

2. GENERAL COMMENTS ON HOUSEKEEPING AND MAINTENANCE

Plant has been well maintained. Repair of digester lid and recirculation pump would have been undertaken previously, but the regional waste treatment study presently underway (see (4) below) will influence the necessity of these repairs.

3. REQUIREMENTS OF HIGHER AUTHORITY

3A. DOES THE PLANT PROVIDE THE DEGREE OF TREATMENT PRESENTLY REQUIRED BY THE STATE? *(If no, explain)*

☐ YES ☒ NO Full secondary treatment is required.

3B. ARE THERE ANY PENDING ACTIONS *(enforcement conferences, change in water quality standards, etc.)* THAT WOULD REQUIRE UPGRADING OF TREATMENT BY THIS PLANT?

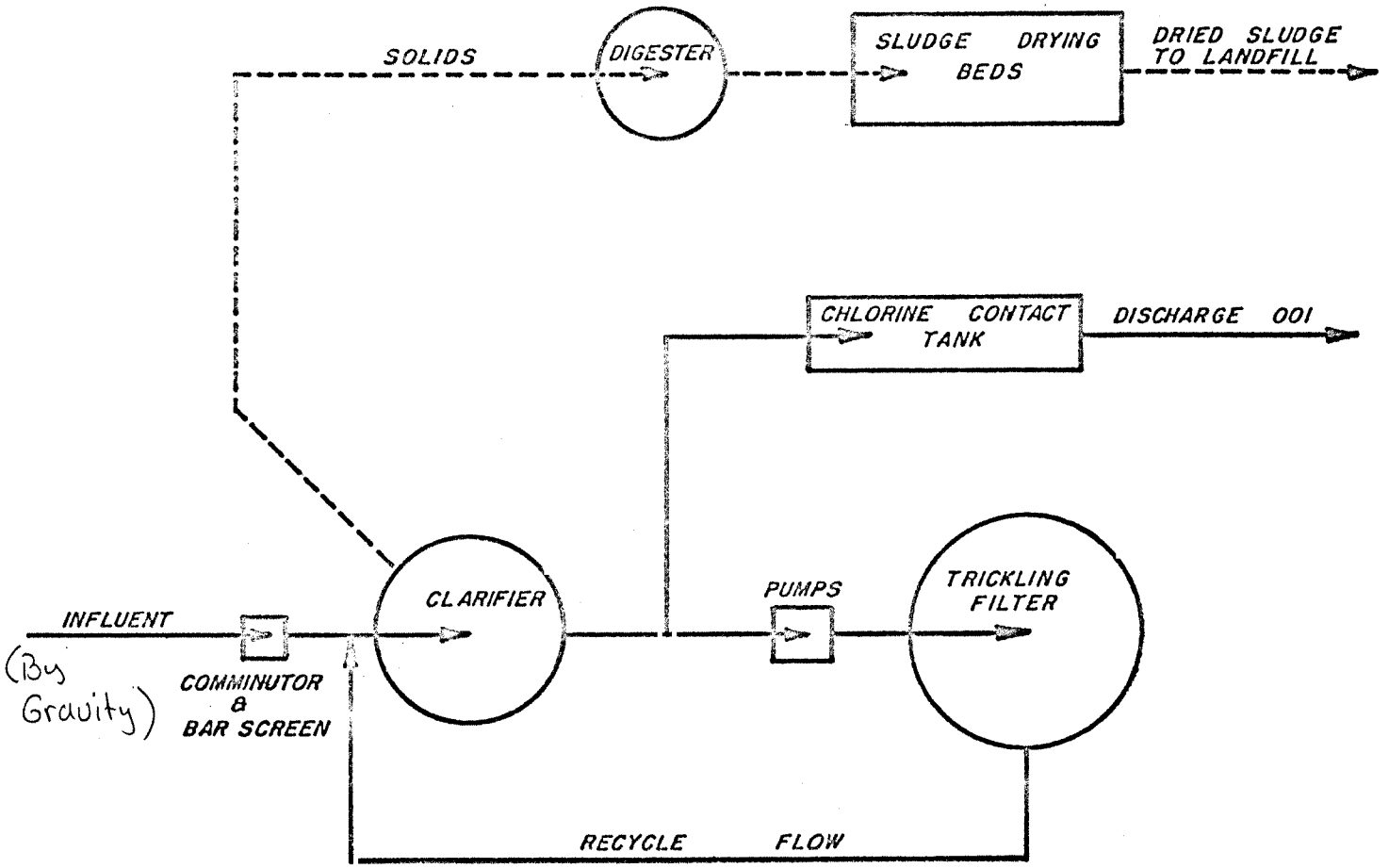
☒ YES ☐ NO *(If yes, explain)* full secondary treatment requirement will require upgrading or replacement, as described in (4) below.

3C. NUMBER OF STATE INSPECTIONS OF PRESENT PLANT TO DATE. NOT KNOWN (APPROXIMATELY ANNUALLY)

4. IS ANY FOLLOW-THRU ACTION REQUIRED TO (1) CORRECT DEFICIENCIES IN THE PLANT OR ITS OPERATION OR (2) RESOLVE INDUSTRIAL WASTE PROBLEMS? *(If yes, describe required corrective action)* ☒ YES ☐ NO

(1). Improvements to the plant or replacement of the plant with a pump station & regional waste treatment at Yakima are being considered, and will be initiated upon completion of the regional waste treatment study.

(2) Investigations of the present color problem are in progress. Will be done late '74.




SCHEMATIC OF WASTEWATER FLOW

TOWN OF UNION GAP
YAKIMA COUNTY WASHINGTON
SEWAGE TREATMENT PLANT

OCT. 8, 1973 PAGE 1 OF 1

Gray & Osborne
CONSULTING ENGINEERS
SEATTLE & YAKIMA
WASHINGTON

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO: Scott Jones

LAB FILES

DATA SUMMARY

Source Union Gap STP

Collected By PML

Date Collected 10-17-73

Goal, Pro./Obj.

| Log Number: 73- | 3839 | 40 | 41 | 42 | 43 | 44 | | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | INF | EFF | 1015 | 1200 | 1400 | 1600 | | | | | |
| pH | 7.0 | 7.1 | | | | | | | | | 00403 |
| Turbidity (JTU) | 145 | 78 | | | | | | | | | 00070 |
| Conductivity (umhos/cm)@25C | 750 | 1200 | | | | | | | | | 00095 |
| COD | 480 | 170 | | | | | | | | | 00340 |
| BOD (5 day) | 320 | 87X | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | | | <1000 | <1000 | <1000 | <1000 | | | | | 31504 |
| Fecal Coliform (Col./100ml) | | | <400 | <400 | <400 | <400 | | | | | 31616 |
| NO3-N (Filtered) | | .20 | | | | | | | | | 00620 |
| NO2-N (Filtered) | | .10 | | | | | | | | | 00615 |
| NH3-N (Unfiltered) | | | | | | | | | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | | | | | | | | | | | 00625 |
| O-PO4-P (Filtered) | | .13 | | | | | | | | | 00671 |
| Total Phos.-P (Unfiltered) | | 1.30 | | | | | | | | | 00665 |
| Total Solids | 774 | 768 | | | | | | | | | 00500 |
| Total Non Vol. Solids | 372 | 556 | | | | | | | | | |
| Total Suspended Solids | 278 | 110 | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | 60 | 24 | | | | | | | | | |
| Color | 670 | 380 | | | | | | | | | |
| Chlorides | 92 | 227 | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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 P. Robb Date 11-12-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Union Gap STP

Collected By P. Lee

Date Collected 11-19-74

Goal, Pro./Obj.

Log Number: 74-4935

| | | | | | | | | | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | | | | | | | | | | | | |
| pH | | | | | | | | | | | | 00403 |
| Turbidity (JTU) | | | | | | | | | | | | 00070 |
| Conductivity (umhos/cm)@25C | | | | | | | | | | | | 00095 |
| COD | | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | | | | | | | | | | | | 31504 |
| Fecal Coliform (Col./100ml) | | | | | | | | | | | | 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 | | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | | |
| IRON | 0.9 | | | | | | | | | | | |
| ZINC | 0.10 | | | | | | | | | | | |
| Chromium (Total) | 0.2 | | | | | | | | | | | |
| Copper | <.1 | | | | | | | | | | | |
| Lead | <.5 | | | | | | | | | | | |

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. Bell Date 1-9-75

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Union Gap & Schanno Ditch — Collected By G. Rasmussen

Date Collected 10-8-74 — Goal, Pro./Obj.

| Log Number: 74- | 4027 | 28 | 29 | 30 | 31 | 32 | 33 | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | U.G. Digested Sludge | U.G. WWTP | Schanno Ditch | Yakima STP Inf. Comp. | Yakima STP Sec. dig. | Wide end of White St. | Hollow Cr. WWTP Outfall | | | | |
| pH | | | | | | | | | | | 00403 |
| Turbidity (JTU) | | | | | | | | | | | 00070 |
| Conductivity (μmhos/cm)@25°C | | | | | | | | | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | | | | | | | | | | | 31504 |
| Fecal Coliform (Col./100ml) | | | | | | | | | | | 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 | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Chromium | 40. | 0.1 | <0.1 | <0.1 | 7.8 | ND | 0.1 | | | | |
| Zinc | 28. | 0.22 | 0.05 | 0.63 | 40 | 0.08 | 0.13 | | | | |
| Iron | 650. | 0.8 | 0.1 | 1.7 | 660. | 0.2 | 1.0 | | | | |
| Lead | 115. | ND | ND | ND | 22. | ND | ND | | | | |
| Copper | 7.6 | <0.1 | <0.1 | <0.1 | 8.2 | <0.1 | <0.1 | | | | |

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 10-17-74

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Wide Hollow Creek  Collected By H. Cregg

Date Collected 9-24-73  Goal, Pro./Obj.

| Log Number: 73- | 3509 | 10 | 11 | 12 | 13 | 14 | 15 | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | | | | | | | | | | | |
| pH | 7.8 | 8.0 | 7.9 | 8.0 | 7.9 | 7.8 | 7.9 | | | | 00403 |
| Turbidity (JTU) | 10 | 10 | 15 | 17 | 14 | 16 | 14 | | | | 00070 |
| Conductivity (μmhos/cm)@25°C | 260 | 270 | 250 | 290 | 360 | 330 | 350 | | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 8000 | 11000 | 900 | 6800 | 8600 | 1700 | 13,000 | | | | 31504 |
| Fecal Coliform (Col./100ml) | 500 | 560 | 800 | 1200 | 1200 | 780 | 1200 | | | | 31616 |
| NO3-N (Filtered) | .13 | .12 | .13 | .21 | .26 | .30 | .38 | | | | 00620 |
| NO2-N (Filtered) | .01 | .01 | .01 | .01 | .01 | .01 | .01 | | | | 00615 |
| NH3-N (Unfiltered) | ND | .02 | ND | .02 | .02 | ND | .04 | | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | .02 | .08 | ND | .06 | .08 | .10 | .04 | | | | 00625 |
| O-PO4-P (Filtered) | .01 | .01 | .01 | .01 | .01 | .01 | .01 | | | | 00671 |
| Total Phos.-P (Unfiltered) | .05 | .02 | .02 | .03 | .02 | .02 | .03 | | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Fecal Strep (col/100ml) | 700 | 880 | 820 | 1100 | 920 | 270 | 570 | | | | |
| Total Alk (as $CaCO_3$) | 100 | 99 | 106 | 112 | 116 | 119 | 129 | | | | |
| Chlorides | 3 | 5 | 5 | 19 | 5 | 6 | 7 | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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 P. Nell  Date 10-10-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Wide Hollow Creek — Collected By PML

Date Collected 7/9/73 — Goal, Pro./Obj.

| Log Number: 73- | 2439 | 40 | 41 | 42 | 43 | 44 | 45 | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | 1 | 2 | 3 | 4 | 4A | 6 | 7 | | | | |
| pH | 8.5 | 8.5 | 8.8 | 8.9 | 8.4 | 8.0 | 8.7 | | | | 00403 |
| Turbidity (JTU) | 21 | 38 | 22 | 15 | 18 | 14 | 10 | | | | 00070 |
| Conductivity (umhos/cm)@25°C | 280 | 280 | 300 | 320 | 310 | 360 | 400 | | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 7000 | 8000 | 7000 | 3500 | 2750 | 1300 | 1750 | | | | 31504 |
| Fecal Coliform (Col./100ml) | 350 | 325 | 325 | 400 | 150 | 400 | <100 | | | | 31616 |
| NO3-N (Filtered) | .03 | .03 | .12 | .10 | .15 | .08 | .10 | | | | 00620 |
| NO2-N (Filtered) | ND | ND | ND | ND | ND | ND | ND | | | | 00615 |
| NH3-N (Unfiltered) | .06 | .02 | .14 | .06 | .02 | .12 | .14 | | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | .10 | .06 | .20 | .28 | .06 | .16 | .20 | | | | 00625 |
| O-PO4-P (Filtered) | .11 | .09 | .12 | .14 | .09 | .12 | .16 | | | | 00671 |
| Total Phos.-P (Unfiltered) | .16 | .20 | .16 | .22 | .16 | .23 | .23 | | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Fecal Strep (Col/100ml) | 350 | >160 | >400 | >400 | 150 | >160 | 150 | | | | |
| Alkalinity (as $CaCO_3$) | 110 | 115 | 125 | 135 | 125 | 140 | 150 | | | | |
| Chlorides | 11 | 10 | 10 | 11 | 10 | 11 | 13 | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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. Nobb Date 7-25-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Wide Hollow Creek  Collected By PMZ

Date Collected 6/19/73  Goal, Pro./Obj.

| Log Number: 73 | 2225 | 26 | 27 | 28 | 29 | 30 | 31 | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | 1 | 2 | 3 | 5 | 5A | 6 | 7 | | | | |
| pH | 8.7 | 8.8 | 8.9 | 9.1 | 8.4 | 8.2 | 8.5 | | | | 00403 |
| Turbidity (JTU) | 2 | 2 | 3 | 2 | 4 | 4 | 1 | | | | 00070 |
| Conductivity (umhos/cm)@25C | 150 | 160 | 260 | 310 | 330 | 360 | 400 | | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 7,000 | 1,500 | 2,000 | 1500 | 4000 | 1400 | 7,000 | | | | 31504 |
| Fecal Coliform (Col./100ml) | <200 | <200 | <200 | <200 | <200 | <200 | <200 | | | | 31616 |
| NO3-N (Filtered) | .20 | .22 | .12 | .40 | .58 | .78 | .92 | | | | 00620 |
| NO2-N (Filtered) | ND | ND | ND | ND | ND | ND | ND | | | | 00615 |
| NH3-N (Unfiltered) | .02 | ND | .16 | .18 | ND | .02 | .02 | | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | .06 | .02 | .24 | .20 | .02 | .22 | .16 | | | | 00625 |
| O-PO4-P (Filtered) | .12 | .10 | .13 | .15 | .13 | .15 | .16 | | | | 00671 |
| Total Phos.-P (Unfiltered) | .15 | .10 | .16 | .21 | .13 | .22 | .19 | | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Fecal Strep (col/100ml) | 175 | <100 | 150 | <100 | <100 | <100 | <100 | | | | |
| Total Alkalinity (as CaCO3) | 90 | 92 | 103 | 125 | 123 | 146 | 135 | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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 Tyler D. Noll  Date 7-11-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Wide Hollow Creek  Collected By PML

Date Collected 6/12/73  Goal, Pro./Obj. 3.2.21

| Log Number: 73- | 2147 | 48 | 49 | 50 | 51 | 52 | 53 | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | 1 | 2 | 3 | 4 | 4-A | 6 | 7 | | | | |
| pH | 8.7 | 8.8 | 8.7 | 8.7 | 8.4 | 8.2 | 8.3 | | | | 00403 |
| Turbidity (JTU) | 2 | 1 | 5 | 2 | 2 | 3 | 1 | | | | 00070 |
| Conductivity (umhos/cm)@25C | 280 | 290 | 300 | 340 | 310 | 340 | 370 | | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 2250 | 6000 | 2500 | 1500 | 3250 | 3750 | 6000 | | | | 31504 |
| Fecal Coliform (Col./100ml) | 280 | 310 | 310 | 180 | 170 | 310 | 300 | | | | 31616 |
| NO3-N (Filtered) | .14 | .18 | .18 | .48 | .56 | .72 | .90 | | | | 00620 |
| NO2-N (Filtered) | ND | ND | ND | ND | ND | ND | ND | | | | 00615 |
| NH3-N (Unfiltered) | .02 | ND | .22 | .18 | —* | ND | .02 | | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | .20 | .16 | .41 | .22 | —* | ND | .04 | | | | 00625 |
| O-PO4-P (Filtered) | .08 | .08 | .10 | .12 | .10 | .12 | .12 | | | | 00671 |
| Total Phos.-P (Unfiltered) | .18 | .18 | .13 | .18 | .11 | .20 | .20 | | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Fecal Strep Coli (col/100ml) | 120 | 375 | 105 | 120 | 215 | 205 | 200 | | | | |
| Chlorides | 10 | 10 | 9 | 11 | 9 | 9 | 11 | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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

* Not Received

Summary By Stephen D. Rath  Date 6-21-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

## DATA SUMMARY

Source Wide Hollow Cr. Collected By P.L.

Date Collected 5-14-73 Goal, Pro./Obj. 3.2.21

| Log Number: 73- | 1744 | 45 | 46 | 47 | 48 | 49 | 50 | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | 1 | 2 | 3 | 5 | 5A | 6 | 7 | | | | |
| pH | 8.8 | 8.8 | 8.8 | 8.8 | 8.2 | 8.2 | 8.2 | | | | 00403 |
| Turbidity (JTU) | 6 | 5 | 9 | 5 | 5 | 5 | 6 | | | | 00070 |
| Conductivity (umhos/cm)@25°C | 250 | 240 | 260 | 300 | 280 | 300 | 315 | | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 10,000 | 8,000 | 7000 | 2,200 | 2,000 | 7,000 | 2,200 | | | | 31504 |
| Fecal Coliform (Col./100ml) | 450 | 360 | 240 | 80 | 120 | 950 | 350 | | | | 31616 |
| NO3-N (Filtered) | .02 | .02 | .02 | .05 | .06 | .06 | .09 | | | | 00620 |
| NO2-N (Filtered) | ND | ND | ND | ND | ND | .01 | ND | | | | 00615 |
| NH3-N (Unfiltered) | .34 | ND | .44 | .02 | ND | .34 | .02 | | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | .36 | .04 | .50 | .08 | .06 | .54 | .30 | | | | 00625 |
| O-PO4-P (Filtered) | .02 | .02 | .02 | .02 | .02 | .02 | .02 | | | | 00671 |
| Total Phos.-P (Unfiltered) | .05 | .02 | .03 | .02 | .04 | .02 | .02 | | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Chlorides | 10 | 9 | 9 | 9 | 9 | 9 | 10 | | | | |

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. Hall Date 5-25-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Wide Hollow Creek  Collected By PML

Date Collected 4-30-73  Goal, Pro./Obj. 3.2.21

| Log Number: 73- | 1618 | 1619 | 1620 | 1621 | 1622 | 1623 | 1624 | 1625 | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | 1 | 2 | 3 | 5 | 5A | 6 | 7 | X | | | |
| pH | 8.3 | 8.8 | 8.9 | 8.9 | 8.7 | 8.7 | 8.4 | - | | | 00403 |
| Turbidity (JTU) | 5 | 6 | 6 | 4 | 4 | 6 | 5 | - | | | 00070 |
| Conductivity (umhos/cm)@25°C | 235 | 235 | 230 | 230 | 245 | 250 | 290 | - | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 7,000 | 5,000 | 4,000 | 2,000 | 1,500 | 7,000 | 3,000 | 5,000 | | | 31504 |
| Fecal Coliform (Col./100ml) | 700 | 400 | 360 | 200 | 120 | 160 | 120 | 100 | | | 31616 |
| NO3-N (Filtered) | .02 | .03 | .02 | .04 | .05 | .05 | .07 | - | | | 00620 |
| NO2-N (Filtered) | ND | ND | ND | ND | ND | ND | ND | - | | | 00615 |
| NH3-N (Unfiltered) | .01 | .01 | .02 | .01 | .01 | .01 | .01 | - | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | .02 | .02 | .03 | .02 | .01 | .02 | .01 | - | | | 00625 |
| O-PO4-P (Filtered) | .01 | .01 | .01 | .01 | ND | .01 | .02 | - | | | 00671 |
| Total Phos.-P (Unfiltered) | .06 | .04 | .01 | .01 | .01 | .02 | .02 | - | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Fecal Strep (col/100ml) | 50 | 50 | 40 | 50 | 66 | 40 | 64 | 60 | | | |
| Total Alkalinity (as $CaCO_3$) | 84 | 84 | 84 | 81 | 88 | 91 | 108 | - | | | |
| Chlorides | 12 | 9 | 10 | 8 | 8 | 8 | 9 | - | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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 P. Roll  Date 5-11-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Wide Hollow Cr

Collected By PML

Date Collected 4-10-73

Goal, Pro./Obj. 3.2.21

| Log Number: 73- | 1401 | 1402 | 1403 | 1404 | 1405 | 1406 | 1407 | 1408 | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | 1 | 2 | 3 | 5 | 5A | 6 | 7 | A | | | |
| pH | 9.1 | 9.3 | 9.4 | 8.0 | 8.8 | 8.6 | 8.6 | — | | | 00403 |
| Turbidity (JTU) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | — | | | 00070 |
| Conductivity (umhos/cm)@25°C | 210 | 220 | 215 | 230 | 250 | 250 | 270 | — | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 5800 | 7000 | 1750 | 2000 | 1100 | 11,400 | 24,000 | 10,000 | | | 31504 |
| Fecal Coliform (Col./100ml) | <40 | <40 | <40 | 140 | <40 | 100 | 300 | 100 | | | 31616 |
| NO3-N (Filtered) | 1.29 | 1.33 | 1.17 | 1.83 | 1.77 | 1.83 | 1.84 | — | | | 00620 |
| NO2-N (Filtered) | .01 | .01 | .01 | .01 | .01 | .01 | .01 | — | | | 00615 |
| NH3-N (Unfiltered) | .83 | .88 | .89 | .84 | .86 | <.01 | .01 | — | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | .84 | .89 | .90 | .85 | .87 | <.01 | .01 | | | | 00625 |
| O-PO4-P (Filtered) | .15 | .14 | .05 | .22 | .20 | .24 | .23 | — | | | 00671 |
| Total Phos.-P (Unfiltered) | .30 | .28 | .10 | .26 | .31 | .28 | .27 | — | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Chlorides | 9 | 8 | 8 | 7 | 8 | 8 | 10 | — | | | |

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 [signature] Date 4-23-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Wide Hollow Creek  Collected By P. L.

Date Collected 3-27-73  Goal, Pro./Obj. 3.2.21

| Log Number: 7312- | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | 1 | 2 | 3 | 5 | 5A | 6 | 7 | A | B | C | |
| pH | 8.7 | 8.8 | 9.0 | 8.7 | 8.8 | 8.6 | 8.7 | | | | 00403 |
| Turbidity (JTU) | 4 | 3 | 5 | 3 | 3 | 2 | 3 | | | | 00070 |
| Conductivity (umhos/cm)@25°C | 310 | 310 | 325 | 349 | 500 | 550 | 570 | | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 2700 | 8000 | 4300 | 3200 | 9000 | 8000 | 1200 | 5000 | 250 | 1000 | 31504 |
| Fecal Coliform (Col./100ml) | 160 | —* | 50 | 150 | 27 | 60 | 120 | 40 | 40 | <40 | 31616 |
| NO3-N (Filtered) | .60 | .60 | .52 | 1.43 | 1.34 | 1.61 | 1.47 | | | | 00620 |
| NO2-N (Filtered) | .01 | .01 | .01 | .01 | ND | .01 | .01 | | | | 00615 |
| NH3-N (Unfiltered) | | | | | | | | | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | | | | | | | | | | | 00625 |
| O-PO4-P (Filtered) | .06 | .06 | .06 | .06 | .08 | .10 | .08 | | | | 00671 |
| Total Phos.-P (Unfiltered) | .07 | .06 | .10 | .10 | .14 | .20 | .10 | | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Chlorides | 19 | 17 | 17 | 20 | 20 | 20 | 22 | | | | |

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

* OVERGROWN WITH ATYPICAL COLONIES

Summary By Stephen D. Roll  Date 4-3-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P.File

COPIES TO:

LAB FILES

DATA SUMMARY

Source Wide Hollow Cr. Collected By PMC

Date Collected 3-14-73 Goal, Pro./Obj. 3.2.21

| Log Number: 73- | 1080 | 1081 | 1082 | 1083 | 1084 | 1085 | | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | 1 | 2 | 3 | 5 | 6 | 7 | | | | | |
| pH | 8.7 | 8.7 | 8.7 | 8.7 | 8.4 | 8.5 | | | | | 00403 |
| Turbidity (JTU) | 1 | 1 | 2 | 3 | 2 | 4 | | | | | 00070 |
| Conductivity (μmhos/cm)@25°C | 400 | 390 | 420 | 570 | 600 | 590 | | | | | 00095 |
| COD | | | | | | | | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 2100 | 2500 | 4000 | 3500 | 3700 | 1500 | | | | | 31504 |
| Fecal Coliform (Col./100ml) | 63 | 37 | 28 | 140 | 110 | >300 | | | | | 31616 |
| NO3-N (Filtered) | 1.09 | 1.09 | .02 | 1.71 | 1.05 | 1.83 | | | | | 00620 |
| NO2-N (Filtered) | .01 | .01 | ND | .01 | .01 | .01 | | | | | 00615 |
| NH3-N (Unfiltered) | .01 | .01 | .01 | .01 | .01 | .01 | | | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | .01 | .02 | .01 | .02 | .02 | .02 | | | | | 00625 |
| O-PO4-P (Filtered) | .10 | .11 | .02 | .17 | .20 | .22 | | | | | 00671 |
| Total Phos.-P (Unfiltered) | .27 | .23 | .03 | .19 | .23 | .40 | | | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Total Alkalinity (as $CaCO_3$) | 150 | 142 | 152 | 219 | 219 | 215 | | | | | |
| Chlorides | 21 | 19 | 16 | 17 | 19 | 21 | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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. Hall Date 3-26-73

STATE OF WASHINGTON

# DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO: P. Lee

COPIES TO:

LAB FILES

DATA SUMMARY

Source Wide Hollow Cr. Collected By H. C.

Date Collected 2-21-23 Goal, Pro./Obj.

| Log Number: 73- | 776 | 777 | 778 | 779 | 780 | 781 | 782 | | | | STORET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station: | 1 | 2 | 3 | 5 | 5A | 6 | 7 | | | | |
| pH | 8.6 | 8.7 | 8.8 | 8.5 | 8.4 | 8.2 | 8.3 | | | | 00403 |
| Turbidity (JTU) | 2. | 2. | 3. | 6. | 4. | 3. | 5. | | | | 00070 |
| Conductivity (umhos/cm)@25C | 420. | 420. | 430. | 520. | 550. | 570. | 560 | | | | 00095 |
| ~~COD~~ Chlorides | 30. | 19. | 18. | 19. | 19. | 18. | 28. | | | | 00340 |
| BOD (5 day) | | | | | | | | | | | 00310 |
| Total Coliform (Col./100ml) | 1,000 | 4,000 | 3,500 | 2,000 | 1,500 | 4,000 | 2,000 | | | | 31504 |
| Fecal Coliform (Col./100ml) | 250 | 60 | <40 | 100 | 110 | 150 | 800 | | | | 31616 |
| NO3-N (Filtered) | 1.26 | 1.28 | 1.26 | 1.66 | 1.82 | 1.92 | 1.82 | | | | 00620 |
| NO2-N (Filtered) | .01 | .01 | .01 | .01 | .01 | .01 | .01 | | | | 00615 |
| NH3-N (Unfiltered) | .01 | <.01 | ND | ND | <.01 | .01 | <.01 | | | | 00610 |
| T. Kjeldahl-N (Unfiltered) | .01 | .02 | .01 | .01 | .01 | .01 | .01 | | | | 00625 |
| O-PO4-P (Filtered) | .19 | .15 | .15 | .19 | .21 | .22 | .24 | | | | 00671 |
| Total Phos.-P (Unfiltered) | .20 | .19 | .20 | .24 | .25 | .27 | .33 | | | | 00665 |
| Total Solids | | | | | | | | | | | 00500 |
| Total Non Vol. Solids | | | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | 00530 |
| Total Sus. Non Vol. Solids | | | | | | | | | | | |
| Copper, Chromium, & Iron | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | | | | |
| Zinc | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | | | | |
| Manganese | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | <.05 | | | | |
| Total Alkalinity (as CaCO3) | 153. | 151. | 161. | 190. | 206. | 213. | 207 | | | | |

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

5A Washington Creek

Summary By Stephen F. Hall Date 3-14-23

# SOLIDS DATA AND CALCULATION SHEET

Survey Conducted At:

On: / / I. II.

| Log No. | S. S. | C.No. | | I. | II. | | |
|---|---|---|---|---|---|---|---|
| 2443 | 111 300ml | 47 | Tare + T.S. | 61.1180 | 61.3285 | Ave. (mg/l) T.S. | 181 |
| | " | 48 | Tare + T.S. | | | | |
| | | | — Burn | 61.1017 | 61.3116 | T.N.V.S. | 125 |
| | | | Tare | 61.0641 | 61.2740 | | |
| | | | T.S. | .0539 | .0545 | | |
| Ac. Neut. N ml | | | T.N.V.S. | .0376 | .0376 | | |
| 300ml | | 12 | | | | | |
| " | | 13 | Tare + T.S.S. | 21.8110 | 24.3280 | Ave. (mg/l) T.S.S. | 49 |
| | | | Tare + T.S.S. | | | | |
| | | | — Burn | 21.8072 | 24.3235 | T.S.N.V.S. | 35 |
| | | | Tare | 21.7961 | 24.3135 | | |
| | | | T.S.S. | .0149 | .0145 | | |
| | | | T.S.N.V.S. | .0111 | .0100 | | |
| Log No. | S. S. | C.No. | | | | | |
| 2444 | 300ml | 33 | Tare + T.S. | 61.1368 | 61.4155 | Ave. (mg/l) T.S. | 203 |
| | " | 12 | Tare + T.S. | | | | |
| | | | — Burn | 61.1181 | 61.3963 | T.N.V.S. | 140 |
| | | | Tare | 61.0764 | 61.3540 | | |
| | | | T.S. | .0604 | .0615 | | |
| Ac. Neut. N ml | | | T.N.V.S. | .0417 | .0423 | | |
| 300ml | | 14 | | | | | |
| " | | 15 | Tare + T.S.S. | 24.4820 | 24.0648 | Ave. (mg/l) T.S.S. | 51 |
| | | | Tare + T.S.S. | | | | |
| | | | — Burn | 24.4768 | 24.0595 | T.S.N.V.S. | 34 |
| | | | Tare | 24.4671 | 24.0490 | | |
| | | | T.S.S. | .0149 | .0158 | | |
| | | | T.S.N.V.S. | .0097 | .0105 | | |
| Log No. | S. S. | C.No. | | | | | |
| 2445 | 300ml | 45 | Tare + T.S. | 65.3970 | 63.3340 | Ave. (mg/l) T.S. | 231 |
| | " | 24 | Tare + T.S. | | | | |
| | | | — Burn | 65.3755 | 63.3125 | T.N.V.S. | 159 |
| | | | Tare | 65.3278 | 63.2648 | | |
| | | | T.S. | .0692 | .0692 | | |
| Ac. Neut. N ml | | | T.N.V.S. | .0477 | .0477 | | |
| 200ml | | 16 | | | | | |
| " | | 17 | Tare + T.S.S. | 22.9475 | 23.9847 | Ave. (mg/l) T.S.S. | 66 |
| | | | Tare + T.S.S. | | | | |
| | | | — Burn | 22.9421 | 23.9795 | T.S.N.V.S. | 40 |
| | | | Tare | 22.9338 | 23.9720 | | |
| | | | T.S.S. | .0137 | .0129 | | |
| | | | T.S.N.V.S. | .0083 | .0075 | | |
| Log No. | S. S. | C.No. | | | | | |
| | | | Tare + T.S. | | | Ave. (mg/l) T.S. | |
| | | | Tare + T.S. | | | | |
| | | | — Burn | | | T.N.V.S. | |
| | | | Tare | | | | |
| | | | T.S. | | | | |
| Ac. Neut. N ml | | | T.N.V.S. | | | | |
| | | | Tare + T.S.S. | | | Ave. (mg/l) T.S.S. | |
| | | | Tare + T.S.S. | | | | |
| | | | — Burn | | | T.S.N.V.S. | |
| | | | Tare | | | | |
| | | | T.S.S. | | | | |
| | | | T.S.N.V.S. | | | | |