

TO: Mike Price

FROM: Grover Scott Jeane II

SUBJECT: Carbonado STP Survey

DATE: February 20, 1973

State of
Washington
Department
of Ecology



An efficiency study of the Carbonado STP was conducted on January 22, 1973.

Influent and effluent proportional composites samples covering 6 hours were collected. Temperature, pH, settleable solids, conductivity, and chlorine residual were monitored at the treatment plant. The effluent was also sampled for coliform.

BOD and COD were reduced 84 and 60% while the total coliform bacteria averaged less than 400 colonies/100 ml. The only problem noted was that people were throwing bottles over the fence into the lagoon.

I would recommend an extension of the outfall pipe approximately 100 feet to prevent erosion of the upper hillside.

Hopefully you will be able to solve the problem of the garbage dump. Along will the solution we should do something about removal of the solid waste that has been deposited in the river.

GSJ:bj

(EFFICIENCY STUDY)

City Carbonado Plant Type Lagoon Population 200 Design 800 pp
Extended Airation Served Capacity
 Receiving Water Carbon River Engineer _____
 Date 1-22-72 Survey Period 1000-1600 hrs. Survey Personnel G. Scott Jeane II
 Comp. Sampling Frequency Hourly Weather Conditions Sunny and dry
 (last 48 hours)
 Sampling Alequot GPH x 30

PLANT OPERATION

Total Flow 30,000 gal/day instantaneous How Measured _____
 Max. (Flow) _____ Time of Max. _____ Min. _____ Time of Min. _____
 Pre Cl₂ _____ #/day Post Cl₂ 3.5 #/day

FIELD RESULTS

Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C	6	6	6	6	4	3	3.8	4
Conductivity (umhos/cm)	8.1	6.9	7.2	7.1	6.8	6.4	6.5	6.5
Settleable Solids	180	65	107	80	100	95	97	95
	20	1	6.2	2.0	Tr.	0	0	0

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent	% Reduction
	73-234	73-235	
5-Day BOD	49	< 8	84
COD	157	63	60
T.S.	202	127	37
T.N.V.S.	120	74	38
T.S.S.	33	23	30
N.V.S.S.	4	4	0
pH	7.0	6.5	--
Conductivity	180	160	--
Turbidity	25	9	--

Carbonado STP

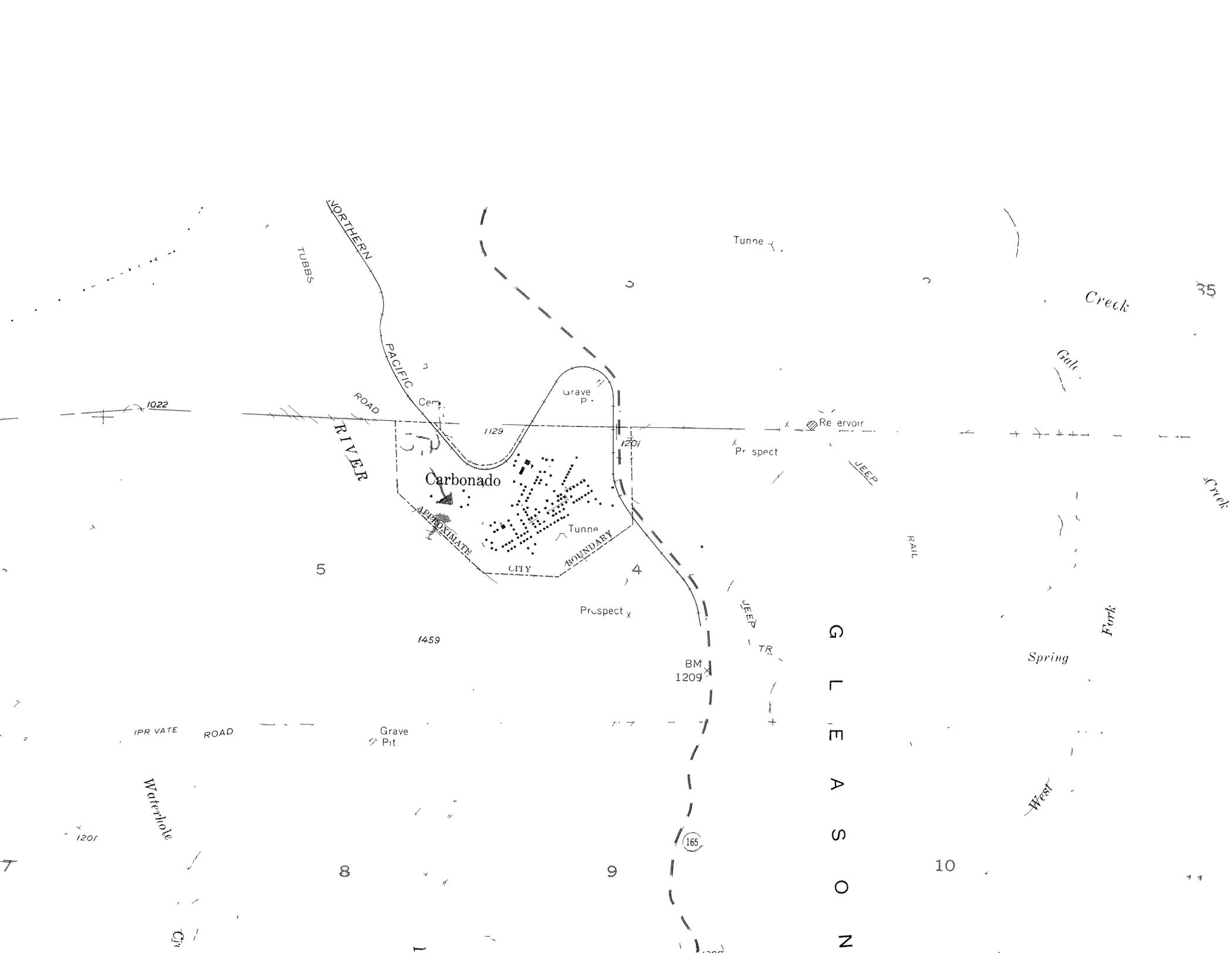
BACTERIOLOGICAL RESULTS

Na₂S₂O₃ added to sample _____ After _____ in bottle _____ min.

LAB #	SAMPLING TIME	COLONIES/100 MLS (MF)		Cl Residual	
		Total	Fecal	ppm	(after secs)
73-236	1030	<400	<200	0.4	
73-237	1200	<200	<200	0.3	After
73-238	1300	<400	<200	0.4	3 to 5 min.

Operator's Name Richard P. Wood Phone # 829-0200

Comments: _____



G L E A S O N

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

ORIGINAL TO:
G.S. J. ANE...
COPIES TO:
.....
.....
LAB FILES.....

DATA SUMMARY

Source CARBONADO STP

Collected By G.S.J.

Date Collected 1-22-73

Goal, Pro./Obj. 3-2-73

Log Number:	73-234	235	236	237	238						STORET
Station:	INF COMP	EFF COMP	EFF 1030	EFF 1200	EFF 1300						
pH	7.0	6.5									00403
Turbidity (JTU)	25	9									00070
Conductivity (umhos/cm)@25°C	180	160.									00095
COD	157	63									00340
BOD (5 day)	49	28									00310
Total Coliform (Col./100ml)			<400	<200	<400						31504
Fecal Coliform (Col./100ml)			<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	202.	127									00500
Total Non Vol. Solids	120	74									
Total Suspended Solids	33	23									00530
Total Sus. Non Vol. Solids	4	4									

Note: All results are in PPM unless otherwise specified. ND is "None Detected"
Convert those marked with a * to PPB (PPM X 10³) prior to entry into STORET

Summary By Stephen D. Roth Date 2-6-73

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

CHECK ONE: 1ST AUDIT RE-AUDIT
 DATE OF AUDIT: _____
 PLANT DESCRIPTION CODE (For Office Only): _____

A. GENERAL INFORMATION

1. PROJECT (State, Number): WPC-WN-283
 SCOPE OF PROJECT (new plant, additions, etc.): New plant
 2. PLANT LOCATION (City, county): Carbondale - Pierce
 IDENTIFICATION OF AREAS SERVED: _____

3. POPULATION

3A. FRACTION OF AREA POPULATION SERVED (%): 100
 3B. PLANT DESIGN (population equivalent): 1 MGD 800
 3C. SERVED BY PLANT (domestic): 800 400

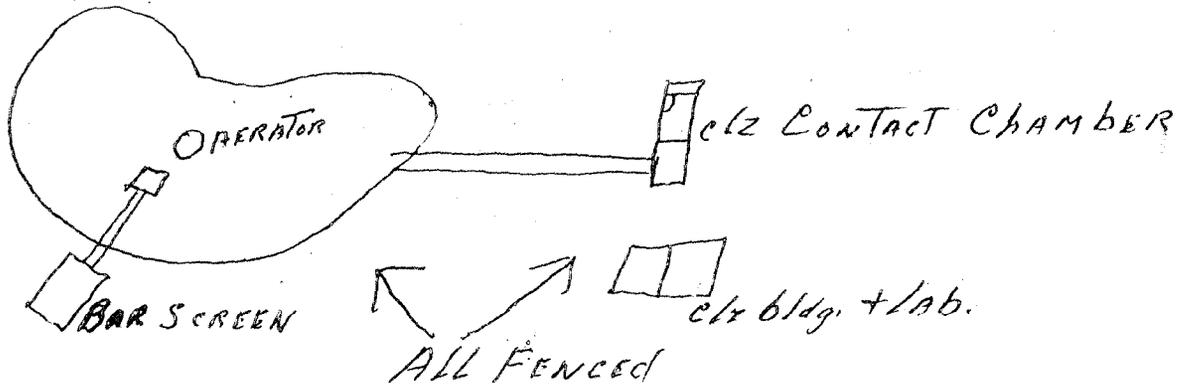
4. TYPE OF COLLECTION SYSTEM

4A. COMBINED SEPARATE BOTH
 4B. ESTIMATED FLOW CONTRIBUTED BY SURFACE OR GROUND WATER (infiltration, mgd): 1 MGD

5. YEAR COMMUNITY BEGAN SEWAGE TREATMENT: Fall 1971
 6. YEAR PRESENT SYSTEM PLACED IN OPERATION:
 6A. SEWER: Unknown 6B. PLANT: Fall 1971 6C. ANCILLARY WORK: _____

7A. SIZE OF PLANT SITE (acres): _____
 7B. APPROXIMATE AREA LEFT FOR EXPANSION (acres): None or if any very little

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: RECEIVING CARBON RIVER
 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): Not enough records yet no records
 1B. PEAK FLOW RATE (mgd):
 DRY WEATHER: _____ WET WEATHER: 0.070 mgd.
 1C. MINIMUM FLOW RATE (mgd): 0.0016 m.g.d.
 2. AVERAGE BOD OF RAW SEWAGE (5 DAY 20°C) (ppm): 6 hrs. survey 69
 3. AVERAGE SETTLEABLE SOLIDS OF RAW SEWAGE (mg/l): 5.0
 4. AVERAGE SUSPENDED SOLIDS OF RAW SEWAGE (mg/l): no analysis
 5. AVERAGE COLIFORM DENSITY OF RAW SEWAGE (mpn/l): Unknown

6. ANNUAL AVERAGE PLANT REDUCTION

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

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

REPORTED? YES NO

TO WHOM? *OSHS and Ecology - ~~OSHS~~*

FREQUENCY	WEATHER	FLOW	SLUDGE HANDLED	CHEMICALS USED	DIGESTER	GRIT HANDLED	ELEC. USED	COST DATA	AIR USED	MAINTENANCE	OTHER
DAILY		✓	—	—	—	—	—	—	—	✓	
WEEKLY											
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?

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

YES NO (If no, explain)

8. INDUSTRIAL WASTES DISCHARGED TO MUNICIPAL SYSTEM: *None*

A. NUMBER AND TYPES OF INDUSTRIES DISCHARGING TO SYSTEM: *None*

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

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

D. VOLUME OF INDUSTRIAL WASTES (mgd)

E. COMPOSITION AND CHARACTERISTICS OF INDUSTRIAL WASTE:

F. MAIN DIFFICULTY EXPERIENCED WITH INDUSTRIAL WASTE (explain)

9. 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.)

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

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

Steven Kors - consultants - Ron Robinson - Dept. of Ecology

11. IS A MANUAL OF PRACTICE OR INSTRUCTIONS AVAILABLE? YES NO

IF YES, WHO WROTE AND PROVIDED IT? *consulting engineers*

12. ESTIMATE OF MAN-HOURS PER WEEK DEVOTED TO LABORATORY WORK AND MAINTENANCE OF RECORDS AND REPORTS

(8) eight

(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	25	None	6 months	—
2. OPERATORS	—	—	—	—	—
3. LABORATORY TECHNICIANS	—	—	—	—	—
4. LABORERS	—	—	—	—	—
5. PART-TIME LABORERS	1	When needed	—	—	—
6. TOTAL	2	—	—	—	—

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

8B. TYPE OF CHLORINATOR
Wallace Tiernan

8C. POINT OF APPLICATION OF CHLORINE
effluent to contact chamber

8D. CAN BYPASSED SEWAGE BE CHLORINATED?
 YES NO No bypass

8E. AVERAGE FEED RATE OF CHLORINE (lb/day)
3-5 lbs.

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

8G. MINIMUM SUPPLY OF CHLORINE STORED ON PREMISES (lb)
300 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
None

12. USES OF RECEIVING STREAM WITHIN 10 MILES OF OUTFALL

Fishing recreation

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

Very good looking effluent, some blue-green algae.

15. STABILIZATION PONDS

A. WEEDS CUT AND VEGETATIVE GROWTH IN PONDS ELIMINATED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		B. BANKS AND DIKES MAINTAINED (erosion etc.)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
C. FENCING AND "WARNING - POLLUTED WATER" SIGNS PRESENT AND IN GOOD REPAIR? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		D. FREQUENCY OF INSPECTION BY OPERATOR, <i>Daily</i>	
E. WATER DEPTH (feet) _____ HIGH _____ LOW _____ MEDIUM			
F. ADEQUATE CONTROL OF DEPTH? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		G. SEEPAGE REPORTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
H. ANY REPORTS OF GROUND WATER CONTAMINATION FROM POND (If yes, give details)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			

I. MOSQUITO BREEDING PROBLEM? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	IF YES, NAME OF SPECIES IF KNOWN	J. CAN SURFACE RUN-OFF ENTER POND? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
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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?

Operator will attend when a good course is available and indicates he would study a correspondence course.

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 failure

C. OPERATIONAL YES NO (If yes, explain)

No operator for two months last summer

D. BASED ON OPERATING EXPERIENCE TO DATE WHAT IF ANY CHANGES WOULD YOU RECOMMEND TO IMPROVE OPERATION OF THE PLANT?

Extension of outfall may be necessary.

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

ITEM	RAW	PRIMARY EFFLUENT	MIXED LIQUOR	FINAL	SLUDGE		DIGESTOR	RECEIVING STREAM
					RAW	SUPER-NATANT		
1. BOD								
2. SUSPENDED SOLIDS								
3. SETTLEABLE SOLIDS	1			1				
4. SUSPENDED VOLATILE								
5. DISSOLVED OXYGEN	1				1			
6. TOTAL SOLIDS								
7. VOLATILE SOLIDS								
8. pH	1				1			
9. TEMPERATURE	1				1			
10. COLIFORM DENSITY								
11. RESIDUAL CHLORINE	1				1			
12. VOLATILE ACIDS								
13. M. B. STABILITY	4				4			
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 1973	1,800			12,000		13,800
PRIOR YEAR 1972	1,800			12,000		13,800
PRIOR YEAR 19						
PRIOR YEAR 19						

EVALUATION PERFORMED BY	TITLE	ORGANIZATION
G. Scott Jeanette II	Environmentalist	Dept of Ecology

INFORMATION FURNISHED BY	TITLE	ORGANIZATION	DATE
Richard Wood	Operator	City of Colorado	1-22-73

G. NOTATIONS BY EVALUATOR

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

2. GENERAL COMMENTS ON HOUSEKEEPING AND MAINTENANCE

The new operator is attending police school daily so the sewage facility is inspected and testing done in the early morning. The police school will soon be over. This plant is clean and appears to be well kept.

3. REQUIREMENTS OF HIGHER AUTHORITY

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

YES NO

The percent reduction of the various parameters is not what we would expect, however the influent values are very low so poor reductions can be expected until waste strength has increased.

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)

The outfall pipe may need to be extended.

3C. NUMBER OF STATE INSPECTIONS OF PRESENT PLANT TO DATE.

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

Training for operator only.