

TO: John Hodgson
FROM: Ron Devitt *Rcd*
SUBJECT: Goldendale STP
DATE: February 27, 1973



Hans Cregg and I conducted an efficiency survey of Goldendale sewage treatment plant. In addition, the primary clarifier effluent was composited. Samples for coliform were taken in the receiving water.

Paul Halm seems to be a conscientious operator. Housekeeping was neat and he is knowledgeable about his plant. He was elected Operator of the Year of the Yakima Region of PNPCA in 1968.

The facilities do have a number of shortcomings. The primary problem is flooding and overflow due to hydraulic overloading. The influent line reduces from 15" to 12" in the head works. There is a 12" outfall line. When influent flow through the 15" line exceeds what can be discharged, the whole system backs up and floods the primary clarifier and head works.

Part of the hydraulic loading could be eliminated by disconnecting the roof rainspouts from the domestic system, but the primary source of overloading is due to infiltration.

Chlorination of bypassed sewage occurs only by mixing with the effluent. The Little Klickitat flows to the Big Klickitat which is the source of water for the City of Klickitat. Mr. Halm notifies that city and DOE when bypassing occurs.

Prior to our survey, grit had been flushed to the river. I believe he didn't realize this was an unacceptable method, and grit will be disposed of on land from now on.

The minimum chlorine contact time was 4 minutes at .7 MGD, although coliform results do not reflect this. There must be short circuiting, as higher values would be expected. There are no means of returning sludge from the chlorine contact chamber to the treatment system. Gas bubbles rising from the length of the chamber indicate that the tank was anaerobic on the bottom.

Immature insects were being carried over the weir to the outfall. The same sort of insects were observed floating in slack pools downstream of the outfall.

Memo to John Hodgson
February 27, 1973
Page 2

The bottom sweep arms on the secondary clarifier were not functioning so sludge draw off was less than ideal. Repairs are scheduled for the future.

There are mercury seals on the trickling filters.

It had snowed the night before, and rained in the afternoon. This probably is the reason for the low DOB (48 ppm) on the influent. The overall efficiency would be better during dry weather flow.

In summary, the operator seems knowledgeable and conscientious but the system he is working with is inadequate.

RD:bj

(EFFICIENCY STUDY)

City Goldendale Plant Type T. Filter Population 3100 Design 1.2 MGD
 Served Capacity
 Living Water Little Klickitat River Engineer John Hodgson
 Date January 30, 1973 Survey Period 0815-1545 Survey Personnel Ron Devitt, Hans Cregg
 Comp. Sampling Frequency 30 min. Weather Conditions Snow, overcast, rain
 (last 48 hours)
 Sampling Alequot MGD x 2000 ml.

PLANT OPERATION

Total Flow .226 MGD How Measured Flow meter and integrator
 Max. (Flow) .76 Time of Max. 1315 Min. .65 Time of Min. 0815 & 1545
 Pre Cl₂ _____ #/day Average Post Cl₂ ~ 32 #/day

FIELD RESULTS

Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp. °C 16	10	8	9	10	9	6	8	8
pH 16	7.2	6.8	7.0	7.0	7.2	7.0	7.1	7.1
Conductivity 16 (umhos/cm)	360	210	290	300	350	225	290	300
Settleable Solids 2	10	8	9	---	.1	Nil	<.1	---

LABORATORY RESULTS ON COMPOSITE IN PPM

Laboratory Number	Influent	Effluent		% Reduction
		1st Clar.	2nd Clar.	Total
5-Day BOD	50	48	19	62
COD	233	148	70	70
T.S.	350	247	208	41
T.N.V.S.	172	134	137	20
T.S.S.	104	49	24	76
N.V.S.S.	9	18	4	56
pH	7.3	7.2	7.3	--
Conductivity	370	360	380	--
Turbidity	55	35	20	--

Goldendale

BACTERIOLOGICAL RESULTS

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

LAB #	SAMPLING TIME	COLONIES/100 Total	S (MF) fecal	Cl Residual		Cl ₂ add rate #/day
				15 sec. ppm	3 min. (after sec)	
73-598	0830	<1,000	<400	.1	.5	31
73-599	1300	2,800	<200			33
73-600	1515	2,900	<400	.1	.75	35
73-601	River Upstream	400	<40	NA	NA	
73-602	River Downstream	<100	<40	NA	NA	

Operator's Name Paul Halm Phone # _____

Comments: _____

City of Goldendale

Goldendale, Washington 98620

Year 1970 Total ra in fall 19.5" +snowfall last 4 days

Total Flow ^{193,600,000} 193,600,000 MG Nat. Gas used 3,957,000 cu.ft.

Aprox. cost Oper. \$15,292.00 Sludge Gas Gen. 8,479,000 cu.ft.

Year 1971 Total rainfall 17.1" Aprox. cost of operation \$11,692.00

Total Flow in MG 185,520,000 Ave. Daily flow of .507 MGD

Nat. Gas used 4,313,000 cu.ft. Sludge Gas Generated 10,405,000

Year 1972 Total rainfall 18.9" Lowest Temps. recorded here Feb. 2, 72 4⁰ and
-12⁰ Dec. 13, 72 These readings were taken between 7 and 8 AM.

Pounds Chlorine used 11,372 Cost \$1696.51

Nat. Gas 4,713,000 cu.ft. Cost \$404.58

Sludge Gas Gen. 9,586,000cu.ft.

Electricity used ~~263,160~~ 263,160 KWH Cost 1,922.60

Total Flow 197,568,000 MG Ave. daily flow of .539 MGD

Aprox. hrs. labor 3029 Aprox. Wages 11,207.68

Repairs Aprox. \$153.69 Paint & Lube Aprox. \$170.10 Misc. Aprox. \$30.40

Chemicals approx. \$ 245.03 Postage Aprox. \$1.55 Total Aprox. Cost of Operation
for the Year \$ 17,666.75 \$6,459.07 Aprox. cost of repair, Chemicals, Chlorine,
Electricity, Nat.Gas, Oil & Grease. Of the \$6,000.00 There was \$1470.59 for up
Dating the Laboratory.

U.S. DEPARTMENT OF THE INTERIOR
 FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
**SEWAGE TREATMENT PLANT OPERATION AND MAINTENANCE
 PRACTICES QUESTIONNAIRE**

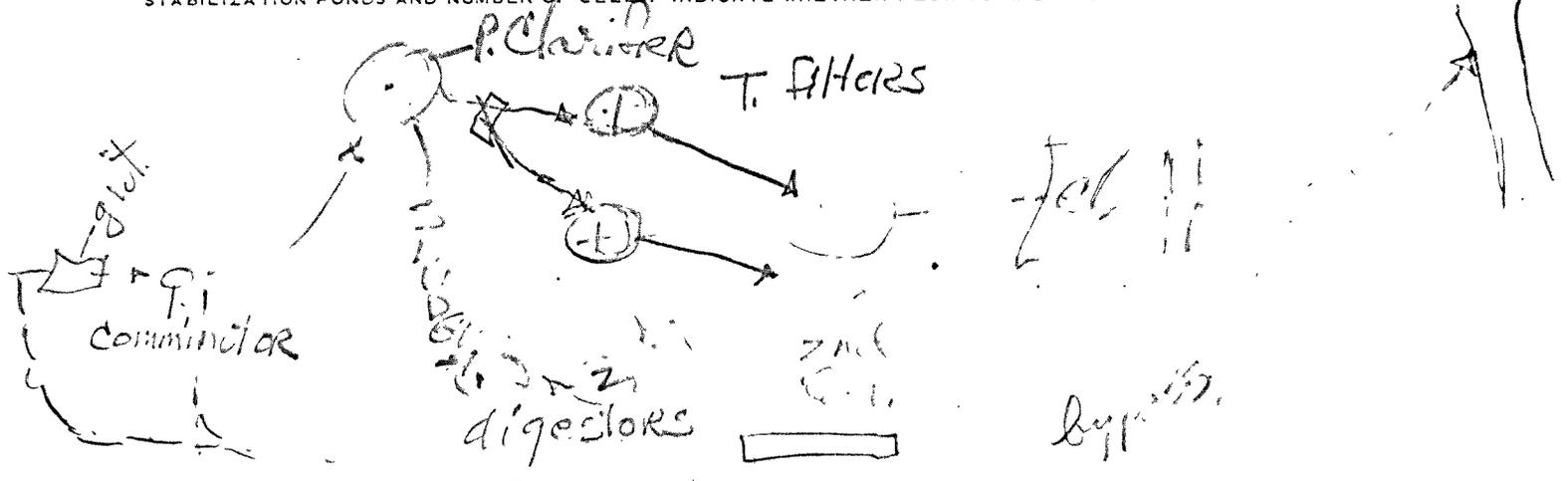
FORM APPROVED
 BUDGET BUREAU NO. 42-#1527

CHECK ONE <input type="checkbox"/> 1ST AUDIT <input type="checkbox"/> RE-AUDIT	DATE OF AUDIT 1-30-73	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) Golden Gate, Klickitat		IDENTIFICATION OF AREAS SERVED city	
3. POPULATION			
3A. FRACTION OF AREA POPULATION SERVED (%) 100%	3B. PLANT DESIGN (population equivalent) 1.2 MGD 1/2	3C. SERVED BY PLANT (domestic) 3/100	
4. TYPE OF COLLECTION SYSTEM			
4A. <input checked="" type="checkbox"/> COMBINED <input type="checkbox"/> SEPARATE <input type="checkbox"/> BOTH		4B. ESTIMATED FLOW CONTRIBUTED BY SURFACE OR GROUND WATER (infiltration, mgd) N/A	
5. YEAR COMMUNITY BEGAN SEWAGE TREATMENT 1942		6. YEAR PRESENT SYSTEM PLACED IN OPERATION	
		6A. SEWER 1942	6B. PLANT 1942
		6C. ANCILLARY WORKS 3-64	
7A. SIZE OF PLANT SITE (acres)		7B. APPROXIMATE AREA LEFT FOR EXPANSION (acres) 10	

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.

Handwritten note: Heavy on T. filters; No sludge in 1st tank (1/2 clean)

9. RECEIVING STREAM

A. NAME OF STREAM
Little Klickitat

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) 5	1B. PEAK FLOW RATE (mgd) DRY WEATHER: 7 WET WEATHER: 7 1/2	1C. MINIMUM FLOW RATE (mgd)
2. AVERAGE BOD OF RAW SEWAGE (5 DAY 20°C) (ppm)	3. AVERAGE SETTLEABLE SOLIDS OF RAW SEWAGE (mg/l) 6	
4. AVERAGE SUSPENDED SOLIDS OF RAW SEWAGE (mg/l)	5. AVERAGE COLIFORM DENSITY OF RAW SEWAGE (ppn) (100 ml)	
6. ANNUAL AVERAGE PLANT REDUCTION %		
6A. BOD (%)	6B. SETTLEABLE SOLIDS (%)	6C. SUSPENDED SOLIDS (%)
6D. COLIFORM DENSITY (%)		

7A. DOES PLANT HAVE BACKUP POWER GENERATOR FOR MAJOR PUMPING FACILITIES? YES NO

7B. ADEQUATE ALARMS 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
after 2nd day Clar

8D. CAN BYPASSED SEWAGE BE CHLORINATED? YES NO *See 1011*

8E. AVERAGE FEED RATE OF CHLORINE (lb/day)
232

8F. CHLORINE RESIDUAL IN EFFLUENT OF BYPASS *at* PPM AT END OF *3* MINUTES

8G. MINIMUM SUPPLY OF CHLORINE STORED ON PREMISES (lb)
150#

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 *by-passes flooding*
 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
City of Klickitat - VOE

9H. DO OPERATORS HAVE OPTION TO BYPASS INDIVIDUAL PLANT UNITS? (If no, has this caused any operational problems?)
 YES NO *Partly - can't pump down PRIMARY Clarifier*

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 *Na*
 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
Little Klickitat -> Big Klickitat -> City of Klickitat Ho supply

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
SAME type of insects in Ch chamber could be seen. Larvae in pools.

13. STABILIZATION PONDS

NA

A. WEEDS CUT AND VEGETATIVE GROWTH IN PONDS ELIMINATED? <input type="checkbox"/> YES <input type="checkbox"/> NO	D. BANKS AND DIKES MAINTAINED (erosion etc.)? <input type="checkbox"/> YES <input type="checkbox"/> NO
C. FENCING AND "WARNING - POLLUTED WATER" SIGNS PRESENT AND IN GOOD REPAIR? <input type="checkbox"/> YES <input type="checkbox"/> NO	G. SEEPAGE REPORTED? <input type="checkbox"/> YES <input type="checkbox"/> NO
E. WATER DEPTH (feet) _____ HIGH _____ LOW _____ MEDIUM	
F. ADEQUATE CONTROL OF DEPTH? <input type="checkbox"/> YES <input type="checkbox"/> NO	H. ANY REPORTS OF GROUND WATER CONTAMINATION FROM POND (If yes, give details)? <input type="checkbox"/> YES <input type="checkbox"/> NO
I. MOSQUITO BREEDING PROBLEM? <input type="checkbox"/> YES <input type="checkbox"/> NO	J. CAN SURFACE RUN-OFF ENTER POND? <input type="checkbox"/> YES <input type="checkbox"/> 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
 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)
 (SPRING 1971)

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)
when influent ^{flow} exceeds effluent, back up to overflow happens; 12" outfall too

B. MECHANICAL YES NO (If yes, explain)
through clarifiers sweep arms & filter pumps don't work

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?
Better GRIT Removal; be able to pump from 1st clarifier, eliminate rain spots & infiltration. Means of cleaning C₂ contact chamber near 1000 sq. ft. Proportional alternator.

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

REPORTED? YES NO
 TO WHOM? DOE

FREQUENCY	WEATHER	FLOW	SLUDGE HANDLED	CHEMICALS USED	DIGESTER	GRIT HANDLED	ELEC. USED	COST DATA	AIR USED	MAINTENANCE	OTHER
DAILY	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<u>NA</u>	<input checked="" type="checkbox"/>					
WEEKLY											
MONTHLY											
ANNUALLY								<input checked="" type="checkbox"/>			

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: <u>NA</u>	A. NUMBER AND TYPES OF INDUSTRIES DISCHARGING TO SYSTEMS
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 WASTES
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?
E.T. Powell (operator 1949)

11. IS A MANUAL OF PRACTICE OR INSTRUCTIONS AVAILABLE? YES NO
 IF YES, WHO WROTE AND PROVIDED IT?
DOE & New York

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					
2. OPERATORS	<u>1</u>	<u>52</u>	<u>1 (E.T.)</u>		<u>7</u>
3. LABORATORY TECHNICIANS					
4. LABORERS					
5. PART-TIME LABORERS	<u>1</u>	<u>8</u>			<u>student</u>
6. TOTAL					

E. LABORATORY CODES

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	FILTERED MIXED LIQUOR	FINAL	SLUDGE		DIGESTOR	RECEIVING STREAM
					RAW	SUPER-NATANT		
1. BOD								
2. SUSPENDED SOLIDS	6			6				
3. SETTLEABLE SOLIDS	2	2	2	2				
4. SUSPENDED VOLATILE								
5. DISSOLVED OXYGEN	2	2	2	2				
6. TOTAL SOLIDS	3			3				
7. VOLATILE SOLIDS	3			3				
8. pH	2	2	2	2			2	
9. TEMPERATURE	2						1	
10. COLIFORM DENSITY								
11. RESIDUAL CHLORINE					1			
12. VOLATILE ACIDS								
13. M. B. STABILITY								
14. ALKALINITY								
15. GCDS ANAL.							2	
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	72- 11,700	16,920	2,115		1,700	15,330

EVALUATION PERFORMED BY	TITLE	ORGANIZATION
Paul DeWitt	Environmental Scientist	U.S. EPA

INFORMATION FURNISHED BY	TITLE	ORGANIZATION	DATE
Paul DeWitt	Environmental Scientist	U.S. EPA	1-2-6

G. NOTATIONS BY EVALUATOR

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

Recommended to LAND dispose GRIT

2. GENERAL COMMENTS ON HOUSEKEEPING AND MAINTENANCE

Paul was OPERATOR of the year ^{VERY good} - YAKIMA Region PNPCA 1968

3. REQUIREMENTS OF HIGHER AUTHORITY

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

YES NO

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) ASK NIXON

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

Needs to eliminate infiltration
some \$ major mechanical (secondary digester)
work.
etc.