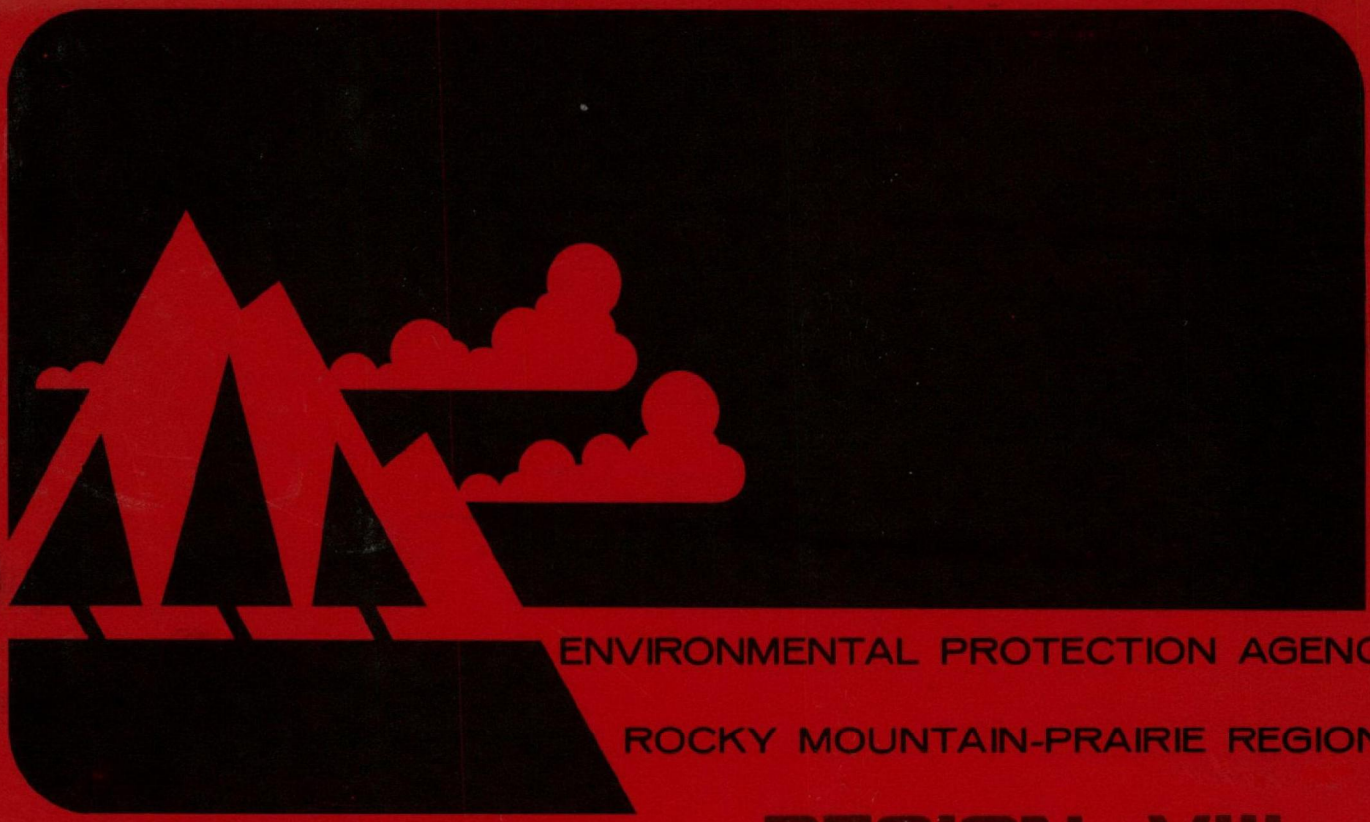

ENVIRONMENTAL PROTECTION AGENCY

ROCKY MOUNTAIN-PRAIRIE REGION

REGION VIII

TECHNICAL ASSISTANCE PROJECT

Evanston MWWTP Facility Evanston Wyoming

OPERATION & MAINTENANCE
WATER DIVISION

JUNE 1976

REPORT ON THE TECHNICAL ASSISTANCE PROJECT AT THE EVANSTON WASTEWATER TREATMENT PLANT EVANSTON, WYOMING

DECEMBER 1975 - FEBRUARY 1976

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Water Division

Environmental Protection Agency

Region VIII

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I. INTRODUCTION

The Evanston, Wyoming municipal wastewater treatment plant (MWWTP) had been found to be operating without an NPDES discharge permit in early 1974 and was issued its permit in July 1974. Subsequent compliance monitoring visits by the State of Wyoming and the Region VIII office indicated the facility was bypassing raw sewage and was not exercising good operation of the facility.

The City, when it became aware of the technical assistance program of the Region VIII EPA office, requested such assistance in August 1975. Before assistance was given, the State of Wyoming issued a cease and desist order to the City ordering the City to cease bypassing the facility. The City responded that it was unable to do so because the facility was hydraulically overloaded.

As a result of the technical assistance request, a preliminary joint visit to the plant was made by the EPA and State of Wyoming Department of Environmental Quality on December 2, 1975. Recommendations were given to the City for investigating possible plant hydraulic bottlenecks and for improving the plant operation. Continued communication and discussion with the City resulted in the elimination of the bypass and improvements in plant operation by January 6, 1976.

Subsequently EPA and Wyoming D.E.Q. personnel returned to the facility in early February 1976 to give additional help to the operator and the City on improving the plant operation and maintenance program.

The purpose of this report is to document the findings of the technical assistance project, including discussions of plant design, operational controls and recommendations to the City for improving plant operations.

II. SUMMARY AND CONCLUSIONS

Little could be done to improve effluent quality at the time of the on-site evaluation due to the limited time spent at the facility. Although the effluent appeared to be of very good quality, it was found that due to the lack of knowledge of operation and lack of controls, that effluent quality would deteriorate during times of too high aeration basin solids and too little aeration basin solids. The operator was taught the proper methods of operation and conditions which exist in the system. Although controls which are necessary to fine tune the system are not available, it is felt that the assistance and training provided to the operator is sufficient at present for the operator to maintain a good plant effluent unless flows become excessive.

Conversations with the plant operator and City Engineer since February 6, 1975 indicate that the effluent quality of the plant is still very good. A Wyoming D.E.Q. compliance monitoring sample taken on February 22, 1976 found the plant effluent quality to be:

BOD_5 - 3 mg/l

SS - 11 mg/l

F.C. - 6,200/100 ml

A continuing area of concern to the City is the problem of high flows from infiltration during the spring and summer which could still prove to be greater than the plant can hydraulically handle. Because of this it may still prove necessary for the City to bypass a portion of its flow during these high flow periods, however all bypassed flow should be capable of at least passing through the aeration tank before a bypass is made.

The elimination of bypassing is evidence of the City's efforts to comply with the State of Wyoming's cease and desist order. The improvement in plant operation and maintenance are further indications of the City's efforts to operate and maintain the present facility in a manner that will result in an effluent that will more than meet the NPDES permit conditions. Continued concern and support by the City of Evanston for the wastewater collection and treatment system operation should ensure satisfactory future wastewater treatment plant performance.

III. RECOMMENDATIONS

(1) The chlorinator should be repaired and used as soon as possible. Although revisions to the federal secondary treatment standards have recently been proposed with respect to fecal coliform limitations, the Evanston facility must still operate and maintain its chlorination facilities.

(2) The infiltration/inflow problem which had been responsible for the plant's hydraulic overload should continue to be studied to determine the best way to alleviate this problem. If it becomes necessary to bypass a portion of the plant flow in the spring due to extremely high flows from infiltration/inflow, the Wyoming D.E.Q. should be contacted immediately. As much as possible all flow should be pumped into the plant for treatment and then bypassed if necessary to eliminate discharge of raw sewage.

(3) The plant staffing at the time of the assistance was barely adequate with one man responsible for plant operation and maintenance. The City should endeavor to have another man available to work part time at the plant for weekends, vacation time and other periods when the present operator is not on duty during the week, or when he requires additional help for major repair work. It is recommended that 8 hour, 7 day a week operation be instituted at the plant as soon as possible.

(4) The plant did not have an alternate power source or emergency alarm system for power loss or equipment breakdowns. The City should investigate the installation of an emergency power source in the future and should install an alarm system at the plant as soon as possible.

(5) During the technical assistance the operator was shown how to use various process control tests to determine how to control the plant operation. The list of minimum necessary lab equipment to conduct these tests was given to the City Engineer at that time. This equipment should be acquired as soon as possible for use by the operator.

(6) The basic plant operation and maintenance had been improved substantially since the visit to the facility on December 2, 1975 by the EPA. However in order to keep the facility in operation and to conduct a good preventative maintenance program, adequate tools are required and proper record keeping should be instituted. In addition, the plant site should be graded and seeded or sodded to improve the plant appearance. Good site maintenance eliminates some of the problems encountered from weeds blowing into the clarifier and aeration basin, and from mud and ice problems encountered during the winter and spring.

(7) The present plant sludge handling facilities appeared to be marginal. It may be necessary for the City to haul waste liquid sludge from the plant if the existing sludge drying beds are found to be inadequate to process all the waste sludge. Because the waste sludge which must be put on these beds is not stabilized, there may be some odors at the plant when sludge is put on the beds. Because this sludge has not been stabilized, the final disposal of this sludge should be controlled to limit public access to the sludge disposal area. An acceptable method of final disposal is to landfill the sludge after removal from the drying beds.

(8) In any plant expansion or modification of the existing clarifier, sludge withdrawal, sludge return and sludge wasting equipment should be carefully evaluated for modifications to improve plant operational control.

(9) The weir on the chlorine contact tank, which was originally a primary clarifier, was submerged. This facilitates short-circuiting in the unit and will result in inefficient usage of chlorine. The existing weir should be raised to eliminate this submergence if possible. If raising the existing weir will not eliminate this submerged weir condition, then correction of this deficiency should be accomplished by constructing a new weir.

(10) The attached O & M inspection report for the facility has some additional recommendations that pertain to plant design, operation and maintenance areas. These should receive prompt attention and consideration.

IV. DESCRIPTION OF PLANT

A. HISTORICAL

Evanston, Wyoming received a federal grant in 1969 to construct secondary treatment facilities (extended aeration) at the existing city primary wastewater treatment plant. The upgraded facility went on line in 1970. At the same time the City conducted an extensive sewer line sealing program to reduce the infiltration rate in the city sewer system. When the plant initially went into operation, the plant effectively treated all the wastes it received. However, by 1974 the plant flow had increased due to high infiltration flows again and the City was bypassing a portion of its flow directly to the Bear River.

The City received its NPDES permit in July 1974 with a monthly effluent limitation of 80 mg/l because of the high flows to the plant. In August 1975 an EPA Permit Compliance Monitoring team found the plant was still bypassing and the State of Wyoming issued an order to the City to stop bypassing.

The City of Evanston, after learning of the Technical Assistance program of the Region VIII EPA Office, requested assistance to see what the City could do to eliminate the bypassing. During the latter part of the summer of 1975 the City replaced a section of interceptor that was responsible for a large amount of the infiltration flow.

B. PLANT UNITS AND PROCESSES

The Evanston, Wyoming wastewater treatment plant is a 1.8 mgd activated sludge plant (extended aeration). Flow enters the plant and passes through a comminutor and then through a parshall flume. The sewage then enters a grit removal basin and then to a wet well. Sewage is pumped from the wet well to the aeration basin with earthen dikes along with the return sludge. The mixed liquor leaves the aeration basin and flows to the secondary clarifier. The scum floats to the water surface and is scraped into a scum pit by surface skimming arms. The scum is periodically pumped from the scum pit and returned to the aeration basin. The heavy solids settle to the bottom of the secondary clarifier and are scraped into a pit and pumped from the pit into the raw sewage line and returned to the aeration basin. The effluent overflows the clarifier weirs and flows to another clarifier which is being used for a chlorine contact tank. Treated wastewater then flows from the chlorine contact tank to a ditch. The water in the ditch eventually enters the Bear River.

The plant is also equipped with sludge drying beds. Sludge is wasted to the drying beds by diverting return sludge flow from the raw sewage line to the waste sludge line. Figure I is a schematic flow diagram of the facility along with the sizes of the units.

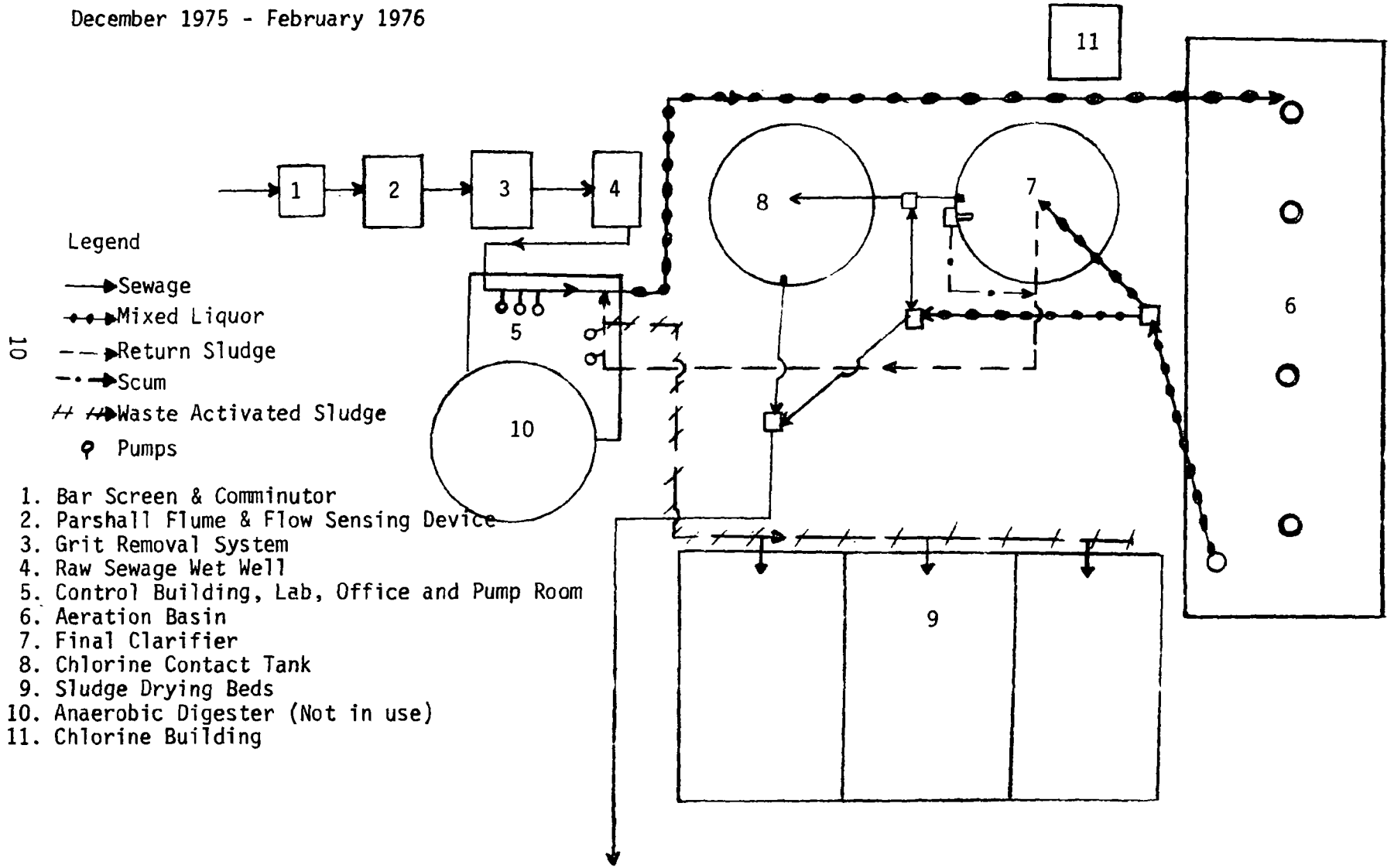
FIGURE I

TECHNICAL ASSISTANCE PROJECT

EVANSTON, WYOMING WASTEWATER TREATMENT FACILITY

Flow Diagram

December 1975 - February 1976



V. DISCUSSION OF ASSISTANCE PROJECT

A. INITIAL PLANT INSPECTION

On December 2, 1975 a joint EPA and State visit to the Evanston WWTP was made to determine whether technical assistance could help the City improve its plant operation. At that time the City was treating approximately 80% of the flow, while the rest was being discharged raw. The operator was unable to get all the flow through the plant even though in December the infiltration rate was minimal due to low groundwater conditions in December.

The plant, at the time of the inspection, had a number of major operating problems because of past practices of inadequate operation and maintenance. The operator at the plant had also been hired less than a year ago and had no experience in WWTP operation. After a careful review of the plant, the cause of the bypassing was determined to be the inability of the transfer pipe between the aeration tank and secondary clarifier to handle all flows through it. This flow limitation caused the aeration basin liquid level to rise and submerge the fixed surface mechanical aerators more than the design called for. This resulted in the mechanical aerators automatically shutting down because the aerator motors overheated when operating in a submerged condition. During extremely high flows it was feared that if no bypassing took place, the entire aeration basin would overflow the earthen basin dikes.

Other problems apparent at the time of the inspection were:

(1) The comminutor was out of service, but parts were on order.

(2) The grit chamber was full of grit which resulted in the influent parshall flume being submerged.

(3) The wet well pumps were not cycling properly and the pumping rate was limited to only one of the three available raw sewage pumps.

(4) The return sludge pump was only being operated during the eight hour 8-5 workday, and at that time was being run at 100% recycle.

(5) The aeration basin was aerobic but the solids level appeared extremely high and no sludge had been wasted since the new operator had come on board in February 1975.

(6) No process control was being used to control the plant. The only tests being run were weekly settleable solids tests by the operator and monthly influent and effluent permit monitoring tests by a private laboratory.

B. INITIAL PLANT OPERATION IMPROVEMENTS

After the inspection the City was informed that three things should be done immediately to improve the plant operation.

(1) Run the return sludge pump continuously, but at less than the maximum rate if possible.

(2) Fix the wet well pump cycling control system so that the pumps could handle all the plant flow.

(3) Clean out the grit chamber and repair the comminutor as soon as the comminutor parts were received.

The City took action and implemented recommendations #1 and #2 immediately. Recommendation #3 was accomplished by mid-January when the comminutor parts arrived. These actions by the City were effective in improving plant operations significantly.

A copy of the plant construction drawings were obtained and after a hydraulic analysis of the plant piping system, it was determined that the pipeline between the aeration tank and clarifier should handle the flow the plant was receiving at that time.

The City was informed of this and was given the recommendation to pump out the secondary clarifier and to check the problem line for possible obstructions such as rocks or other foreign objects. The City engineer, following this suggestion, determined that a valve on this line that was buried which was believed to be open was found instead to be partially closed. Upon opening this valve completely it was found that the plant could now treat all the flow and bypassing was eliminated on January 6, 1976.

The City still felt, however, that technical assistance from the EPA and State of Wyoming D.E.Q. would be beneficial as the plant

operator had not had any real training in operating the facility. The City agreed that if assistance was given, that it would attempt to implement any recommendations that were made by the assistance team to improve plant operations.

The technical assistance project was then initiated on February 2, 1976 by members of the EPA Region VIII Office in Denver and the State operator/trainer of the Wyoming D.E.Q.

C. CONTROL TESTING

A series of process control tests were initiated during the on-site federal assistance project. These control tests consisted of dissolved oxygen tests, centrifuge tests, turbidity tests, settleability tests, and sludge blanket depths. These tests were conducted six times a day by the operator.

The dissolved oxygen meter was used to measure the oxygen concentration of the mixed liquor in the aeration basins.

The centrifuge test was used to determine the solids concentration of the mixed liquor and return sludge throughout the day.

Turbidity tests were conducted on the effluent from the final clarifier to monitor effluent quality.

Settleability tests were conducted on the mixed liquor to monitor and observe sludge characteristics.

Sludge blanket depth determinations were made to determine sludge levels in the final clarifier.

D. OPERATOR TRAINING AND PLANT EVALUATION

During the evaluation of the facility the operator was taught how to perform the process control tests. Limited amount of information was given to the operator due to the length of the assistance project. Very little time was allowed for in-depth interpretations of the process control tests.

The operator was also taught how to calculate settled sludge concentrations from the settleometer tests and how to plot the results on process control graphs. An acceptable operating range was also given to the operator. Reading material concerning operation and process control was also left with the operator. The operator was informed of the importance of plotting the data on the graphs and observing the changes in sludge quality and the quality of the plant effluent in relation. Also it was recommended that the reading material be carefully reviewed and if questions existed to contact EPA Region VIII O&M staff for assistance.

The first day of the on-site federal assistance consisted of evaluating plant records and getting familiar with plant equipment, personnel involved with plant operation, and establishing background information on plant operating status.

Members of the city management were contacted and the purpose of the EPA/state evaluation was explained. The conversations with the

city management team appeared to be very successful. They were interested in dealing with problems which the evaluation of the wastewater treatment plant might reveal, and subsequently took steps to implement recommendations made during the assistance project.

Process control test results for the first day indicated a lower return sludge flow was necessary. The plant was equipped with two constant speed return sludge pumps, each rated at 450 gpm. No flow measurement devices were installed on the return sludge line and the return sludge was discharged to the aeration basin with the raw sewage below the surface so that no accurate determination of the return flow was possible. The only feasible means available for reducing the return sludge flow (RSF) rate at the plant was to partially close the butterfly valve on the discharge side of the pump. It was possible to reduce the RSF rate by running a pump in an on/off mode, but this is not good practice and is not feasible during the 16 hours when the operator is not at the plant.

The only means available for determining the change in return sludge flow was indirectly through observation of the change in the return sludge concentration (RSC). The RSC sample was obtained by taking a sample of the RSF at a sample valve before the return sludge pump. This procedure was then recommended and used for determining changes in RSF.

During the fourth day of the assistance it was found that the sludge settling characteristics had improved drastically,

although no real change had been made in operations. The ATC, RSC and dissolved oxygen concentration remained approximately the same throughout the project, but sludge quality had improved drastically. The operator had taken some settling tests in a 1000 ml graduated cylinder prior to the assistance and this data indicated that the plant was still in a start-up phase.

The operator stated that in December the return sludge pump was turned off for three days to allow the sludge in the system to concentrate in the final clarifier so that a concentrated sludge could be wasted to the drying beds. This resulted in most of the sludge being wasted from the system, leaving a very low MLSS. It was explained to the operator that this method of wasting a large amount of sludge at infrequent intervals often resulted in the type of poor plant performance that the plant had earlier experienced. The operator was instructed to waste small amounts of sludge when necessary and to monitor the effect of that wasting on the mixed liquor solids concentration in the aeration tank. After determining the concentration of mixed liquor after wasting, and the quality of sludge in the system, the operator would then determine if additional wasting was still required. Guidelines to be used for determining the amount of sludge to waste at any one time were left with the operator.

ENVIRONMENTAL PROTECTION AGENCY

REPORT ON OPERATION AND MAINTENANCE OF WASTEWATER TREATMENT PLANT

DATE OF INSPECTION: February 3, 1976

Form Approved OMB No. 158-R0035

A. GENERAL INFORMATION

1. PLANT

(a.) NAME	(b.) OWNER	(c.) LOCATION
Evanston MWWTP	City of Evanston, WY	Evanston, WY

2. TYPE OF PLANT	3. PROJECT NO.	4. AVG. DESIGN FLOW (mgd)	5. DESIGN POPULATION EQUIVALENT
Extended Aeration	C-560069	1.8	5,000

6. COLLECTION SYSTEM						7. DATE PRESENT PLANT BEGAN OPERATING	8. STATE PERMIT NO.
	COMBINED	X	SEPARATE		BOTH	1970	WY-0020095

9. IN THE SPACE PROVIDED BELOW, FURNISH A SIMPLIFIED FLOW DIAGRAM OR A WRITTEN DESCRIPTION OF THE PLANT UNITS IN FLOW SEQUENCE.

See Attached Sketch

10. IDENTIFY RECEIVING WATERS

Bear River

11. IDENTIFY PERTINENT STREAM STANDARDS AND/OR USES OF THE RECEIVING WATERS

Class I stream (game fishery)

12. GIVE THE EFFLUENT STANDARDS AND/OR REQUIREMENTS FOR STATE OPERATING PERMIT

By July 1, 1977 30 mg/l BOD_5&SS, 200/100 ml fecal coliform, 0.1 mg/l total chlorine residual.

B. CURRENT PLANT LOADING

1. ANNUAL AVG DAILY FLOW RATE (mgd)	2. PEAK FLOW RATE (mgd)		3. POPULATION SERVED
	DRY WEATHER	WET WEATHER	
0.87	1.19	-	5,400

4. ANNUAL AVG BOD_5 OF RAW SEWAGE (mg/l)	5. ANNUAL AVG SUSPENDED SOLID OF RAW SEWAGE (mg/l)
147.5	138

6. PRINCIPAL TYPES OF INDUSTRIAL WASTE DISCHARGED TO MUNICIPAL SYSTEM	7. POPULATION EQUIVALENT (BOD) OF INDUSTRIAL WASTES
None	N.A.

8. POPULATION EQUIVALENT (SS) OF INDUSTRIAL WASTES	9. VOLUME OF INDUSTRIAL WASTES (mgd)

10. INFILTRATION PROBLEMS

Yes. Ongoing 201 study is determining amount and source of infiltration.

Form Approved
OMB No. 158-R0035

C PLANT PERFORMANCE

1. LABORATORY ANALYSIS (Total Plant)

(a) REPORTING PERIOD

FROM (Month, year)	TO (Month, year)
October 1975*	January 1975

	MONTHLY ITEMS (b)	ACTUAL PLANT PERFORMANCE DATA (c)	PLANT DESIGN DATA (d)	NPDES PERMIT REQUIREMENTS (e)	PLANT ACHIEVES DESIGN EFFICIENCY (f) YES	PLANT ACHIEVES DESIGN EFFICIENCY (f) NO	PLANT COMPLIES WITH PERMIT REQUIREMENTS (g) YES	PLANT COMPLIES WITH PERMIT REQUIREMENTS (g) NO
(1)	FLOW (mgd) (monthly average)	0.87 (Since bypassing stopped 1/6/76.)						
(2)	PEAK FLOW (mgd) (maximum day)							
(3)	SETTLEABLE SOLIDS (monthly average) INFLUENT (ml/l)							
	EFFLUENT (ml/l)							
	% REMOVAL							
(4)	SUSPENDED SOLIDS (monthly average) INFLUENT (mg/l)	133						
	EFFLUENT (mg/l)	16						
	% REMOVAL	88	85			X*		
(5)	BOD_5 (monthly average) INFLUENT (mg/l)	138						
	EFFLUENT (mg/l)	16		80/120				X*
	% REMOVAL	88	85			X*		
(6)	DISSOLVED OXYGEN (monthly average) EFFLUENT (mg/l)							
(7)	CHLORINE RESIDUAL (monthly average) EFFLUENT (mg/l)	0.25**						
(8)	COLIFORM (per 100 ml) (monthly average) TOTAL	6330						
	FECAL	2300						
(9)	pH RANGE EFFLUENT MINIMUM	7.2		6.0			X	
	MAXIMUM	7.4		9.0			X	
(10)	TOTAL PHOSPHORUS (as P) (monthly average) INFLUENT (mg/l)							
	EFFLUENT (mg/l)							
	% REMOVAL							
(11)	TOTAL NITROGEN (as N) (monthly average) INFLUENT (mg/l)							
	EFFLUENT (mg/l)							
	% REMOVAL							

2. PLANT RECORDS
ARE MONTHLY OPERATING RECORDS FILED WITH STATE AGENCY? [X] YES [ ] NO

*Effluent data does not include raw sewage bypass that was in effect until 1/6/76.

**Plant not chlorinating since 11/75.

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3. DOES PLANT HAVE ALTERNATE ELECTRIC POWER SOURCE?
[ ] DUAL FEED [ ] GENERATOR [X] NONE

4. ADEQUATE ALARM SYSTEM FOR POWER OR EQUIPMENT FAILURES? [ ] YES [X] NO

5. EQUIPMENT PROGRAM	ADEQUATE	INADEQUATE
(a.) ROUTINE MAINTENANCE SCHEDULES	X	
(b.) RECORDS OF MAINTENANCE, REPAIRS & REPLCMT		X
(c.) SPARE PARTS INVENTORY		X

6. IS PLANT EFFLUENT BEING CHLORINATED? [ ] YES [X] NO

7. DOES SEWAGE BY-PASS PLANT IN WET WEATHER? [X] YES [ ] NO

8. DOES SEWAGE BY-PASS PLANT IN DRY WEATHER? * [X] YES [ ] NO

9. AGENCIES NOTIFIED OF EACH BYPASS
Wyoming Dept. of Env. Quality

10. BYPASS FREQUENCY (Monthly)	11. AVG DURATION OF BYPASS (Hrs)	12. REASON FOR BYPASSING	13. CAN BYPASS SEWAGE BE CHLORINATED?
12	24	See Item G-2	[ ] YES [X] NO

14. DO SEWER OVERFLOWS OCCUR UPSTREAM OF PLANT? [ ] YES [X] NO

15. ANY ODOR COMPLAINTS BEYOND PLANT PROPERTY? *(If yes, explain)*
Yes. In summer, but less this past year than in previous years.

16. OBSERVED APPEARANCE OF EFFLUENT, RECEIVING STREAM OR DRAINAGE WAY
Effluent was only slightly turbid. Where effluent entered the receiving dtich it was clean. However 200 feet below this point until main flow of Bear River was reached sludge banks 6-12" deep were found. See attached photos.

17. IS A CONSULTING ENGINEER RETAINED OR AVAILABLE FOR CONSULTATION ON OPERATING AND MAINTENANCE PROBLEMS?
[X] YES [ ] NO *(If yes, check one of the following)* [X] CONTINUING BASES [ ] REQUEST BASES

18. DO OPERATORS AND OTHER PERSONNEL ROUTINELY ATTEND SHORT COURSES, SCHOOL OR OTHER TRAINING? [X] YES [ ] NO

(a.) If yes, cite course sponsor, and date of last course.
Wyoming Operators School - October 1975

(b.) If no, are there any courses available in this area?

(c.) Is there an established procedure for training new operators?
Not yet.

19. IS LAB TESTING ADEQUATE FOR THE CONTROL REQUIRED FOR THIS SIZE AND TYPE OF PLANT AND USES OF RECEIVING WATERS?
[ ] YES [X] NO *(If No, explain)*
No process control. See item G-2.

20. EXPLAIN MAIN DIFFICULTY EXPERIENCED WITH INDUSTRIAL WASTES
N.A.

21. PERMANENT RECORD FILE
(a.) PLANT OPERATION AND MAINTENANCE MANUAL? [ ] YES [X] NO (b.) AS BUILT PLANS AND SPECIFICATIONS? [X] YES [ ] NO
(c.) MANUFACTURERS OPERATION & MAINTENANCE SPECIFICATIONS? [ ] YES [X] NO (d.) FLOW CHARTS? [X] YES [ ] NO

22. ESTIMATED WEEKLY MAN-HOURS FOR LAB WORK INCLUDING MAINTENANCE OF RECORDS AND PREPARATION OF REPORTS
7

23. ANNUAL BUDGET FOR MAINTAINING AND OPERATING PLANT

SALARIES & WAGES	ELECTRICITY	CHEMICALS	MAINTENANCE	STAFFING & TRAINING	OTHER	TOTAL
9,000	9,000	300	2,600	7,260	15,000	46,160

24. STABILIZATION PONDS N.A.

(a.) WEEDS CUT AND VEGETATION GROWTH IN PONDS REMOVED? [ ] YES [ ] NO

(b.) BANKS AND DIKES MAINTAINED? *(Erosion, etc.)* [ ] YES [ ] NO

(c.) ANY REPORTS OF GROUND WATER CONTAMINATION FROM POND? *(If yes, give details)* [ ] YES [ ] NO

(d.) SEEPAGE REPORTED [ ] YES [ ] NO

(e.) ADEQUATE DEPTH CONTROL? [ ] YES [ ] NO

(f.) EFFLUENT RELEASE IS [ ] CONTINUOUS [ ] INTERMITTENT [ ] SEASONAL

 *Bypassing stopped 1/6/76.

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D. LABORATORY CONTROL

CODING INSTRUCTION

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.

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 (a.)	RAW (b.)	PRIMARY EFFLUENT (c.)	MIXED LIQUOR (d.)	FINAL (e.)	(f.) SLUDGE RAW	(f.) SLUDGE SUPERNATANT	DIGESTER (g.)	RECEIVING STREAM (h.)
1. BOD	6			6				
2. SUSPENDED SOLIDS	6			6				
3. SETTLEABLE SOLIDS			1					
4. SUSPENDED VOLATILE								
5. DISSOLVED OXYGEN			3					
6. TOTAL SOLIDS								
7. VOLATILE SOLIDS								
8. pH	3		3					
9. TEMPERATURE			3					
10. COLIFORM DENSITY				6				
11. RESIDUAL CHLORINE								
12. VOLATILE ACIDS								
13. M B STABILITY								
14. ALKALINITY								
15. Fecal Coliform				6				
16.								
17.								
18.								
19.								

COMMENTS

All BOD_5, SS, fecal coliform, total coliform, chlorine residual and pH tests made at Ford Chemical Laboratories in Salt Lake City, Utah.

E. PLANT PERSONNEL INVENTORY

PERSONNEL CLASSIFICATION (a.)	EMPLOYMENT (b.) ACTUAL MAN-HOURS PER WEEK	EMPLOYMENT (b.) ACTUAL NUMBER	EMPLOYMENT (b.) NUMBER BUDGETED	EMPLOYMENT (b.) NO. RECOMMENDED	(c.) CERTIFICATION NO. RECOMMENDED OR REQUIRED BY STATE	(c.) CERTIFICATION ACTUAL NO. CERTIFIED	TRAINING REQUIRED NEXT 12 MONTHS (d.) NEW HIRES	TRAINING REQUIRED NEXT 12 MONTHS (d.) UPGRADE (Promotion or skill improvement
1. MANAGEMENT/SUPERVISOR		-						
2. OPERATOR	50	1			1			1
3. LABORATORY								
4. MAINTENANCE					1*		1	
5. OTHER PLANT WORKERS								
6. OTHER OFFICE/CLERICAL								
7. TOTAL	50	1			2		1	1

(c.) CERTIFICATION: VOLUNTARY [ ] MANDATORY [X]

*See Item G-2.

F. GUIDE - VISUAL OBSERVATION - UNIT PROCESS

RATING CODES. S = Satisfactory; U = Unsatisfactory; M = Marginal; IN = In Operation; OUT = Out of Operation

	CONDITION OR APPEARANCE	RATING	COMMENTS
GENERAL	GROUNDS	M	Needs sodding or seeding.
	BUILDINGS	S	
	POTABLE WATER SUPPLY PROT	S	
	SAFETY FEATURES	M	
	BYPASSES	M	Automatic when flow exceeds plant capacity.
	STORM WATER OVERFLOWS	-	
PRELIMINARY	MAINTENANCE OF COLLECTION SYSTEMS	M	
	PUMP STATION	M	Bubbler control for pumps connected to pump suction.
	VENTILATION	S	
	BAR SCREEN	S	
	DISPOSAL OF SCREENINGS	M	Stored in drying beds.
	COMMINUTOR	S	
	GRIT CHAMBER	S	
	DISPOSAL OF GRIT	M	Stored in drying beds.
PRIMARY	SETTLING TANKS		
	SCUM REMOVAL		
	SLUDGE REMOVAL		
	EFFLUENT		
SLUDGE DISPOSAL	DIGESTERS	U	No sludge digestion facilities.
	TEMPERATURE AND pH		
	GAS PRODUCTION		
	HEATING EQUIPMENT		
	SLUDGE PUMPS		
	DRYING BEDS	S	
	VACUUM FILTER		
	INCINERATION		
	DISPOSAL OF SLUDGE	M	Stored on site.
OTHER	FLOWMETER AND RECORDER	S	
	RECORDS	M	Record keeping being instituted now.
	LAB CONTROLS	M	Process control and required lab equipment being instituted now.
SECONDARY-TERTIARY (List items as required)	Aeration Basins	M	Single speed aerators limit D.O. control.
	Secondary Clarifier	M	No return sludge flow meter, no waste sludge flow measuring device. Sludge collection hopper limits return sludge flow control. Need handrails.
CHLORINE	EFFLUENT		
	CHLORINATORS	U	Parts just received for chlorinator.
	EFFECTIVE DOSAGE	U	Fecal coliform and chlorine residual data questionable since chlorinator has been out of service.
	CONTACT TIME		
	CONTACT TANK	M	Weirs submerged resulting in short circuiting.

G NOTATIONS BY EVALUATOR

1. OPERATION AND MAINTENANCE PROBLEMS/DEFICIENCIES

CHECK EACH OF THE FOLLOWING ITEMS IN TERMS OF THEIR ESTIMATED ADVERSE AFFECT ON THE PERFORMANCE OF THE PLANT.

ITEM	MAJOR	MINOR	NONE	ITEM	MAJOR	MINOR	NONE
STAFF COMPLEMENT		X		OVERLOADS (type)			
PERSONNEL TRAINING		X		HYDRAULIC	X		
OPERATING BUDGET		X		PERIODIC	X		
LABORATORY CONTROL	X			CONTINUOUS			
INSTRUMENTATION			X	ORGANIC			X
INDUSTRIAL WASTE			X	PERIODIC			
PLANT OBSOLESENCE		X		CONTINUOUS			
EQUIPMENT FAILURE:				OVERLOAD CAUSE(S):			
TREATMENT PROCESSES		X		INFILTRATION	X		
SLUDGE HANDLING AND PROCESSING		X		COMBINED SEWERS			
				INDUSTRIAL GROWTH			
EQUIPMENT MAINTENANCE		X		RAPID POPULATION GROWTH		X	
SPARE PARTS INVENTORY		X		INCREASED SERVICE AREA			
POWER FAILURE	X			OTHER:			
				OTHER			

2. DESCRIBE BRIEFLY THE MAJOR PROBLEMS INDICATED ABOVE *(include follow-up actions needed see Instructions)*

See Attached Comments

3. PURPOSE OF INSPECTION		4. GENERAL RATING	
☐ GRANT COMPLIANCE	☐ FOLLOW-UP	ACCEPTABLE	
☒ PERMIT COMPLIANCE	☐ OTHER:	CONDITIONAL ACCEPTANCE	
		UNACCEPTABLE	X

EVALUATION PERFORMED BY	TITLE	ORGANIZATION	DATE
George Hartmann	Chief, O&M Section	EPA	2/3-5/76
Leon Malloy	Engineering Technician	EPA	2/3-5/76
Pat Gamroth	State Trainer	Wyoming D.E.Q.	2/3-5/76

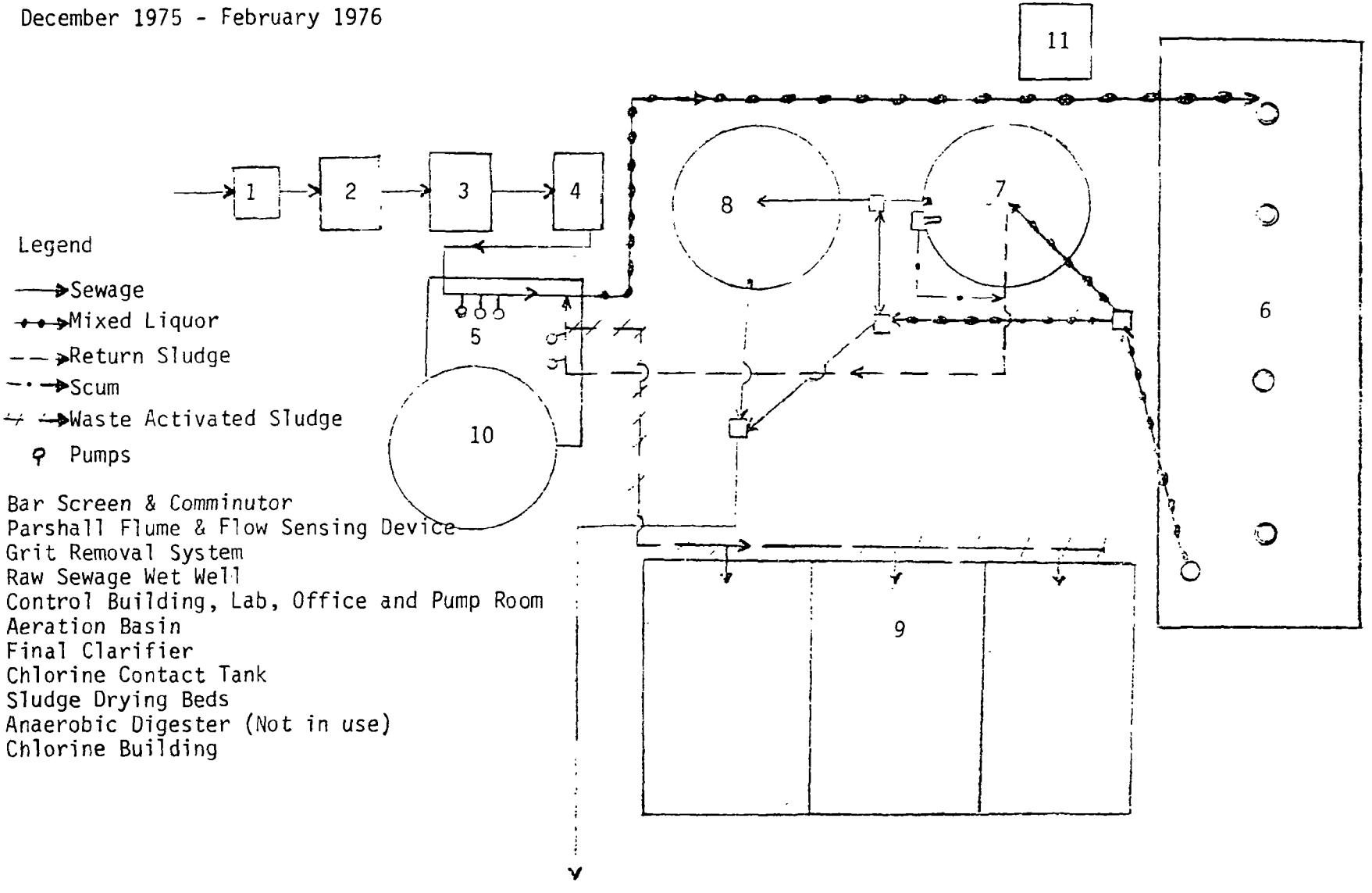
INFORMATION FURNISHED BY	TITLE	ORGANIZATION	DATE
Dutch Riebenacht	Operator	City of Evanston	2/3-5/76
John Proffit	Consulting Engineer	Unitah Engineer	2/3-5/76

TECHNICAL ASSISTANCE PROJECT

EVANSTON, WYOMING WASTEWATER TREATMENT FACILITY

Flow Diagram

December 1975 - February 1976



1. Bar Screen & Comminutor
2. Parshall Flume & Flow Sensing Device
3. Grit Removal System
4. Raw Sewage Wet Well
5. Control Building, Lab, Office and Pump Room
6. Aeration Basin
7. Final Clarifier
8. Chlorine Contact Tank
9. Sludge Drying Beds
10. Anaerobic Digester (Not in use)
11. Chlorine Building

Attached photos referred to on page 3, item C-16, are attached to the City's copy of this report only.

Item G-2: Evanston, Wyoming

An O&M inspection was performed at the Evanston Municipal Wastewater Treatment Plant in conjunction with the Technical Assistance that was given at that time. Attached is a copy of the technical assistance project report which describes the plant history, assistance given during the project and recommendations made to improve plant operations.

Major deficiencies found in plant operation and maintenance are listed below. The listing is not by priority, but the deficiencies relating to permit violations should be corrected immediately where possible.

(1) The plant chlorinator is broken and needs to be repaired as soon as possible. Although federal secondary treatment standards have recently been modified with respect to fecal coliform limitations, the Evanston facility should still operate its chlorination facilities.

(2) The infiltration/inflow problem which has been responsible for the plant's hydraulic overload should continue to be studied to determine the best way to alleviate this problem. If it becomes necessary to bypass a portion of the plant flow this spring due to extremely high infiltration/ inflow flows, the Wyoming D.E.Q. should be contacted immediately. As much as possible all flow should be pumped into the plant if possible and then bypassed to eliminate discharge of raw sewage.

(3) The plant staffing at the present time is barely adequate with one man responsible for plant operations and maintenance. The City should endeavor to have another man available to work part time at the plant for weekends, vacation time and other periods when the present operator is not on duty during the week or when he requires additional help for major repair work. It is recommended that 8 hour, 7 day a week operation be instituted at the plant as soon as possible.

(4) The present plant does not have an alternate power source or emergency alarm system when power is lost. The City should investigate the installation of an emergency power source in the future and should install an alarm system at the plant as soon as possible.

(5) At the time of the inspection and during the technical assistance the operator was shown how to use various process control tests to determine how to control the plant operation. The list of minimum necessary lab equipment to conduct these tests was given to the City Engineer at that time. This equipment should be acquired as soon as possible for use by the operator.

(6) The basic plant operation and maintenance has been improved substantially since the visit to the facility on December 2, 1975 by the EPA. However in order to keep the facility in operation and to conduct a good preventative maintenance program, adequate tools are required and proper record keeping should be instituted. In addition the plant site should be graded and seeded or sodded to improve the plant appearance. Good site maintenance eliminates some of the problems encountered from blowing weeds and mud during the winter and spring months of the year.

(7) The present plant sludge handling facilities appear to be marginal. It may be necessary for the City to haul waste liquid sludge from the plant if the existing sludge drying beds are found to be inadequate to process all the waste sludge. Because the waste sludge which must be put on these beds is not stabilized there may be some odors at the plant when sludge is put on the beds. Because this sludge has not been stabilized, the final disposal of this sludge should be controlled to limit public access to the sludge disposal area. An acceptable method of final disposal at the present time is to landfill the sludge after removal from the drying beds. The City should ensure that the plant facility plan now underway addresses the sludge disposal problem as landfilling unstabilized sludge is not an acceptable practice for sludge disposal of federally funded MWWTP's.

(8) In any plant expansion or modification the existing clarifier sludge withdrawal, sludge return and sludge wasting equipment should be carefully evaluated for improvements to improve plant operational control.

The cooperation of the plant operator, city engineer and city administration officials who have been involved with the EPA in the Technical Assistance Project have in large part been responsible for the noticeable improvement in plant operations since the December 2, 1975 visit by the Wyoming D.E.Q. and EPA. It is hoped that through continued effort the Evanston facility will be producing an excellent effluent and the present sludge banks in the Bear River below the plant will no longer be present after the spring runoff. The EPA and State of Wyoming are both ready to work with the City to help further the City's efforts in this area.