

670

6-4-87

COMPUTER - WILL NOT LOAD  
DATA FROM HISTORICAL

Sprinter not set

#2 WELL HAS BAD FUEL TANK

ACID SYSTEM HAS SEVERAL  
LEAKS. NO SIGHT GLASS?  
1800 GAL HAS BEEN PLACED IN TANK,  
ONLY 3 TRANSFER BY OPERATION

NO SCALES AT ACID FEED  
DOES NOT WORK -

#1

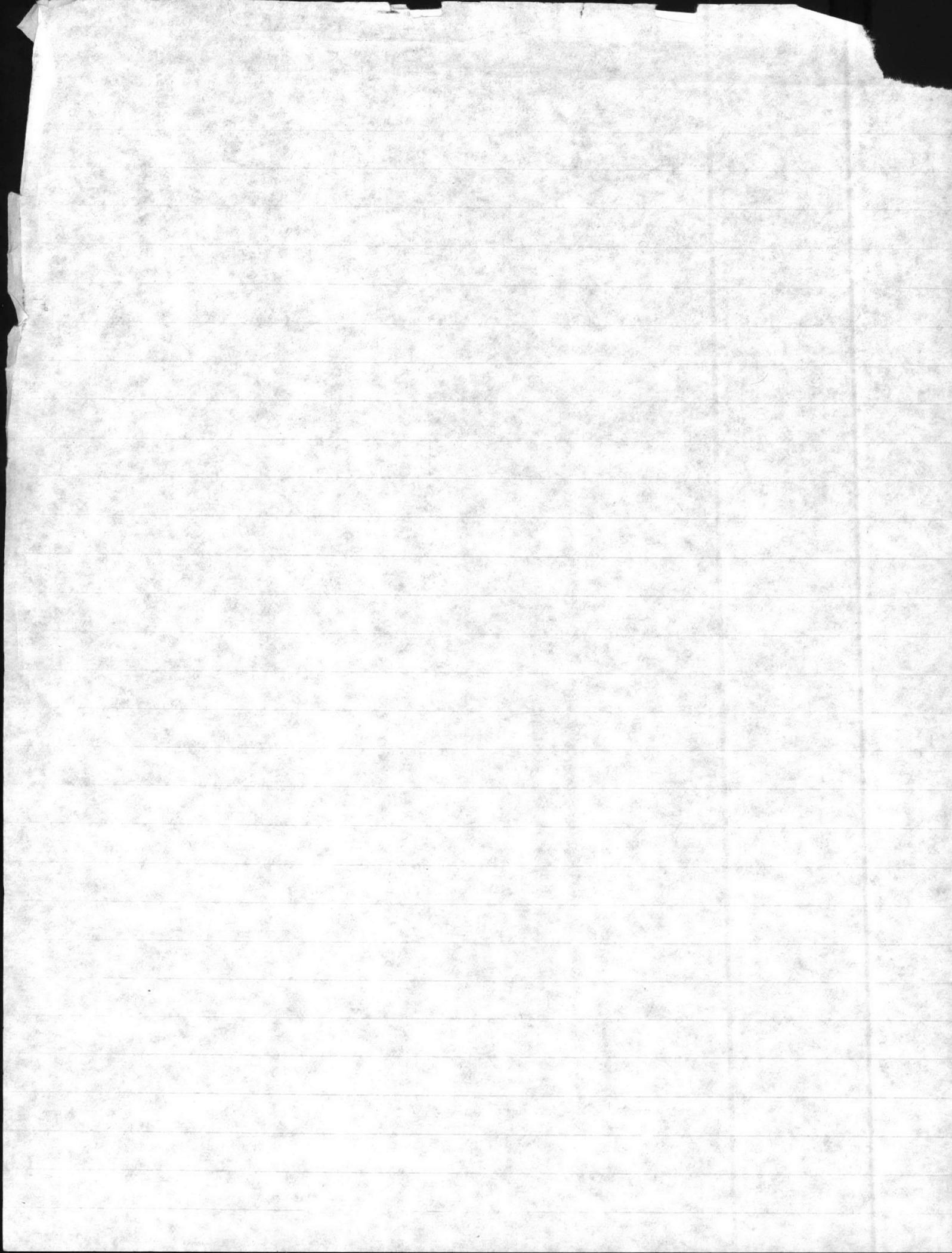
DO NOT HAVE INFORMATION  
FOR COMPUTER

MANUAL & Disk for loading & maintenance  
for computer

20% ANKOB DO NOT HAVE  
& IF WE DID WE DO NOT  
HAVE THE HARDWARE A-D CON-  
VERTER

ACID TRANSFER NOT WORKING

Sims feed pump 3

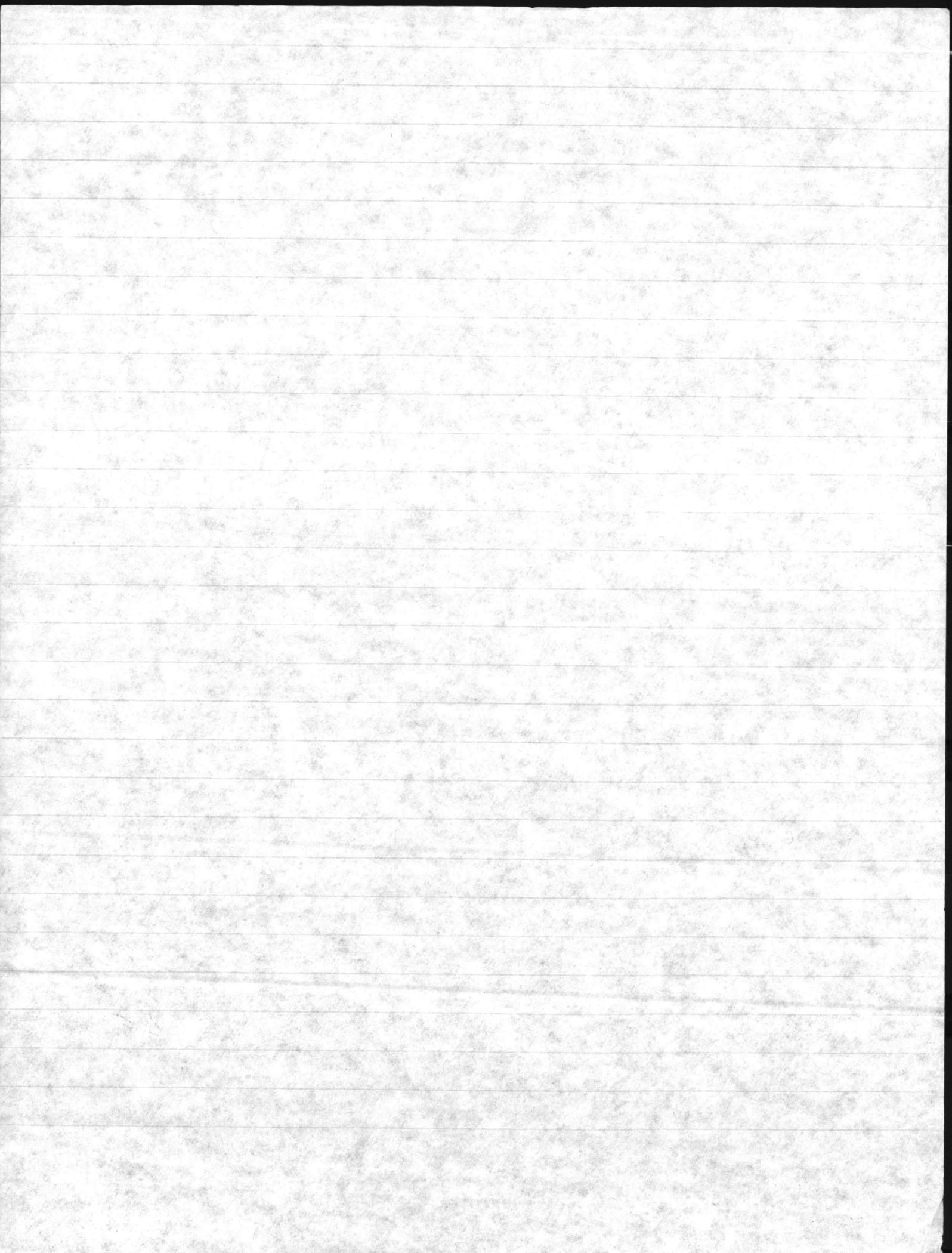


Contractor paid 138

27 ~~upward~~ / cu ft  
5  
135

27 cu ft / upward

65  
5  
325 upward



STC 1070 CG (5)

1 Daily inspection ?

2. 14004 T - Float indicator

830

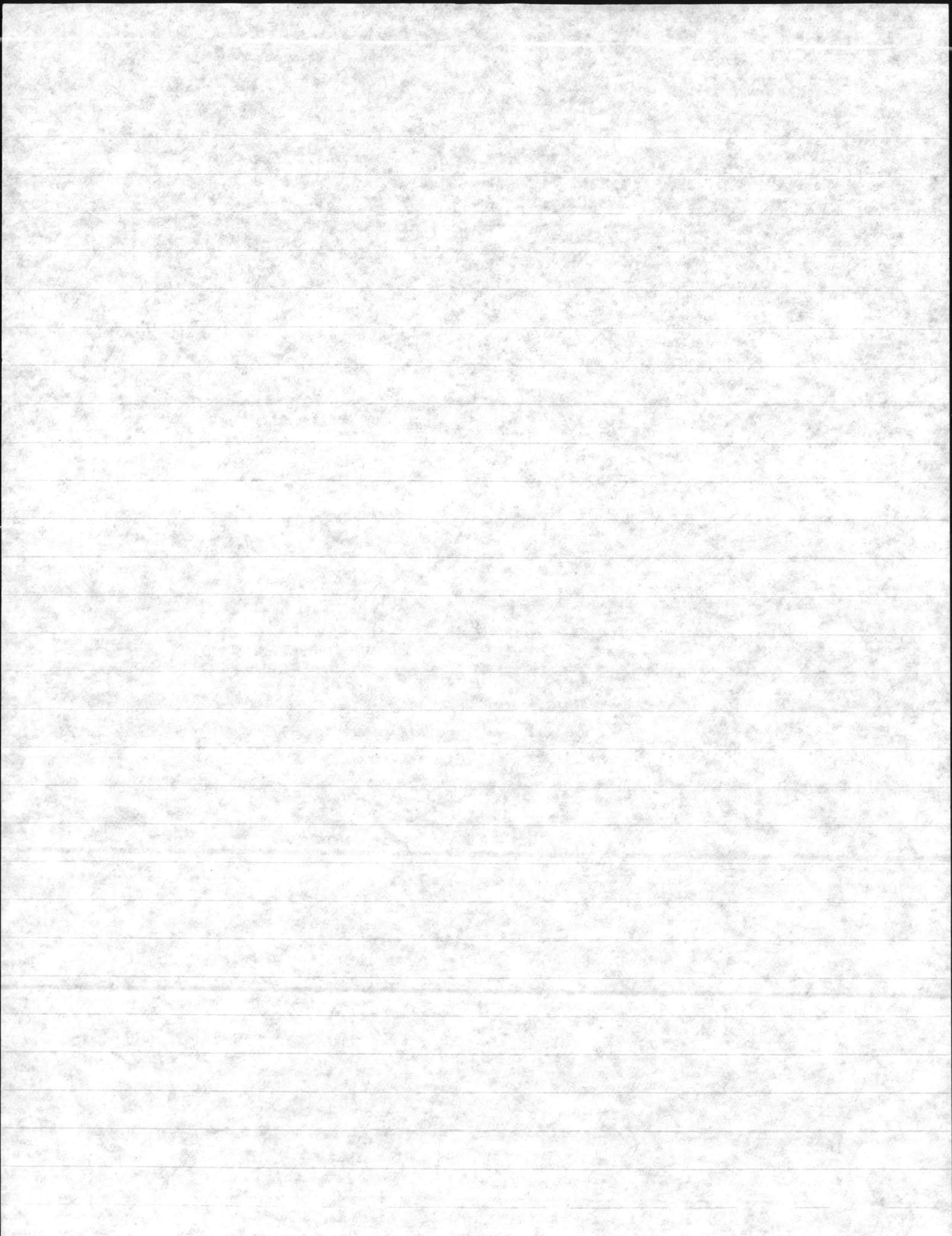
624

606

SBO 25

NR 44

2323



WELL # 1

Pump set 85' - 11 $\frac{1}{4}$ " - 86'  
Tail section 101'  
Well plugged at 124'

WELL # 2

Pump set 85' 3 $\frac{1}{4}$ " - 86'  
Tail section 101'  
Well plugged at 124'

WELL # 3

Pump set 85' 3 $\frac{1}{4}$ "  
Tail section 101'  
Well plugged at 130'

WELL # 4

Pump set 85' 3 $\frac{1}{4}$ "  
Tail sect. 101'  
Well plugged at 100'

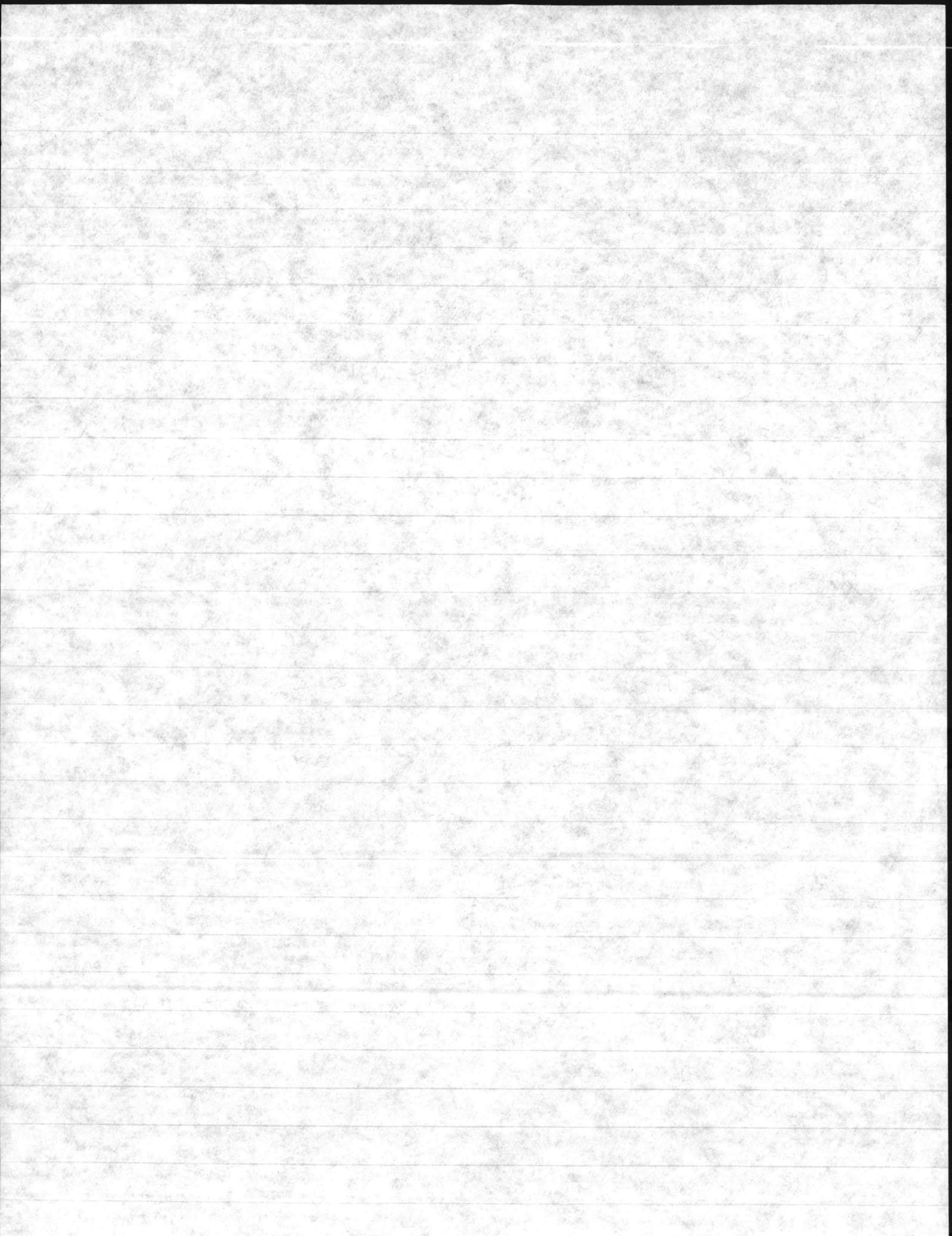
WELL # 5 86' 6 $\frac{3}{4}$ "  
Tail set.

Well plugged at " 145'

WELL # 6 85' 11 $\frac{1}{4}$ "  
Tail section 101'  
124'

WELL # 7 86' 6 $\frac{3}{4}$ "  
Tail 101'  
160'

WELL # 8 86' 6 $\frac{3}{4}$ "  
Tail 101'  
185'



well # 9      86'  $6\frac{3}{4}$ "  
tail      101'  
138'

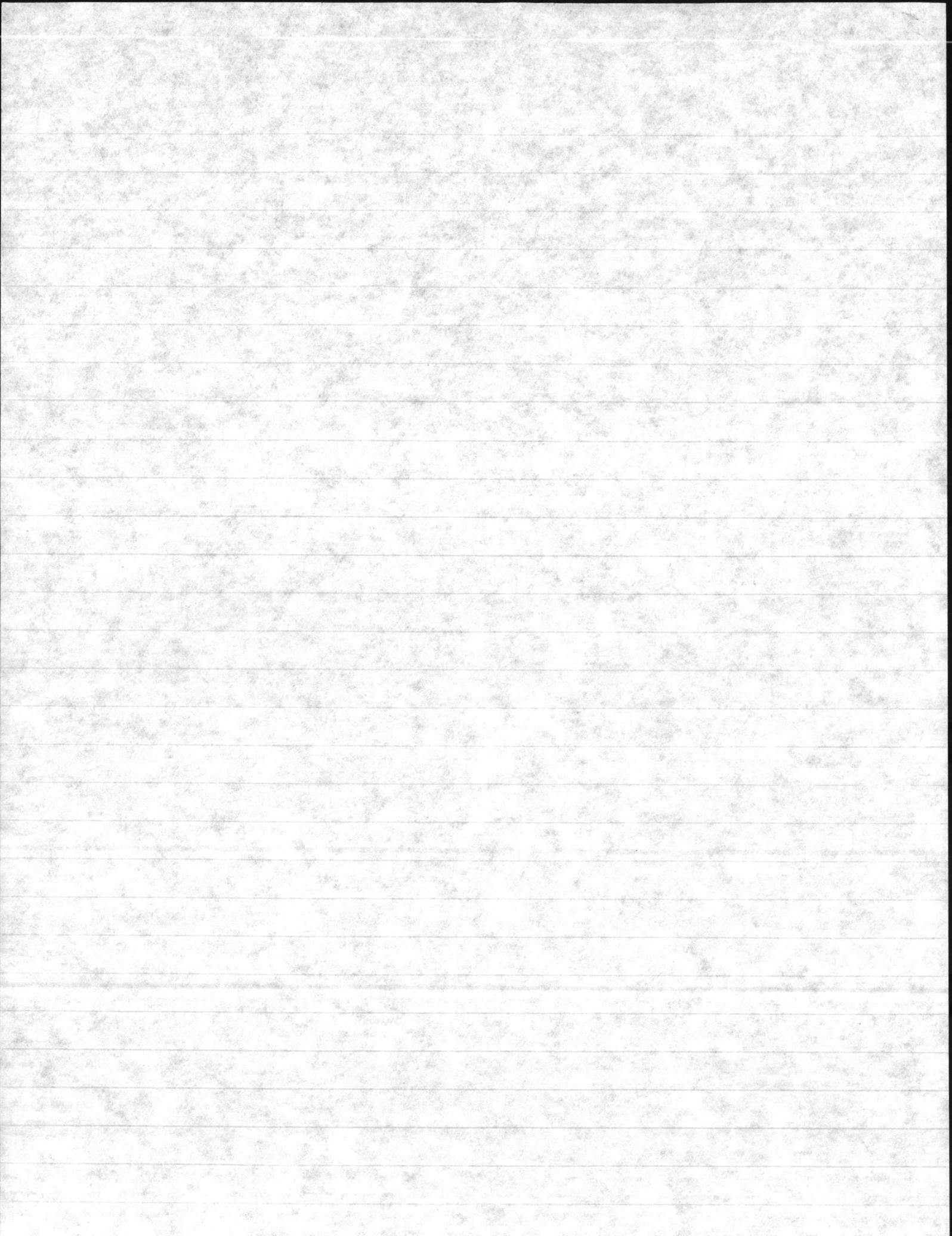
well # 10      86'  $6\frac{3}{4}$ "  
tail      101'  
176'

well # 11      85'  $3\frac{1}{4}$ "  
tail      101'  
148'

well # 12      85'  $3\frac{1}{4}$ "  
tail      101'  
140'

well # 13      84'  $8\frac{1}{4}$ "  
tail      101'  
150'

well # 14      84'  $8\frac{1}{4}$ "  
tail      101'  
180'





HENRY VON OESEN AND ASSOCIATES  
CONSULTING ENGINEERS  
AND PLANNERS

Telephone (919) 763-0141

805 NORTH THIRD STREET P.O. DRAWER 2087 WILMINGTON, NORTH CAROLINA 28402

May 26, 1987

Mr. Vann Marshburn  
Naval Facilities Eng. Command  
Camp Lejeune, NC 28542-5000

Re: N62470-81-C-1644  
Holcomb Boulevard Water Plant

Dear Vann:

As requested in your letter of 5 May 1987, we have reviewed the performance of the well pumps installed on the referenced project. We have compared the well test results with the pump curves to determine how the pumps should perform under the conditions indicated by the well tests.

The head conditions specified for the pumps were based on an assumed pumping level in the wells of 50 feet at the specified flow of 260 GPM. A tabulation of the calculated head on each pump is attached along with the well test performance.

We have plotted the head on each pump based on the well tests on the curves to determine what flow should be expected from each pump. The flows vary from well to well, but the information indicates that all wells should function satisfactorily if the discharge valves are properly set.

The information from Deming Pump Company on their test results is not very clear, but it does appear that some of the wells (6, 8, 13 and 14) may not be producing the flow indicated by the well tests.

We would suggest that the discharge valves be set to deliver the flows indicated by the well tests as shown on the tabulation (last column; "flow from curve"). If any well will not function properly under these conditions, additional investigation will be needed to determine what the problem is.

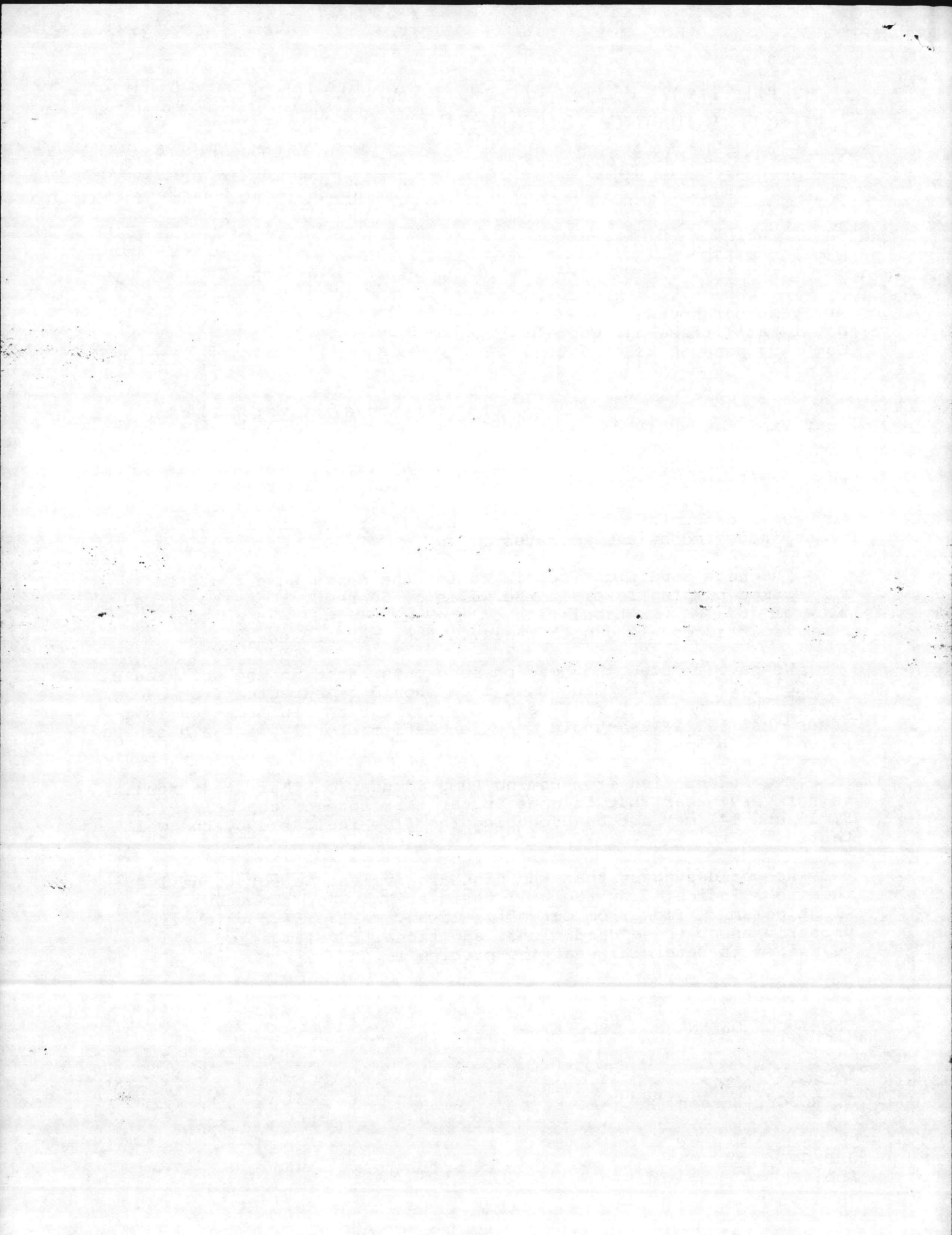
Sincerely,

HENRY VON OESEN AND ASSOCIATES, INC.

J. Robert Benson, Jr., P. E.

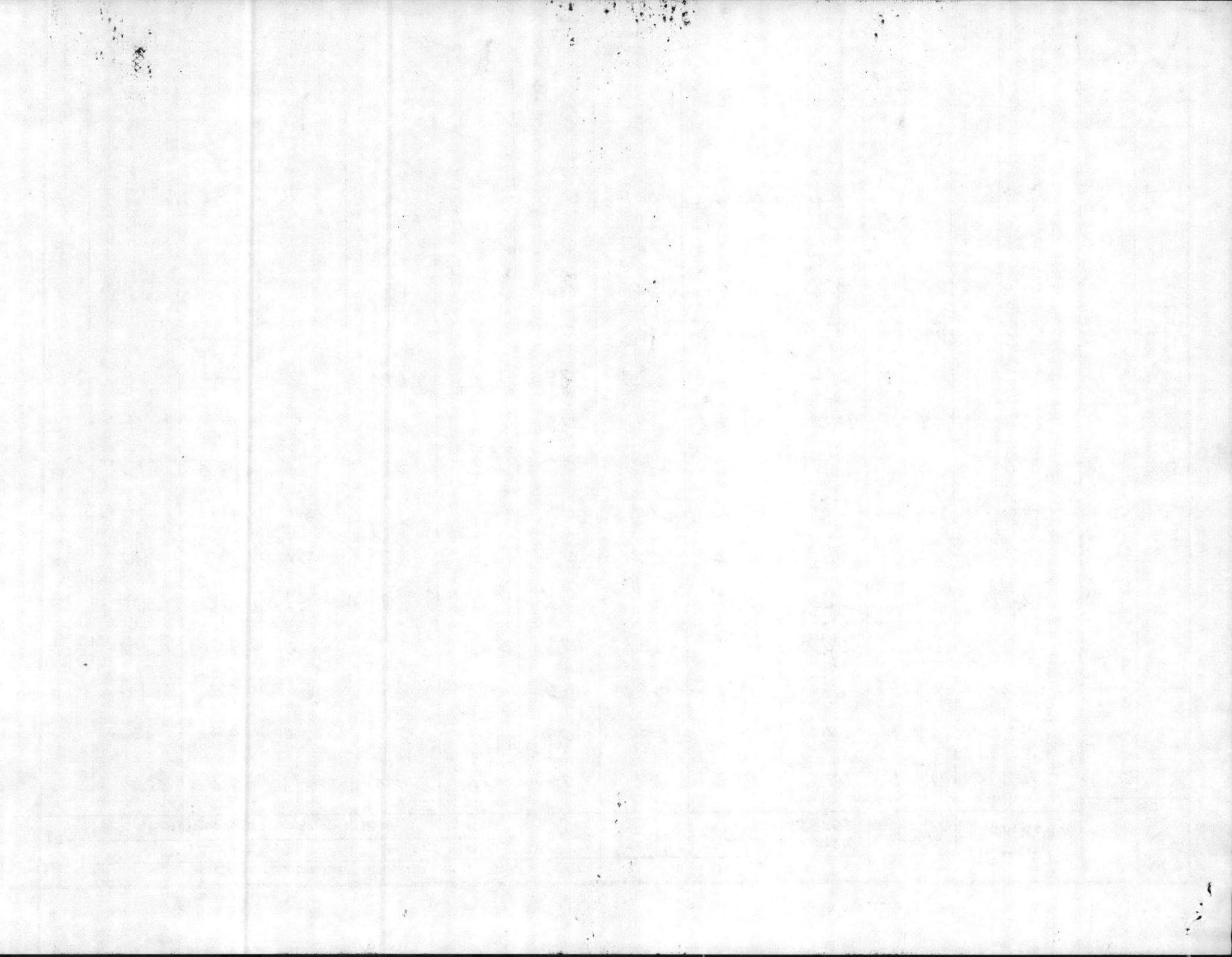
JRB/GGB  
Enc.

A/22



WELL NO	CALCULATED HEAD - FEET						LIFT IN WELL	TDH	WELL TEST			FLOW FROM CURVE
	STATIC HEAD			FRICTION		GPM			PUMPING LEVEL	TDH		
	DISCH. ELEV	PUMP ELEV	STATIC	MAIN	SITE							
1	41	23	18	49	7	50	124	250	65.1	143.6	240	
2	41	23	18	53	7	50	128	250	59.0	136.5	250	
3	41	23	18	58	7	50	133	250	53.2	135.1	260	
4	41	21	20	62	7	50	139	250	50.9	139.7	270	
5	41	28	13	23	7	50	93	300	57.5	99	300	
6	41	25	16	27	7	50	100	200	61.8	109.3	210	
7	41	30	11	11	7	50	79	250	48.3	77.3	<del>260</del>	
8	41	30	11	16	7	50	84	250	87.7	111	210	
9	41	36	5	28	7	50	90	300	69.7	109.2	270	
10	41	39	2	29	7	50	88	300	95.5	133	250	
11						50	143	200	57.8	150.8	210	
12						50	145	200	55.8	150.8	210	
13						50	156	200	46.5	152.5	225	
14						50	160	350	90	200	300	

DATE	5/26/87	DESIGN	JMB	Wilmington, North Carolina	HENRY VON OESSEN & ASSOCIATES Consulting Engineers	SHEET
CHECK						
JOB NO	W62470-81-C-1644	FOR		HOLCOMB BLVD WATER PUMP	North Carolina	OF
JOB NO	2476					





FLOW RATE/DIFFERENTIAL PRESSURE EQUIVALENCY CHART

FOR: PRECISION SYSTEMS, INC.  
7861 BAYBERRY ROAD  
JACKSONVILLE, FL. 32216

REF: P.O.#102HPA-4885  
AUGUST 8, 1987  
MR. DENNIS TAYLOR

FLUID: WATER                      LINE: 17.400 O.D.              FLOW: MIN. 0 GPM  
PRESSURE: 16 PSIA                      16.634 I.D.                      NOR. 2400 GPM  
TEMP.: 68°F                              .530 WALL                      MAX. 3000 GPM

CALCULATION OF FLOW RATE "Y" CONSTANT

$.620 \times 5.666 \times (16.340)^2 \times \sqrt{F} = 938.33$

PTS.	FLOW IN GPM	D.P.	PTS.	FLOW IN GPM	D.P.
1	100	.01"	16	1600	2.9"
2	200	.05"	17	1700	3.3"
3	300	.10"	18	1800	3.7"
4	400	.18"	19	1900	4.1"
5	500	.28"	20	2000	4.5"
6	600	.41"	21	2100	5.0"
7	700	.56"	22	2200	5.5"
8	800	.73"	23	2300	6.0"
9	900	.92"	24	2400	6.5"
10	1000	1.1"	25	2500	7.1"
11	1100	1.4"	26	2600	7.7"
12	1200	1.6'	27	2700	8.3"
13	1300	1.9"	28	2800	8.9"
14	1400	2.2"	29	2900	9.6"
15	1500	2.6"	30	3000	10.2"

2290 - old

2630 - new

2700 - Bar

**DATE:** 27 October 1987

**FROM:** Utilities Systems General Foreman

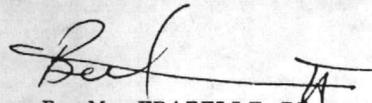
**TO:** Director, Utiliites Branch

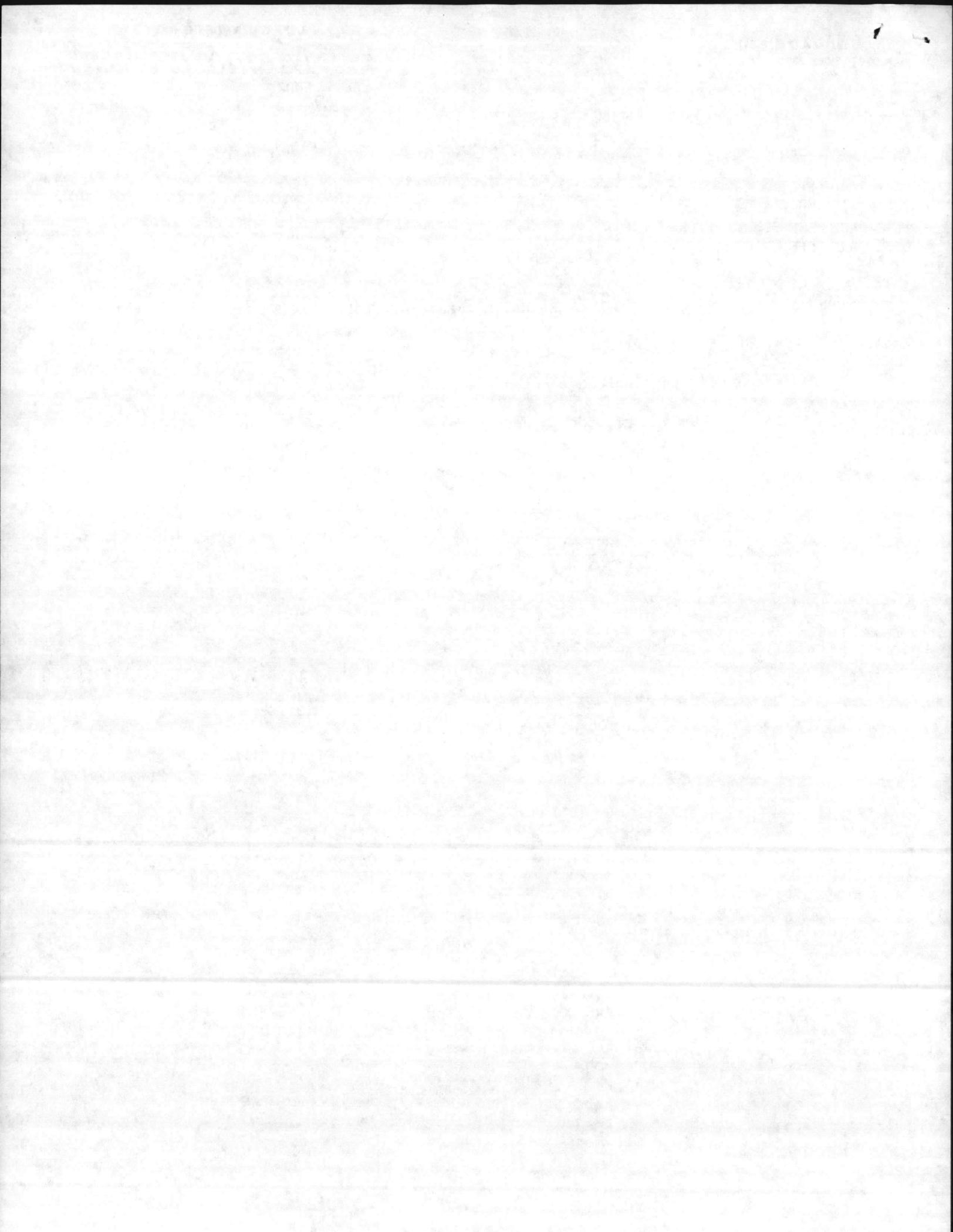
**Via:** Utilities General Foreman

**SUBJ:** CONTRACT 1644 - HOLCOMB BOULEVARD WATER TREATMENT PLANT

**Encl:** (1) List of Warranty Problems

1. As requested, the enclosure notes the problems involving this plant.
2. If any further information is needed, please contact me at your earliest convenience.

  
B. M. FRAZELLE II



## BUILDING 670

### Computer Problem

1. Data Fail #7 and 12 alarm often. \*
2. Not enough spares provided as per contract for remote - should have 20%.
3. Lock up when printing memo.

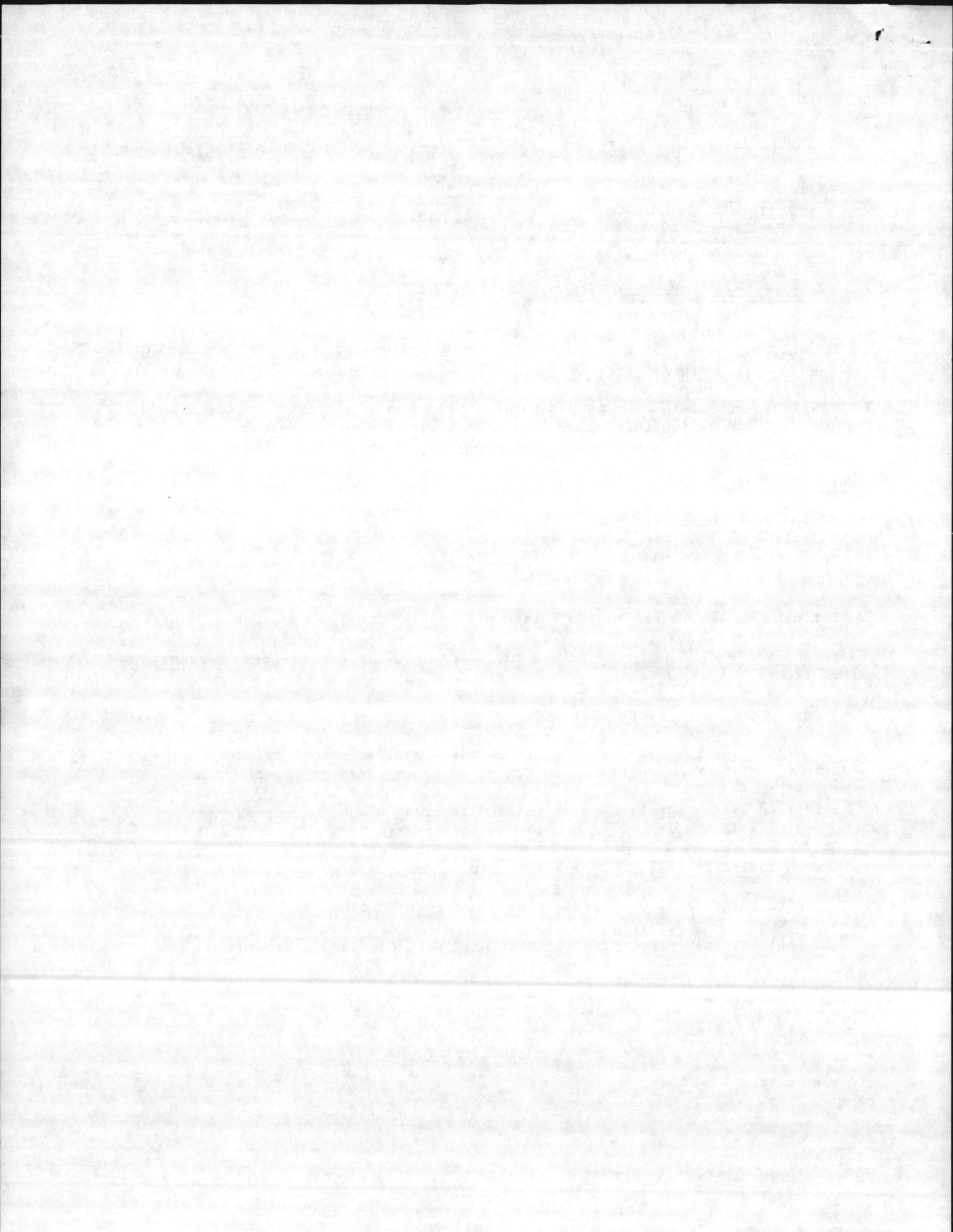
### Raw Water Problem

1. #4 well only pumps 150 GPM.
2. #8 well only pumps 190 GPM.
3. #9 well only pumps 125 GPM.
4. #12 well only pumps 150 GPM.
5. Raw water pumps will not pump capacity. Pumps were designed to pump 2 each 2100 GPM and 2 each 1400 GPM at 39 feet of head. The head on spiractor operate from 39 feet to 50 feet, depending on age of sand in spiractors.

### Plant Problems

1. #3 and #4 filters will only run 15-25 HR.  
#5 filter will only run 30-40 HR.  
Should be from 75-100 HR. before backwashing. Each filter has excessive air when shut off.
2. Effluent valves on #3, #4, #5 filter will not shut off when plant goes off.\*
3. Waste valve will not open unless the water level in the filters is below filter trough.
4. Backwash indicator inoperable. \*
5. To switch from one backwash pump to another requires manual switching of valves. Specifications requires automatic switching to be required.
6. Acid feed system ejection point located in wrong place. Hardness goes up when feeding acid.
7. Rewash indicator #3 filter will not work, and wash valve #4 filter. \*
8. #2 spiractor rate flow controller will not go wide open. \*
9. The influent valves to spiractor stem nuts are lose and/or broken.\*

\*Indicates warranty called in.



7-11-85

1- No Signal of High Lift Pumps at TT Reservoir on or off. TT-39A. No way to Start Pumps at TT-39A from 670

NOTE: 24-1 -

Existing TT Elevated Tank Receiver with Control High Lift on or off HAS HISTORY OF Malfunction

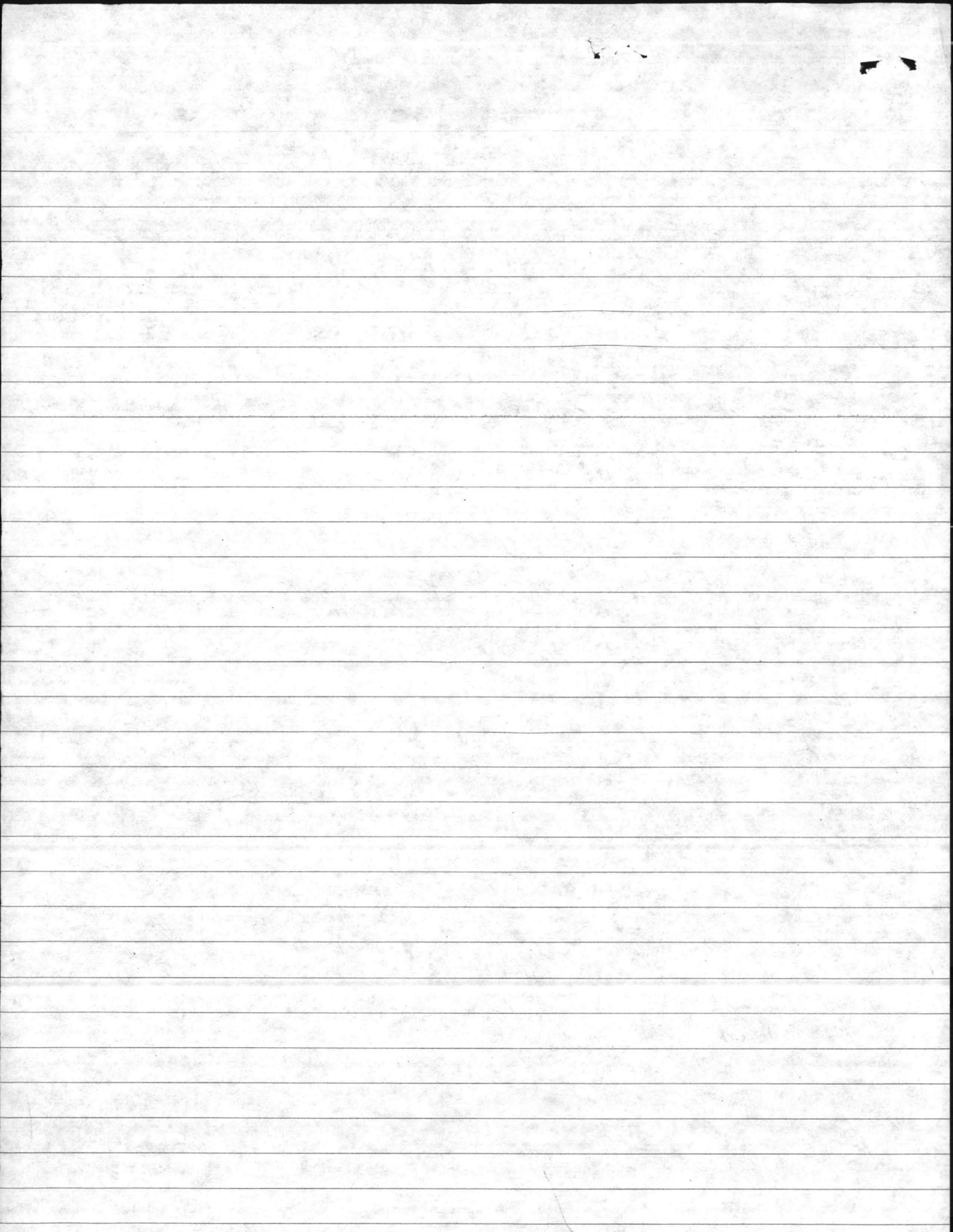
Functional Requirements - Page 16750-5  
Para 2.1.1 - New Computer will Monitor the Operation of & Provide Control in Manual & Auto.

2- No Filter Start/Stop Control. If Plant goes off 3, 4, 5 filters will run dry.

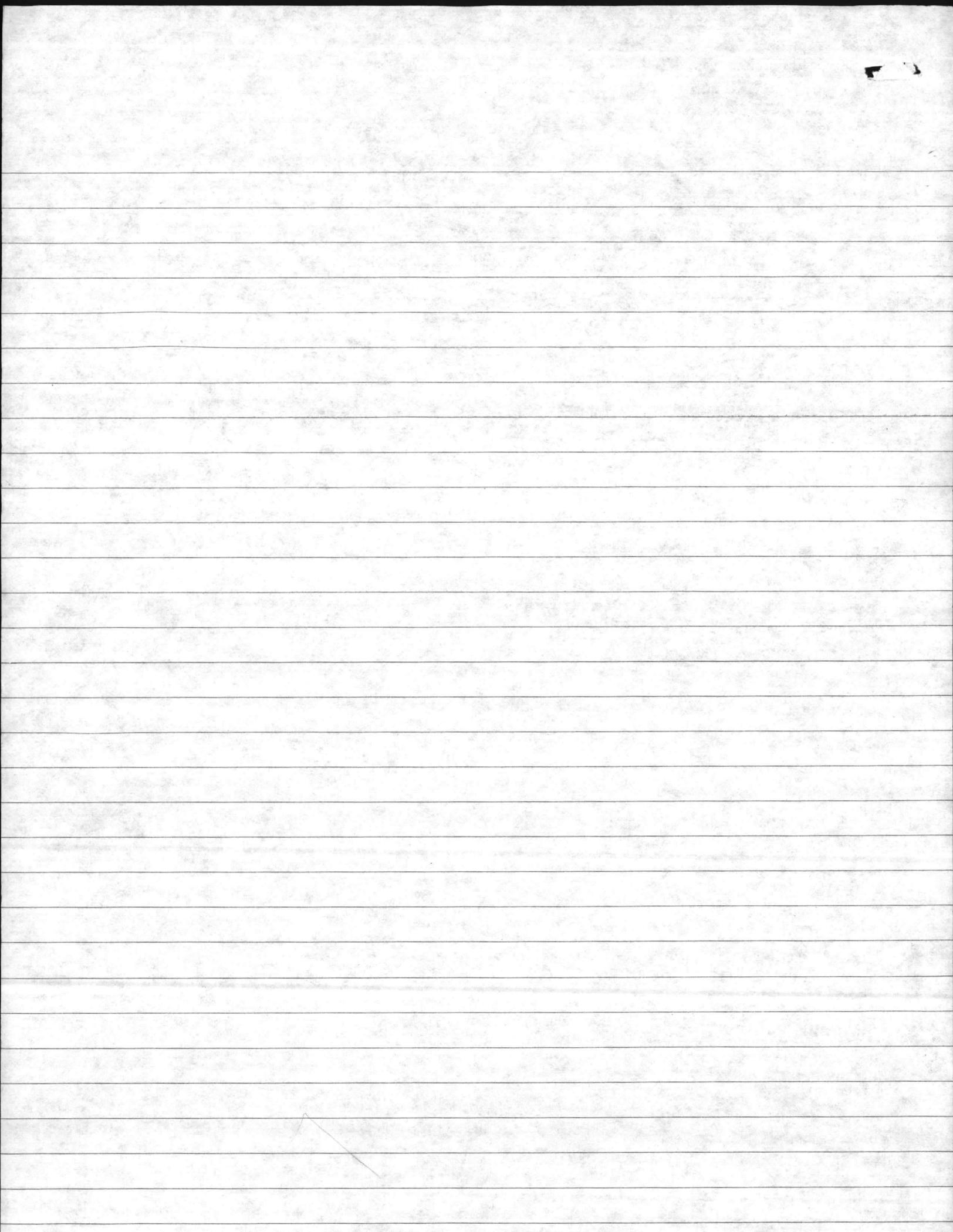
3- 1 + 2 filters will be controlled by present Bubble system. 3, 4, 5 will be Manual Set Point.

4- No Start/Stop Control on 1 + 2 filters for new Backward Pump.

5- No Start/Stop Control on 3, 4, 5 filters for Backward Pump at 670 Reservoir



- 6- Common Backwash line could result in 2 filters on Backwash at same time from 2 different Backwash Pumps
- 7- No Valve indicators on new filters, have to walk downstairs to see if valves open or closed.
- 8- Line system will not be fixed by Venturi - Does not work.  
Antiquated - out of date - no parts
- 9- will pumps cut off if computer is out.
- 10- if computer is out how will we tell levels, pumps on/off etc.
- 11- We do not want to isolate 3 Chlorinators, (1) Raw (1) Inflow (1) Effluent
- 12- Tie in existing Delvond with meter 4-20 ma to Microprocessor to receive Delvond flow at TT-38



*S. Miller*

DEPARTMENT OF THE NAVY  
**Memorandum**

**DATE:** 27 October 1987

**FROM:** Utilities System General Foreman

**TO:** Director, Utilities

**Via:** Utilities General Foreman

**SUBJ:** Contract #1644, Holcomb Blvd. Expansion

1. Since some misunderstanding exist concerning the Raw Water Booster Pumps performance the attached is submitted to clarify the problem.
2. All calibration, testing, assistance, given to the personnel at Public Works was accomplished to help solve the existing problem.
3. If detailed additional information is required please contact me at your earliest convenience.

B. M. FRAZELLE II

10/11/11

11

1. THE EXISTING SYSTEM WAS FULL OF AIR FOR ABOUT 2 MONTHS DUE TO NEW WATER LINE INSTALLATION. WE SPENT MUCH TIME BLEEDING AIR FROM SYSTEM.

2. OLD SIGNAL FROM VENTURI CONVERTED DIFFERENTIAL PRESSURE TO A 3 TO 15 P.S.I. PNEUMATIC SIGNAL WHICH RAN TO OUR EXISTING METER. THE CONTRACT CALLED ~~FROM~~ *FOR* THE CONTRACTOR TO TIE INTO THIS EXISTING 3 TO 15 P.S.I. SIGNAL AND TIE IT INTO NEW COMPUTER. IN ORDER FOR THE CONTRACTOR TO MAKE THIS TIE IN HE HAD TO INSTALL ANOTHER CONVERTER WHICH CONVERTED THE 3 TO 15 P.S.I. SIGNAL TO A 4 TO 20 Ma. SIGNAL AND TIE THIS INTO THE A TO D BOARD WHICH RUNS TO THE COMPUTER. THE A TO D BOARD HAS ITS OWN CALIBRATION AND WAS CALIBRATED BY THE CONTRACTOR.

WHEN WE CHECKED THE FLOWS THE RESULT WAS 200 TO 300 G.P.M. LESS THAN DESIGN FOR PUMP PERFORMANCE.

AFTER NUMEROUS TEST V. MARSHBURN REQUIRED THE CONTRACTOR TO INSTALL ANOTHER METER SINCE THE CONTRACTOR INSISTED THE PUMPS WERE PERFORMING AS PER DESIGN. THE CONTRACTOR INSTALLED AN ANNUBAR DIRECTLY INTO THE PIPING AND READ THE FLOWS FROM THE NEW RAW WATER PUMPS.

3. THE INSTRUMENT MECHANIC AT AROUND THE SAME TIME TOOK A NEW ELECTRONIC TRANSMITTER FROM THE OLD T.T. PLANT, PARALLELED THE SIGNAL FROM THE VENTURI BY TEEING OFF THE LOW AND HIGH SIDE OF THE VENTURI. THIS NEW SIGNAL BYPASSED THE 3 TO 15 P.S.I. SIGNAL AND WAS TIED DIRECTLY INTO THE COMPUTER A TO D BOARD. THE RESULTING COMPARISON WAS 100 G.P.M. LESS THAN THE ANNUBAR SIGNAL.

IT IS ANYONE'S GUESS WHICH SIGNAL IS MORE CORRECT. NEVERTHELESS THE PUMPS ARE NOT PUMPING PER DESIGN. IT APPEARS THERE WAS A DESIGN DEFICIENCY. THE PUMPS WERE DESIGNED WITH A MAXIMUM HEAD OF 39 FEET. AFTER RUN TIMES INCREASE ON THE SPIRATORS THE HEAD INCREASES TO 50 FEET OR APPEARS TO INCREASE SINCE THE PRESSURE IN THE SPIRATOR ROOM INCREASES. NUMEROUS GAUGES HAVE BEEN INSTALLED WITH A RESULTING INCREASE IN PRESSURE. LANTDIV AND THE A&E SAID THIS WOULD NOT AFFECT THE PUMPS AND THAT EVEN THOUGH THE SAND GREW 4 TO 5 FEET IN HEIGHT THIS WOULD NOT INCREASE THE HEAD.

100

## 670 HOLCOMB BLVD. MAJOR PROBLEMS

### COMPUTER PROBLEMS

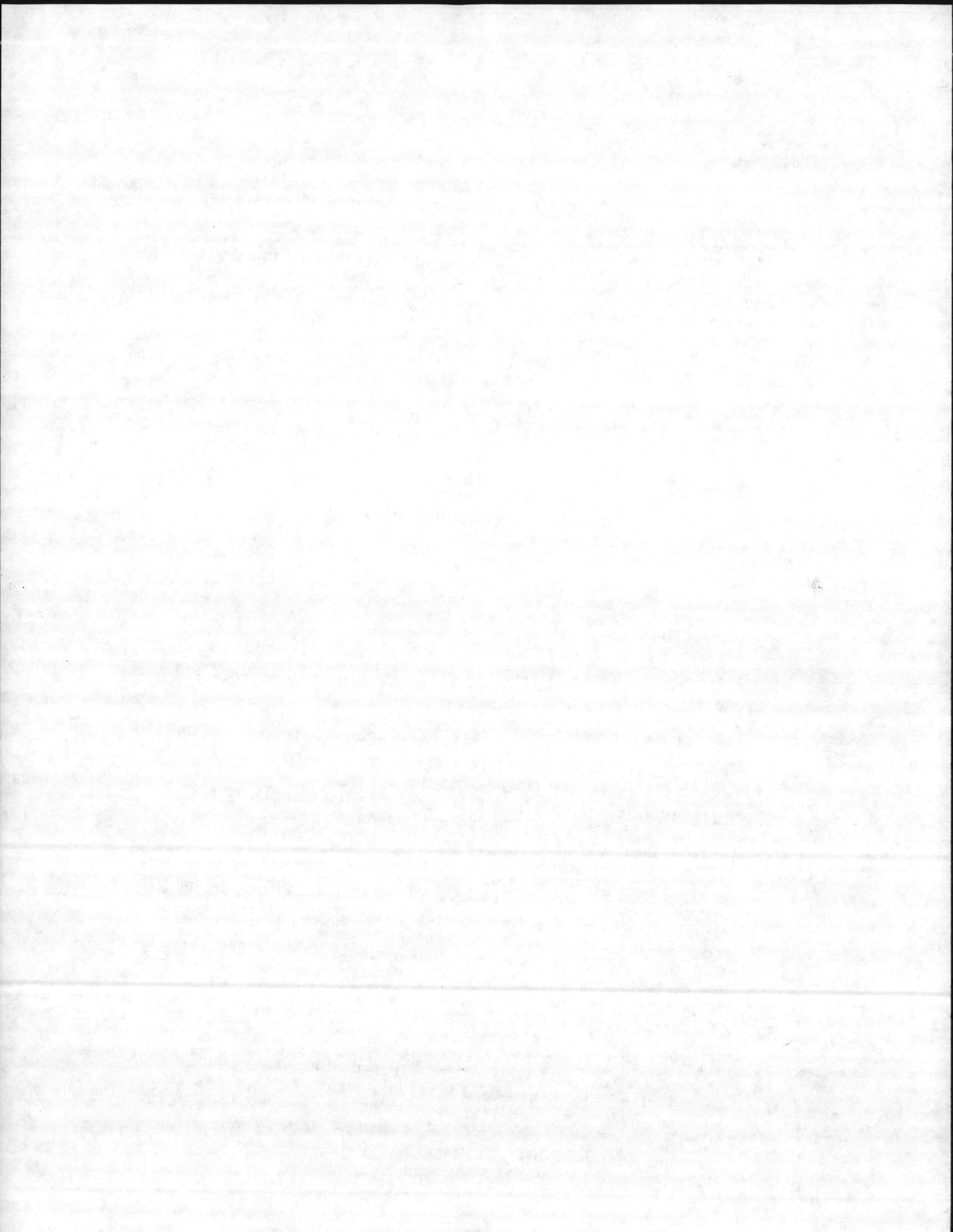
1. Print Screen Command locks out computer.
2. Computer activate command - slower than before, increased lag time between commands.
3. All meters and controls need calibration.
4. T.T. Elevated tank and Berkley Manor Elevated Tank Ground Fault Interrupters out.
5. Radio to 645 and the spare are gone. Taken by AQUATROL Representative.
6. Not enough spares provided as per contract.

### RAW WATER PROBLEMS

1. Wells 11, 12, 13, 14 flow decreased approx. 100 gallons per minute per well.
2. Wells 4, 8, 9, 13 were left pumping approx. 100 gallons per minute per well below design gallons per minute as required by specifications.
3. Raw Water Booster pumps will not pump capacity. T.D.H. not sufficient. Raw water reservoir has to be maintained at full capacity for pumps to pump.
4. Raw Water Influent Meter quit. Water damage in meter caused by leaking conduit. Conduit was required to be water tight.

### PLANT PROBLEMS

1. Filters will only run aprox. 6 to 8 hours between backwash intervals. Filters are air locking. Time between backwash should be approx. 100 hours. Suspected sand problem.
2. Surface wash nozzles need adjusting on surface wash arms on all filters.
3. All filter rate-of-flow and loss-of-head controls need calibration.
4. Effluent valves on #3, #4, #5 filters are leaking and will not seat off correctly. When plant shuts off filters run dry.
5. Influent valves to all new filters will only open if we have 2 high lift pumps running increasing pressure on distribution system.
6. Waste valves will not open unless the water level in the filter is below filter trough.
7. New backwash clock quit.
8. To switch from one backwash pump to another (new to old) and vice versa require manual switching of valves (copper taping). Specifications (as interpreted by requires automatic switching to be provided.
9. Acid feed system has never run. Many leaks. Never had start up or instructions.
10. New distribution at T.T. 39A has never run. Electrical Problem.
11. Rewash gauge (valve position indicator) to #4 filter quit.
12. Effluent valves to all filters (Rate-of-flow) go wide open if you switch from auto position.
13. All flow indicators need calibration.
14. Spiractor rate-of-flow valves are locked wide open. They do not work.
15. General landscaping and yard work very poor.
16. Numerous items on punch list were identified and would need checking out. The entire plant has never been punched to my knowledge. Numerous list have been compiled by Public Works inspectors (preliminary)  
SEE MR. HUNT, MR. L. WOOD, MR. VAN MARSHBURN.



8 - 2887

#1 + 2 pumps	2629	new
	2193	old

Filter	2512
--------	------

#1 pump	1775	new
	1423	old

#1 + 2 pump	2290	old
	2630	new
	2700	A Bar

Remate \$2700 / well  
95 all together

New eq w 1500  
2000  
999 remate



Started - #2 Raw Water Pump

Design 2100 g.p.m.

Pumped for 1 Hour. Dropped  
for 10" -

Calculated = 117,000 =  
1633 g.p.m.

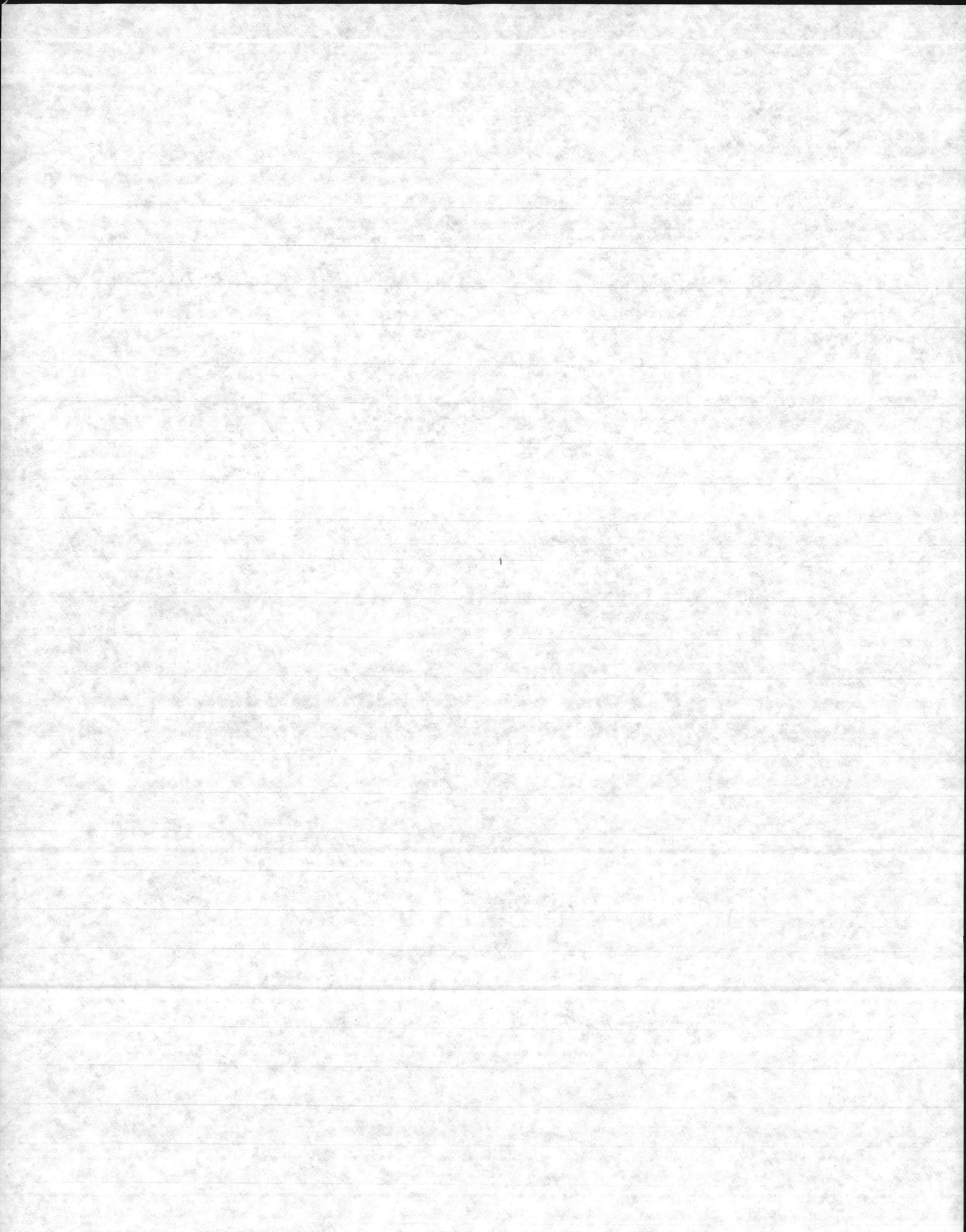
→ 1600 g.p.m.  
at 22½ psi on discharge + 1½ psi  
Section

- On Curve -

Dropped Pressure to 17 psi  
39.2 feet = 1860 g.p.m.

Dropped to 16 psi -  
36.9 feet = 1985 g.p.m.

Started #4 Pump with  
#2 Pump got 2970  
Should have 3500 g.p.m.



# Memorandum

DATE: 25 June 1987

FROM: Utilities System General Foreman

TO: Director, Utilities

Via: Utilities General Foreman

SUBJ: Contract #81-1644, Expansion of the Holcomb Blvd. Water Treatment Plant;  
Discrepancies Concerning

1. An operational test of the newly installed acid feed system at the Holcomb Blvd. Water Treatment Plant was done on 24 June 1987. Present were Mr. Fred Hill, Water Supply Consultant, N. C. Department of Natural Resources, Mr. S. Miller, Foreman, Water Treatment Plant Operator, and Mr. D. Hill, Water Treatment Plant Operator Leader. Mr. Fred Hill's assistance was requested since our preliminary testing, previously done, indicated possible design problems with feeding acid for p.H. control and stabilization of the lime softened water.

2. Samples were taken from the filter influent with and without acid feed. The average results were as follows:

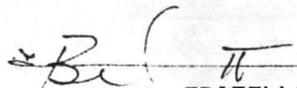
<u>HARDNESS</u>	<u>p.H.</u>
60 p.p.m.	9.1

The acid feed system was then started with the following results:

<u>HARDNESS</u>	<u>p.H.</u>
70 p.p.m.	8.4

3. During the initial design phase of the subject contract water treatment personnel requested re-carbonation be installed at this plant. The water treatment facility presently operates two re-carbonation systems and we are familiar with this type of treatment for stabilization. The systems work very well and achieve desired results, i.e. stabilization of water with no increase in hardness. In lieu of this system the A & E decided to design an acid feed system to achieve the same result. Numerous complaints were registered by water treatment personnel along with N. C. State Department of Natural Resources personnel. The acid feed system was subsequently approved and installed under subject contract.

4. Our test seem to indicate that a decrease in p.H. is accomplished with the acid feed but a resulting increase in the hardness is also accomplished defeating the softening process and increasing the operational cost. It is requested the services of professional chemist, engineers, etc. be procured to provide assistance concerning this problem.

  
BYRON M. FRAZELLE II



meet with Warr on  
these items.  
3-3-88

Design 1+2 at 2100 GPM

at 70 ft of head

3+4 at 1400 GPM at 70 ft of  
head

Bob Taylor of Seneca stated that  
we would pay HP premium with  
4<sup>th</sup> 2100 GPM pump.

Bob said that it would be better  
to go with new motor & switch gear  
and have the pump properly design,  
than try to run each pump  
throttle down to run 4 spiractor  
better on pump & less expensive.

Bob stated that the HP of motor  
& trim impeller could be change  
to insure proper head & GPM of each  
pump.

~~TC563 out~~

670 outlet on  
Alarm line ✓

671 - GUARD on AUX

268914 - Load test

Sadder

20 little cord  
on mispec

20 plug on floor fan

AS110 → micro wand

RR85 ✓

765 air compressor  
Guard  
guards not  
secure

22 cord on drink  
machine

22 fixture in digester  
office heater

TC563 - elect outlet  
lose plate

MP water cooler res.  
pal.

Ref in wrong  
place over  
elect. box