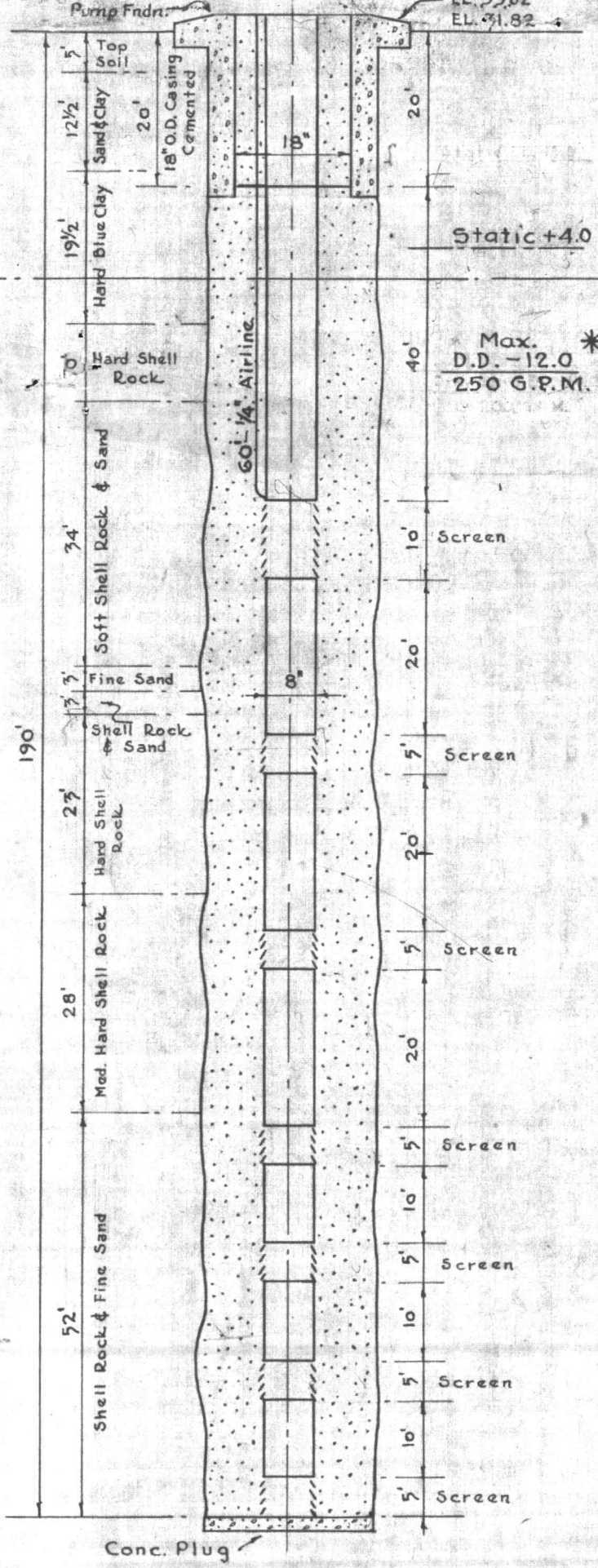


200 G.P.M. - SINGLE DRIVE - 7 1/2 H.P.

199 " " actual D.D. - 79
208 " " " D.D. - 84

EL. 33.82
EL. 31.82

Pump Fndt.



Static +4.0

Max. D.D. - 12.0 *
250 G.P.M.

Screen

Screen

Screen

Screen

Screen

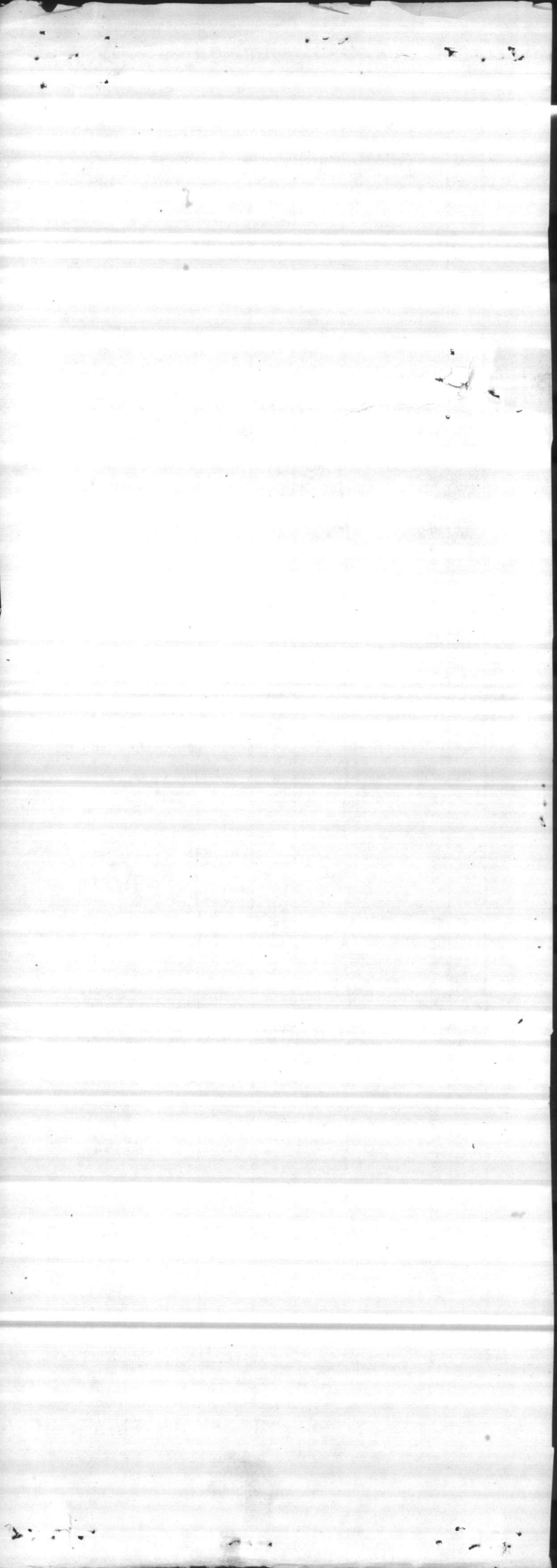
Screen

Screen

Conc. Plug

Armco Iron Screen Used In This Well

D.T.A. WELL No.12



PHYSICAL AND CHEMICAL ANALYSIS OF WATER				SAMPLE NO.
FROM: (Station or unit) <i>Wall 12 - Bldg 612</i>			DATE <i>8-8-57</i>	
TO: (Name and location of laboratory)				
SAMPLE FROM (Location of sampling point)				
COLLECTED BY <i>Withrow</i>	DATE <i>8-8-57</i>	HOUR	SOURCE (Designate ground, surface, raw, treated) <i>Raw</i>	
REASON FOR EXAMINATION		EXAMINATION REQUESTED BY		
NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.				
I. FIELD ANALYSIS		III. ROUTINE LABORATORY ANALYSIS		
1. pH	TEMPERATURE		(CHECK ONE)	
	°F	°C	REQUESTED	NOT REQUESTED
ITEM			PPM	
2. CARBON DIOXIDE (CO ₂)				
3. DISSOLVED OXYGEN (O ₂)				
4. HYDROGEN SULFIDE (H ₂ S)				
5. CHLORINE DEMAND (Cl ₂)				
FIELD ANALYSIS BY		P <i>0</i> MO <i>165</i>		
DATE OF ANALYSIS		4. TOTAL HARDNESS (CaCO ₃) <i>168</i>		
II. SPECIAL LABORATORY ANALYSES		5. NON-CARBONATE HARDNESS (CaCO ₃) (By Computation)		
Check (X) individual items to be included in the Special Analyses. Request determination only of those substances suspected of being present in significant amounts.		6. CARBONATE HARDNESS (CaCO ₃) (By Computation)		
		7. TOTAL DISSOLVED SOLIDS		
(X)	ITEM	PPM		ITEM
	1. As			9. CALCIUM (Ca) <i>64.8</i>
	2. Se			10. MAGNESIUM (Mg) <i>1.2</i>
	3. Pb			11. SODIUM (Na) AND POTASSIUM (K)
	4. B			12. HYDROXIDE (OH)* <i>0.0</i>
	5. Cu			13. BICARBONATE (HCO ₃)* <i>165.0</i>
	6. Zn			14. CARBONATE (CO ₃)* <i>0.0</i>
	7. Cr (Hexavalent)			15. SULFATE (SO ₄)
	8. PO			16. CHLORIDE (Cl) <i>10.0</i>
	9. Cd			17. NITRATE (NO ₃)
	10. CN			18. IRON (Fe) TOTAL <i>1.2</i>
	11. Phenolic Compounds (PPB)			19. MAGANESE (Mn)
	12. Others (Specify)			20. SILICA (SiO ₂)
	13.			21. FLUORIDE (F)
	14.			*State whether determined or computed from P and MO alkalinity.
	15.			
	16.			
REMARKS (Such as unusual appearance, taste, odor, etc.)				
LABORATORY ANALYSIS BY <i>Joshie</i>				DATE OF ANALYSIS <i>8-8-57</i>



SPECIAL LABORATORY ANALYSIS

THIS IS A SPECIAL ANALYSIS OF THE SAMPLE SUBMITTED TO THE LABORATORY FOR THE PURPOSE OF DETERMINING THE CONCENTRATION OF THE FOLLOWING SUBSTANCES:

1. CHLORIDE

2. SULFATE

3. NITRATE

4. PHOSPHATE

5. SILICA

6. IRON

7. COPPER

8. ZINC

9. MANGANESE

10. LEAD

11. CADMIUM

12. MERCURY

13. CHROMIUM

14. NICKEL

15. VANADIUM

16. COBALT

17. MANGANESE DIOXIDE

18. CHLORINE DIOXIDE

19. CHLORINE TRIOXIDE

20. CHLORINE PENTOXIDE

21. CHLORINE HEXOXIDE

22. CHLORINE SEPTOXIDE

23. CHLORINE OCTOXIDE

24. CHLORINE NONOXIDE

25. CHLORINE DECAOXIDE

26. CHLORINE UNDOCAOXIDE

27. CHLORINE DICHOXIDE

28. CHLORINE TRICHOXIDE

29. CHLORINE TETRACHOXIDE

30. CHLORINE PENTACHOXIDE

31. CHLORINE HEXACHOXIDE

32. CHLORINE SEPTACHOXIDE

33. CHLORINE OCTACHOXIDE

34. CHLORINE NONACHOXIDE

35. CHLORINE DECACHOXIDE

36. CHLORINE UNDECACHOXIDE

37. CHLORINE DODECACHOXIDE

38. CHLORINE TRIDECACHOXIDE

39. CHLORINE TETRADECACHOXIDE

40. CHLORINE PENTADECACHOXIDE

41. CHLORINE HEXADECACHOXIDE

42. CHLORINE HEPTADECACHOXIDE

43. CHLORINE OCTADECACHOXIDE

44. CHLORINE NINETEENOXIDE

45. CHLORINE TWENTYOXIDE

46. CHLORINE TWENTY-ONEOXIDE

47. CHLORINE TWENTY-TWOOXIDE

48. CHLORINE TWENTY-THREEOXIDE

49. CHLORINE TWENTY-FOUROXIDE

50. CHLORINE TWENTY-FIVEOXIDE

51. CHLORINE TWENTY-SIXOXIDE

52. CHLORINE TWENTY-SEVENOXIDE

53. CHLORINE TWENTY-EIGHTOXIDE

54. CHLORINE TWENTY-NINEOXIDE

55. CHLORINE THIRTYOXIDE

56. CHLORINE THIRTY-ONEOXIDE

57. CHLORINE THIRTY-TWOOXIDE

58. CHLORINE THIRTY-THREEOXIDE

59. CHLORINE THIRTY-FOUROXIDE

60. CHLORINE THIRTY-FIVEOXIDE

61. CHLORINE THIRTY-SIXOXIDE

62. CHLORINE THIRTY-SEVENOXIDE

63. CHLORINE THIRTY-EIGHTOXIDE

64. CHLORINE THIRTY-NINEOXIDE

65. CHLORINE FORTYOXIDE

66. CHLORINE FORTY-ONEOXIDE

67. CHLORINE FORTY-TWOOXIDE

68. CHLORINE FORTY-THREEOXIDE

69. CHLORINE FORTY-FOUROXIDE

70. CHLORINE FORTY-FIVEOXIDE

71. CHLORINE FORTY-SIXOXIDE

72. CHLORINE FORTY-SEVENOXIDE

73. CHLORINE FORTY-EIGHTOXIDE

74. CHLORINE FORTY-NINEOXIDE

75. CHLORINE FIFTYOXIDE

WELL #

612

LENGTH OF AIR LINE

STATIC LEVEL

PUMPING LEVEL

DRAW DOWN

DISCHARGE PRESSURE

CAP. PER FOOT OF DRAW DOWN

TOTAL CAP.

DATE

MAY 1 77

50

17'

25

25

30

192

25

25

28

201

26

24

26

214

27

23

24

219

27

23

22

222

REMARKS:

TOP SCREEN 60'
MAX. PUMPING LEVEL 50' FROM PUMP BASE
OR 10' ON AIR LINE WITH 60' AIRLINE

8-7-80 Pulled Pump - impeller rotted. NO Strainer,
Blow well

DEPTH OF WELL:

AIRLINE

LEVATION: +

DATE

INSTALLED: 1942
JUNE



Date	Well	G.P.M.	Line Stage	Static ft. guage ft.	D.D. guage	Ft. Of D.D.	Shut off head ft.
9-10-53	12	115	90	33.0	26.0	67.9	100 +
11	12	175	65	-	17.	16	-
9-14-53	12	190	51.0	-	11.7	21.3	92.5
9-19	12	200	48.5	-	11.7	21.3	

**FOREMAN'S
LABOR DISTRIBUTION
CARD**

NAVMC 10041-SD

DISTRIBUTION

DATE

NAME

ACCOUNT NO.

WORK ORDER NO.

SIGNATURE OF FOREMAN

GPO: 1951-O-959671

Bldg HP 612

Pump, Vertical turbine, Jayne
AR-3428 Complete with discharge head
size 5"

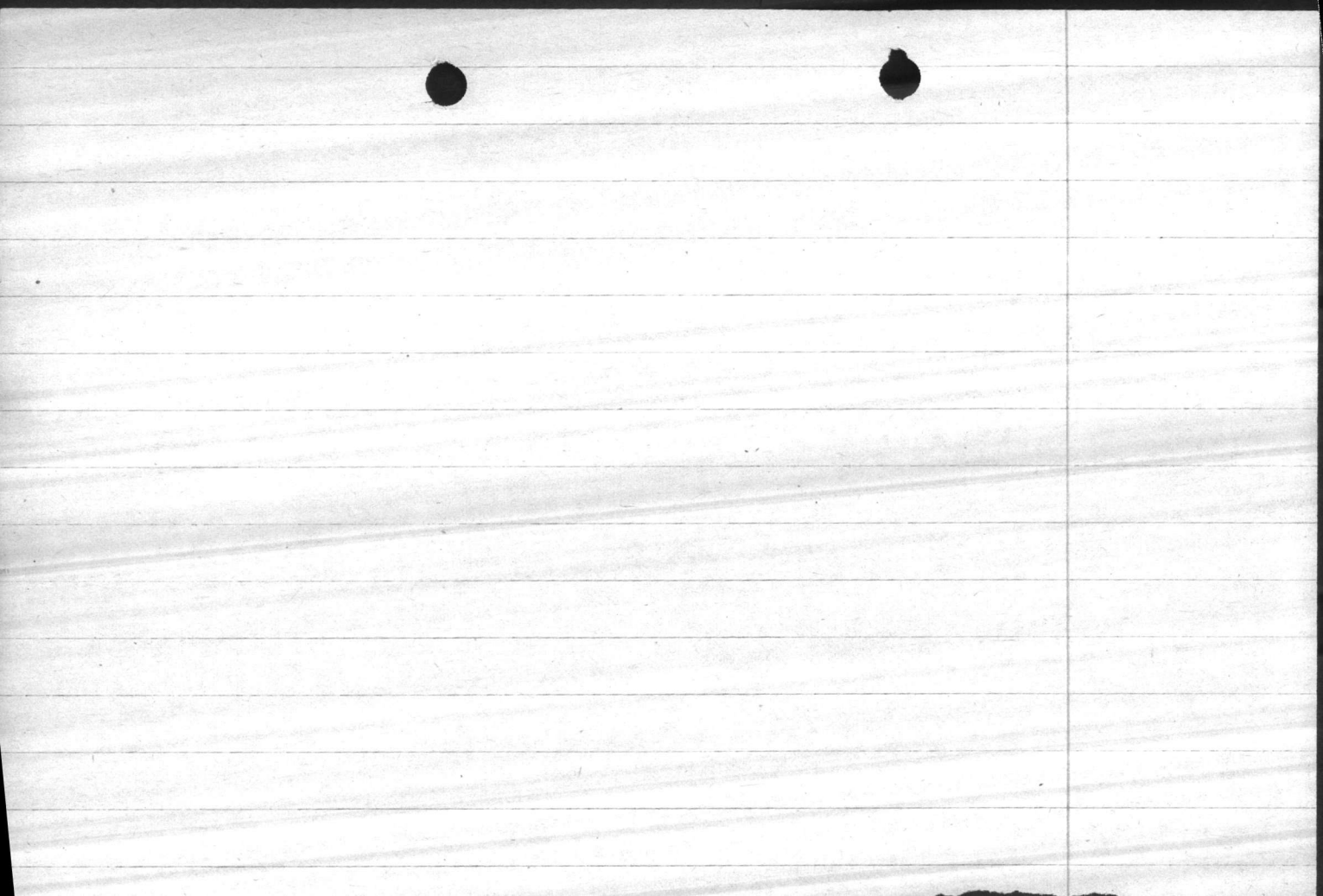
setting 50'

Capacity 200 GPM @ 84' TPDH

Bowl assembly 6 stage 7 MC

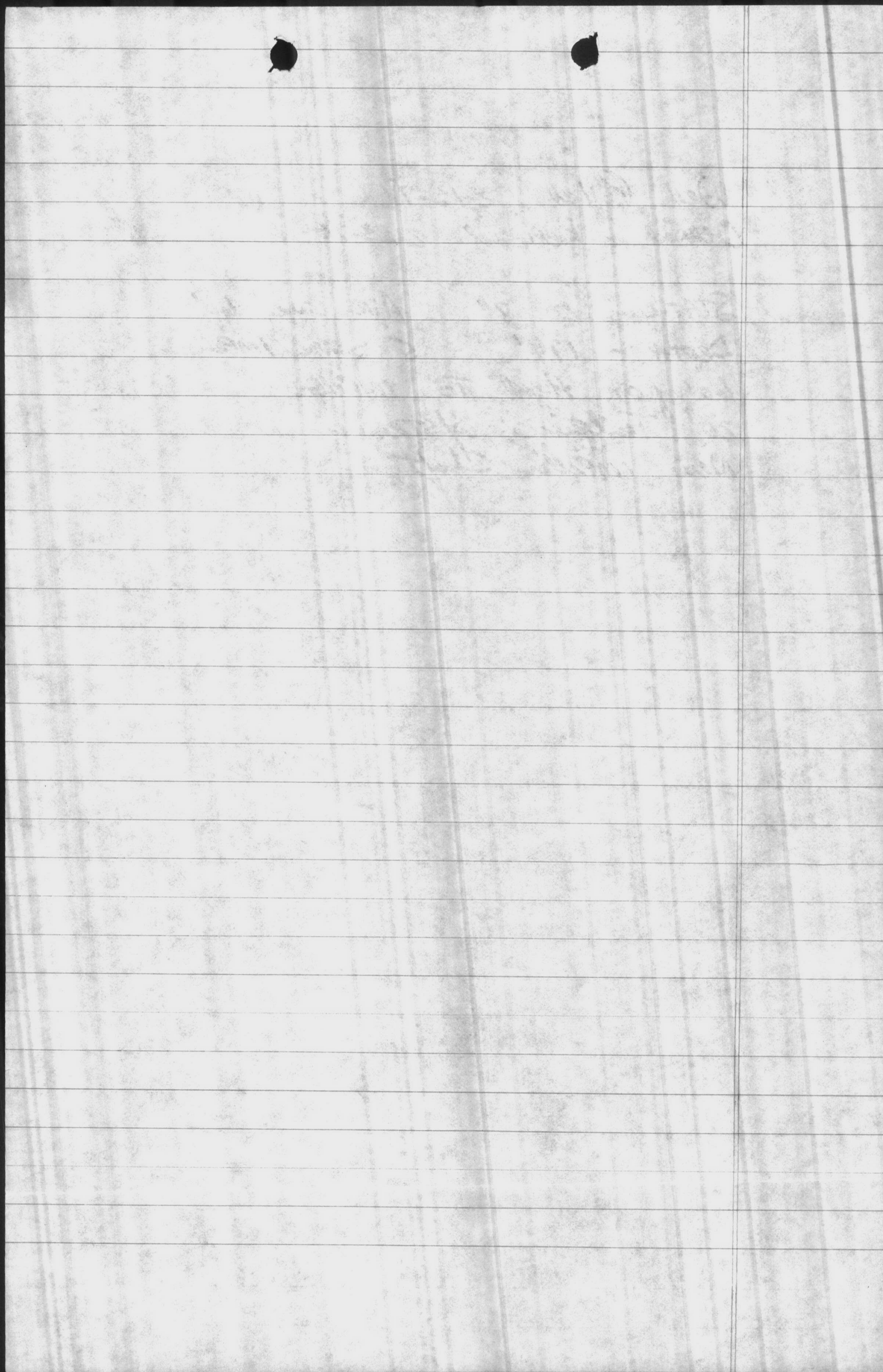
Impeller # B-1073

6" disc



Well Pulled 2-13-78
CLEANED + REPLACED 2-23-78

STATIC - 20' 8" AIR LINE 60'
DEPTH - 174' 5 STAGE IMPELLOR
60' from Head TO IMPELLOR
20' Tailpiece w/STRAINER
New IMPELLOR Shaft



8-1148
 new pump
 Installed

Well # 12

Date	Line Ft.	G.P.M.	D.D. El.	Static El.	Shut Off head FT.	D.D. Ft.	
6-4-53	48	100	+2.2	+4.3	?	6.5	60 FT. OLD AIR LINE
9-10-53	98	115	+2.22	+9.12	100+	6.9	58 FT. NEW AIR LINE
9-10-53		175	-7.	-	-	16.12	"
9-14-53	51	190	-12.18	-	92.5	21.3	"
10-19-53	48.5	200	-12.18	-	-	21.3.	"
7-28-54				32			
11/9/66		111		27	26 #		SE WELLS TEST.
8/11/69		30		27			
9-4-10		108	-7.2'	+10.8'		18'	

as of 3/1/67 well 12 has a Pomona pump on Layne Piers

Air Line - 58' (NEW LINE 9-10-53)



U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
OFFICE OF WATER DATA COORDINATION
INVENTORY OF HYDROLOGIC DATA STATIONS
QUALITY OF WATER

APPROVED.
Budget Bureau No. 42-R1485
Approval Expires June 30, 1968

1. AGENCY CODE MC	2. TYPE Q	3. LATITUDE ° ' " N 34 42 77	4. LONGITUDE ° ' " W 77 20 48	
6. AGENCY STATION NO.		7. STATION NAME		
8. DRAINAGE BASIN CODE No. Letter 612		9. STATE CODE HP	10. COUNTY CODE 20-612	11. COUNTY NAME
12. PERIOD OF RECORD Began Discontinued 06 N		13. <input type="checkbox"/> Continuous <input type="checkbox"/> Interruption Exceeds 1 Year 133	14. ON SLOW	
15. SITE 1942				
<input type="checkbox"/> 101 Stream <input type="checkbox"/> 102 Canal		<input type="checkbox"/> 103 Lake <input type="checkbox"/> 104 Reservoir <input type="checkbox"/> 105 Estuary		<input type="checkbox"/> 106 Spring <input checked="" type="checkbox"/> 107 Well <input checked="" type="checkbox"/> 110 Other
16. FREQUENCY OF MEASUREMENT				
<input type="checkbox"/> 201 Continuous Recorder <input type="checkbox"/> 202 Telemetered		<input type="checkbox"/> 203 Daily <input type="checkbox"/> 204 Weekly <input type="checkbox"/> 205 Monthly <input type="checkbox"/> 206 Quarterly		<input type="checkbox"/> 207 Seasonal <input type="checkbox"/> 208 Annual <input type="checkbox"/> 209 Other Periodic <input checked="" type="checkbox"/> 210 Occasional
17. TYPES OF DATA AVAILABLE				
Physical <input type="checkbox"/> 311 Temperature <input type="checkbox"/> 312 Specific Conductance <input type="checkbox"/> 313 Turbidity <input type="checkbox"/> 314 Color <input type="checkbox"/> 315 Odor <input type="checkbox"/> 316 Radioactivity <input type="checkbox"/> 317 pH (field) <input checked="" type="checkbox"/> 318 pH (lab) <input type="checkbox"/> 319 Eh <input type="checkbox"/> 320 Other		Chemical <input type="checkbox"/> 331 Dissolved solids <input checked="" type="checkbox"/> 332 Chlorides Only <input type="checkbox"/> 333 Nutrients (Nitrogen and phosphorus compounds) <input type="checkbox"/> 334 Common ions <input checked="" type="checkbox"/> 335 Hardness <input type="checkbox"/> 336 Radiochemical <input type="checkbox"/> 337 Dissolved oxygen <input type="checkbox"/> 338 Other Gases <input type="checkbox"/> 339 Other		Organic <input type="checkbox"/> 351 Pesticides (insecticides, herbicides, etc.) <input type="checkbox"/> 352 Synthetic detergents <input type="checkbox"/> 353 Other Biologic <input type="checkbox"/> 361 Coliforms <input type="checkbox"/> 362 Other Micro-organisms <input type="checkbox"/> 363 BOD <input type="checkbox"/> 364 Other Sediment <input type="checkbox"/> 371 Concentration <input type="checkbox"/> 372 Particle size <input type="checkbox"/> 373 Other
18. SUPPLEMENTARY DATA FOR SITE				
<input type="checkbox"/> 421 Surface Water Station <input type="checkbox"/> 422 Ground Water Station		<input type="checkbox"/> 423 Water Stage or Level <input checked="" type="checkbox"/> 424 Water discharge X		<input type="checkbox"/> 425 Time of Travel <input type="checkbox"/> 426 Drainage Area
19. STORAGE OF DATA				
<input type="checkbox"/> 501 Periodic Report <input type="checkbox"/> 502 Areal Report		<input checked="" type="checkbox"/> 503 Not Published <input type="checkbox"/> 504 Data on Punched Card		<input type="checkbox"/> 505 Data on Magnetic Tape <input type="checkbox"/> 506 Other
20. OFFICE AT WHICH DATA AVAILABLE				
Office _____				
BASE MAINTENANCE DEPARTMENT, UTILITIES DIVISION				
Street No. _____				
CITY, STATE, ZIP _____				City Code _____
MARINE CORPS BASE				0735
CAMP LEJEUNE, N. C. 28542				
21. OFFICE COMPLETING FORM				
22. COMPILER'S NAME _____				23. DATE
BASE MAINTENANCE DEPARTMENT				Month _____ Year _____
F. E. TEW, JR.				19 66



20'-0" 18" Casing set and cemented

Test Pumped with air lift

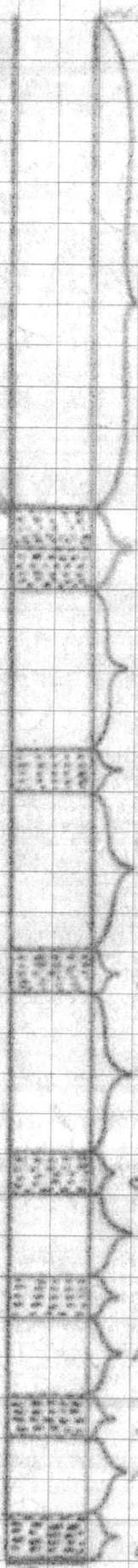
Well pumps 190 G.P.M. with 430' flow down below surface

Static 1640' below surface

Well 176' below surface to 25' below surface 177 3 minutes

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190

60" 2" air line



60' 8" PIPE

10' 8" SCREEN

20' 8" PIPE

5' 8" SCREEN

20' 8" PIPE

5' 8" SCREEN

10' 8" PIPE

5' 8" SCREEN

10' 8" PIPE

5' 8" SCREEN

10' 8" PIPE

5' 8" SCREEN

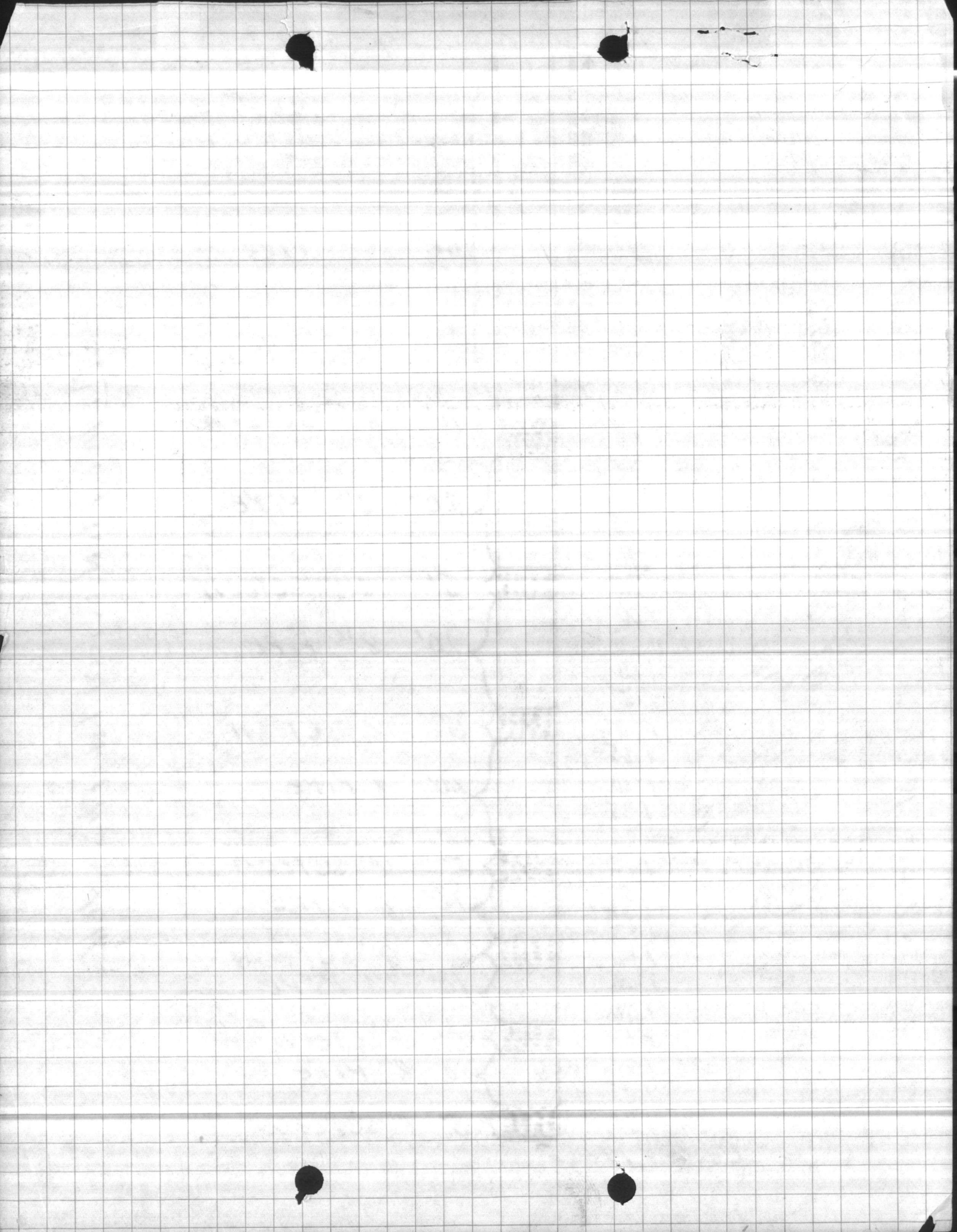
10' 8" PIPE

5' 8" SCREEN

Cement Plug

ARMED IRON SCREEN IN THIS WELL

Surface
Well # 12 Reg. area



LOG of formation W/ #12 176 and
finished at depth of 190 ft

0 To 5'	Top Soil
5' To 17.6"	fine sand and Clay mixed
17.6" To 37'	hard blue clay
37' To 47'	hard shell rock
47' To 81'	Soft shell Rock with lots of fine sand
81' To 84'	fine sand
84' To 87'	shell Rock and sand
87' To 110'	hard shell Rock
110' To 138'	Medium hard shell Rock
138' To 190'	Shell Rock and fine sand in thin layers
190' To 198'	fine Sandy Muck

$$\begin{array}{r} 43.0 \\ 16.85 \\ \hline 36.15 \end{array}$$
$$\begin{array}{r} 25.0 \\ 16.85 \\ \hline 8.15 \end{array}$$

Kellam

#12

WATER ANALYSIS

By N. H. Kellam

Date 6/19/42

Sample from Well No. 12

Total Solids _____ PPM Dissolved Solids _____ PPM

Suspended Solids _____ PPM Volatile Solids _____ PPM

Phenol. Alk. as CaCO₃ 0 PPM Silica as SiO₂ _____ PPM

Total Alk. " " 184 " Ferrous Iron as Fe _____ "

Carbonates " " 0 " Total Iron as Fe _____ "

Bicarbonates " " 184 " Aluminum as Al. _____ "

Chlorides as Cl. 15 " Calcium as Ca. _____ "

Sulphates as SO₄ _____ " Magnesium as Mg. _____ "

Nitrites as NO₂ _____ " Sodium as Na. _____ "

Carbon Dioxide as CO₂ _____ "

pH 7.4 Soap Hardness as CaCO₃ _____ PPM

Odor slight Turbidity 40

REMARKS air pump broke down and well was not pumped enough to clear up.

ANALYSIS

Date _____
Sample No. _____

Total Solids _____
Dissolved Solids _____

Aluminum as Al _____
Iron as Fe _____
Calcium as Ca _____
Magnesium as Mg _____
Sulfate as SO4 _____
Chloride as Cl _____
Carbon Dioxide as CO2 _____

Total Hardness as CaCO3 _____
Total _____

Marine Barracks
New River, N. C.
June 22, 1942

WELLS-PERMANENT WATER SUPPLY-Reg. Area
By Layne Atlantic Company

Report on Well No. 12 Reg. Area

Location: 2505 ft. west of station 355 + 57 on main access road as shown on M.B. Dwg. No. 521.

Date Drilled: June 1942

Drilling Equipment: Rotary Rig and Bits.

Status: Ground elev. 31.4

A 23" hole drilled to a depth of 20'. 20' of 18" steel casing set and the annular space filled with cement grout. A 17 $\frac{1}{2}$ " hole was drilled inside this casing to a total depth of 198'.

Log of Formation:

0 to 5'	Top soil
5 to 17.5	Fine sand and clay mixed
17.5' to 37'	Hard blue clay
37' to 47'	Hard shell rock
47' to 81'	Soft shell rock with lot of
81' to 84'	Fine sand (fine sand)
84' to 87'	Shell rock and sand
87' to 110'	Hard shell rock
110' to 138'	Medium hard shell rock
138' to 190'	Shell rock with thin layers of
190' to 198'	Fine sandy muck (fine sand)

Remarks: Due to the presence of fine sand in the shell rock it was necessary to construct a gravel wall well.

Well finished at 190'.

Gravel wall construction: 190' of 8" steel pipe with sections of armco iron screen was set in the well and the annular space was filled with $\frac{1}{2}$ " gravel.

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Second main line of faint text in the upper section.

Third main line of faint text, possibly a date or reference.

Fourth main line of faint text.

Fifth main line of faint text.

Large block of faint text, possibly a paragraph or list.

Section of faint text, possibly containing a signature or name.

Section of faint text, possibly a date or reference.

Section of faint text, possibly a signature or name.

Final section of faint text at the bottom of the page.

W E L L D A T A

Well No. 12

SPECIFICATIONS

Pump Base Elevation	33.8
Ground Elevation	31.8
Static Elevation	15.0
Maximum allowed Drawdown	-14.0
Total Discharge	200 G.P.M.
Total Head	90 Feet

TEST

190 G.P.M.	24#	Pressure	Drawdown	+1.3
200 G.P.M.	22#	Pressure	Drawdown	-0.3
220 G.P.M.	20#	Pressure	Drawdown	-1.3
250 G.P.M.	17#	Pressure	Drawdown	-2.5

Recovers to elevation + 13.0 in three (3) minutes.

Air line 62.2

Elev. DP 6702 33.8

W. E. B. DUBOIS

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1895

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Log of Screen Settings:	0 to 60'	8" pipe
	60 to 70'	8" screen
	70 to 90	8" pipe
	90 to 95	8" screen
	95 to 115	8" pipe
	115 to 120	8" screen
	120 to 140	8" pipe
	140 to 145	8" screen
	145 to 155	8" pipe
	155 to 160	8" screen
	160 to 170	8" pipe
	170 to 175	8" screen
	175 to 185	8" pipe
	185 to 190	8" screen

40' of screen in all was placed in this well.

Air Line: 60' of $\frac{1}{2}$ " pipe was welded to the 8" pipe for air line.

Static Level: 16.85' below surface.

Pumping: This well was pumped with air lift and flow was measured with a 12" weir. Well pumps 190 G.P.M. with a 36.15' D.D. from static level. Recovers to 8.15' below static in 3 minutes.

The air pump broke down before this well was completely cleared up and no complete chemical analysis was made.

N. H. Kellum
Asst. Chem. Eng.

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W E L L D A T A

Well No. 12

SPECIFICATIONS

Pump Base Elevation	33.8
Ground Elevation	31.8
Static Elevation	15.0
Maximum allowed Drawdown	-14.0
Total Discharge	200 G.P.M.
Total Head	90 Feet

TEST

190 G.P.M.	24 $\frac{1}{2}$	Pressure	Drawdown	+1.3
200 G.P.M.	22 $\frac{1}{2}$	Pressure	Drawdown	-0.3
220 G.P.M.	20 $\frac{1}{2}$	Pressure	Drawdown	-1.3
250 G.P.M.	17 $\frac{1}{2}$	Pressure	Drawdown	-2.5

R_g covers to elevation + 13.0 in three (3) minutes.



PUMPING TEST

AT

WELL NO. 12

Hadnot Point

(Location)

Shut-Off Head Pressure..... 29

Static Level Reading from height of gauge on base... 31 ft.

26 ~~60~~ Lb. Head Pressure.....G.P.M. 100

D/d..... 33

24 ~~55~~ Lb. Head Pressure.....G.P.M. 132 1/2

D/d..... 38

22 ~~50~~ Lb. Head Pressure.....G.P.M. 150

D/d..... 41

20 ~~45~~ Lb. Head Pressure.....G.P.M. 170

D/d..... 43

17 ~~40~~ Lb. Head Pressure.....G.P.M. 200

D/d..... 45

Well Recovers to 33 Ft. in 2 Minutes.

Date Tested

July 11th. 1945

this well will pump some sand at 140 G.P.M.
or more

612

