UMAT 2075

UMAT

RECEIVED
JAN 16 1958
STATE ENGINEER
SALEM, OREGON

4N/28-11N(1)

APPLICATION No.
PERMIT No. G 763
WELL No. HERMISTON No. 3
Umatilla Co.

REPORT ON COMPLETION OF WELL

DATE OF REPORT DECEMBER, 1957

1. LOCATION OF WELL: SE¼, SW¼, SW¼ OF SECTION 11 TWP. 4 N PGE. 28 E, W.M.
2. NAME OF NEAREST NATURAL SURFACE STREAM UMATILLA RIVER
3. DISTANCE FROM WELL TO THAT STREAM: ABOUT 2 MILES
4. IF THE WELL IS LESS THAN 1300 FEET FROM A NATURAL SURFACE STREAM, GIVE THE DIFFERENCE IN ELEVATION BETWEEN THE GROUND SURFACE AT THE WELL AND THE LOWEST POINT IN STREAM CHANNEL: _____ FEET.
5. DATE OF BEGINNING DRILLING OR DIGGING JULY 16, 1954
6. DATE WELL WAS COMPLETED OCTOBER 5, 1954

7. LOG OF MATERIALS ENCOUNTERED

CHARACTER OF MATERIAL	DEPTH AT WHICH ENCOUNTERED	THICKNESS OF STRATUM
GRAVEL & ROCK	AT SURFACE	28 FT.
SOFT GREEN SAND & GRAVEL	28 FT.	27 FT.
HARD BROWN BASALT	55 FT.	5 FT.
HARD BLACK BASALT	60 FT.	118 FT.
SOFT GREEN CLAY	178 FT.	7 FT.
HARD TO MEDIUM BLACK BASALT WITH SOME SOFT BASALT	185 FT.	763 FT.
BROWN, BLUE, WHITE, STICKY CLAY	948 FT.	7 FT.
MEDIUM BLACK BASALT	955 FT.	5 FT.

REMARKS: _____

WELL INFORMATION

8. DIAMETER OF WELL 24, 20, 16, 15, 12 INCHES. DEPTH OF WELL 962 FEET.
9. DEPTH AT WHICH WATER WAS FIRST ENCOUNTERED 655 FEET.
10. WATER LEVEL WHEN COMPLETED: 12 FEET BELOW GROUND SURFACE.
11. ADDITIONAL INFORMATION REGARDING WELL; SUCH AS SOIL CONDITIONS, QUICK SAND, CAVES, OBSTRUCTIONS, ROCK, ETC.: CAVING ENCOUNTERED AT 542', 628-652', 740' AND 950'

INFORMATION ON PERMANENT PUMP

12. MANUFACTURER OF PUMP: FAIRBANKS, MORSE & Co.
13. ADDRESS: CHICAGO 5, ILLINOIS
14. DATA ON NAME OR BASE PLATE:
15. DATA ON PUMP BOWL ASSEMBLY:
16. SIZE OF PUMP: 14"
17. RATED CAPACITY: 1500 GALLONS PER MINUTE.
18. RATED SPEED: 1750 REVOLUTIONS PER MINUTE.
19. NUMBER OF STAGES: SINGLE STAGE
20. SIZE OF INTAKE PIPE: 10"

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21. SIZE OF DISCHARGE PIPE: 10"
22. LENGTH OF INTAKE PIPE: 10'
23. LENGTH OF DISCHARGE PIPE: 100' OF COLUMN AND SHAFT
24. SUCTION LIFT: (DIFFERENCE IN ELEVATION BETWEEN WATER SURFACE IN WELL AND PUMP)
25. DISCHARGE LIFT: (DIFFERENCE IN ELEVATION BETWEEN PUMP AND END OF DISCHARGE LINE) 75' - 85'
26. DEPTH OF PUMP INTAKE BELOW GROUND SURFACE: 115 ± FEET.
27. REMARKS: DEEP WELL PUMP DISCHARGES INTO AN AERATION TANK FROM WHICH A FAIRBANKS, MORSE BOOSTER PUMP DELIVERS WATER TO THE CITY MAINS. THE BOOSTER PUMP IS A HORIZONTAL SPLIT CASE CENTRIFUGAL TYPE OF 6" SUCTION AND 5" DISCHARGE WITH A 75 HP ELECTRIC MOTOR DRIVING IT AT 1750 RPM TO DELIVER 1500 GPM AT 165' HEAD.

MOTOR OR ENGINE INFORMATION

28. NAME OF MANUFACTURER: FAIRBANKS, MORSE & Co.
29. ADRESS: CHICAGO 5, ILLINOIS
30. TYPE OF MOTOR OR ENGINE: VERTICAL HOLLOW SHAFT
31. DATA ON NAME OR BASE PLATE: 40 HP, 440 V, 3 PHASE, 60 CYCLE, 1750 RPM
32. RATED HORSEPOWER: 40
33. RATED SPEED OF MOTOR OR ENGINE: 1700 - 1800 REVOLUTIONS PER MINUTE
34. RATED CAPACITY OF PUMP (WITH DESCRIBED MOTOR)

1500	G.P.M. AT	82	FT. HEAD
1200	G.P.M. AT	90	FT. HEAD
	G.P.M. AT		FT. HEAD

35. REMARKS:

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LOG OF WELL: (DESCRIBE EACH STRATUM ORFORMATION CLEARLY, INDICATE IF WATER BEARING, AND GIVE THICKNESS AND DEPTH AS INDICATED.)

CHARACTER OF MATERIAL	DEPTH AT WHICH ENCOUNTERED	THICKNESS OF STRATUM	
GRAVEL & ROCK	AT SURFACE	28 FT.	
SOFT GREEN SAND & GRAVEL	28 FT	27 FT.	
HARD BROWN BASALT	55 FT.	5 FT.	
HARD BLACK BASALT	60 FT.	2 FT.	
STREAK BLUE SHALE	62 FT.	0.5 FT.	
HARD BLACK BASALT	62.5 FT	115.5 FT.	
SOFT GREEN CLAY	178 FT.	7 FT.	
MEDIUM BLACK BASALT	185 FT.	35 FT.	
HARD BLACK BASALT	220 FT.	20 FT.	
SOFT BLACK BASALT	240 FT.	10 FT.	
SOFT BLACK BASALT & SHALE	250 FT.	35 FT.	
HARD BLACK BASALT	285 FT.	22 FT.	
MEDIUM BLACK BASALT	307 FT.	38 FT.	
HARD BLACK BASALT	345 FT.	40 FT.	
MEDIUM BLACK BROKEN BASALT	385 FT.	65 FT.	
HARD BLACK BASALT	450 FT.	100 FT.	
MEDIUM BLACK BASALT	550 FT.	10 FT.	
MEDIUM BLACK BROKEN BASALT	560 FT.	5 FT.	
HARD BLACK BROKEN BASALT	565 FT.	5 FT.	
MEDIUM BLACK BROKEN BASALT	570 FT.	6 FT.	
HARD BLACK BASALT	576 FT.	4 FT.	
MEDIUM BLACK BROKEN BASALT	580 FT.	30 FT.	
HARD BLACK BASALT	610 FT.	6 FT.	
MEDIUM BLACK BROKEN BASALT	616 FT.	14 FT.	
HARD BLACK BASALT	630 FT.	13 FT.	
MEDIUM BLACK BROKEN BASALT	643 FT.	12 FT.	
HARD BLACK BROKEN BASALT	655 FT.	9 FT.	(SOME WAT
HARD BLACK BASALT	664 FT.	19 FT.	IN BROKE
MEDIUM BLACK BROKEN BASALT	683 FT.	2 FT.	FORMATIO
HARD BLACK BROKEN BASALT	685 FT.	10 FT.	
MEDIUM BLACK BROKEN BASALT	695 FT.	45 FT.	
HARD BLACK BASALT	740 FT.	95 FT.	
SOFT BLACK BASALT	835 FT.	4 FT.	
HARD BLACK BASALT	839 FT.	24 FT.	
SOFT BLACK BASALT	863 FT.	2 FT.	
HARD BLACK BASALT	865 FT.	23 FT.	
MEDIUM BLACK BASALT	888 FT.	7 FT.	
HARD BLACK BASALT	895 FT.	5 FT.	
MEDIUM BLACK BASALT	900 FT.	20 FT.	
HARD BLACK BASALT	920 FT.	4 FT.	
MEDIUM BLACK BASALT	924 FT.	16 FT.	
HARD BLACK BASALT	940 FT.	4 FT.	
MEDIUM BLACK BASALT	944 FT.	4 FT.	
BROWN, BLUE, WHITE, STICKY CLAY	948 FT.	7 FT.	
MEDIUM BLACK BASALT	955 FT.	5 FT.	

FINAL LOG - 962 FT.

UMAT **UMAT 2075**

4N/28-11N(1)

UMAT

LOG OF TWENTY-FOUR HOUR PUMPING TEST

CITY OF HERMISTON WELL NO. 3

November 1-2, 1954

General Data

A. Location of Well No. 3: North 65° East 1000 feet from the Southwest corner of Section 11, Township 4 North, Range 28 East, W.M.

B. Dimensions of Well No. 3:

Depth: 962 feet
Inner Casing: 20" Dia. to 53' depth
16" Dia. to 93' depth
Uncased Hole in Rock: 15" Dia. to 329' depth
12" Dia. to 962' depth

C. Well Driller: A. A. Durand & Son, Walla Walla, Washington.

D. Test Pumping: By A. A. Durand & Son (Hooper Brown, Operator-In-Charge).

E. Test Pump Data: Pump - Peerless 6-stage 12 HXA, with 160' of 10" column and shaft
Driver - Buda JL 1335

F. Test Observations: By James H. Reid, Consulting Engineer;
E. F. Palmer, City Superintendent of Public Works.

G. Water Level Measurements: By water level gauge connected to air line extending 158' below top of casing.

H. Discharge Measurements: By measurement of pressure head on sharp-edged orifices at outlet end of 10" discharge pipes, using orifice calibrations from Purdue University.

JAMES H. REID & ASSOCIATES
Consulting Engineers
420 Bell Street
Edmonds, Washington

LOG OF TWENTY-FOUR HOUR PUMPING TEST

CITY OF HERMISTON WELL NO.3

TIME	Water Level Well #3	Drawdown in Feet Well #3	Orifice Head In Inches	Gallons Per Minute	Water Temp. In Deg. F.	REMARKS
Nov. 1, 1954						
11:10 A.M.	12'	0	0	0		Static Water level in Well #3 before test
11:12 A.M.	45'	33'	26"	1060	69°	7" Orifice in 10" Discharge pipe
11:23 A.M.	45'	33'	25¼"	1050		Water level 17' in Well #1
11:30 A.M.	45'	33'	25¼"	1050		
11:43 A.M.					71°	
11:55 A.M.	99'	87'	40½"	2000		8" Orifice in 10" Discharge pipe
12:10 P.M.	101'	89'	40½"	2000		
12:30 P.M.	103'	91'	40¼"	1990		
12:40 P.M.	107'	95'	41"	2015		
12:50 P.M.	107'	95'	41¼"	2020		Water level 25' in Well #1
1:25 P.M.	109'	97'	41¼"	2020	74°	
1:45 P.M.	110'	98'	41¼"	2020	74°	
2:10 P.M.	108' *		41¼"	2020		Pump at Well #1 started at 2:10 P.M.
2:40 P.M.	113'	101'	39¼"	1965		
3:00 P.M.	114'	102'	39¼"	1960		
3:13 P.M.	115'	103'	39¼"	1960		
3:30 P.M.	114'	102'	39"	1955		
3:45 P.M.	115'	103'	39¼"	1960	74°	
4:00 P.M.	118'	106'	40-3/4"	2000	74°	
4:02 P.M.	-	-	24½"	1520		
4:20 P.M.	87'	75'	24-1/4"	1535		Pump at Well #1 stopped at 4:20 P.M.
4:50 P.M.	82'	70'	13;13-1/2	1550		Two 7" Orifices in 10" Discharge pipes
5:40 P.M.	79'	67'	13;13-1/2	1550		

* Variation in drawdown due to brief stoppage of test pump at 2:05 - 2:07 P.M.

4N/28-11W(1)

HOUR	Depth to W.S. Below Casing	Feet of Drawdown	Orifice Head (Inches)	G P.M.	Water Temp.	REMARKS
Nov. 1						
6:05 P.M.	77'	65'	13;13	1520		
7:00 P.M.	75'	63'	12½;12½	1480		
7:15 P.M.	75½'	-	12-3/4; 12-3/4	1500		Pump at Well #1 started at 7:25 P.M.
7:45 P.M.	79'	67'	13¼;13¼	1528		
7:55 P.M.	80'		12½;12½	1480		
8:15 P.M.	-	-	-	-	-	Changed to one 8" Orifice in 10" discharge pipe (to South)
8:30 P.M.	85'	73'	25 3/4	1580		
9:00 P.M.	84'	72'	24	1525		Pump at Well #1 stopped at 9:20 P.M.
9:30 P.M.	83'	71'	24¼	1530		
10:00 P.M.	78'	66'	23½	1515		
10:30 P.M.	77'	65'	23½	1515		
11:00 P.M.	76'	64'	23½	1515		
11:30 P.M.	75'	63'	23¼	1507		
12:00	75'	63'	23½	1515		

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HOUR	Depth to W.S. Below Casing	Feet of Drawdown	Orifice Head (Inches)	G P.M.	Water Temp.	REMARKS
Nov. 2						
12:30 A.M.	74'	62'	23½	1515		
1:00 A.M.	74'	62'	23½	1515		
1:30 A.M.	75'	63'	23-3/4	1520		
2:00 A.M.	73'	61'	23	1500		
2:05 A.M.	74'	62'	23-3/4	1520		Operator's Note: Well is quite sensitive and responds to immediate throttle action of engine which indicates a constant.
2:30 A.M.	74'	62'	23-3/4	1520		
3:00 A.M.	74'	62'	23-3/4	1520		
3:30 A.M.	74'	62'	23-3/4	1520		
4:00 A.M.	78'	66'	23½	1515		Pump at Well #1 started at 3:45 A.M.
4:30 A.M.	78'	66'	22½	1486		
4:35 A.M.	80'	68'	24¼	1536		
5:00 A.M.	83'	71'	24	1529		Pump at Well #1 stopped 5:20 A.M.
5:30 A.M.	81'	69'	24	1529		
6:00 A.M.	76'	64'	24	1529		
6:30 A.M.	75'	63'	24	1529	76°	
7:00 A.M.	74'	62'	23½	1515		Water level 22' in Well #1 at 6:45 A.M.

4N/2e-11N/1

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4N/28-11N(1)

HOUR	Depth to W.S. Below Casing	Feet of Drawdown	Orifice Head (Inches)	G P.M.	Water Temp.	REMARKS
Nov. 2						
7:30 A.M.	-	-	24	1529		
8:00 A.M.	-	-	24	1529		
8:30 A.M.	74'	62'	23	1500		Pump at Well #1 started at 8:30 A.M.
9:00 A.M.	76'	64'	24	1529		
9:15 A.M.	80'	68'	23½	1510		Water level 64' in Well #1 at 9:15 A.M.
9:45 A.M.	81'	69'	23½	1515		Water level 66' in Well #1 at 9:40 A.M.
10:15 A.M.	83'	71'	23½	1515		Water level 67' in Well #1 at 10:10 A.M.
10:25 A.M.	142'	130'	55	2315	75°	
10:35 A.M.	144'	132'	54½	2315		
10:45 A.M.	146'	134'	13½;12½	2315		Two 8" Orifices in 10" Discharge pipes
11:05 A.M.	146.5'	134.5'	53½	2300		One 8" Orifice in 10" Discharge pipe
11:06 A.M.	146.5'	134.5'	0	0		Water level 73' in Well #1 at 10:50 A.M.
11:06.5	36	24				Pump at Well No. 1 stopped at 11:05 A.M.
11:07 A.M.	37	25				Test Pump stopped at 11:06 A.M.
11:08 A.M.	39	27				
11:09 A.M.	38	26				
11:10 A.M.	36	24				
11:11 A.M.	35	23				
11:12 A.M.	33	21				
11:15 A.M.	30	18				
11:18 A.M.	26	14				
11:20 A.M.	24	12				
11:25 A.M.	21	9				
11:30 A.M.	19	7				
11:35 A.M.	17	5				
11:40 A.M.	15	3				
11:45 A.M.	14	2				

STATE ENGINEER
Salem, Oregon

UMAT 2075

RECEIVED
DEC 11 1957
WATER RESOURCES DEPT.
SALEM, OREGON

State Well No. 4N/28-11N1

County Umatilla

Application No. .....

Chemical Analysis

OWNER City of Hermiston ..... OWNER'S NO. 3

ANALYST Oregon State Board of Health ..... Address .....

Date of Collection 8/10/50

Point of Collection .....

	P.P.M.	E.P.M.
Silica (SiO_2)		
Iron (Fe) Total		
Manganese (Mn)		
Calcium (Ca)		
Magnesium (Mg)		
Sodium (Na)		
Potassium (K)		
Bicarbonate (HCO_3)	112.	
Carbonate (CO_3)	28.	
Sulfate (SO_4)		
Chloride (Cl)	23.	
Fluoride (F)	1.7	
Nitrate (NO_3)		
Boron (B)		
Dissolved Solids	239.	
Hardness as $CaCO_3$	15.	
Specific Conductance (Micromhos at 25°C)		
pH	8.4	
Percent Sodium		
Sodium Absorption Ratio (S.A.R.)		
CLASS		

State Printing 89313

UMAT 2075 Umatilla 4N/28-11N(1)

Oregon State Board of Health

SANITARY ENGINEERING LABORATORY

REPORT OF MINERAL ANALYSIS OF WATER

Location of source Hermiston Charles Tracts Description of source deep well

Analysis by MHP Date 1/6/55 Collected by _____ Date 9/21/54

RESULTS

	Parts per million
Turbidity	5
Color: Apparent _____ True	2
Odor: Hot _____ Cold	
Total Solids	669
Loss on Ignition	100
Silicon (SiO_2)	50
Chloride (Cl)	20
Sulfate (SO_4)	165
Calcium (Ca)	36
Magnesium (Mg)	46
Aluminum (Al)	0
Orthophosphates (PO_4)	.05
Metaphosphates $(PO_3)_6$	
Alkalinity (as $CaCO_3$): Carbonate	0
Bicarbonate	109
Hardness (as $CaCO_3$)	295
Sodium and Potassium (as Na)	72
Iron (Fe)	.6
Manganese (Mn) Trace (less than	.1 ppm)
Fluoride (F)	.7
Carbon Dioxide (CO_2)	4.6

pH 7.7

Remarks _____

PHE-10

UMAT 2075

STATE ENGINEER
Salem, Oregon

State Well No. 4N/28-11N1

County Umatilla

Application No. G-853

Chemical Analysis

OWNER City of Hermiston OWNER'S NO. 3 (Third Street)

ANALYST Charlton Laboratories Address Portland

Date of Collection 7/21/61

Point of Collection

	P.P.M.	E.P.M.
Silica (SiO_2)	68.0	
Iron (Fe) Total	0.05	
Manganese (Mn)	0.00	
Calcium (Ca)	4.2	
Magnesium (Mg)	1.0	
Sodium (Na)	55.0	
Potassium (K)	10.5	
Bicarbonate (HCO_3)	102	
Carbonate (CO_3)		
Sulfate (SO_4)	16.0	
Chloride (Cl)	17.7	
Fluoride (F)	0.70	
Nitrate (NO_3)	0.03	
Boron (B)		
Aluminum (Al)	0.3	
Dissolved Solids	264	
Hardness as $CaCO_3$	15	
Specific Conductance (Micromhos at 25°C)		
pH		~~8.4~~ 8.64
Percent Sodium		
Sodium Absorption Ratio (S.A.R.)		
CLASS		

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SALEM, OREGON

STATE ENGINEER
Salem, Oregon

State Well No. 4N/28-11N1
County Umatilla
Application No. G-853

Chemical Analysis

OWNER City of Hermiston OWNER'S NO. 3 (Third Street)

ANALYST Charlton Laboratories Address Portland

Date of Collection 9/13/62

Point of Collection

	P.P.M.	E.P.M.
Silica (SiO_2)	63.0	
Iron (Fe) Total	0.40	
Manganese (Mn)	0.00	
Calcium (Ca)	6.3	
Magnesium (Mg)	2.3	
Sodium (Na)	72.0	
Potassium (K)	10.5	
Bicarbonate (HCO_3)	105	
Carbonate (CO_3)		
Sulfate (SO_4)	25.1	
Chloride (Cl)	19.5	
Fluoride (F)	1.6	
Nitrate (NO_3)	0.00	
Boron (B)		
Aluminum (Al)	1.0	
Dissolved Solids	295	
Hardness as $CaCO_3$	25.5	
Specific Conductance (Micromhos at 25°C)		
pH	8.60	
Percent Sodium		
Sodium Absorption Ratio (S.A.R.)		
CLASS		

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STATE ENGINEER
Salem, Oregon

UMAT 2075

RECEIVED
DEC 11 1967
WATER RESOURCES DEPT.
SALEM, OREGON

State Well No. 4N/28-11N(1)

County UMATILLA

Application No.

Water Level Record

OWNER: City of Hermiston OWNER'S NO. 3

Description of measuring point: Water level measurments in feet below reference mark on pump discharge

Date	Water Level Feet (above) (below) Land Surface	Remarks	Date	Water Level Feet (above) (below) Land Surface	Remarks
11-18-58	13	FINAL PROOF			
5-1-61	15		11-1-62	21	
6-1-61	16		12-1-62	20	
7-1-61	23				
8-1-61	26				
9-1-61	23				
10-1-61	19				
11-1-61	17				
12-1-61	17				
1-1-62	17				
2-1-62	17				
3-1-62	18				
4-1-62	19				
5-1-62	20				
6-1-62	21				
7-1-62	29				
8-1-62	27				
9-1-62	25				
10-1-62	22				

REMARKS: Measurments through December 1962 taken from hydrograph in June 1963 report "Engineering investigation of the Municipal Water System" by Cornell, Howland, Hayes & Merryfield

State Printing 89314