Well A-021A

Status Code: M
Registration No: 55-620296
Land Surface Elevation: 2183
Comments:

D(13-12) 12 ABA
6350 N. Silverbell Rd.

Northing: 482286
Easting: 962487
State Plane Arizona Central
NAD83 International feet

DRILLING INFORMATION

Drill Phase	Drill Date	Drilling Method	Contractor	Depth (ft. BLS)	Bit Dia. (in.)
ream	Nov 1953	cable	McDaniel, A. A.	180	8

GRAVEL PACK INFO.

CASING INFORMATION

Description	Date Cased	Top (ft.BLS)	Bttm. (ft. BLS)	Case Dia. (in.)	Case Comp.
cased	Nov 1953		180	8	UNKN(

PERFORATION INFORMATION

Date	Top (ft. BLS)	Bot. (ft. BLS)	Type
Nov 1953	60	178	torch cut

STATIC WATER LEVEL INFORMATION

Date Measured	Water Table Elevation (ft. AMSL)	Depth To Water (ft BLS)	Agency Name
10/16/01	2099.65	83.35	Research & Technical Support - Tucson Water
7/5/01 2:57:00 PM	2103.26	79.74	Research & Technical Support - Tucson Water
4/20/01 7:59:00 AM	2105.64	77.36	Research & Technical Support - Tucson Water
1/19/01 12:41:00 PM	2106.13	76.87	Research & Technical Support - Tucson Water
10/20/00 11:23:00 AM	2096.65	86.35	Research & Technical Support - Tucson Water
7/21/00 2:58:00 PM	2096.09	86.91	Research & Technical Support - Tucson Water
6/28/00 10:25:00 AM	2095.43	87.57	Research & Technical Support - Tucson Water
2/9/00	2098.81	84.19	Research & Technical Support - Tucson Water
12/22/98	2103.52	79.48	Research & Technical Support - Tucson Water
12/29/97	2099.27	83.73	Research & Technical Support - Tucson Water
1/3/97	2115.24	67.76	Research & Technical Support - Tucson Water
11/28/95 11:50:00 AM	2126.29	56.71	Research & Technical Support - Tucson Water
12/9/94	2113.67	69.33	Research & Technical Support - Tucson Water
12/14/93	2123.15	59.85	Research & Technical Support - Tucson Water
12/24/92	2102.35	80.65	Research & Technical Support - Tucson Water
12/13/91	2101.70	81.30	Research & Technical Support - Tucson Water
12/27/90	2095.29	87.71	Research & Technical Support - Tucson Water
12/26/89	2093.26	89.74	Research & Technical Support - Tucson Water
1/11/89	2100.96	82.04	Research & Technical Support - Tucson Water
12/28/87	2101.00	82.00	Research & Technical Support - Tucson Water

Bttm. = bottom, Dia. = diameter, ft. BLS = feet below land surface, ft. AMSL = feet above mean sea level,
in. = inches, info. = information, Mgals = Millions of gallons

A-21A

D-13-12) 12 cba

CITY OF TUCSON WELL LOG

OLD WELL NO. Rancho Panorama NEW WELL NO.: A 21

LOCATION: 6350 N. Silverbell (E. side) 1-3/10 mi. N. of Sunset Rd.

DRILLER: A. A. McDaniel DATE DRILLED: 11/28/53

STATIC LEVEL: 67'

CASING SIZE, PERFORATION INFORMATION AND DEVELOPMENT INFORMATION:

Casing: 181' of 8" ID new linepipe w/welded joints.
Perforations: 4 rows of 1/4" x 8" torch cuts staggered 18" apart from 60' to 178'.

DEPTH BELOW SURFACE	TYPE OF FORMATION
0' - 7'	Soil
7' - 23'	Gravel, loose
23' - 74'	Gravel, cemented
74' - 105'	Muddy gravel & water
105' - 107'	Clean gravel & water
107' - 112'	Gravel, cemented
112' - 135'	Clayey gravel, water
135' - 155'	Clay, some gravel
155' - 165'	Hard packed clay & pebbles
165' - 170'	Clean gravel & water
170' - 180'	Rocky clay

Total depth: 180'

T. DEPTH: L.S. TO TOP OF FILL 2/19/81 110.1'

W-44(e)

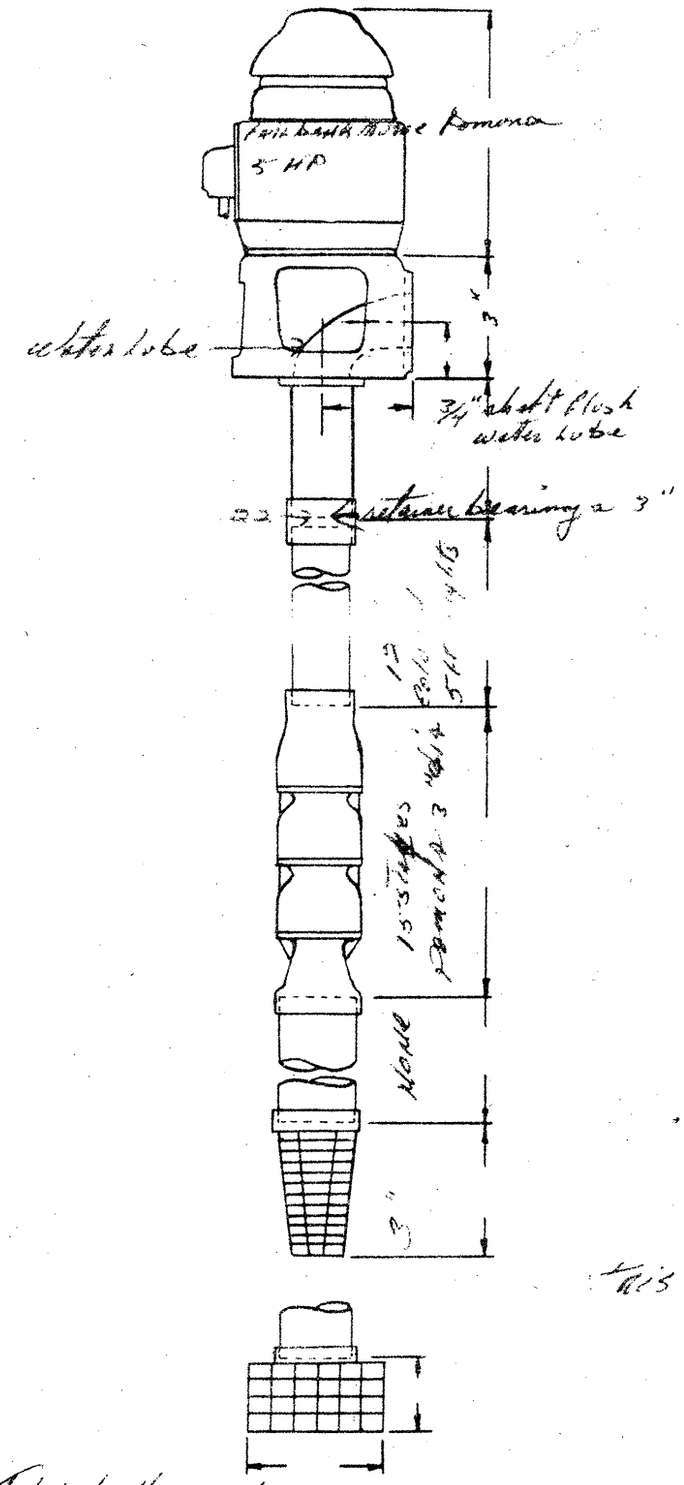
TUCSON CITY WATER DEPARTMENT

WELL PUMP WORK ORDER NO. A-21

NATURE OF WORK Pull pump and abandoned well

LOCATION Orange Grove and Silverbell Rd DATE 1-18-68

SKETCH



Total depth 165'

WELL CONDITIONS

Diameter Casing 10"

Static Level 68'

Head at Pump Discharge

PUMP DATA

Pomona

Head and Discharge Dize 12" x 3"

Bowls Pomona

Stages 15

Column Size 3"

Shaft Size 3/4 Flush

Shaft Type water lube

Suction Pipe Size none

Strainer Size 3" with footvalve

MOTOR

Size and Serial No. Fairbanks Morse Pomona 5 HP

Current 208-228 - 440 Volts

13.8 - 13.0 6.5 Amps

GAS ENGINE

Size and Make

Serial No.

GEAR DRIVE

Make and Model

Gear Ratio

CHANGES MADE:

This complete pump removed to city stores

Well W-001A

Status Code: A
Registration No: 55-619937
Land Surface Elevation: 1969
Comments:

D(11-11) 31 CBC
12200 N. Luckett Rd.

Northing: 519975
Easting: 899648
State Plane Arizona Central
NAD83 International feet

DRILLING INFORMATION

Drill Phase	Drill Date	Drilling Method	Contractor	Depth (ft. BLS)	Bit Dia. (in.)
ream	May 1973	unknown	Cotton Boring		
deepening	Apr 1994	cable	City of Tucson	867	8

GRAVEL PACK INFO.

CASING INFORMATION

Descrip-tion	Date Cased	Top (ft.BLS)	Bttm. (ft. BLS)	Case Dia. (in.)	Case Comp.
cased	May 197		650	16	UNKN(
cased	Apr 1994	0	667	10	UNKN(
cased	Apr 1994	643	853	8	UNKN(

PERFORATION INFORMATION

Date	Top (ft. BLS)	Bot. (ft. BLS)	Type
May 1973	310	640	Mills Knife
Apr 1994	667	850	Mills Knife

STATIC WATER LEVEL INFORMATION

Date Measured	Water Table Elevation (ft. AMSL)	Depth To Water (ft BLS)	Agency Name
2/24/01	1740.72	228.28	Research & Technical Support - Tucson Water
1/7/00	1725.58	243.42	Research & Technical Support - Tucson Water
12/29/99	1739.00	230.00	Water Operations - Tucson Water
12/23/98	1727.34	241.66	Research & Technical Support - Tucson Water
12/16/97	1720.85	248.15	Research & Technical Support - Tucson Water
12/4/96	1713.77	255.23	Research & Technical Support - Tucson Water
1/9/96	1714.56	254.44	Research & Technical Support - Tucson Water
12/20/94	1711.58	257.42	Research & Technical Support - Tucson Water
1/27/94	1713.04	255.96	Research & Technical Support - Tucson Water
12/23/92	1702.11	266.89	Research & Technical Support - Tucson Water
2/7/92	1693.55	275.45	Research & Technical Support - Tucson Water
11/9/90	1687.10	281.90	Water Operations - Tucson Water
12/12/89	1694.48	274.52	Research & Technical Support - Tucson Water
12/27/88	1691.90	277.10	Research & Technical Support - Tucson Water
12/14/87	1693.20	275.80	Research & Technical Support - Tucson Water
12/16/86	1697.70	271.30	Research & Technical Support - Tucson Water
12/18/85	1691.50	277.50	Research & Technical Support - Tucson Water

Bttm. = bottom, Dia. = diameter, ft. BLS = feet below land surface, ft. AMSL = feet above mean sea level,
in. = inches, info. = information, Mgals = Millions of gallons

The Weber Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

Date FEBRUARY 14,1994

Customer CITY OF TUCSON Job # 94-7758

Location SOUTHEAST CORNER OF SILVERBELL RD. & LUCKETT RD.

Well # W-1

City AVRA VALLEY County PIMA State ARIZONA

Case Size 16" O.D. 3/8" WALL Liner Size N/A

Type Hole CABLE TOOL Orig. Depth 650' Cur. Depth 627' S.W.L. 253'

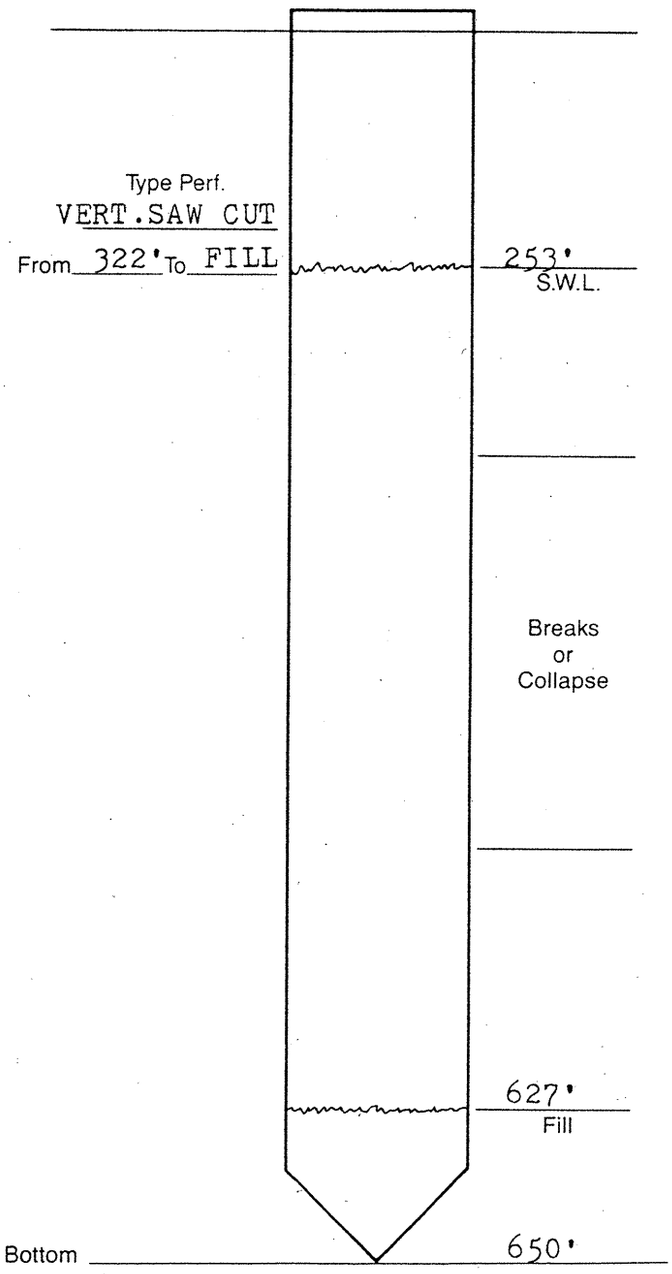
Reference By: JOE HUERSTELL P.O. # 94.P50681

From CASING TOP To FILL At CONT. Intervals Type Drive ELEC. SUBM.

Results OIL MIXED WITH DIESEL FUEL ON TOP OF WATER. WATER DIRTY FROM S.W.L. TO 322'. FAIRLY HEAVY BUILDUP BELOW 340'. WATER CLOUDY FROM 408' TO 460', DIRTY FROM 460' TO FILL.

Recommendations BAIL OIL OFF TOP OF WATER, CLEAN OUT FILL, WIRE BRUSH FROM 300' TO BOTTOM.

Signed Ed Keenan
Cust Copy



11131.332

AGRICULTURAL ENGINEERING DEPARTMENT THE UNIVERSITY OF ARIZONA A.E.D.# _____

NAME City of Tucson W-1

B.M. ELEVATION 1969

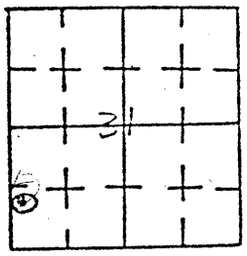
DATE DRILLED May/73 BY A.U. Boring

CASING 16 inch

PERFORATIONS (330) 310 - 640

WELL TYPE
Domestic
Industrial
Irrigation
Municipal ←
Recreation
Stock
Unused

T 11 S, R 11 E, S 31



WELL LOG

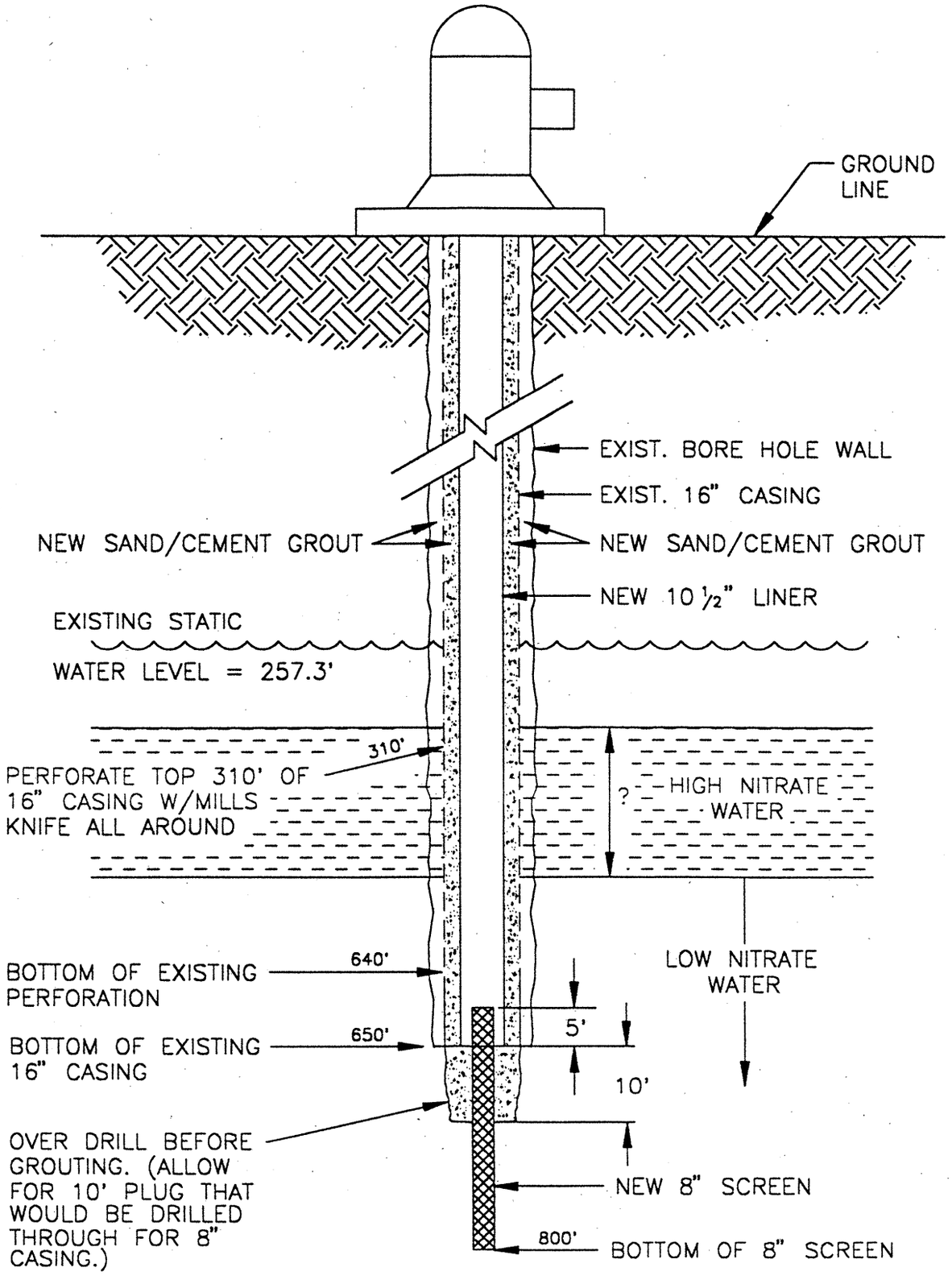
From Feet	To Feet	Material
0	100	sand + clay granitic alluvium
110	130	gravel + sand large SR-R pebbles
140	220	sand + clay more calcareous
230	330	clay, fine sand light brown calcareous sandstone
340	550	sand + clay mostly granitic + metamorphic
560	650	sand + clay, coarser more gravel, gray
		struck water 240'
		From well cuttings analysis no. 3410
Total Depth		650

WATER ANALYSIS

Date	4/1973		
Lab. No.	1295		
Total Salts (PPM)			
EC x 10^3	.70		
Calcium			
Magnesium			
Sodium	85		
Chloride			
Sulfate			
Carbonate			
Bicarbonate			
Flouride			
Nitrate	53		
pH	8.2		
Hardness Gr/Gal			

WELL PUMP TEST

Date			
Running W.L.			
Drawdown			
Discharge/Method			
Specific Capacity			
Transmissivity			
Duration			
Type of Test			
Agency			



tucson water.

DATE: 1-25-94

SCALE: NONE

METHOD TO MODIFY EXISTING WELL W-1

FILENAME: W1WELL2.DWG

WELL CUTTING LITHOLOGIC FORM FORM WR-1006

Hole Number W-001 (Deepening)
Date 9/22/94
Location (Avra Valley) (D-11-11)31 CBC
By B. M. Prior

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
680	685	95 % Volcanic 5 % Igneous (phaneritic) ___ % Gneiss & Schist ___ % Metasediments (Quartzite, etc.) ___ % Sedimentary (lithified) ___ % Chemical Precipitates	6 % Gravel 83 % Sand 11 % Fines	___ Well Rounded X Rounded ___ Subrounded ___ Subangular ___ Angular

Cementation well X mod. ___ poor ___ none ___

Comments: Traces of oxidized casing. Grains of purple rhyolite, yellowish tan latite. Grains of feldspar (k-spar) and quartz.

Formation Description: tan gray to purplish gray gravelly clayey fine to coarse sand

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
685	710	100 % Volcanic ___ % Igneous (phaneritic) ___ % Gneiss & Schist ___ % Metasediments (Quartzite, etc.) ___ % Sedimentary (lithified) ___ % Chemical Precipitates	1 % Gravel 42 % Sand 57 % Fines	___ Well Rounded X Rounded ___ Subrounded ___ Subangular ___ Angular

Cementation well X mod. ___ poor ___ none ___

Comments: 30 foot fine soil zone. Trace of Fe oxidation points.

Formation Description: yellowish tan, fine sandy clay

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
710	725	100 % Volcanic ___ % Igneous (phaneritic) ___ % Gneiss & Schist ___ % Metasediments (Quartzite, etc.) ___ % Sedimentary (lithified) ___ % Chemical Precipitates	17 % Gravel 51 % Sand 32 % Fines	___ Well Rounded ___ Rounded ___ Subrounded X Subangular ___ Angular

Cementation well X mod. ___ poor ___ none ___

Comments: Purple rhyolite, greenish andesite, yellowish-tan latite. Traces of manganese oxide dendrites and oxidation points.

Formation Description: veri-colored to yellowish tan, gravelly, silty, fine to coarse sand

Revised 11/85

WELL CUTTING LITHOLOGIC FORM FORM WR-1006

Hole Number W-001 (Deepening)
Date 9/22/94
Location Avra Valley (D-11-11)31 CBC
By B. M. Prior

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
725	735	100 % Volcanic	1 % Gravel	Well Rounded
		% Igneous (phaneritic)	55 % Sand	Rounded
		% Gneiss & Schist	44 % Fines	X Subrounded
		% Metasediments (Quartzite, etc.)		Subangular
		% Sedimentary (lithified)		Angular
		% Chemical Precipitates		

Cementation well X mod. ____ poor ____ none ____

Comments: Trace oxidation staining on gravel grains and coarse sand fine silt-sand zone.

Formation Description: yellowish tan silty/clayey coarse to fine sand

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
235	740	100 % Volcanic	9 % Gravel	Well Rounded
		% Igneous (phaneritic)	65 % Sand	Rounded
		% Gneiss & Schist	26 % Fines	Subrounded
		% Metasediments (Quartzite, etc.)		X Subangular
		% Sedimentary (lithified)		Angular
		% Chemical Precipitates		

Cementation well X mod. ____ poor ____ none ____

Comments: purple rhyolite porphry, latite ?

Formation Description: tannish light gray, gravelly, silty, fine to coarse sand

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
740	755	100 % Volcanic	1 % Gravel	Well Rounded
		% Igneous (phaneritic)	57 % Sand	Rounded
		% Gneiss & Schist	42 % Fines	X Subrounded
		% Metasediments (Quartzite, etc.)		Subangular
		% Sedimentary (lithified)		Angular
		% Chemical Precipitates		

Cementation well X mod. ____ poor ____ none ____

Comments: Fine sand - silt zone. All gravel is less than 3/16". Traces of black Mn oxide on fine gravel.

Formation Description: yellowish tan, gravelly, clayey/silty, fine to coarse sand

WELL CUTTING LITHOLOGIC FORM FORM WR-1006

Hole Number W-001 (Deepening)
Date 9/22/94

Location (Avra Valley) (D-11-11)31 CBC
By B.M. Prior

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
755	785	90 % Volcanic 10 % Igneous (phaneritic) ___ % Gneiss & Schist ___ % Metasediments (Quartzite, etc.) ___ % Sedimentary (lithified) ___ % Chemical Precipitates	6 % Gravel 52 % Sand 42 % Fines	___ Well Rounded ___ Rounded ___ Subrounded X Subangular ___ Angular

Cementation well X mod. ___ poor ___ none ___

Comments: Gravels less than 7/16" in size. Traces of black Mn Oxide. Traces of oxidized limonite "points". Purplish gray rhyolite. Traces of coarse 1/4" feldspar crystals.

Formation Description: Medium purplish gray to yellowish gray, gravelly silty fine to coarse sand.

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
785	855	97% Volcanic 3% Igneous (phaneritic) ___ % Gneiss & Schist ___ % Metasediments (Quartzite, etc.) ___ % Sedimentary (lithified) ___ % Chemical Precipitates	2% Gravel 50% Sand 48% Fines	___ Well Rounded ___ Rounded ___ Subrounded X Subangular ___ Angular

Cementation well X mod. ___ poor ___ none ___

Comments: Gravel fraction is less than 1/4" in size. Purple rhyolite with tan to gray volcanics.

Formation Description: Tan to light gray, silty fine sand.

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
___	___	___ % Volcanic ___ % Igneous (phaneritic) ___ % Gneiss & Schist ___ % Metasediments (Quartzite, etc.) ___ % Sedimentary (lithified) ___ % Chemical Precipitates	___ % Gravel ___ % Sand ___ % Fines	___ Well Rounded ___ Rounded ___ Subrounded ___ Subangular ___ Angular

Cementation well ___ mod. ___ poor ___ none ___

Comments:

Formation Description:

Revised 11/85

Well WR-200A

Status Code: Q
Registration No: 55-530631
Land Surface Elevation: 2242.63
Comments: Sweetwater Recharge Facilities

D(13-13) 20 DAB
3868 N. Silverbell Rd.

Northing: 469246
Easting: 973174
State Plane Arizona Central
NAD83 International feet

DRILLING INFORMATION

Drill Phase	Drill Date	Drilling Method	Contractor	Depth (ft. BLS)	Bit Dia. (in.)
ream	Sep 1991	reverse rotary	All American	203	12

GRAVEL PACK INFO.

Type	Method
gravel	Tremie pip

CASING INFORMATION

Description	Date Cased	Top (ft.BLS)	Bttm. (ft. BLS)	Case Dia. (in.)	Case Comp.
surface	Sep 1991	0	36	12	UNKN(
cased	Sep 1991	0	200	6	UNKN(

PERFORATION INFORMATION

Date	Top (ft. BLS)	Bot. (ft. BLS)	Type
Sep 1991	115	200	saw cut

STATIC WATER LEVEL INFORMATION

Date Measured	Water Table Elevation (ft. AMSL)	Depth To Water (ft BLS)	Agency Name
1/3/02 10:21:00 AM	2117.97	124.66	Research & Technical Support - Tucson Water
12/10/01 11:00:00 AM	2117.27	125.36	Research & Technical Support - Tucson Water
11/28/01 10:45:00 AM	2116.72	125.91	Research & Technical Support - Tucson Water
10/16/01 1:08:00 PM	2116.71	125.92	Research & Technical Support - Tucson Water
9/19/01 10:31:00 AM	2118.38	124.25	Research & Technical Support - Tucson Water
8/3/01 8:53:00 AM	2118.52	124.11	Research & Technical Support - Tucson Water
7/5/01 2:12:00 PM	2119.42	123.21	Research & Technical Support - Tucson Water
6/5/01 1:05:00 PM	2123.30	119.33	Research & Technical Support - Tucson Water
5/10/01 11:31:00 AM	2124.91	117.72	Research & Technical Support - Tucson Water
4/17/01 7:30:00 AM	2125.57	117.06	Research & Technical Support - Tucson Water
3/9/01	2125.62	117.01	Research & Technical Support - Tucson Water
2/23/01 12:05:00 PM	2125.31	117.32	Research & Technical Support - Tucson Water
1/19/01 10:30:00 AM	2123.69	118.94	Research & Technical Support - Tucson Water
12/6/00 12:06:00 PM	2120.67	121.96	Research & Technical Support - Tucson Water
11/24/00 12:07:00 PM	2119.64	122.99	Research & Technical Support - Tucson Water
10/19/00 12:45:00 PM	2117.56	125.07	Research & Technical Support - Tucson Water
9/7/00 9:00:00 AM	2118.64	123.99	Research & Technical Support - Tucson Water
8/21/00 9:20:00 AM	2118.91	123.72	Research & Technical Support - Tucson Water
7/21/00 2:25:00 PM	2120.01	122.62	Research & Technical Support - Tucson Water

Bttm. = bottom, Dia. = diameter, ft. BLS = feet below land surface, ft. AMSL = feet above mean sea level,
in. = inches, info. = information, Mgals = Millions of gallons

Lab Report
Cuttings Analysis
Form WR-1003 b
Revised 2-84

Processor BMP, CF
Date 9/10/91
Pan Set #3 (5-205)

reactions - O (no reaction), W (weak),
te), S (strong)
eving 2 - After wet sieving and drying

d in Sieve 2.0mm	Retained in Sieve 0.063mm		Not Retained 0.063mm			Remarks
Estimated Percent of Fines	Weight in Grams	Estimated Percent of Fines	Calculated Percent of Fines	Acid Reac. 1	Acid Reac. 2	(Mudstone, caliche, clay,etc., retained in washed samples. Ratio of size to weight in gravels).
0	177	0		S	S	Augen Samples to 24'
0	145	0		M	W	
0	108	0		S	M	
0	127	0		S	W	
0	134	0		W	W	
0	132	0		M	W	
0	109	0		M	W	Basin fill
—	—	—	—	—	—	No Sample Collected
—	—	—	—	—	—	" " "
0	178	0		W	O	
0	151	0		O	O	
0	130	0		O	O	
0	140	0		O	O	
0	187	0		W	W	
0	135	0		O	O	
0	116	0		O	W	
0	110	0		O	W	
0	141	0		W	M	
0	151	0		W	W	
0	93	0		W	O	
0	119	0		O	O	
0	130	0		O	W	
0	153	0		O	W	
0	192	0		W	O	
0	124	0		O	O	
0	190	0		O	O	
0	135	0		O	W	
0	211	0		W	W	
0	169	0		O	O	

Lab Report
Cuttings Analysis
Form WR-1003 b
Revised 2-84

Processor BMP CF

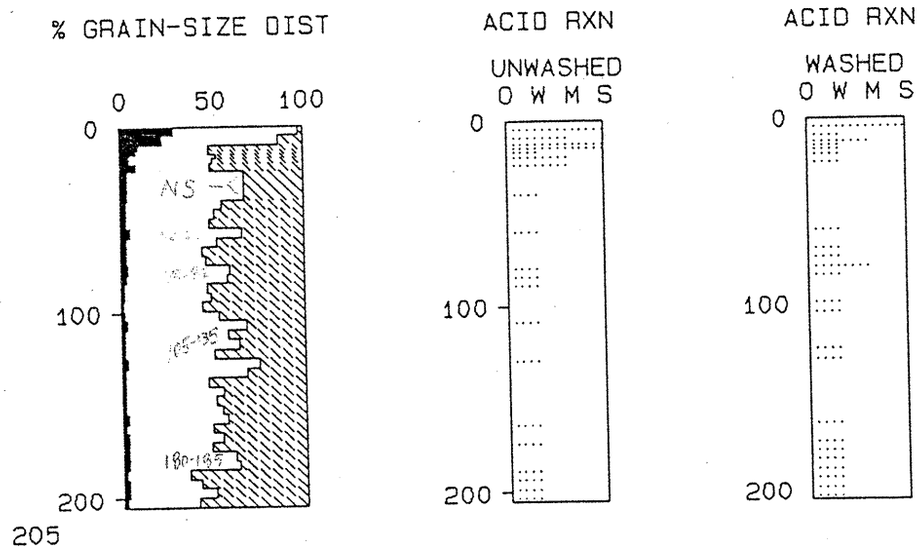
Date 9/10/91

Pan Set #3 (5-205)

reactions - O (no reaction), W (weak),
te), S (strong)
eving 2 - After wet sieving and drying

d in Sieve 2.0mm	Retained in Sieve 0.063mm		Not Retained 0.063mm			Remarks
Estimated Percent of Fines	Weight in Grams	Estimated Percent of Fines	Calculated Percent of Fines	Acid Reac. 1	Acid Reac. 2	(Mudstone, caliche, clay,etc., retained in washed samples. Ratio of size to weight in gravels).
0	142	0		O	O	
0	136	0		O	O	
0	137	0		O	O	
0	180	0		O	O	
0	167	0		O	O	
0	116	0		W	W	
0	122	0		O	O	
0	150	0		W	W	
0	197	0		O	W	
0	216	0		O	W	
0	112	0		W	W	
0	144	0		W	W	
0	151	0		W	W	
0	97	0		W	W	

WR-200A


% GRAIN-SIZE DIST
0
50
100
0
100
200
205
ACID RXN
UNWASHED
O W M S
0
100
200
ACID RXN
WASHED
O W M S
0
100
200

WELL CUTTING LITHOLOGIC FORM FORM WR-1006

Hole Number WR-200a
Date 12/11/91

Location Columbus Park at Santa Cruz River
By BMP

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
0	10	98 % Volcanic	8 % Gravel	Well Rounded
		2 % Igneous (phaneritic)	66 % Sand	Rounded
		% Gneiss & Schist	26 % Fines	X Subrounded
		Tr? % Metasediments (Quartzite, etc.)		Subangular
		% Sedimentary (lithified)		Angular
		% Chemical Precipitates		

Cementation well X mod. ____ poor ____ none ____

Comments: Auger sample. Sandy loam surficial deposit. Calcareous.

Formation Description: yellowish grayish tan, gravelly, silty-clayey, fine to medium sand

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
10	20	95 % Volcanic	51 % Gravel	Well Rounded
		5 % Igneous (phaneritic)	42 % Sand	Rounded
		% Gneiss & Schist	7 % Fines	X Subrounded
		Tr? % Metasediments (Quartzite, etc.)		Subangular
		Tr? % Sedimentary (lithified)		Angular
		% Chemical Precipitates		

Cementation well ____ mod. X poor ____ none ____

Comments: Auger sample. Volcanic channel fill. Cobble rich. Strongly calcareous to 15'. No Mn oxide with traces of very weak Fe oxide.

Formation Description: tannish gray, silty, coarse sandy cobbley gravel

Depth From	Depth To	Major Components of Sand & Gravel	Particle Size Distribution	Roundness
20	205	98 % Volcanic	46 % Gravel	Well Rounded
		2 % Igneous (phaneritic)	51 % Sand	Rounded
		% Gneiss & Schist	3 % Fines	Subrounded
		% Metasediments (Quartzite, etc.)		X Subangular
		% Sedimentary (lithified)		Angular
		% Chemical Precipitates		

Cementation well ____ mod. ____ * poor X none ____

Comments: Auger sample 20 - 24'. Basin fill beginning at 20' to total depth of 205'. 20 - 25 is a mix of cobbley channel fill and volcanic basin fill. Sandy horizons at 50 - 55', 75 - 80', 105 - 135', 180 - 185'. * Cementation (weak) occurs with increases of sand. Basin fill is predominantly rhyolite porphry, lapilli tuff + andesite.

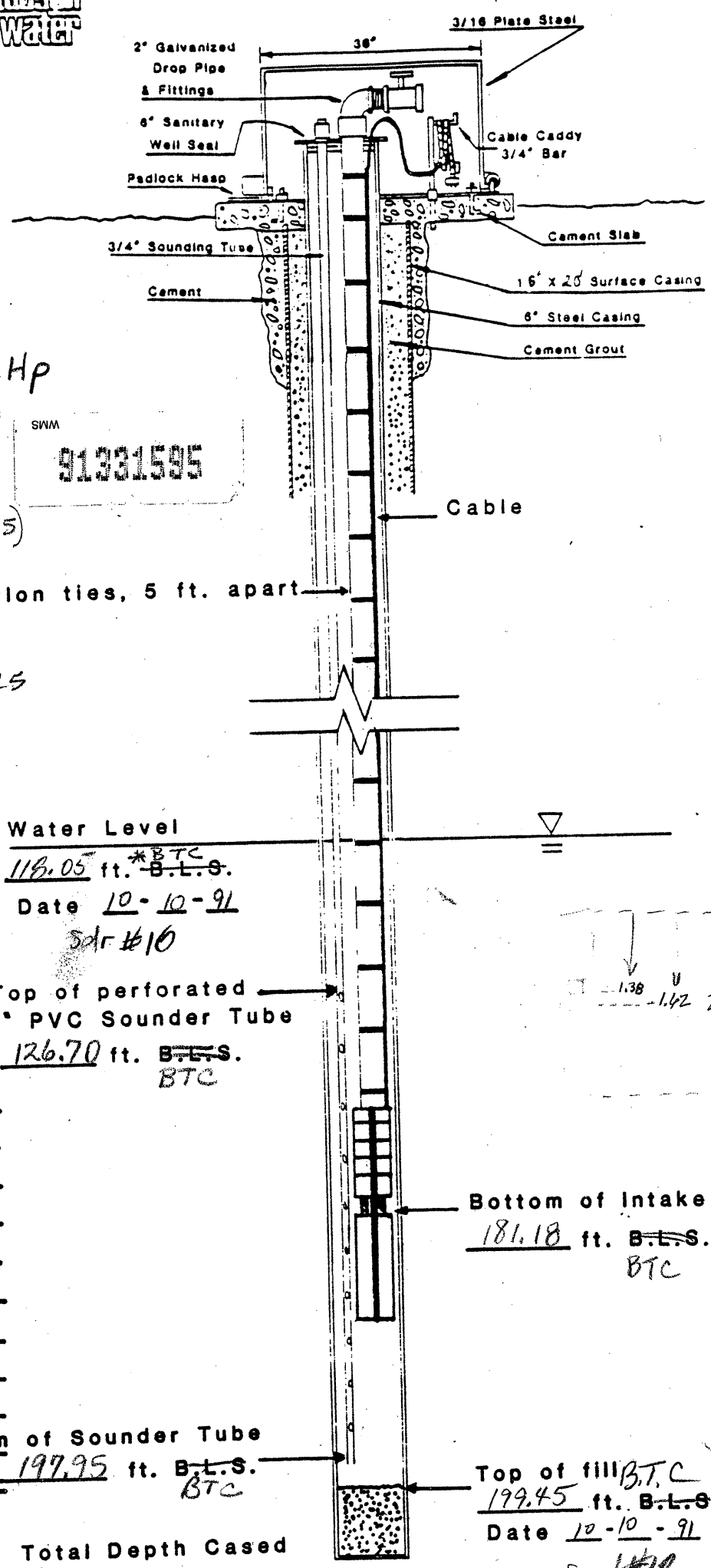
Formation Description: tannish, purplish, medium gray, silty coarse sandy gravel

Revised 11/85

SCHEMATIC OF EQUIPMENT,

HOLE NUMBER WR-200

DATE 10/10/91



COMMENTS

Pump tested at GPM

Sp. Cap. GPM/FT

Pump Grundfos

No. 9133 40S20-7 2 Hp

Q=40 @ 144' 345 rpm

S/N = 91331595

Motor Franklin

F-91-140084 (336 12925)

Model 2343151618 hp

230/3 6.7 Amp

3450 rpm, S.F. max. 9.1

1.5 Kw, KVA code L, SF=1.25

WMS 91331595

2"	3/4
21.14 (1510) (1442)	7.90
21.15 1446	21.14
21.14	21.12
21.15	21.09
21.13	21.12
21.14	21.12
21.16	
21.19	21.13
10.60 1540	21.12
179.80	21.11
+ 1.38	21.10
181.18	211.15

* BTC = Below Top of Casing

Well file

CONSTRUCTION OF CASING

FORM WR-1004 C

HOLE NUMBER WR-200

DATE 9/12/91

tucson water

DEPTH TO TOP OF CASING SEGMENT

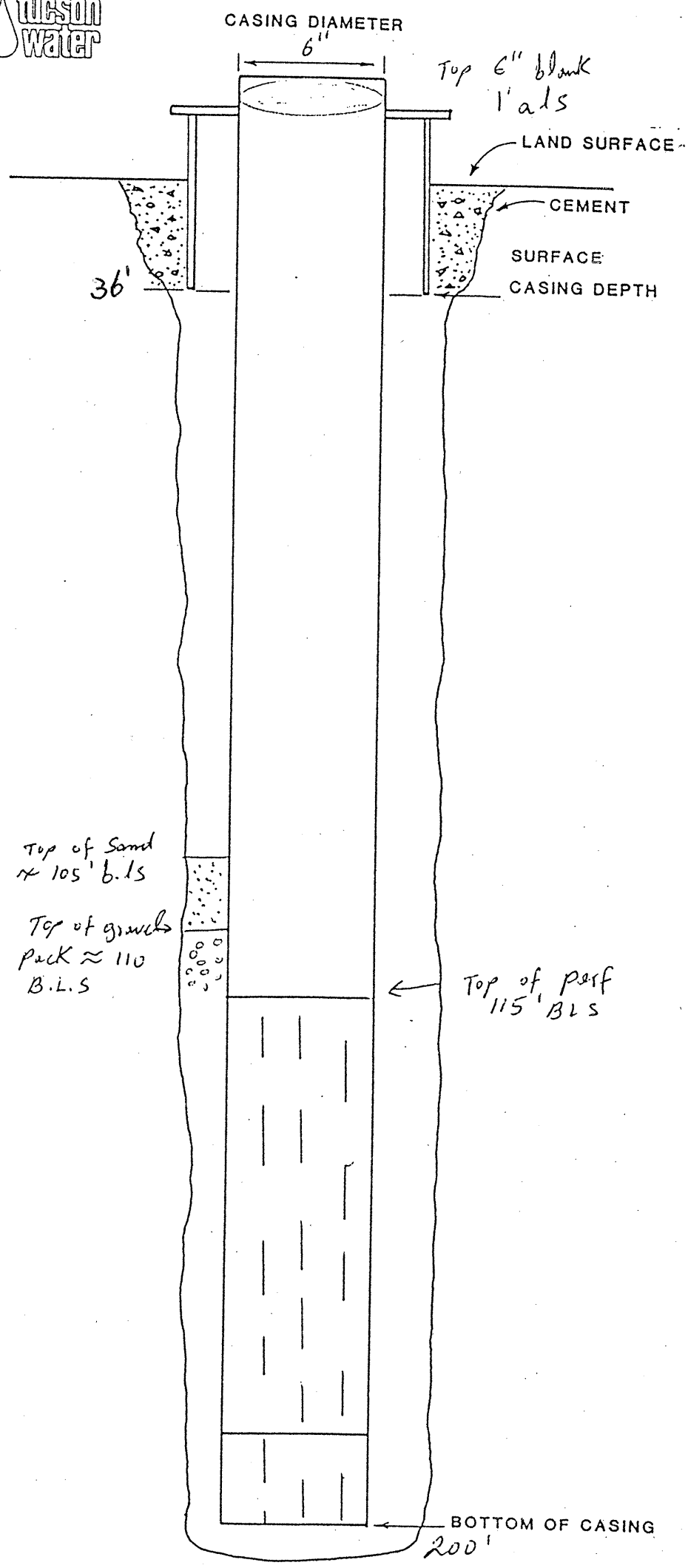
COMMENTS

Install 6" steel Casing

Blank 1' above surface to 115 below surface

Perforated ~~18~~ from 115' below land surface to 200' b.l.s.

85' Perf. 115 blank



SKETCH IN SCREEN AND CENTRALIZERS

Well WR-310A

Status Code: Q
Registration No: 55-562753
Land Surface Elevation: 2263.68
Comments: Sweetwater Wetlands

D(13-13) 21 DCC
2621 W. Sweetwater Drive

Northing: 466784
Easting: 977105
State Plane Arizona Central
NAD83 International feet

DRILLING INFORMATION

Drill Phase	Drill Date	Drilling Method	Contractor	Depth (ft. BLS)	Bit Dia. (in.)
ream	Sep 1997	air rotary	Tonto Environmenta	180	12

GRAVEL PACK INFO.

Type	Method
cement	tremie pipe
gravel	tremie pipe
sand	tremie pipe

CASING INFORMATION

Description	Date Cased	Top (ft.BLS)	Bttm. (ft. BLS)	Case Dia. (in.)	Case Comp.
surface	Sep 1997	0	20	16	concre
cased	Sep 1997	0	170	6	steel

PERFORATION INFORMATION

Date	Top (ft. BLS)	Bot. (ft. BLS)	Type
Sep 1997	130	170	slotted

STATIC WATER LEVEL INFORMATION

Date Measured	Water Table Elevation (ft. AMSL)	Depth To Water (ft BLS)	Agency Name
3/25/02 8:46:00 AM	2138.46	125.22	Research & Technical Support - Tucson Water
3/19/02 3:52:00 PM	2138.18	125.50	Research & Technical Support - Tucson Water
3/14/02 11:03:00 AM	2139.42	124.26	Research & Technical Support - Tucson Water
3/8/02 11:28:00 AM	2140.39	123.29	Research & Technical Support - Tucson Water
2/25/02 9:05:00 AM	2140.18	123.50	Research & Technical Support - Tucson Water
2/20/02 9:08:00 AM	2140.02	123.66	Research & Technical Support - Tucson Water
2/13/02 9:31:00 AM	2139.98	123.70	Research & Technical Support - Tucson Water
2/4/02 8:10:00 AM	2139.33	124.35	Research & Technical Support - Tucson Water
1/30/02 9:06:00 AM	2139.04	124.64	Research & Technical Support - Tucson Water
1/22/02 8:29:00 AM	2139.46	124.22	Research & Technical Support - Tucson Water
1/14/02 10:02:00 AM	2139.64	124.04	Research & Technical Support - Tucson Water
1/7/02 9:46:00 AM	2139.35	124.33	Research & Technical Support - Tucson Water
12/31/01 12:45:00 PM	2138.89	124.79	Research & Technical Support - Tucson Water
12/16/01 10:12:00 AM	2136.76	126.92	Research & Technical Support - Tucson Water
12/10/01 9:46:00 AM	2135.92	127.76	Research & Technical Support - Tucson Water
9/24/01 8:16:00 AM	2127.05	136.63	Research & Technical Support - Tucson Water
9/17/01 10:32:00 AM	2126.18	137.50	Research & Technical Support - Tucson Water

Bttm. = bottom, Dia. = diameter, ft. BLS = feet below land surface, ft. AMSL = feet above mean sea level,
in. = inches, info. = information, Mgals = Millions of gallons

SCHEMATIC OF EQUIPMENT.

HOLE NUMBER WR-310A

DATE 11/18/97

tucson water

COMMENTS HM

Pump tested at GPM

Sp. Cap. GPM/FT

Grundfos pump model# 10605-9

Type SP-9722 Q= 10 gpm

n= 3450 rpm H= 175FT

Power Cable 14 AWG TW FLAT

FRANKLIN MOTOR model# 234511

1/2 hp, 230V, 3Ø, 2.4A, 0.3

3450 RPM, SF MAX 2.4 A

SERIAL # 2K97 15-3358

1 1/4" GALV drop pipe

0.64' + 0.05 = 0.69'

21.10' + 0.05 = 21.84'

21.16' + 0.05 = 43.05'

21.11' + 0.05 = 64.21'

21.17' + 0.05 = 85.43'

21.08' + 0.05 = 106.56'

21.15' + 0.05 = 127.76'

13.00' = 140.76

0.05' = GAP IN COUPLING

0.06' = Threads inside SANITARY SEAL

140.76' - 1.5' (SLAB & RISER) - 0.06' = 139.20' BLS TO TOP OF pump

1" GALV SOUNDER PIPE

21.12' x 6 Joints = 126.72'

126.72 + (0.04 COUP. GAP x 7) = 127'

127' + 12.5' CUT JOINT = 139.5

139.5' - 1.5' (SLAB & RISER) - 0.06 = 137.94 BLS

13' PERFORATED PIPE

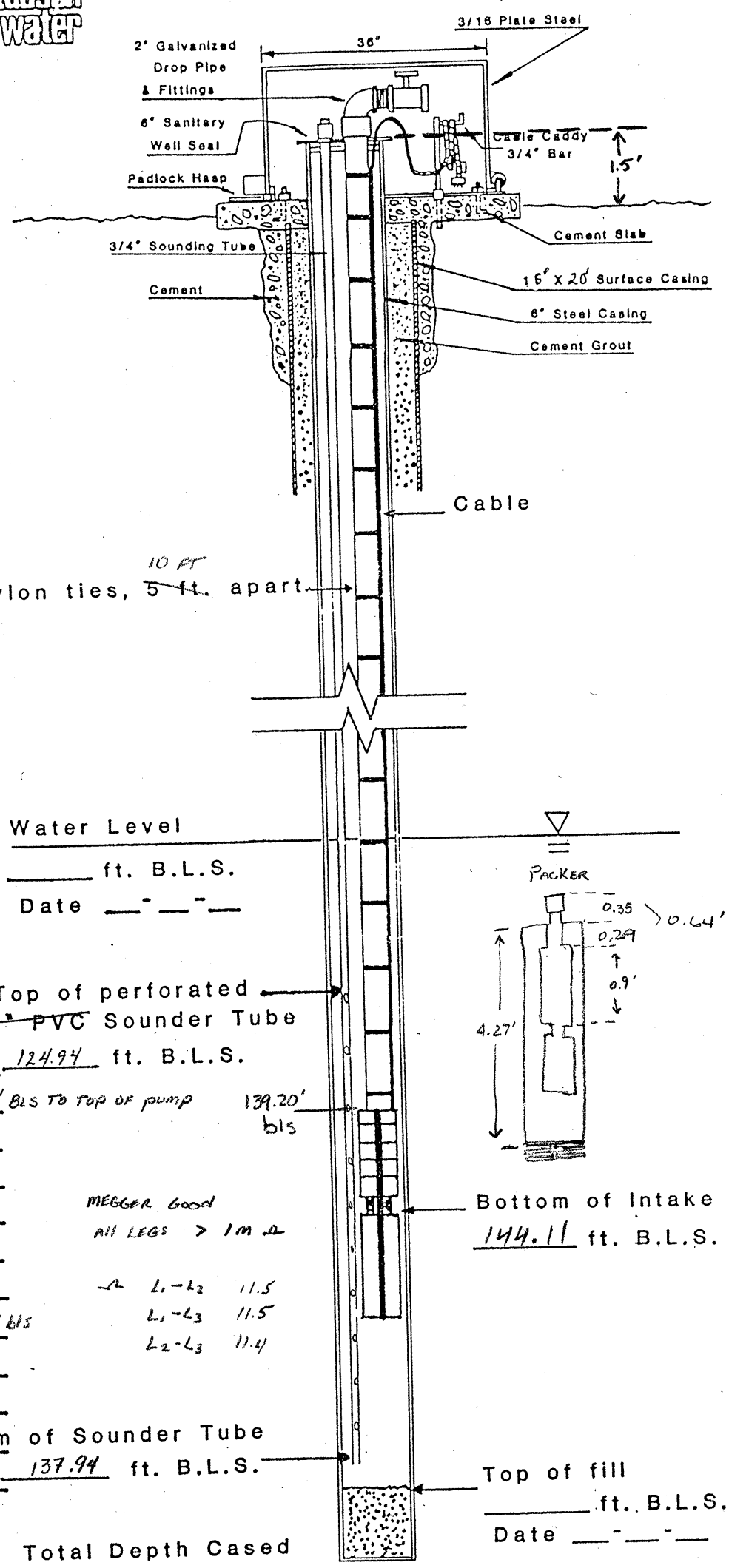
MEGGER Good

All LEGS > 1M Ω

Ω $L_1 - L_2$ 11.5

$L_1 - L_3$ 11.5

$L_2 - L_3$ 11.4



CONSTRUCTION OF CASING

FORM WR-1004 C

HOLE NUMBER WR-310A

DATE 8/26/99

DEPTH TO TOP OF CASING SEGMENT

COMMENTS

0-20 ft. 16-inch surface casing.

0-180 ft. 12-inch drilled hole.

0-130 ft. 6-inch steel blank casing.

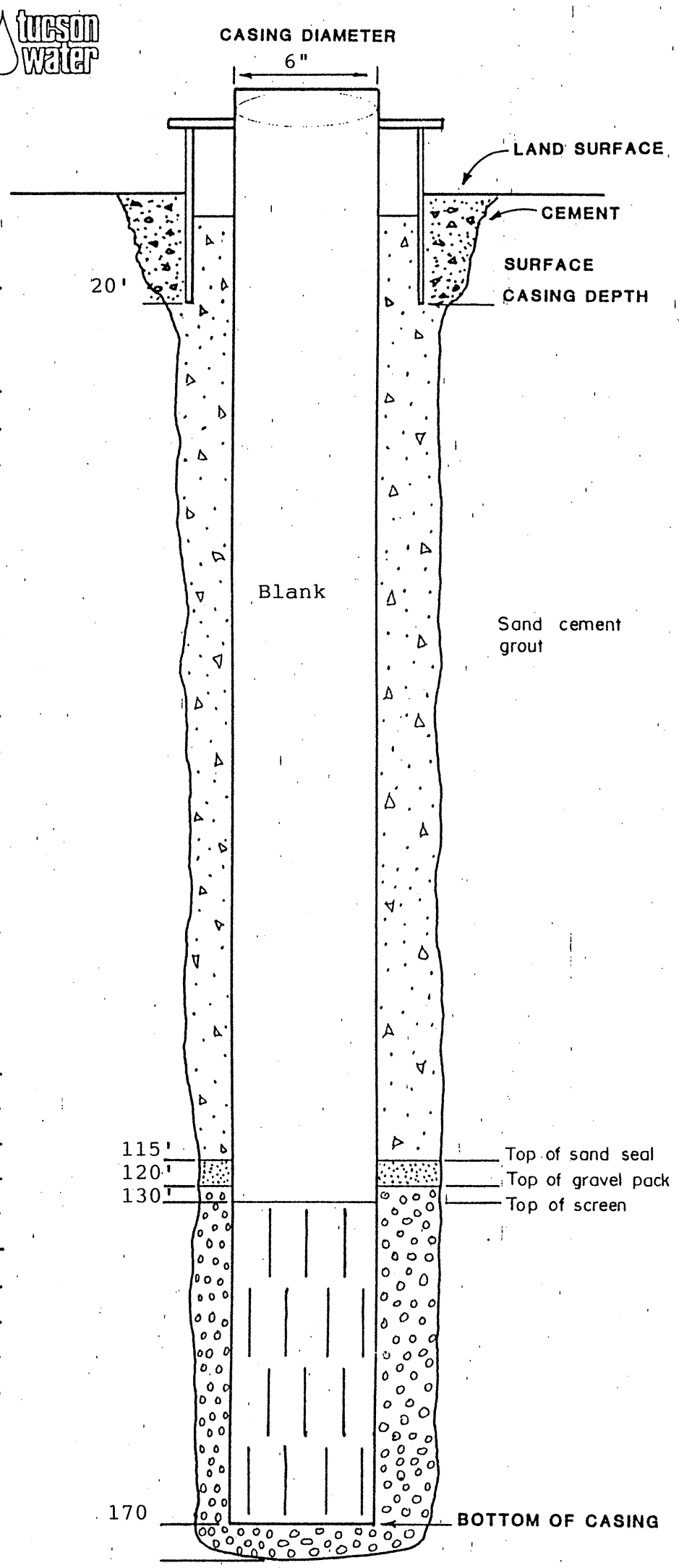
130-170 ft. 6-inch perforated casing.

Top of gravel pack at 120 ft.

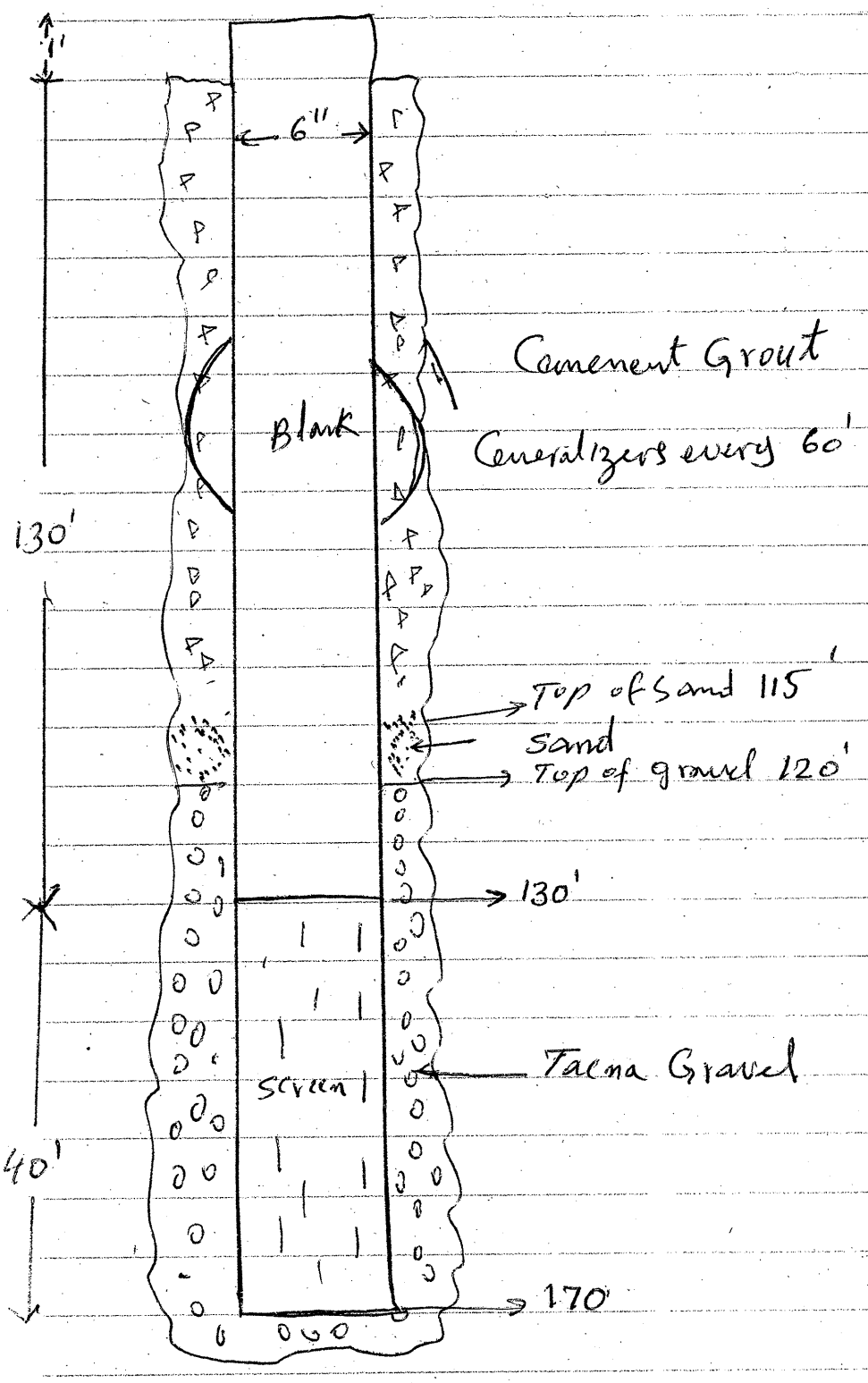
Top of filter sound at 115 ft.

115-surface cement grout

Centralizers every 60 ft.



9/9/97 WR-310



88-2317

B Cadmium

WELL CUTTING
LITHOLOGIC FORM
FORM WR-1006

Hole Number WR-310A
Date 9/18/97

Location
By Chuck Faas

Depth From	Depth To	Major Components of Sand & Gravel		Particle Size Distribution		Roundness	
0'	10'	40%	Volcanic	3%	Gravel	☐	Well Rounded
		50%	Igneous (phaneritic)	15%	Sand	☐	Rounded
		8%	Gneiss & Schist	82%	Fines	☐	Subrounded
			Metasediments (Quartzite, etc.)			☒	Subangular
		2%	Sedimentary (lithified)			☐	Angular
			Chemical Precipitates				

Cementation ☒ Well ☐ Mod. ☐ Poor ☐ None

Comments: Gravels consist of a blend of granitic-gneissic material with lesser amounts of volcanics. Occasional caliche particles present. Mica flakes common in sand.

Formation Description: Sandy silt-clay.

Depth From	Depth To	Major Components of Sand & Gravel		Particle Size Distribution		Roundness	
10'	40'	89%	Volcanic	60%	Gravel	☐	Well Rounded
		8%	Igneous (phaneritic)	28%	Sand	☒	Rounded
		3%	Gneiss & Schist	12%	Fines	☒	Subrounded
			Metasediments (Quartzite, etc.)			☐	Subangular
			Sedimentary (lithified)			☐	Angular
			Chemical Precipitates				

Cementation ☐ Well ☐ Mod. ☐ Poor ☒ None

Comments: Sharp increase in gravel content. Coarse gravel contained subrounded to rounded pebbles as large as 1.5 inches in diameter. Traces of mica flakes in sand. The volcanics are mainly andesite.

Formation Description: Sandy pebble gravel.

Depth From	Depth To	Major Components of Sand & Gravel		Particle Size Distribution		Roundness	
40'	135'	96%	Volcanic	47%	Gravel	☐	Well Rounded
		3%	Igneous (phaneritic)	39%	Sand	☐	Rounded
		1%	Gneiss & Schist	14%	Fines	☐	Subrounded
		Tr.	Metasediments (Quartzite, etc.)			☒	Subangular
			Sedimentary (lithified)			☐	Angular
			Chemical Precipitates				

Cementation ☐ Well ☐ Mod. ☒ Poor ☐ None

Comments: Coarse gravel content increases with depth. Volcanic pebbles as large as 1 inch in diameter are occasionally found in the first 80 feet of this interval with higher concentrations confined to the last 15 feet of this interval.

Formation Description: Sand gravel with minor amounts of silt and clay.

WELL CUTTING LITHOLOGIC FORM
FORM WR-1006

Hole Number WR-310A
Date 9/18/97

Location
By Chuck Faas

Depth From	Depth To	Major Components of Sand & Gravel		Particle Size Distribution		Roundness	
135'	175'	98%	Volcanic	74%	Gravel	☐	Well Rounded
		2%	Igneous (phaneritic)	17%	Sand	☐	Rounded
			Gneiss & Schist	9%	Fines	☒	Subrounded
			Metasediments (Quartzite, etc.)			☒	Subangular
			Sedimentary (lithified)			☐	Angular
			Chemical Precipitates				

Cementation ☐ Well ☒ Mod.
☐ Poor ☐ None

Comments: Increase in coarse gravel compared to previous interval. Gravel consists of subangular to subrounded pebbles of mainly andesite.

Formation Description: Sandy pebble gravel.

Depth From	Depth To	Major Components of Sand & Gravel		Particle Size Distribution		Roundness	
'	'		Volcanic		Gravel	☐	Well Rounded
			Igneous (phaneritic)		Sand	☐	Rounded
			Gneiss & Schist		Fines	☐	Subrounded
			Metasediments (Quartzite, etc.)			☐	Subangular
			Sedimentary (lithified)			☐	Angular
			Chemical Precipitates				

Cementation ☐ Well ☐ Mod.
☐ Poor ☐ None

Comments:

Formation Description:

Depth From	Depth To	Major Components of Sand & Gravel		Particle Size Distribution		Roundness	
'	'		Volcanic		Gravel	☐	Well Rounded
			Igneous (phaneritic)		Sand	☐	Rounded
			Gneiss & Schist		Fines	☐	Subrounded
			Metasediments (Quartzite, etc.)			☐	Subangular
			Sedimentary (lithified)			☐	Angular
			Chemical Precipitates				

Cementation ☐ Well ☐ Mod.
☐ Poor ☐ None

Comments:

Formation Description:

Well Y-001A

Status Code: A
Registration No: 55-619942

D(12-12) 22 DCD
8801 N. Casa Grande Highway

Northing: 498135
Easting: 951552

State Plane Arizona Central
NAD83 International feet

Land Surface Elevation: 2130
Comments:

DRILLING INFORMATION

Drill Phase	Drill Date	Drilling Method	Contractor	Depth (ft. BLS)	Bit Dia. (in.)
ream	Apr 1924	unknown	Schnaufer, W. J.	316	

GRAVEL PACK INFO.

CASING INFORMATION

Description	Date Cased	Top (ft.BLS)	Bttm. (ft. BLS)	Case Dia. (in.)	Case Comp.
cased	Apr 1924		316	18	UNKN(

PERFORATION INFORMATION

Date	Top (ft. BLS)	Bot. (ft. BLS)	Type
Apr 1924	36	300	Mills Knife

STATIC WATER LEVEL INFORMATION

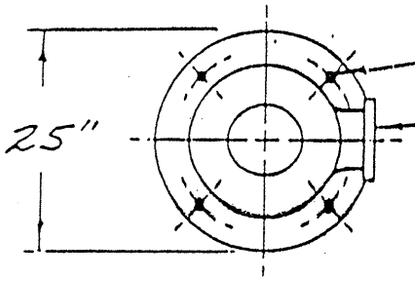
Date Measured	Water Table Elevation (ft. AMSL)	Depth To Water (ft BLS)	Agency Name
11/24/98	2023.00	107.00	Water Operations - Tucson Water
1/2/98	2040.00	90.00	Water Operations - Tucson Water
1/9/97	2035.45	94.55	Research & Technical Support - Tucson Water
11/27/95	2041.77	88.23	Research & Technical Support - Tucson Water
12/9/94	2036.75	93.25	Research & Technical Support - Tucson Water
12/14/93	2047.02	82.98	Research & Technical Support - Tucson Water
12/14/92	2034.79	95.21	Research & Technical Support - Tucson Water
11/9/90	2018.60	111.40	Water Operations - Tucson Water
1/1/90	2019.67	110.33	Research & Technical Support - Tucson Water
1/5/89	2033.10	96.90	Research & Technical Support - Tucson Water
1/5/88	2031.10	98.90	Research & Technical Support - Tucson Water
12/18/86	2044.50	85.50	Research & Technical Support - Tucson Water
1/20/86	2040.80	89.20	Water Operations - Tucson Water
1/7/85	2044.80	85.20	Research & Technical Support - Tucson Water
8/1/80	2015.80	114.20	Research & Technical Support - Tucson Water

PUMPAGE INFORMATION (MGals)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
2000	20.60	20.58	24.76	23.45	25.61	25.38	24.50	19.08	27.72	27.94	27.44	28.31	295.38
1999	24.28	22.55	23.15	23.81	23.88	23.90	22.09	21.65	24.31	27.10	24.89	23.18	284.79

Bttm. = bottom, Dia. = diameter, ft. BLS = feet below land surface, ft. AMSL = feet above mean sea level,
in. = inches, info. = information, Mgals = Millions of gallons

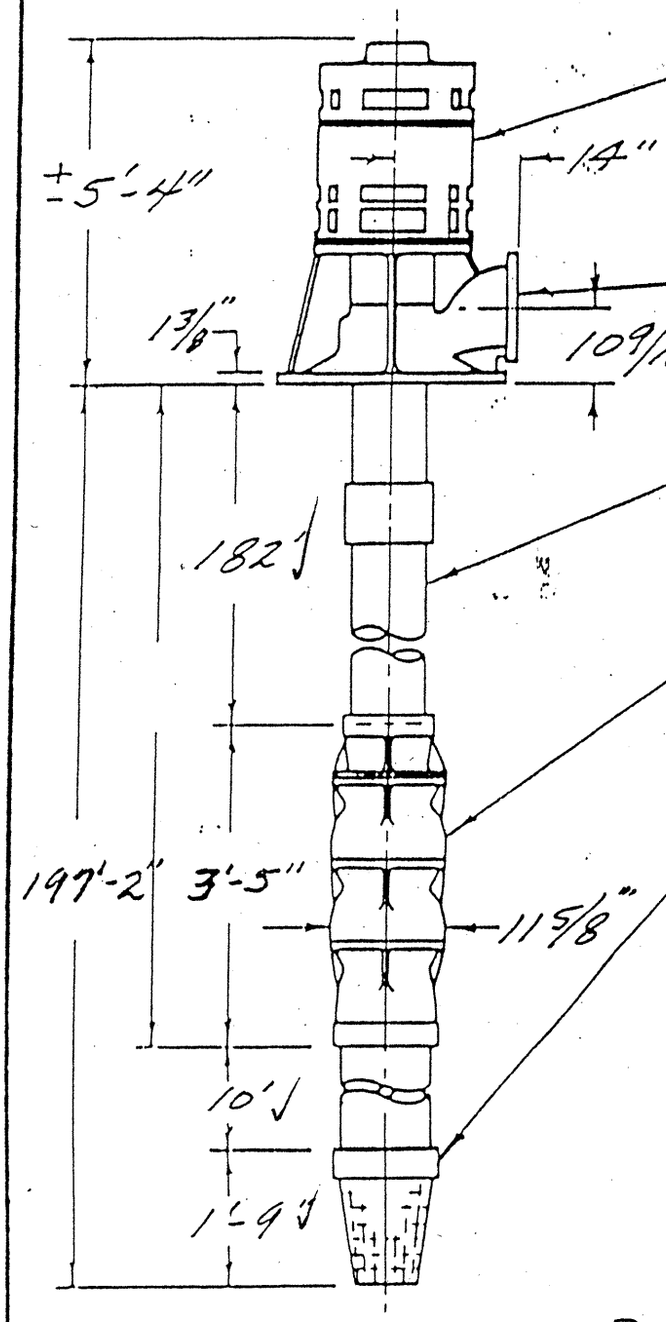
Peabody Floway VERTICAL TURBINE PUMP



4— 1 1/8 " DIA. HOLES ON 22 5/8 " B.C.

10 " x 125# ASA DISCHARGE FLANGE

CONDITIONS:
U.S. GALLONS PER MINUTE— 1000
TOTAL DYNAMIC HEAD IN FT.— 178
LIQUID— H_2O
SPEC. GRAV. 1.0 @ °F. TEMP.



NEWMAN
VERTICAL HOLLOW SHAFT MOTOR
HP— 75 PHASE— 3 CYCLE— 60
VOLTAGE— 460 RPM— 1800
ENCLOSURE— W.P.-1

TYPE "A" DISCHARGE HEAD— 16 1/2 x 10

OIL LUBRICATED
COLUMN ASSEMBLY— 8" x 2" x 1 1/4"

BOWL ASSEMBLY— 3 STAGE 12 LKM

SUCTION PIPE & CONE STRAINER— 8"

CUSTOMER LEW S. McGINNES
PEPPERTREE ~~PO#~~ BOOSTER STATION
DEALER GILBERT PUMP OF TUCSON
PO #

NOTE: DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

CITY OF TUCSON
TUCSON WATER
THESE DRAWINGS HAVE BEEN CHECKED FOR GENERAL COMPLIANCE WITH PLANS AND SPECIFICATIONS
APPROVED

Peabody Floway

6

11-2806-A

Well Y-002A

Status Code: M
Registration No: 55-086156
Land Surface Elevation: 2114.3
Comments:

D(12-12) 22 CAA

Northing: 500598
Easting: 949388
State Plane Arizona Central
NAD83 International feet

DRILLING INFORMATION

Drill Phase	Drill Date	Drilling Method	Contractor	Depth (ft. BLS)	Bit Dia. (in.)
ream	Oct 1982	rotary	BC&M		

GRAVEL PACK INFO.

CASING INFORMATION

Description	Date Cased	Top (ft.BLS)	Bttm. (ft. BLS)	Case Dia. (in.)	Case Comp.
cased	Oct 1982	0	450	16	UNKN(

PERFORATION INFORMATION

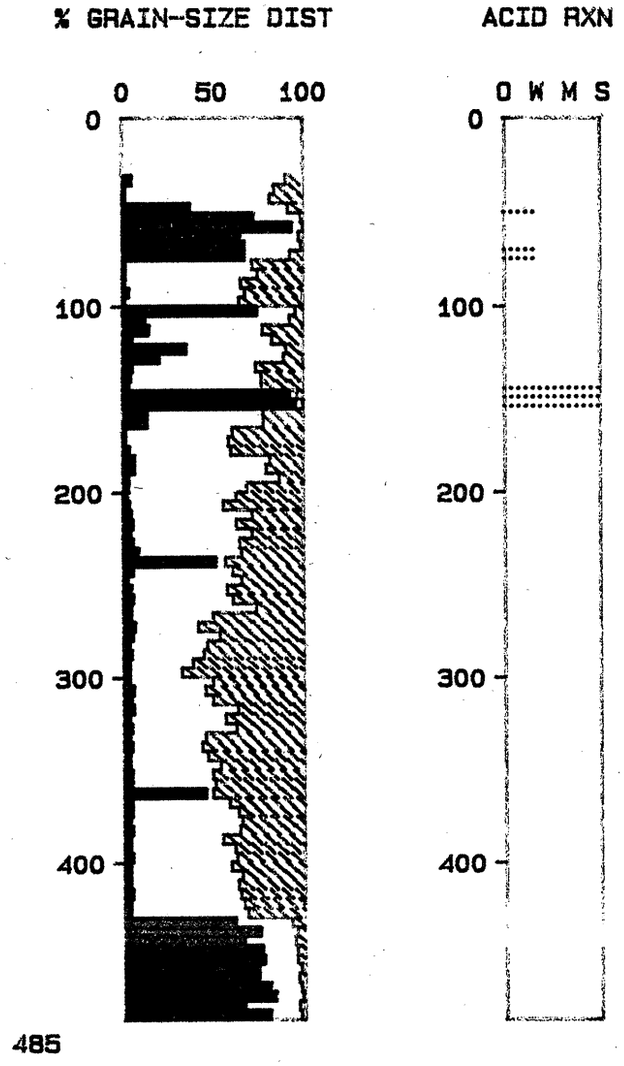
Date	Top (ft. BLS)	Bot. (ft. BLS)	Type
Oct 1982	230	430	

STATIC WATER LEVEL INFORMATION

Date Measured	Water Table Elevation (ft. AMSL)	Depth To Water (ft BLS)	Agency Name
2/24/01	2008.35	105.95	Research & Technical Support - Tucson Water
2/7/00	2009.22	105.08	Research & Technical Support - Tucson Water
12/22/98	2008.46	105.84	Research & Technical Support - Tucson Water
12/16/97	2007.46	106.84	Research & Technical Support - Tucson Water
1/2/97	2020.68	93.62	Research & Technical Support - Tucson Water
11/27/95 3:12:00 PM	2027.99	86.31	Research & Technical Support - Tucson Water
12/9/94	2021.74	92.56	Research & Technical Support - Tucson Water
12/14/93	2033.22	81.08	Research & Technical Support - Tucson Water
12/14/92	2019.52	94.78	Research & Technical Support - Tucson Water
10/3/92 8:00:00 AM	2016.22	98.08	Research & Technical Support - Tucson Water
10/2/92 8:00:00 AM	2013.96	100.34	Research & Technical Support - Tucson Water
10/1/92 8:00:00 AM	2013.59	100.71	Research & Technical Support - Tucson Water
9/30/92 8:00:00 AM	2012.83	101.47	Research & Technical Support - Tucson Water
9/29/92 8:00:00 AM	2012.81	101.49	Research & Technical Support - Tucson Water
9/28/92 8:00:00 AM	2013.32	100.98	Research & Technical Support - Tucson Water
9/27/92 8:00:00 AM	2013.36	100.94	Research & Technical Support - Tucson Water
9/26/92 8:00:00 AM	2013.26	101.04	Research & Technical Support - Tucson Water
9/25/92 8:00:00 AM	2013.07	101.23	Research & Technical Support - Tucson Water
9/24/92 8:00:00 AM	2013.09	101.21	Research & Technical Support - Tucson Water
9/23/92 8:00:00 AM	2012.90	101.40	Research & Technical Support - Tucson Water

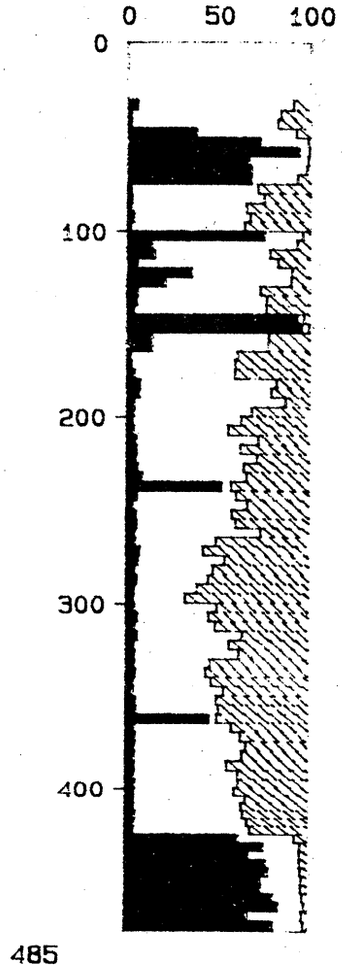
Bttm. = bottom, Dia. = diameter, ft. BLS = feet below land surface, ft. AMSL = feet above mean sea level,
in. = inches, info. = information, Mgals = Millions of gallons

Y-002 A


% GRAIN-SIZE DIST
0
50
100
0
100
200
300
400
485
ACID RXN
O W M S
0
100
200
300
400

Y-002A

PERCENT GRAIN-SIZE DISTRIBUTION



WELL CUTTING LITHOLOGIC FORM

TEST HOLE OR WELL NO. Y-2

LOCATION (12-12)22caa

DATE FORM FILLED OUT: 11/2/82

BY: G. Hix/J. Huerstel

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
30	45	85 % Granitic-Gneissic	Well Rounded	Well
		10 % Volcanic-Tuffaceous	Rounded	X Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		5 % Limestone-Shale	X Subangular	
		% Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Gravely sand - difficult to drill.

FORMATION DESCRIPTION: Gravely sand with cobbles and boulders up to 1 foot in diameter. Mostly granitic-gneissic origin.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
45	75	20 % Granitic-Gneissic	Well Rounded	X Well
		10 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		% Limestone-Shale	X Subangular	
		70 % Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Clay with minor sand and gravel.

FORMATION DESCRIPTION: Reddish tan clay with strong acid reaction small fraction of predominantly granite-gneiss sand and gravel.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
75	100	60 % Granitic-Gneissic	Well Rounded	Well
		30 % Volcanic-Tuffaceous	Rounded	X Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		10 % Limestone-Shale	X Subangular	
		% Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Coarse gravely sand with minor clay.

FORMATION DESCRIPTION: Gravely sand of predominantly granitic-gneissic origin with minor fine grained volcanics derived locally.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
100	130	50 % Granitic-Gneissic	Well Rounded	Well
		20 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	Subrounded	X Poorly
		% Limestone-Shale	X Subangular	
		30 % Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Clayey sand and gravel

FORMATION DESCRIPTION: Moderate fraction of reddish tan non-reactive clay with granitic-gneiss sand and gravels.

WELL CUTTING LITHOLOGIC FORM

TEST HOLE OR WELL NO. Y-2

LOCATION (12-12)22caa

DATE FORM FILLED OUT: _____

BY: Hix/Huerstel

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
130	145	70 % Granitic-Gneissic	Well Rounded	Well
		20 % Volcanic-Tuffaceous	Rounded	X Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		% Limestone-Shale	X Subangular	
		10 % Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Gravelly sand with minor clay.

FORMATION DESCRIPTION: Predominantly coarse granitic-gneissic sands and gravels with minor volcanics and tan non-reactive clay.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
145	155	1 % Granitic-Gneissic	X Well Rounded	X Well
		1 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		% Limestone-Shale	Subangular	
		98 % Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Dense sticky clay.

FORMATION DESCRIPTION: Light tan colored dense clay with strong acid reaction.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
155	200	65 % Granitic-Gneissic	Well Rounded	Well
		30 % Volcanic-Tuffaceous	Rounded	X Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		% Limestone-Shale	X Subangular	
		5 % Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Coarse sand and gravel.

FORMATION DESCRIPTION: Sand fraction clean sorted quartz and feldspars derived from granitic-gneissic material. Volcanics is predominantely material of the larger gravel size fraction.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
200	279	60 % Granitic-Gneissic	Well Rounded	Well
		35 % Volcanic-Tuffaceous	Rounded	X Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		% Limestone-Shale	X Subangular	
		5 % Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Coarse sands and gravels.

FORMATION DESCRIPTION: Much the same material as 155-200' except a slight increase in volcanics and a slightly more weathered appearance along with some Fe Oxide staining on the grains surface

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
270	430	20 % Granitic-Gneissic	___ Well Rounded	___ Well
		70 % Volcanic-Tuffaceous	___ Rounded	X Moderately
		___ % Sandstone-Siltstone	___ Subrounded	___ Poorly
		___ % Limestone-Shale	X Subangular	
		10 % Claystone-Caliche	___ Angular	
		Est. ___ % Fines Removed by Washing		
		___ % ___		

Comments: Coarse sands and gravels.

FORMATION DESCRIPTION: Increase in volcanics predominantly gray andesite-basaltic andesite in composition. Larger fragments are of volcanic material. Quartz and feldspar fraction decreases in the fines below.

From	To			
430	450	___ % Granitic-Gneissic	___ Well Rounded	___ Well
		20 % Volcanic-Tuffaceous	___ Rounded	X Moderately
		___ % Sandstone-Siltstone	___ Subrounded	___ Poorly
		___ % Limestone-Shale	X Subangular	
		80 % Claystone-Caliche	___ Angular	
		Est. ___ % Fines Removed by Washing		
		___ % ___		

Comments: Sand and gravelly clay.

FORMATION DESCRIPTION: Reddish tan reactive clay with angular volcanic fragments of andesite and andesitic basalt composition. No granitic or gneissic material.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
450	485	___ % Granitic-Gneissic	___ Well Rounded	X Well
	T.D.	15 % Volcanic-Tuffaceous	___ Rounded	___ Moderately
		___ % Sandstone-Siltstone	X Subrounded	___ Poorly
		___ % Limestone-Shale	___ Subangular	
		85 % Claystone-Caliche	___ Angular	
		Est. ___ % Fines Removed by Washing		
		___ % ___		

Comments: Gravelly clay.

FORMATION DESCRIPTION: Volcanic material decrease especially in the fines fraction: clay is reddish brown, somewhat fissel and very reactive.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
___	___	___ % Granitic-Gneissic	___ Well Rounded	___ Well
		___ % Volcanic-Tuffaceous	___ Rounded	X Moderately
		___ % Sandstone-Siltstone	___ Subrounded	___ Poorly
		___ % Limestone-Shale	X Subangular	
		___ % Claystone-Caliche	___ Angular	
		Est. ___ % Fines Removed by Washing		
		___ % ___		

Comments: ___

FORMATION DESCRIPTION: ___

Hole Number Y-02A

FORM WR-1003

Location PEPPERTREE RANCHES

Pan Set 2

Driller BC &M

Method Drilled REVERSE ROTARY

Explanation:

Retained Fines - The amount of fines remaining in all screens as a percent.
Lab Acid Reaction - O (no reaction), W (weak), M (moderate), S (strong).
Units - Depth (feet)
Sample Size (grams)
Weight (grams)

(1) DEPTH	(2) SAMPLE SIZE	MUNSEL COLOR (3) DRY	MUNSEL COLOR (4) WET	GRAVEL GT.4.0mm (5) WEIGHT	GRAVEL GT.4.0mm (6) PERCENT	GRAVEL GT.2.0mm (7) WEIGHT	GRAVEL GT.2.0mm (8) PERCENT	SAND GT.0.063mm (9) WEIGHT	SAND GT.0.063mm (10) PERCENT	TOTAL FINES (11) WEIGHT	TOTAL FINES (12) PERCENT	(13) RETAIN. FINES PERCENT	(14) LAB ACID REAC.	REMARKS
35	286	7.5YR 7/2	7.5YR 6/4	12	4.2	14	4.9	244	85.3		5.6		O	
40	277		7/4	10	3.6	34	12.3	227	82.0		2.1			
45	240		7/4	9	3.8	33	13.8	193	80.5		2.0			
50	245	7/4	6/4	6 (5)	2.0	15 (13)	5.3	157 (133)	54.3		38.4	15	W	
55	184		6/6	1 (.6)	.3	2 (1.2)	.7	80 (48)	26.1		72.9	40	O	
60	195		6/6	0	0	1 (.25)	.1	46 (11.5)	5.9		94.0	75	O	
65	175		6/6	0	0	2 (1.2)	.7	93 (56)	31.9		67.4	40	O	
70	172		6/4	2 (1.2)	.7	4 (2.4)	1.4	86 (52)	30.3		67.6	40	W	
75	193		6/4	6 (5)	2.6	10 (8)	4.1	61 (49)	25.4		67.9	20	W	
80	298	8/6	7/2	48	16.1	36	12.1	208	69.9		1.9		O	
85	338			52	15.4	32	9.5	246	72.7		2.5			
90	307			56	18.3	50	16.3	196	63.9		1.6			
95	249			42	[illegible]	39	15.7	159	[illegible]		[illegible]			
100	263			43	16.3	50	19.0	165	62.7		2.0			
105	218	7/4	6/4	6 (3.9)	1.8	6 (3.9)	1.8	69 (45)	20.7		75.7	35		
110	267	7/2		4	1.5	13	4.9	214	80.0		13.6			
115	287			25	8.7	37	12.9	182	63.4		15.0			
120	288		7/4	27	9.4	22	7.6	223	77.3		5.7			
125	275		6/4	16 (12)	4.4	18 (13.5)	4.9	203 (152)	55.2		35.5	25		
130	267		7/4	8 (7.2)	2.7	21 (19)	7.1	206 (185)	69.2		21.0	10		
135	309	8/2		19	6.1	63	20.4	209	67.6		5.9			
140	267	8/2		14	5.2	48	18.0	191	71.5		5.3			

K

Hole Number Y-002A

FORM WR-1003

Location PEPPERTREE RANCHES

Pan Set 2

Driller BC & M

Method Drilled REVERSE ROTARY

Explanation:

Retained Fines - The amount of fines remaining in all screens as a percent.
Lab Acid Reaction - O (no reaction), W (weak), M (moderate), S (strong).
Units - Depth (feet)
Sample Size (grams)
Weight (grams)

(1)	(2)	MUNSEL COLOR		GRAVEL GT.4.0mm		GRAVEL GT.2.0mm		SAND GT.0.063mm		TOTAL FINES		(13)	(14)	REMARKS
DEPTH	SAMPLE SIZE	(3) DRY	(4) WET	(5) WEIGHT	(6) PERCENT	(7) WEIGHT	(8) PERCENT	(9) WEIGHT	(10) PERCENT	(11) WEIGHT	(12) PERCENT	RETAIN. FINES PERCENT	LAB ACID REAC.	
145	277	7.5YR 8/2	7.5YR 7/4	17	6.1	48	17.3	202	72.8		3.7		S	
150	185	7/4	6/4	20 (3)	1.6	12 (1.8)	1.0	48 (7.2)	3.9		93.5	85	S	
155	197	7/4	6/4	0	0	0	0	55 (8)	4.1		95.9	85	S	
160	—	—	—	—		—		—						
165	277	7.5YR 7/4	7.5YR 5/4	32	11.5	29	10.4	177	63.9		14.2		O	
170	272	7/2	6/2	49	17.9	57	20.9	161	59.1		2.1			
175	300			57	19.0	64	21.3	172	57.3		2.5			
180	293			53	18.2	65	22.3	163	55.6		3.9			
185	326	7/4	6/4	11	3.4	46	14.1	245	75.1		7.3			
190	317	6/4		20	6.2	44	13.8	231	72.8		7.3			
195	293	7/6	6/2	11	3.4	26	8.9	244	83.2		4.5			
200	304			55	18.1	40	13.2	197	64.9		3.9			
205	288		5/4	41	14.1	65	22.5	173	60.2		3.2			
210	278	6/4		64	22.9	58	21.0	145	52.3		3.8			
215	248	7/6	5/6	26	10.4	42	17.0	167	67.4		5.2			
220	307			53	17.3	61	20.0	176	57.5		5.1			
225	316			33	10.3	55	17.3	212	67.1		5.3			
230	311			35	11.1	75	24.2	182	58.6		6.1			
235	336			47	14.0	67	20.0	193	57.4		8.6			
240	304	6/4	5/4	58	19.2	71	23.2	16	53.2		4.5			
245	305			50	16.5	71	23.4	167	54.9		5.2			
250	324			55	16.9	53	16.5	205	63.2		3.5			

Hole Number Y-002A

FORM WR 1003

Location Peppertree Ranches

Pan Set 2

Driller BC + M

Method Drilled Reverse Circulation

Explanation:

Retained Fines - The amount of fines remaining in all screens as a percent.
Lab Acid Reaction - O (no reaction), W (weak), M (moderate), S (strong).
Units - Depth (feet)
Sample Size (grams)
Weight (grams)

(1)	(2)	MUNSEL COLOR		GRAVEL GT.4.0mm		GRAVEL GT.2.0mm		SAND GT.0.063mm		TOTAL FINES		(13)	(14)	
DEPTH	SAMPLE SIZE	(3) DRY	(4) WET	(5) WEIGHT	(6) PERCENT	(7) WEIGHT	(8) PERCENT	(9) WEIGHT	(10) PERCENT	(11) WEIGHT	(12) PERCENT	RETAIN. FINES PERCENT	LAB ACID REAC.	REMARKS
255	317	7.5YR 6/4	7.5YR 5/4	57	18.0	76	23.9	168	53.1		5.0		O	
260	321			56	17.5	72	22.4	175	54.5		5.5			
265	321			24	7.5	59	18.3	223	69.4		4.9			
270	322			79	24.6	81	25.1	144	44.6		5.7			
275	272	6/2		88	32.5	69	25.6	96	35.3		6.7			
280	351			86	24.5	75	21.3	168	47.8		6.5			
285	304			89	29.4	70	23.0	132	43.3		4.2			
290	292			96	32.9	64	22.0	116	39.9		5.2			
295	292			111	37.9	67	23.1	102	35.0		3.9			
300	271			136	50.0	47	16.8	78	28.7		4.4			
305	279			76	27.4	63	22.6	128	44.1		5.9			
310	283			86	30.4	68	24.2	112	39.7		5.7			
315	324			82	[illegible]	8[illegible]	[illegible]	145	[illegible]		4.5			
320	320			61	19.1	53	16.4	187	58.6		5.9			
325	290			61	21.0	64	22.1	153	52.9		4.1			
330	266			43	16.1	57	21.4	154	58.0		4.4			
335	313			91	29.2	77	24.5	131	41.7		4.6			
340	278			78	28.2	78	28.2	108	38.7		4.8			
345	305			96	31.4	66	21.7	131	42.8		4.1			
350	273			60	22.0	66	24.2	136	49.7		4.2			
355	317			85	26.8	73	23.2	143	45.2		4.8			
360	298			72	24.3	74	24.9	136	45.6		5.2			

FORM WR 1003

Hole Number Y-002A

Page 4 of 5

Location PEPPERTREE RANCHES

Pan Set 2

Driller BC&M

Method Drilled REVERSE ROTARY

Explanation:

Retained Fines - The amount of fines remaining in all screens as a percent.
Lab Acid Reaction - O (no reaction), W (weak), M (moderate), S (strong).
Units - Depth (feet)
Sample Size (grams)
Weight (grams)

(1) DEPTH	(2) SAMPLE SIZE	MUNSEL COLOR (3) DRY	MUNSEL COLOR (4) WET	GRAVEL GT.4.0mm (5) WEIGHT	GRAVEL GT.4.0mm (6) PERCENT	GRAVEL GT.2.0mm (7) WEIGHT	GRAVEL GT.2.0mm (8) PERCENT	SAND GT.0.063mm (9) WEIGHT	SAND GT.0.063mm (10) PERCENT	TOTAL FINES (11) WEIGHT	TOTAL FINES (12) PERCENT	(13) RETAIN. FINES PERCENT	(14) LAB ACID REAC.	REMARKS
365	295	7.5YR 6/2	7.5YR 5/4	7.6	25.7	71	24.1	13	45.0		5.2		O	
370	308			65	21.1	63	20.4	166	54.0		4.4			
375	282			43	15.2	60	21.5	165	58.6		4.7			
380	293			38	12.9	60	20.5	182	62.2		4.4			
385	262			41	15.5	52	20.0	157	60.1		4.3			
390	314			72	22.8	67	21.5	161	51.4		4.3			
395	320			56	17.6	65	20.2	186	58.2		4.0			
400	266			51	19.0	49	18.3	153	57.4		5.2			
405	268			41	15.2	66	24.7	149	55.7		4.4			
410	314			43	13.7	63	20.0	195	61.9		4.4			
415	284			35	12.5	67	23.7	170	59.8		4.1			
420	285			39	13.9	61	21.5	171	59.9		4.7			
425	268			[illegible]	[illegible]	52	[illegible]	162	[illegible]		[illegible]			
430	259			26	10.1	55	21.1	168	64.9		3.9			
435	247	5YR 6/3	5YR 5/4	6 (5.4)	2.2	14 (12.5)	5.1	84 (75.8)	30.7		62.1	10		
440	256			2 (2.0)	.8	9 (7.8)	3.0	62 (52.7)	20.6		75.6	15		
445	239			2 (1.3)	.5	11 (9.2)	3.8	85 (68.2)	28.5		67.1	20		
450	192			2 (2.2)	1.1	7 (6.3)	3.3	40 (36.1)	18.8		76.8	10		
455	229			3 (2.5)	1.1	9 (6.4)	2.8	55 (41.1)	17.9		78.2	25		
460	224			1 (.7)	.3	7 (5.3)	2.4	69 (51.4)	23.0		74.3	25		
465	217			3 (2.6)	1.2	7 (5.3)	2.4	64 (48.2)	22.2		74.2	25		
470	215			1 (.5)	.2	6 (3.6)	1.7	59 (35.6)	16.6		81.5	40		

Hole Number Y-002A

FORM WR 1003

Location PEPPERTREE RANCHES

Pan Set 2

Driller BC&M

Method Drilled REVERSE ROTARY

Explanation:

Retained Fines - The amount of fines remaining in all screens as a percent.
Lab Acid Reaction - O (no reaction), W (weak), M (moderate), S (strong).
Units - Depth (feet)
Sample Size (grams)
Weight (grams)

(1)	(2)	MUNSEL COLOR		GRAVEL GT.4.0mm		GRAVEL GT.2.0mm		SAND GT.0.063mm		TOTAL FINES		(13)	(14)	
DEPTH	SAMPLE SIZE	(3) DRY	(4) WET	(5) WEIGHT	(6) PERCENT	(7) WEIGHT	(8) PERCENT	(9) WEIGHT	(10) PERCENT	(11) WEIGHT	(12) PERCENT	RETAIN. FINES PERCENT	LAB ACID REAC.	REMARKS
475	239	5YR 6/3	5YR 5/4	1 (.3)	.1	5 (2.4)	1.0	70 (35.0)	14.7		84.2	50	O	
480	251	↓	↓	2 (1.4)	.6	9 (6.2)	2.5	86 (60.4)	24.1		72.9	30	↓	
485	206	↓	↓	1 (.3)	.1	9 (3.1)	1.5	53 (18.4)	8.9		89.4	65	↓	
490														
495														
500														
505														
510														
515														
520														
525														
530														
535														
540														
545														
550														
555														
560														
565														
570														
575														
580														

Well Y-003A

Status Code: B
Registration No: 55-086157
Land Surface Elevation: 2144.1
Comments: Well abandoned May 2001

D(12-12) 26 CAD 3
5810 W. Kaiser Rd.

Northing: 494349
Easting: 955612
State Plane Arizona Central
NAD83 International feet

DRILLING INFORMATION

Drill Phase	Drill Date	Drilling Method	Contractor	Depth (ft. BLS)	Bit Dia. (in.)
ream	Nov 1982	reverse rotary	BC&M		

GRAVEL PACK INFO.

CASING INFORMATION

Descrip-tion	Date Cased	Top (ft.BLS)	Bttm. (ft. BLS)	Case Dia. (in.)	Case Comp.
cased	Nov 1982	0	578	16	UNKN(

PERFORATION INFORMATION

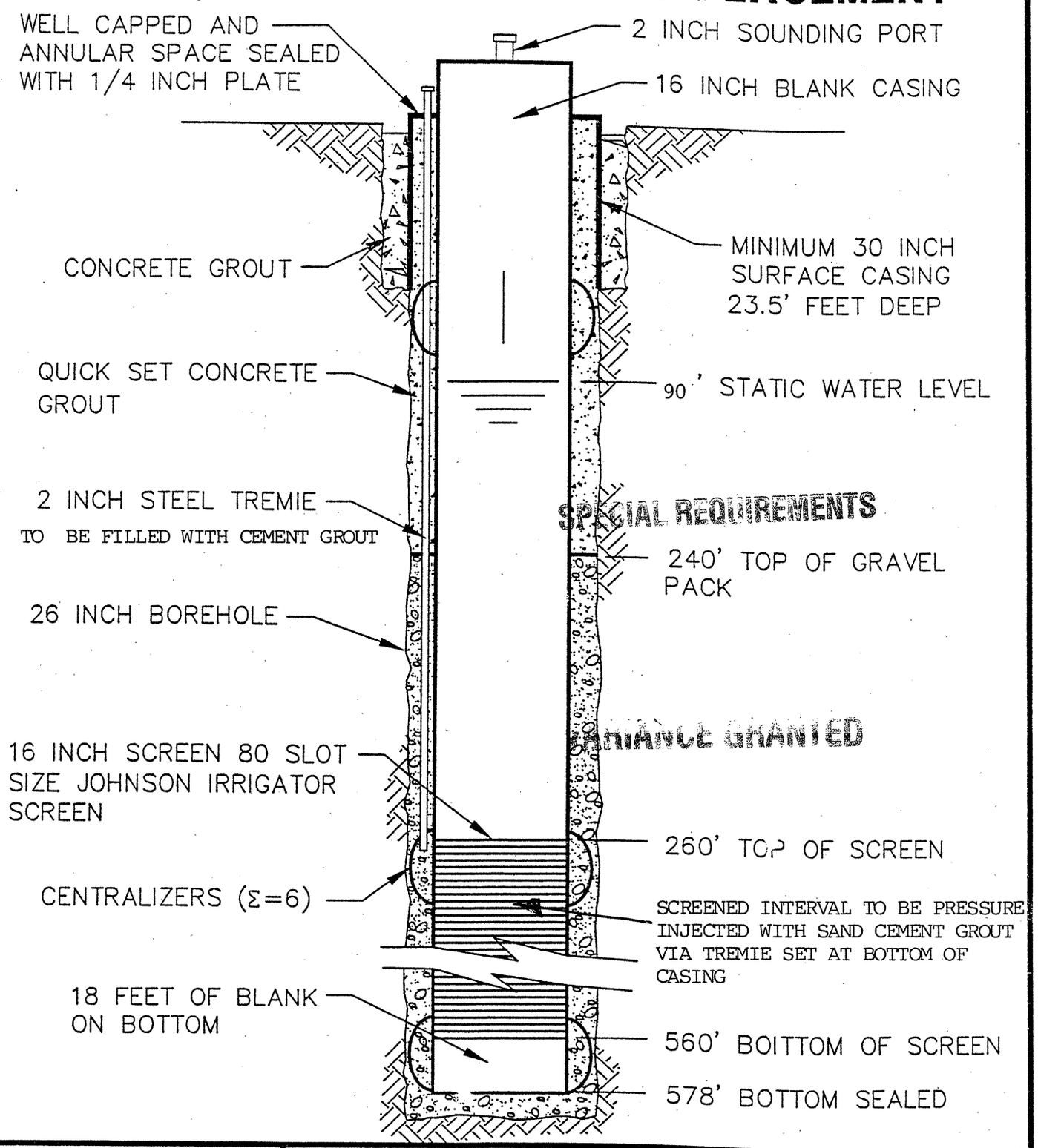
Date	Top (ft. BLS)	Bot. (ft. BLS)	Type
Nov 1982	260	560	

STATIC WATER LEVEL INFORMATION

Date Measured	Water Table Elevation (ft. AMSL)	Depth To Water (ft BLS)	Agency Name
2/24/01	2050.52	93.58	Research & Technical Support - Tucson Water
2/7/00	2047.99	96.11	Research & Technical Support - Tucson Water
12/22/98	2051.05	93.05	Research & Technical Support - Tucson Water
12/16/97	2050.80	93.30	Research & Technical Support - Tucson Water
11/22/97 8:00:00 AM	2051.03	93.07	Research & Technical Support - Tucson Water
11/21/97 8:00:00 AM	2051.01	93.09	Research & Technical Support - Tucson Water
11/20/97 8:00:00 AM	2050.93	93.17	Research & Technical Support - Tucson Water
11/19/97 8:00:00 AM	2050.96	93.14	Research & Technical Support - Tucson Water
11/18/97 8:00:00 AM	2051.00	93.10	Research & Technical Support - Tucson Water
11/17/97 8:00:00 AM	2050.76	93.34	Research & Technical Support - Tucson Water
11/16/97 8:00:00 AM	2050.82	93.28	Research & Technical Support - Tucson Water
11/15/97 8:00:00 AM	2050.82	93.28	Research & Technical Support - Tucson Water
11/14/97 8:00:00 AM	2050.80	93.30	Research & Technical Support - Tucson Water
11/13/97 8:00:00 AM	2050.81	93.29	Research & Technical Support - Tucson Water
11/12/97 8:00:00 AM	2050.77	93.33	Research & Technical Support - Tucson Water
11/11/97 8:00:00 AM	2050.74	93.36	Research & Technical Support - Tucson Water
11/10/97 8:00:00 AM	2050.86	93.24	Research & Technical Support - Tucson Water
11/9/97 8:00:00 AM	2050.76	93.34	Research & Technical Support - Tucson Water
11/8/97 8:00:00 AM	2050.65	93.45	Research & Technical Support - Tucson Water
11/7/97 8:00:00 AM	2050.66	93.44	Research & Technical Support - Tucson Water

Bttm. = bottom, Dia. = diameter, ft. BLS = feet below land surface, ft. AMSL = feet above mean sea level,
in. = inches, info. = information, Mgals = Millions of gallons

CASING, GRAVEL AND GROUT PLACEMENT



SPECIAL REQUIREMENTS
VARIANCE GRANTED

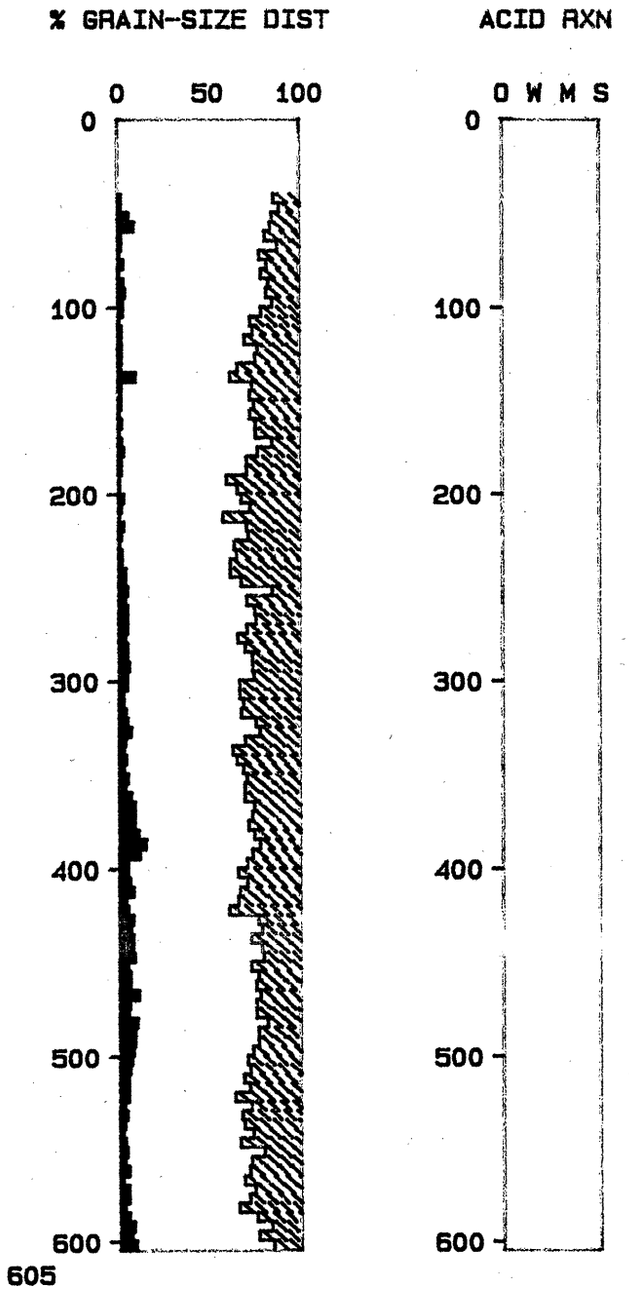
RECEIVED
GROUNDWATER MGT

TUCSON WATER
INVESTING IN OUR COMMUNITY

WELL CONSTRUCTION DETAIL
WELL Y-003A

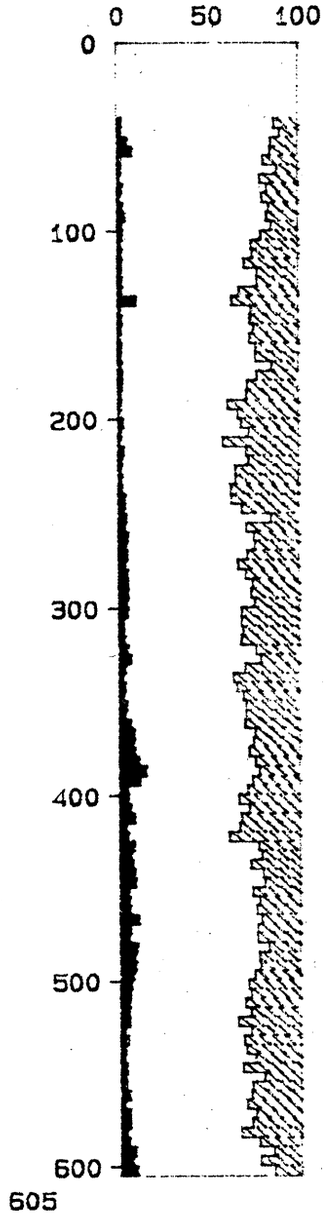
DATE : 11/97 SCALE: NOT TO SCALE

Y-003A


% GRAIN-SIZE DIST
0
50
100
ACID RXN
0 W M S
0
100
200
300
400
500
600
605

Y-003A

PERCENT GRAIN-SIZE DISTRIBUTION



FORM WR-1003

Pan Set 4

- The amount of fines remaining in all screens as a percent.
ion - O (no reaction), W (weak), M (moderate), S (strong).
(feet)
Size (grams)
(grams)

2.0mm	SAND GT.0.063mm		TOTAL FINES		(13)	(14)	REMARKS
(8) ERCENT	(9) WEIGHT	(10) PERCENT	(11) WEIGHT	(12) PERCENT	RETAIN. FINES PERCENT	LAB ACID REAC.	
9.1	242	84.3		2.4		O	
6.9	252	87.2		2.4			
8.6	276	79.1		5.7			
8.7	277	75.5		8.7			
15.2	218	78.7		1.8			
7.6	248	86.1		2.1			
14.7	232	77.3		1.3			
12.8	217	79.5		2.9			
12.8	220	78.3		1.4			
11.4	260	80.2		3.1			
[illegible]	264	[illegible]		[illegible]			
11.0	261	82.3		2.5			
15.1	242	76.1		2.8			
17.6	245	72.1		1.5			
8.1	234	71.8		2.1			
21.4	202	67.6		2.0			
14.9	258	75.2		1.7			
15.8	273	74.4		2.5			
19.6	219	64.2		2.3			
24.6	176	52.2		10.4			

Pan Set 4

nes - The amount of fines remaining in all screens as a percent.
action - O (no reaction), W (weak), M (moderate), S (strong).
th (feet)
ple Size (grams)
ght (grams)

GT.2.0mm	SAND GT.0.063mm		TOTAL FINES		(13)	(14)	
(8) PERCENT	(9) WEIGHT	(10) PERCENT	(11) WEIGHT	(12) PERCENT	RETAIN. FINES PERCENT	LAB ACID REAC.	REMARKS
16.7	237	72.0		1.5		O	
16.1	241	70.7		2.3			
17.1	243	72.8		2.1			
17.4	247	71.6		1.4			
15.7	254	74.1		2.0			
15.8	250	74.6		1.5			
11.7	269	82.8		2.2			
16.3	264	74.2		2.5			
17.0	233	69.3		2.1			
16.4	211	69.2		1.6			
16.9	199	59.1		1.5			
22.8	190	64.6		1.4			
[illegible]	194	64.9		3.0			
14.8	205	70.7		1.7			
27.3	172	56.6		1.3			
19.4	206	67.8		3.0			
16.8	207	69.7		2.4			
24.1	187	63.4		1.4			
20.2	183	62.7		2.4			
24.3	166	60.1		2.2			
22.9	176	58.5		4.0			
19.1	178	64.3		4.0			

FORM WR 1003

Pan Set 4

es - The amount of fines remaining in all screens as a percent.
ction - O (no reaction), W (weak), M (moderate), S (strong).
h (feet)
le Size (grams)
ht (grams)

T.2.0mm	SAND GT.0.063mm		TOTAL FINES		(13)	(14)	
(8) PERCENT	(9) WEIGHT	(10) PERCENT	(11) WEIGHT	(12) PERCENT	RETAIN. FINES PERCENT	LAB ACID REAC.	REMARKS
11.2	242	79.9		4.6		O	
17.8	200	67.1		3.7			
17.4	208	69.6		5.4			
17.2	210	70.9		4.7			
19.4	194	66.0		5.1			
20.1	179	61.9		3.8			
19.0	192	65.1		5.1			
17.6	204	69.2		5.1			
18.4	191	67.7		5.7			
18.4	205	70.0		5.1			
22.2	185	62.3		5.4			
19.9	181	64.4		3.2			
[illegible]	168	66.6		[illegible]			
20.8	193	63.7		3.6			
16.5	210	70.7		5.4			
15.1	208	71.5		6.9			
19.9	198	65.6		4.0			
24.0	189	60.4		2.6			
22.5	179	61.1		3.8			
22.9	206	65.6		2.9			
20.7	200	65.6		4.6			
20.7	202	66.4		3.6			

FORM WR 1003

Pan Set 4

nes - The amount of fines remaining in all screens as a percent.
action - O (no reaction), W (weak), M (moderate), S (strong).
th (feet)
ple Size (grams)
ght (grams)

GT.2.0mm	SAND GT.0.063mm		TOTAL FINES		(13)	(14)	
(8) PERCENT	(9) WEIGHT	(10) PERCENT	(11) WEIGHT	(12) PERCENT	RETAIN. FINES PERCENT	LAB ACID REAC.	REMARKS
18.3	178	62.7		6.7		O	
15.8	198	66.4		8.7			
14.5	189	65.4		9.0			
16.8	175	62.5		9.3			
16.0	176	64.0		11.3			
14.4	191	62.6		15.1			
13.5	175	62.1		11.7			
17.6	175	65.5		5.2			
21.5	182	61.1		4.7			
19.1	198	65.3		6.3			
17.2	182	58.9		8.4			
21.6	168	62.5		3.7			
[illegible]	164	[illegible]		[illegible]			
14.3	197	68.6		8.4			
14.5	198	71.7		6.9			
15.0	172	64.7		7.5			
13.1	184	71.0		8.5			
12.8	206	71.0		9.3			
15.9	197	68.1		5.2			
15.2	206	71.3		5.9			
16.3	218	69.9		6.1			
14.7	174	67.4		10.9			

FORM WR 1003

Pan Set 4

nes - The amount of fines remaining in all screens as a percent.
action - O (no reaction), W (weak), M (moderate), S (strong).
th (feet)
ple Size (grams)
ght (grams)

GT.2.0mm	SAND GT.0.063mm		TOTAL FINES		(13)	(14)	
(8) PERCENT	(9) WEIGHT	(10) PERCENT	(11) WEIGHT	(12) PERCENT	RETAIN. FINES PERCENT	LAB ACID REAC.	REMARKS
18.3	178	62.7		6.7		O	
15.8	198	66.4		8.7			
14.5	189	65.4		9.0			
16.8	175	62.5		9.3			
16.0	176	64.0		11.3			
14.4	191	62.6		15.1			
13.5	175	62.1		11.7			
17.6	175	65.5		5.2			
21.5	182	61.1		4.7			
19.1	198	65.3		6.3			
17.2	182	58.9		8.4			
21.6	168	62.5		3.7			
[illegible]	164	[illegible]		[illegible]			
14.3	197	68.6		8.4			
14.5	198	71.7		6.9			
15.0	172	64.7		7.5			
13.1	184	71.0		8.5			
12.8	206	71.0		9.3			
15.9	197	68.1		5.2			
15.2	206	71.3		5.9			
16.3	218	69.9		6.1			
14.7	174	67.4		10.9			

FORM WR 1003

Pan Set____

ıes - The amount of fines remaining in all screens as a percent.
ıction - O (no reaction), W (weak), M (moderate), S (strong).
:h (feet)
ıle Size (grams)
;ht (grams)

;T.2.0mm	SAND GT.0.063mm		TOTAL FINES		(13)	(14)	
(8) PERCENT	(9) WEIGHT	(10) PERCENT	(11) WEIGHT	(12) PERCENT	RETAIN. FINES PERCENT	LAB ACID REAC.	REMARKS
19.3	205	62.9		3.4		O	
15.5	211	71.3		5.1		↓	
11.2	225	76.3		8.1		↓	
14.0	216	70.4		6.5		↓	
9.9	208	75.9		9.1		↓	

FORM WR-1001

Hole Number Y-3

Location Cortaro Rd + I-10.

DEPTH	INTERVAL THICKNESS	PERCENTAGE			FORMATION COLOR	COMPOSITION	ACID REACT.	DRILL RATE	
		CLAY	SAND	GRAV.					
40-41	1	0	65	35	7.5YR 4/2	Volcanics, qtz	0	S	
41-106	65	0	85	15	7.5YR 4/2	Volcanics, qtz, mainly light colored, wellsorted	0	S	@ 82 clayie
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.5YR [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
						the predominant rock	0		@ 10
131-140	9	<5	75	20	7.5YR 5/4	Volcanics less Qtz than	0	F	Cla
						above			Clay
140-225	85	0	75	25	7.5YR 6/2	Volcanics Qtz, mica,	0	m-f	San
225-285	60	0	65	35	7.5YR 5/2	VOLCANIC SAND & GRAVEL	0	F	INCREA VOLC
285-330	45	0	75	25	" "	" "	WM	M	FIN
330-365	35	0	65	35	" "	" "		F	COARS
365-425	60	0	75	25	" "	" "	W	F	less c
425-475	50	0	70	30	7.5YR 5/2	Volcanic + igneous sands, gravels	W	F	"
475-535	60	0	75	25	" "	" "	W	F	predom
									ball
535-605		<5	75	20	7.5YR 5/4	Volcanics + igneous	0	m	predo
									clay
									balls-
									layers
									brow

WELL CUTTING LITHOLOGIC FORM

TEST HOLE OR WELL NO. Y-3 LOCATION (12-12)26cad

DATE FORM FILLED OUT: 11/16/82 BY: Huerstel

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
40	105	65 % Granitic-Gneissic	Well Rounded	Well
		35 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	X Subrounded	X Poorly
		% Limestone-Shale	Subangular	
		% Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Coarse volcanic and gneissic gravelly sand

FORMATION DESCRIPTION: Multi-colored intermediate volcanic and gneissic quartz and feldspar fragments. Larger chunks of material are fairly well rounded and volcanic in nature. No acid reaction.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
105	130	85 % Granitic-Gneissic	Well Rounded	Well
		15 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	X Subrounded	X Poorly
		% Limestone-Shale	Subangular	
		% Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Gneissic sand and gravel with minor volcanics.

FORMATION DESCRIPTION: Clean quartz and feldspar rich sandy gravelley formation with latite and rhyolite volcanics. No acid reaction.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
130	180	65 % Granitic-Gneissic	Well Rounded	Well
		35 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	X Subrounded	X Poorly
		% Limestone-Shale	Subangular	
		% Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Coarse gneissic and volcanic sand and gravel

FORMATION DESCRIPTION: Formation much the same as 40--→ 105' except noticeable decrease in red volcanics and increase in greenish greys and browns. No acid reaction.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
180	225	30 % Granitic-Gneissic	Well Rounded	Well
		70 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	Subrounded	X Poorly
		% Limestone-Shale	X Subangular	
		% Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Volcanic sand and gravel with minor gneissic gragments.

FORMATION DESCRIPTION: Further decrease in red volcanics with increasing grey and green volcanics. Fines are still predominately quartz and feldspar rich. Weak acid reaction from 215'--→ 225'

WELL CUTTING LITHOLOGIC FORM

TEST HOLE OR WELL NO. Y-3 LOCATION (12-12)26cad

DATE FORM FILLED OUT: 11/16/82 BY: Huerstel

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
225'	590	5 % Granitic-Gneissic	Well Rounded	Well
		92 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	Subrounded	X Poorly
		% Limestone-Shale	X Subangular	
		3 % Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Volcanic sands and gravel with minor pale buff colored clays.

FORMATION DESCRIPTION: Gneissic portion of material has dropped considerably to where green and grey basalts and andesites are the predominate fraction in both the coarse and fines fraction. Weak to moderate acid reaction.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
590	605	<1 % Granitic-Gneissic	Well Rounded	Well
		90 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	X Subrounded	X Poorly
		% Limestone-Shale	Subangular	
		10 % Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments: Volcanic sands and gravels with increase in pale buff colored clays.

FORMATION DESCRIPTION: Much the same formation as 225 --> 590 except slightly more clay and a moderate to strong acid reaction. The volcanics also appear to be slightly more weathered. Overall colors are a little more dull.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
		% Granitic-Gneissic	Well Rounded	Well
		% Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		% Limestone-Shale	Subangular	
		% Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments:

FORMATION DESCRIPTION:

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
		% Granitic-Gneissic	Well Rounded	Well
		% Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		% Limestone-Shale	Subangular	
		% Claystone-Caliche	Angular	
		Est. % Fines Removed by Washing		
		%		

Comments:

FORMATION DESCRIPTION:

Well Y-004A

Status Code: E
Registration No: 55-086158
Land Surface Elevation: 2110.6
Comments:

D(12-12) 21 ADB

Northing: 501336
Easting: 946465
State Plane Arizona Central
NAD83 International feet

DRILLING INFORMATION

Drill Phase	Drill Date	Drilling Method	Contractor	Depth (ft. BLS)	Bit Dia. (in.)
ream	Nov 1982	rotary	BC&M		

GRAVEL PACK INFO.

CASING INFORMATION

Description	Date Cased	Top (ft.BLS)	Bttm. (ft. BLS)	Case Dia. (in.)	Case Comp.
cased	Nov 1982	0	466	16	UNKN(

PERFORATION INFORMATION

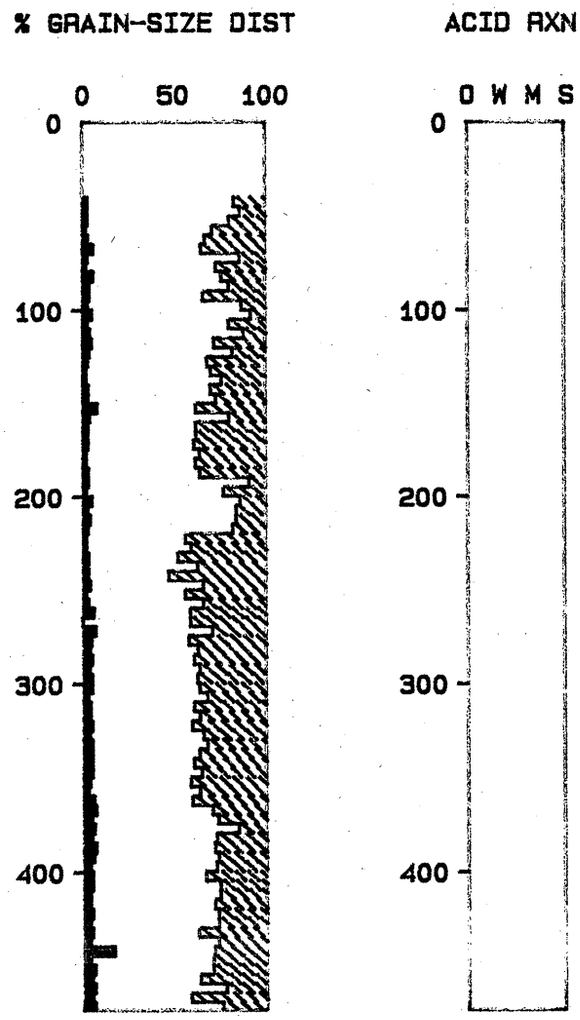
Date	Top (ft. BLS)	Bot. (ft. BLS)	Type
Nov 1982	245	445	

STATIC WATER LEVEL INFORMATION

Date Measured	Water Table Elevation (ft. AMSL)	Depth To Water (ft BLS)	Agency Name
2/24/01	1995.13	115.47	Research & Technical Support - Tucson Water
2/7/00	1999.92	110.68	Research & Technical Support - Tucson Water
12/22/98	1999.40	111.20	Research & Technical Support - Tucson Water
12/16/97	1998.40	112.20	Research & Technical Support - Tucson Water
10/13/97 8:00:00 AM	1995.55	115.05	Research & Technical Support - Tucson Water
10/12/97 8:00:00 AM	1995.30	115.30	Research & Technical Support - Tucson Water
10/11/97 8:00:00 AM	1995.36	115.24	Research & Technical Support - Tucson Water
10/10/97 8:00:00 AM	1995.35	115.25	Research & Technical Support - Tucson Water
10/9/97 8:00:00 AM	1995.20	115.40	Research & Technical Support - Tucson Water
10/8/97 8:00:00 AM	1995.17	115.43	Research & Technical Support - Tucson Water
10/7/97 8:00:00 AM	1995.23	115.37	Research & Technical Support - Tucson Water
10/6/97 8:00:00 AM	1995.23	115.37	Research & Technical Support - Tucson Water
10/5/97 8:00:00 AM	1995.04	115.56	Research & Technical Support - Tucson Water
10/4/97 8:00:00 AM	1994.96	115.64	Research & Technical Support - Tucson Water
10/3/97 8:00:00 AM	1994.93	115.67	Research & Technical Support - Tucson Water
10/2/97 8:00:00 AM	1994.87	115.73	Research & Technical Support - Tucson Water
10/1/97 8:00:00 AM	1994.77	115.83	Research & Technical Support - Tucson Water
9/30/97 8:00:00 AM	1994.87	115.73	Research & Technical Support - Tucson Water
9/29/97 8:00:00 AM	1994.65	115.95	Research & Technical Support - Tucson Water
9/28/97 8:00:00 AM	1994.74	115.86	Research & Technical Support - Tucson Water

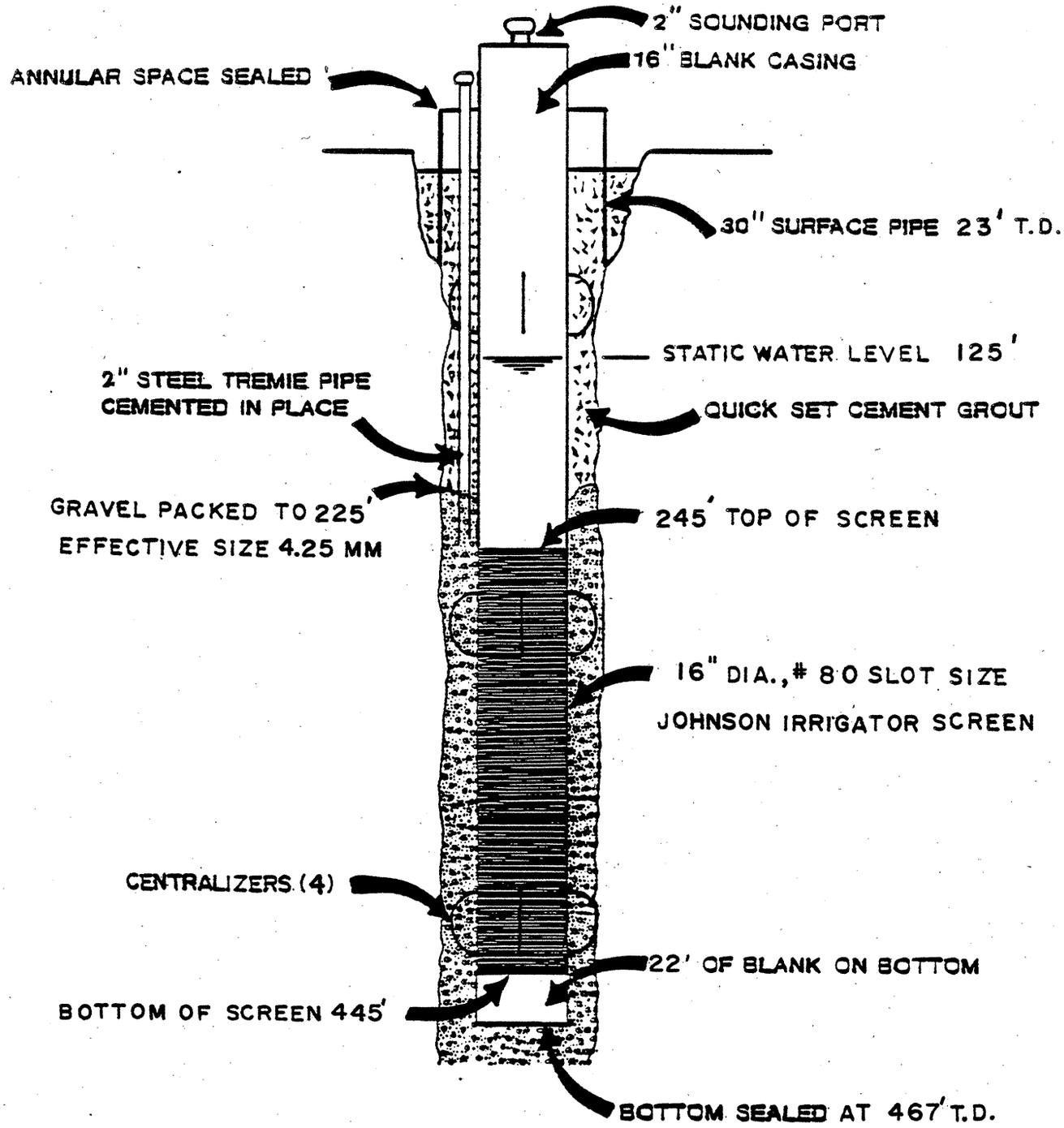
Bttm. = bottom, Dia. = diameter, ft. BLS = feet below land surface, ft. AMSL = feet above mean sea level,
in. = inches, info. = information, Mgals = Millions of gallons

Y-004A


% GRAIN-SIZE DIST
0
50
100
0
100
200
300
400
ACID RXN
O W M S
0
100
200
300
400

474

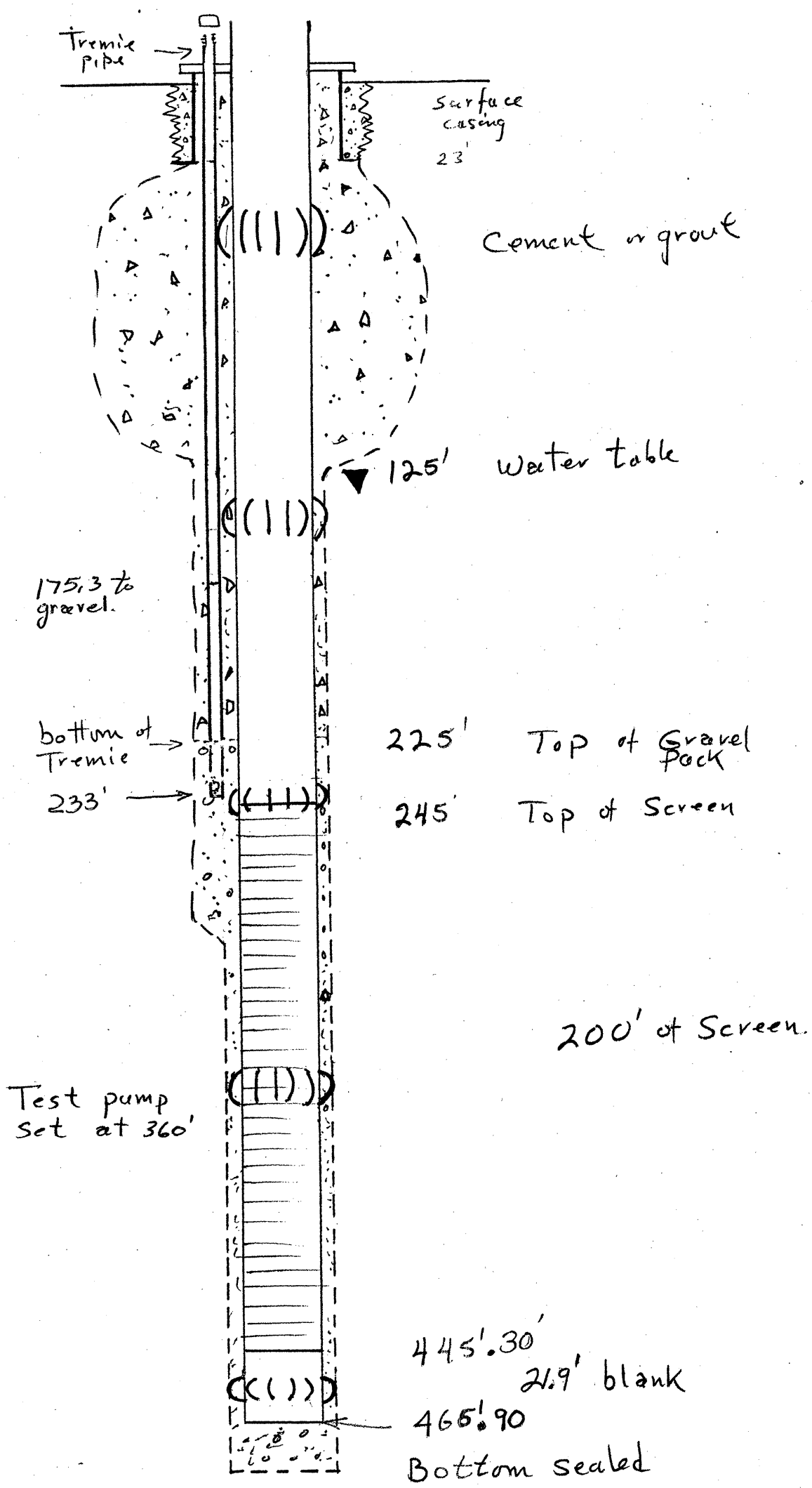
CASING, GRAVEL, AND CEMENT GROUT PLACEMENT DETAIL



DR. BY L. BRUMBAUGH	Tucson Water	CITY OF TUCSON
APPR. BY Bruce Johnson, CHIEF HYDROLOGIST		Y-4 WATER WELL
	DATE 12-9-82	
APPR. BY _____ DIRECTOR	SCALE NONE	DWG. NO. FIG. 1

Y-4

10-25-82
(68)


Tremie pipe
Surface casing
23'
Cement or grout
125'
Water table
175.3 to gravel.
bottom of Tremie
233'
225'
Top of Gravel Pack
245'
Top of Screen
200' of Screen.
Test pump set at 360'
445'.30'
21.9' blank
465'.90
Bottom sealed

WELL CUTTING
LITHOLOGIC FORM

TEST HOLE OR
WELL NO. Y-4 LOCATION T12S R12E, 21adb

DATE FORM FILLED OUT: 10/29/82 BY: G. Hix

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
45'	175'	50 % Granitic-Gneissic	Well Rounded	Well
		40 % Volcanic-Tuffaceous	Rounded	Moderately
		5 % Sandstone-Siltstone	Subrounded	X Poorly
		% Limestone-Shale	X Subangular	
		% Claystone-Caliche	Angular	
	Est.	% Fines Removed by Washing		
		5 % Schists		

Comments: Fragments of banded muscovite gneiss and weathered granite. Large cobbles and boulders in upper 60 feet.

FORMATION DESCRIPTION: Sandy gravelwith cobbles and boulders in upper 60 feet with interbedded layers of sandy clay less than 1 foot thick. Predominately Catalina gneiss and granites with Tucson Mountain volcanics intermixed.

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
175'	205'	20 % Granitic-Gneissic	Well Rounded	Well
		70 % Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	Subrounded	X Poorly
		% Limestone-Shale	X Subangular	
		% Claystone-Caliche	Angular	
	Est.	% Fines Removed by Washing		
		%		

Comments: Volcanics predominate. Rhyolites, andesites, and tuffs, all fine grained.

FORMATION DESCRIPTION: Sandy gravel of predominately volcanic composition

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
205'	475'	5 % Granitic-Gneissic	Well Rounded	Well
	T.D.	95 % Volcanic-Tuffaceous	Rounded	X Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		% Limestone-Shale	X Subangular	
		% Claystone-Caliche	Angular	
	Est.	% Fines Removed by Washing		
		%		

Comments: Boulders encountered at 254'. Decrease in gravel size from 275. Minor clay layers. Rock type more basic than above andesites, basults

FORMATION DESCRIPTION: Sandy gravel of predominately volcanic composition

DEPTH From	DEPTH To	MAJOR COMPONENTS OF SAND & GRAVEL	ROUNDNESS OF PARTICLES	SORTING
		% Granitic-Gneissic	Well Rounded	Well
		% Volcanic-Tuffaceous	Rounded	Moderately
		% Sandstone-Siltstone	Subrounded	Poorly
		% Limestone-Shale	Subangular	
		% Claystone-Caliche	Angular	
	Est.	% Fines Removed by Washing		
		%		

Comments:

Well Z-007A

Status Code: A
Registration No: 55-619844
Land Surface Elevation: 2233.2
Comments:

D(13-13) 8 BAA
3401 W. Orange Grove Rd.

Northing: 482154
Easting: 971478
State Plane Arizona Central
NAD83 International feet

DRILLING INFORMATION

Drill Phase	Drill Date	Drilling Method	Contractor	Depth (ft. BLS)	Bit Dia. (in.)
ream	Jan 1960	unknown	Leatherwood		
deepening	Dec 1976	cable		507	

GRAVEL PACK INFO.

CASING INFORMATION

Description	Date Cased	Top (ft.BLS)	Bttm. (ft. BLS)	Case Dia. (in.)	Case Comp.
cased	Jan 1960		300	12	UNKN(
cased	Dec 1976	205	507	10	UNKN(

PERFORATION INFORMATION

Date	Top (ft. BLS)	Bot. (ft. BLS)	Type
Jan 1960			
Dec 1976	205	507	torch cut

STATIC WATER LEVEL INFORMATION

Date Measured	Water Table Elevation (ft. AMSL)	Depth To Water (ft BLS)	Agency Name
1/30/01	2102.52	130.68	Research & Technical Support - Tucson Water
2/9/00	2102.42	130.78	Research & Technical Support - Tucson Water
1/14/99	2105.84	127.36	Research & Technical Support - Tucson Water
12/29/97	2103.85	129.35	Research & Technical Support - Tucson Water
12/16/96	2114.68	118.52	Research & Technical Support - Tucson Water
11/28/95	2120.34	112.86	Research & Technical Support - Tucson Water
12/9/94	2114.55	118.65	Research & Technical Support - Tucson Water
12/9/93	2125.20	108.00	Water Operations - Tucson Water
12/22/92	2106.95	126.25	Research & Technical Support - Tucson Water
12/16/91	2106.21	126.99	Research & Technical Support - Tucson Water
1/22/91	2104.50	128.70	Water Operations - Tucson Water
12/12/89	2102.85	130.35	Research & Technical Support - Tucson Water
2/14/89	2106.70	126.50	Water Operations - Tucson Water
12/28/87	2111.50	121.70	Research & Technical Support - Tucson Water
12/20/86	2117.00	116.20	Research & Technical Support - Tucson Water
12/13/85	2120.80	112.40	Water Operations - Tucson Water
1/7/85	2127.30	105.90	Research & Technical Support - Tucson Water
1/5/84	2126.00	107.20	Research & Technical Support - Tucson Water

Bttm. = bottom, Dia. = diameter, ft. BLS = feet below land surface, ft. AMSL = feet above mean sea level,
in. = inches, info. = information, Mgals = Millions of gallons

NAMES OF CREW

Campbell
Perez
Ortiz

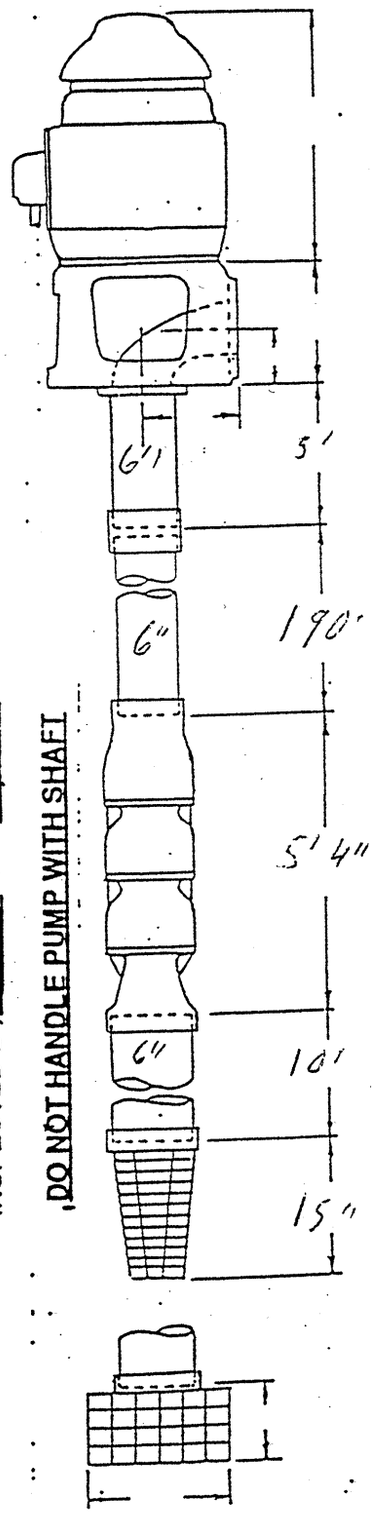
TUCSON CITY WATER DEPARTMENT

WELL PUMP WORK ORDER

NATURE OF WORK Install Pump

LOCATION Z-7 DATE 4/2/96

SKETCH



STICK UP 10"x20"

LATERAL 7/8"

SHAFT RUN OUT

INSPECTED BY 988 DATE 4/1/96

DO NOT HANDLE PUMP WITH SHAFT

WELL CONDITIONS

Diameter Casing 12

Static Level

Head at Pump Discharge

PUMP DATA

Head and Discharge Dize 6"x6"

Bowls 7.703

Stages 6

Column Size 6"x10'

Shaft Size 1 3/16"x2"

Shaft Type Jones S/S

Suction Pipe Size 6"x10'

Strainer Size 6"x15"

MOTOR

Size and Serial-No.

Current

GAS ENGINE

Size and Make —

Serial No. —

GEAR DRIVE

Make and Model —

Gear Ratio —

CHANGES MADE:

BOWL DATA

Model No. SE 10C6

Serial No. 87022D1-96

Impeller Dia. 7.703

Design gpm 350

Design head 345

CITY OF TUCSON

GRAIN SIZE ANALYSIS

Page 1 of 1

Location Z-7

Depth	Weight	<0.063 mm		0.063 mm		0.125 mm		0.246 mm		0.5 mm		1.0 mm		2.0 mm		3.35 mm		4.0 mm		6.35 mm		REMARKS
		Weight	%	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%	
245	322		22	15	5	19	6	24	7	30	9	42	13	41	13	14	4	36	11	21	10	
285	361		8	8	2	8	2	10	3	10	3	14	4	19	5	10	3	53	15	199	55	
325	365		19	10	3	10	3	13	4	15	4	19	5	17	5	5	1	14	4	189	52	
365	366		14	8	2	10	3	13	4	16	4	20	5	14	4	4	1	11	3	220	60	
400	303		26	16	5	17	6	21	7	24	8	30	10	25	8	8	3	17	6	64	21	
440	331		8	6	2	10	3	21	6	38	11	68	21	87	26	18	5	32	10	26	8	
480	361		18	12	3	18	5	34	7	52	14	67	19	52	14	10	3	28	8	33	9	

CITY OF TUCSON

WELL-CUTTING ANALYSIS FORM

Page 1 of 2

Location Z-7

LAB No. #1

Depth: 215-500

Method drilled: CABLE TOOL

Driller:

Depth	Pan	Sample Size	Munsell color Dry	Munsell color Wet	Fines <.0625 mm Weight	Fines <.0625 mm Percent	Sand >.0625 mm Weight	Sand >.0625 mm Percent	Gravel >2.0 mm Weight	Gravel >2.0 mm Percent	Gravel > 4.0 mm Weight	Gravel > 4.0 mm Percent	Mudstone Weight	Mudstone Percent	Acid *	Max. Size	Remarks
215		327		10YR 4/6		22	111	34	50	15	96	29			O	19	
225		308		10YR 5/6		19	86	28	39	13	123	40			O	25	
235		337				27	123	36	46	14	77	23			O	22	
245		322		10YR 5/6		23	125	39	54	17	68	21			O	24	
255		375		10YR 5/6		12	86	23	57	15	187	50			O	32	
265		351		10YR 5/6		10	53	15	40	11	225	64			O	49	
275		306				16	73	24	51	17	133	43			O	28	
285		361		10YR 5/6		11	44	12	27	7	254	70			W	35	
295		328		10YR 6/6		18	77	23	39	12	154	47			W	50	
305		345		10YR 4/4		22	115	33	57	17	96	28			W	22	
315		323				20	96	30	43	13	120	37			W	29	
325		365				21	64	18	19	5	204	56			W	51	
335		338				27	137	41	35	10	76	22			W	29	
345		281		10YR 4/4		10	40	14	48	17	167	59			W	34	
355		373		10YR 5/6		10	46	12	14	4	275	74			W	45	
365		366				15	62	17	18	5	232	63			W	50	
375		368		10YR 5/6		19	88	24	23	6	187	51			W	61	
385		347		10YR 6/4		31	143	41	45	13	51	15			W	20	
395		313				28	97	31	35	11	95	30			W	33	
400		303				29	104	34	31	10	81	27			W	38	1 piece weighs 37 g
410		317				16	88	28	44	15	129	41			W	29	
420		285		10YR 6/4		29	117	41	40	14	47	16			W	28	
430		372		10YR 5/6		12	103	28	99	27	122	33			W	24	
440		331		10YR 5/4		8	137	41	109	33	58	18			W	17	
450		367		10YR 6/4		13	95	26	58	16	166	45			W	25	
460		350				15	95	27	70	20	132	38			W	15	

*Reaction to HCL S - Strong M - Moderate W - Weak O - None

ANAL. BY _____ DATE _____

CITY OF TUCSON

WELL-CUTTING ANALYSIS FORM

Page 2 of ____

Location Z-7

LAB No. #1

Depth: 215-500

Method drilled: cable tool

Driller:

Depth	Pan	Sample Size	Munsell color		Fines <.0625 mm		Sand >.0625 mm		Gravel >2.0 mm		Gravel > 4.0 mm		Mudstone		Acid *	Max. Size	Remarks
			Dry	Wet	Weight	Percent	Weight	Percent	Weight	Percent	Weight	Percent	Weight	Percent			
470		375				14	123	33	59	16	139	37			W	17	
480		361				16	170	47	65	18	67	19			W	21	
490		380				15	141	37	76	20	106	28			W	31	
500		348				11	91	26	64	18	158	45			W	65	

ANAL. BY _____ DATE _____

*Reaction to HCL
S - Strong
M - Moderate
W - Weak
O - None