SITE 2

AQUIFER-TEST REPORT

I. SUMMARY

A. Location Palm Beach County, Florida

B. Date November 5, 1986

C. Well Development 2 hours with air; 2 hours of pumping

D. Length of Test 120 minutes of pumping

E. Discharge 318 gallons per minute

F. Hydraulic Coefficients Transmissivity is 31,000 square feet per day from observation well data.

G. Analytical Model Cooper-Jacob straight line

H. Preparer Leo J. Swayze

I. Reviewer Subdistrict Ground Water Specialist

J. Remarks The transmissivity represents the section of the aquifer between 77 and 183 feet below land surface.

II. NARRATIVE

A. Introduction

1. Test purpose To provide water managers with hydraulic parameters for ground-water modeling.

2. Personnel The test was conducted by personnel (Richard Kane and Leo Swayze) of the U.S. Geological Survey, Water Resources Division, Miami subdistrict.

B. Physical Conditions

1. Aquifer description The main water-bearing zone of the surficial aquifer consists primarily of about 106 feet of sandy, shelly limestones interbedded with unconsolidated layers of sand and shell. This is overlain by about 77 feet of a moderately sorted, very fine sand and shelly marl of comparatively lower permeability. The overlying sands and shelly marls act as a confining layer for short periods of pumping. On a long-term pumping basis, the aquifer should be considered as "water table." The base of the surficial aquifer is 210 feet below land surface.

2. Site location The test site is located in the southeast corner of Palm Beach County, Florida (see location map).

Latitude is 26°25'53" Longitude is 80°12'15"

3. Well descriptions A geologic test well (PB-1574) was drilled to the base of the aquifer. The section to be tested was then determined by field observation of drill cuttings. The borehole was then backfilled to 183 feet. An observation well was established by screening the interval between 86 and 183 feet. A 9-inch borehole was drilled 30 feet from the observation well. A pumping well (PB-1574) was created by installing 6-inch PVC casing and screening the interval between 80 and 180 feet with 6-inch 10 slot PVC screen (see enclosed construction schedule).

4. Pump The well was pumped with a 40-horsepower 4-inch Rupp self-priming centrifugal pump.

5. Drawdown measurements Measurements were made with a chalked tape in both the pumping and observation wells.

6. Discharge Discharge was measured using the "free discharge pipe oriface" method as described in the Bureau of Reclamation's Ground Water Manual. A 10-foot length of 12-inch diameter PVC pipe fitted with a 6-inch PVC pipe riser was used to vent H_2S gas before discharge through the oriface was measured. Discharge was 318 gallons per minute.

7. Computations Computations are shown on the semilog graph of drawdown versus time. Method of analysis is based on the Cooper-Jacob straight line method as described by Lohman (1972) and Kruseman and DeRidder (1976).

C. Results

1. A reasonable comparison existed between transmissivity calculated from pumping well drawdown data, 23,000 square feet per day, and observation well drawdown data, 31,000 square feet per day. Drawdown data from the pumping well show some scatter. This was probably due to small fluctuation in the pumping rate, and surging caused by hydrogen sulfide gas release from the pumped ground water in the stand pipe. Drawdown data from the observation well approached a horizontal line after about 95 minutes of pumping. This probably does not represent an equilibrium situation but represents a transition from a confined system to a water-table system. This transition is due to the permeability contrast between the overlying surficial sands and the sandy and shelly limestones in the pumping zone. Grain-size analysis of the sands yielded a horizontal permeability value of 24 feet per day (Lappala, 1978). Vertical permeabilities could

be 2 to 10 times lower (Weeks, 1976). This is about 121 times less than the horizontal permeability of the tested zone (292 feet per day). Based on this physical model of the system, aquifer characteristics were calculated using the Cooper-Jacob straight line method applied to the early drawdown data.

2. Transmissivity Aquifer transmissivity is about 31,000 square feet per day for geologic materials between 77 and 183 feet below and surface.

3. Storage coefficient Not applicable

4. Other activities in the area None

5. References

Kruseman, G.P., and DeRidder, N.A., 1976, Analysis and evaluation of pumping test data: International Institute for Land Reclamation and Improvement/ILRI, Wageningen, The Netherlands, 200 p.

Lappala, E.G., 1978, Quantitative hydrogeology of the Upper Republican Natural Resource District, southwest Nebraska: U.S. Geological Survey Water-Resources Investigations Report 78-38, 200 p.

Lohman, S.W., 1972, Ground-water hydraulics: U.S. Geological Survey Professional Paper 708, 70 p.

Weeks, E.P., 1978, Aquifer tests - the state of the art in hydrology: Invitational well-testing symposium proceedings, Lawrence-Berkley Report LBC-7027, Lawrence-Berkley Laboratory, University of California, 26 p.

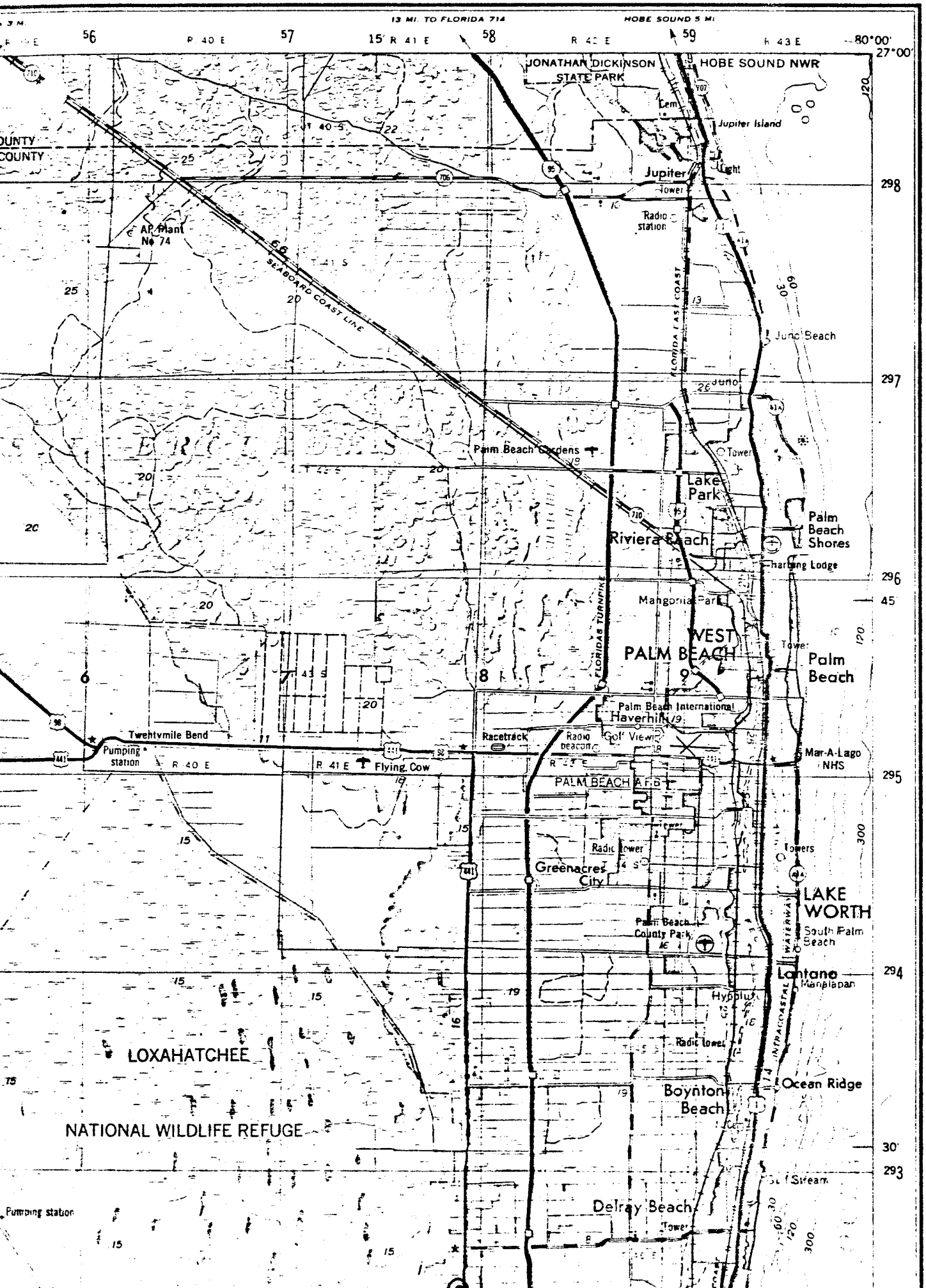
D. Figures

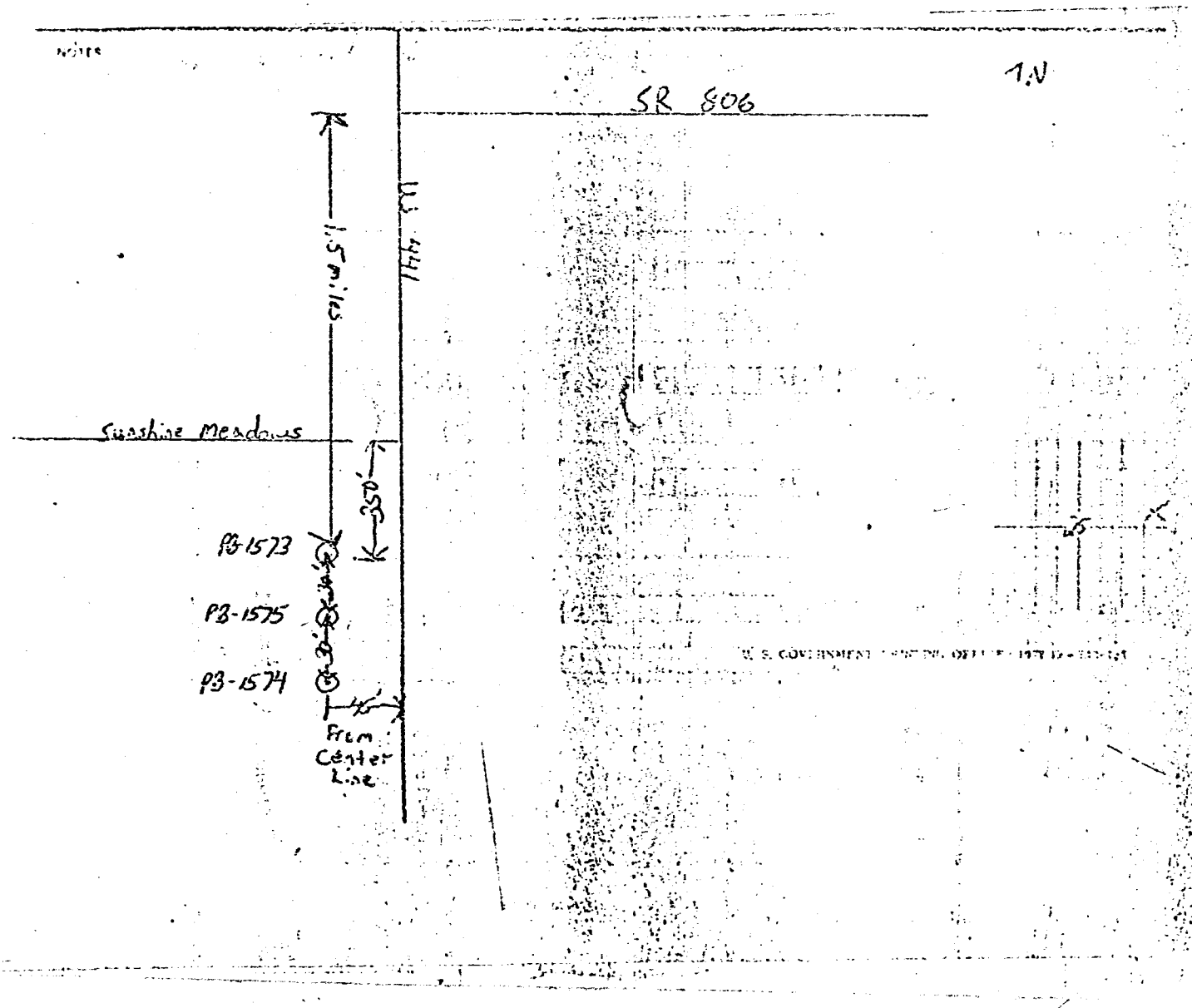
1. Map of Palm Beach County with site location.
2. Calculations

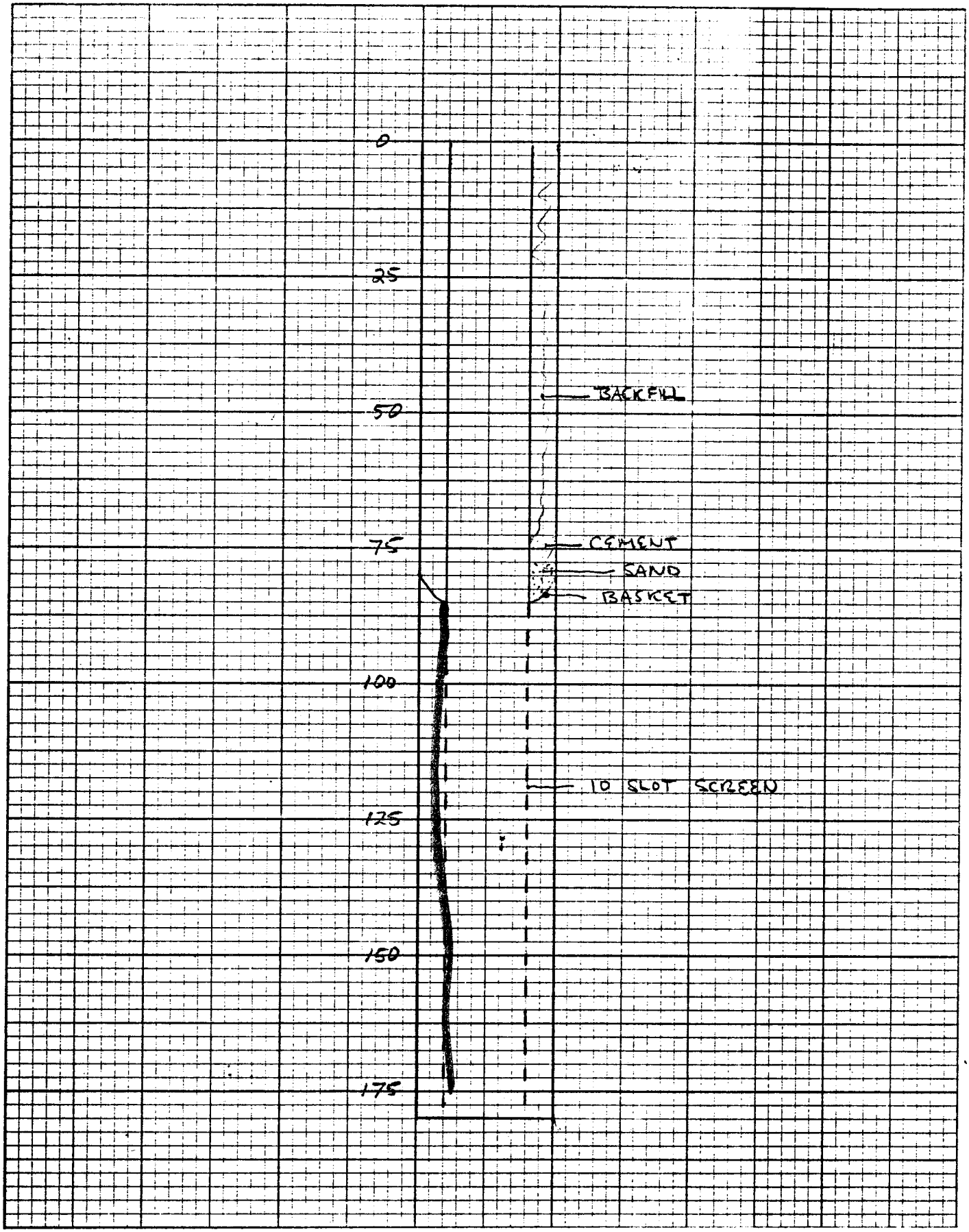
   Semilog graph of time versus drawdown for pumping well and observation well.
3. Generalized geologic column.
4. Drawing of well construction.

Tables

1. Lithologic log of test well (observation well).
2. Tabulation of field data.


13 MI. TO FLORIDA 714
HOBE SOUND 5 MI
56
57
58
59
R 40 E
R 41 E
R 42 E
R 43 E
80°00'
27°00'
JONATHAN DICKINSON STATE PARK
HOBE SOUND NWR
Jupiter Island
Jupiter
Light
Tower
Radio station
AP Plant No 74
SEABOARD COAST LINE
FLORIDA EAST COAST
Juno Beach
Juno
Palm Beach Gardens
Lake Park
Riviera Beach
Palm Beach Shores
Harbor Lodge
Mangonia Park
WEST PALM BEACH
Palm Beach
FLORIDAS TURNPIKE
Palm Beach International
Haverhill
Racetrack
Radio beacon
Golf View
Twelvemile Bend
Pumping station
Flying Cow
Mar-A-Lago NHS
PALM BEACH A.F.B.
Radio Tower
Towers
Greenacres City
LAKE WORTH
South Palm Beach
Palm Beach County Park
Lantana
Manalapan
Hypoluxo
INTRACOASTAL WATERWAY
LOXAHATCHEE
NATIONAL WILDLIFE REFUGE
Ocean Ridge
Boynton Beach
Stream
Delray Beach
Pumping station
298
297
296
295
294
293
45
30
120
60
300


NOTES
SR 806
1.5 miles
US 441
Sunshine Meadows
350'
PB-1573
PB-1575
PB-1574
From Center Line



Well Construction: A 9-inch hole was drilled to 180 feet. A 6-inch PVC casing was then lowered to the bottom of the hole inside the 9-inch steel casing. The steel casing was then pulled back to 70 feet which allowed the basket to open. The open hole was then sand packed and cemented. The rest of the 9-inch steel casing was then removed. The open hole was then back-filled with sand and cuttings.

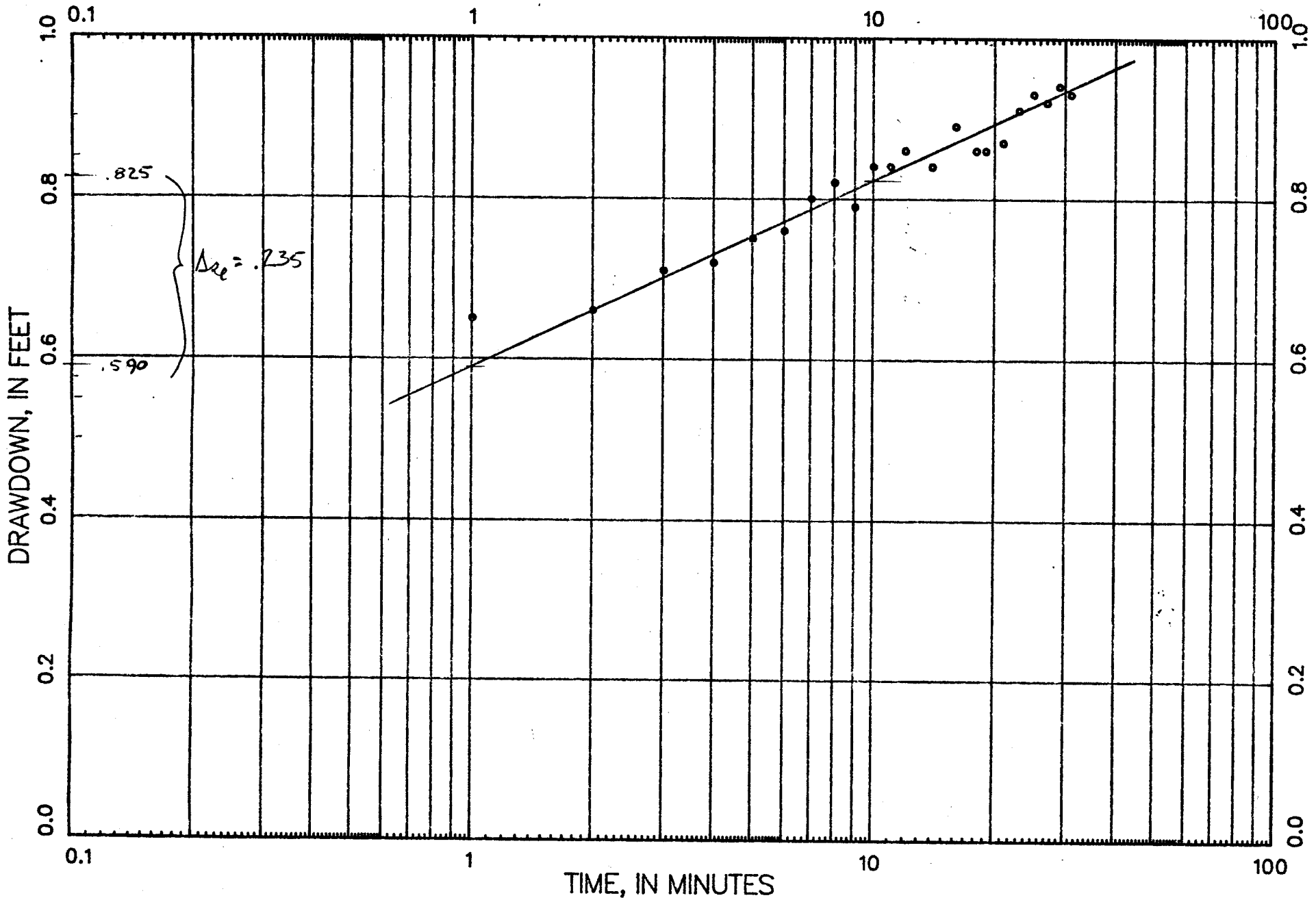
46 0780
10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

PB-1575

TIME	DTW	DISCHARGE	RADIUS
0.000	3.150	29245	0
1.0000	3.800		
2.0000	3.810		
3.0000	3.886		
4.0000	3.887		
5.0000	3.900		
6.0000	3.910		
7.0000	3.955		
8.0000	3.957		
9.0000	3.994		
10.0000	3.999		
11.0000	3.999		
12.0000	3.999		
14.0000	3.999		
16.0000	4.000		
18.0000	4.000		
19.0000	4.000		
21.0000	4.000		
23.0000	4.000		
25.0000	4.000		
27.0000	4.000		
29.0000	4.000		
31.0000	4.000		

DRAWDOWN VS. TIME

COOPER–JACOB METHOD

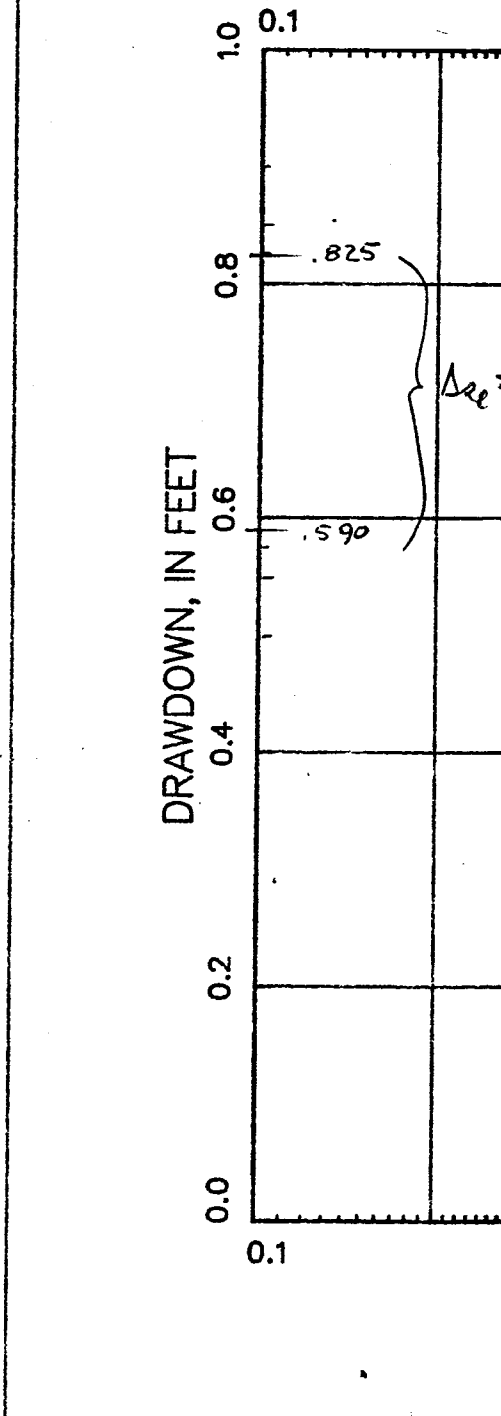


$KD = (2.3)(Q) / (4\pi)(\Delta s_e)$

$= (2.3)(29245) / (4\pi)(.235)$

$= 22788 \text{ FE}^2/\text{d}$

DR.02.PW.1



GSPT2

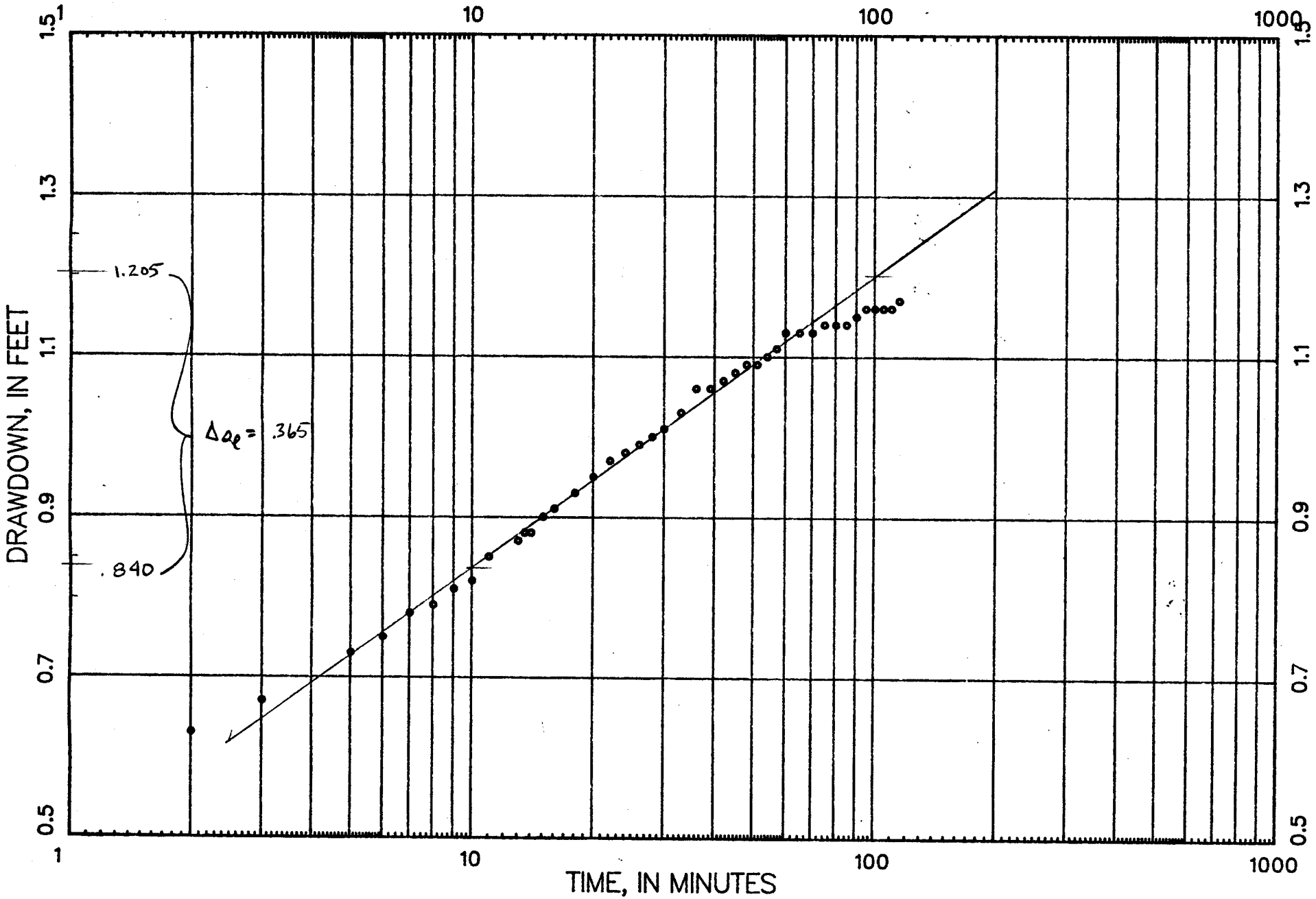
TIME	DTW	DISCHARGE	RADIUS
0.000	3.620	61211	30
2.000	4.250	11	
3.000	4.290		
5.000	4.350		
6.000	4.370	318 GPM	
7.000	4.400		
8.000	4.410		
9.000	4.430		
10.000	4.440		
11.000	4.470		
13.000	4.490		
13.500	4.500		
14.000	4.500		
15.000	4.520		
16.000	4.530		
18.000	4.550		
20.000	4.570		
22.000	4.590		
24.000	4.600		
26.000	4.610		
28.000	4.620		
30.000	4.630		
33.000	4.650		
36.000	4.680		
39.000	4.680		
42.000	4.690		
45.000	4.700		
48.000	4.710		
51.000	4.710		
54.000	4.720		
57.000	4.730		
60.000	4.750		
65.000	4.750		
70.000	4.750		
75.000	4.760		
80.000	4.760		
85.000	4.760		
90.000	4.770		
95.000	4.780		
100.000	4.780		
105.000	4.780		
110.000	4.780		
115.000	4.790		

P3-1574

TIME	DTW	DISCHARGE	RADIUS
0.0000	3.9620	61211	30
2.0000	4.2500		
5.0000	4.3500		
7.0000	4.4000		
8.0000	4.4100		
10.0000	4.4400		
11.0000	4.4700		
13.0000	4.4900		
14.0000	4.5000		
15.0000	4.5000		
18.0000	4.5300		
20.0000	4.5500		
24.0000	4.6000		
26.0000	4.6100		
33.0000	4.6600		
36.0000	4.6800		
42.0000	4.6900		
45.0000	4.7000		
48.0000	4.7100		
51.0000	4.7100		
54.0000	4.7200		
57.0000	4.7300		
60.0000	4.7500		
65.0000	4.7500		
70.0000	4.7500		
75.0000	4.7600		
80.0000	4.7600		
85.0000	4.7600		
90.0000	4.7700		
95.0000	4.7800		
100.0000	4.7800		
105.0000	4.7800		
110.0000	4.7800		
115.0000	4.7900		

DRAWDOWN VS. TIME

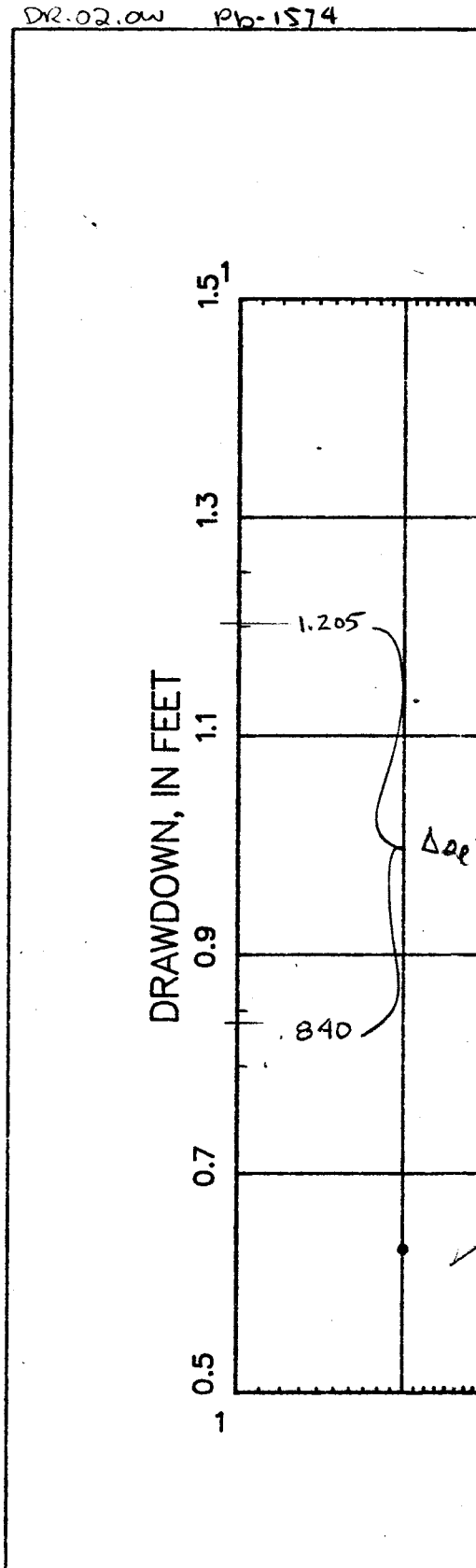
COOPER–JACOB METHOD



$kD = 2.3Q / 4\pi \Delta_{oe}$

$= (2.3)(61211) / (4)(\pi)(.365)$

$= 30{,}709 \ ft^2/d$



Lithologic Log of Well PB-1574

Lat 26°25'53", long 80°12'15"
Sec. 25, T. 46 S., R. 41 E.

Description	Thickness (feet)	Depth, feet below land surface
Sand, dusky-brown (5 YR 2/2) dark-yellowish-brown (10 YR 4/2); quartzose, coarse to medium, moderately sorted, angular to subangular; about 10 to 20 percent organics.	4	0 - 4
Sand, dark-yellowish-brown (10 YR 4/2); quartzose, coarse to fine, poorly sorted, angular to subrounded; about 5 percent shell fragments; about 10 percent organics; about 5 percent lime mud.	3	4 - 7
Sand, pale-yellowish-brown (10 YR 6/2); quartzose, medium to very fine, moderately sorted, angular to subangular; 10 to 20 percent detrital carbonates and shell fragments, Chione, Olivella; about 5 percent silt and micrite; interbedded with 10 percent sandstone nodules.	3	7 - 10
Sand, light-olive-gray (5 Y 6/1); quartzose, medium to very fine, moderately sorted, angular to subangular; 10 to 20 percent detrital carbonates and shell fragments, Tellina, Chione, Terebra; 1 to 3 percent heavy minerals, fine to very fine, angular to subangular.	4	10 - 14
Sand as above.	3	14 - 17
Sand, light-olive-gray (5 Y 6/1); quartzose, coarse to fine, poorly sorted, angular to subangular; 1 to 3 percent heavy minerals, fine to very fine, angular to rounded, moderately to well sorted.	3	17 - 20
Sand, grayish-brown (5 YR 3/2); quartzose as above; about 10 to 20 percent organic material, silt size.	4	20 - 24
Sand, dark-yellowish-brown (10 YR 4/2) brownish-gray (5 YR 4/1); quartzose as above; 1 percent heavy minerals, fine to very fine, subangular to rounded; about 1 percent detrital carbonates.	3	24 - 27
Sand, yellowish-gray (5 Y 7/2); quartzose (with orange iron stains), coarse to fine, moderately sorted, angular to subrounded; 1 to 3 percent heavy minerals, fine to very fine, angular to subrounded.	3	27 - 30
Sand, yellowish-gray (5 Y 8/1); quartzose, coarse to fine, moderately sorted, angular to subangular; 1 to 3 percent heavy minerals as above.	4	30 - 34

Description	Thickness (feet)	Depth, feet below land surface
Sand as in 27 to 30 feet.	3	34 - 37
Sand as above.	3	37 - 40
Sand, light-olive-gray (5 Y 6/1) to pale-yellowish-brown (10 YR 6/2); quartzose, coarse to fine, moderately sorted, angular to subrounded; about 1 percent heavy minerals as above.	4	40 - 44
Sand, yellowish-gray (5 Y 8/1) to pale-yellowish-orange (10 YR 8/6); quartzose (with yellowish-orange stain), coarse to fine, moderately sorted, angular to subrounded; 1 to 3 percent heavy minerals, fine to very fine, subangular to rounded.	3	44 - 47
Sand as above.	3	47 - 50
Sand, pale-yellowish-brown (10 YR 6/2) to yellowish-gray (5 Y 8/1); quartzose, medium to fine, well sorted, angular to subrounded; 1 percent heavy minerals as above.	4	50 - 54
Sand as 44 to 47 feet.	3	54 - 57
Sand, pale-yellowish-brown (10 YR 6/2) to yellowish-gray (5 Y 8/1); quartzose, coarse to fine, moderately sorted, angular to subrounded; 1 percent heavy minerals, fine to very fine, angular to rounded.	3	57 - 60
Sand, yellowish-gray (5 Y 8/1); as above.	4	60 - 64
Sand as above.	3	64 - 67
Sand, pale-yellowish-brown (10 YR 6/2) to yellowish-gray (5 Y 8/1); quartzose as above; 1 to 3 percent heavy minerals as above.	3	67 - 70
Sand as above.	4	70 - 74
Sand, light-olive-gray (5 Y 6/1) to dark-gray (N 3); medium to very fine, moderately sorted, angular to subrounded; 10 to 20 percent heavy minerals and phosphates, medium to very fine, angular to rounded; about 10 percent silt.	3	74 - 77
Sand, light-gray (N 7) to light-olive-gray (5 Y 5/2); quartzose as above; 10 to 20 percent heavy minerals and phosphates as above; interbedded with 10 percent calcite nodules.	3	77 - 80

Lithologic Log of Well PB-1574--Continued

Description	Thickness (feet)	Depth, feet below land surface
Sand, light-gray (N 7); quartzose, coarse to fine, moderately sorted, angular to subrounded; 10 percent heavy minerals, coarse to very fine, angular to rounded; 20 to 30 percent detrital carbonates, coarse to fine; interbedded with about 30 to 40 percent limestone; sandy, sparse biosparite; 10 percent heavy minerals, fine to very fine, angular to rounded; 20 percent quartz, medium to fine, angular to subrounded; moderately cemented; moderately porous.	4	80 - 84
Sand, interbedded with limestone as above.	3	84 - 87
Sand, light-gray (N 7); quartzose, coarse to fine, moderately sorted, angular to subrounded; 10 percent heavy minerals and phosphates, medium to very fine, subangular to rounded; 20 to 30 percent detrital carbonates, very coarse to fine; interbedded with about 30 to 40 percent limestone; sandy, sparse biosparite; 20 to 30 percent quartz, medium to fine, angular to subrounded; 10 percent heavy minerals, medium to very fine, subangular to rounded; poorly to moderately cemented; very porous.	3	87 - 90
Limestone, light-gray (N 7); sandy, sparse biosparite; 20 percent quartz, medium to fine, angular to subrounded; 5 to 10 percent heavy minerals, medium to very fine, subangular to rounded; moderately cemented; very porous; interbedded with about 40 to 50 percent sand; quartzose, medium to fine, well sorted, angular to subrounded; 10 percent heavy minerals and phosphates, medium to very fine, subangular to rounded; 20 to 30 percent detrital carbonates and shell fragments, coral.	4	90 - 94
Limestone, interbedded with sand as above.	3	94 - 97
Limestone, light-gray (N 7); sandy, sparse biosparite; 20 to 30 percent quartz, medium to fine, angular to subrounded; 5 to 10 percent heavy minerals, medium to fine, subangular to rounded; moderately to loosely cemented; moderate to good porosity; interbedded with 40 to 50 percent sand; quartzose, medium to fine, angular to subrounded, moderately to well sorted; 5 to 10 percent heavy minerals as above; 30 percent detrital carbonates and shell fragments.	3	97 - 100

Lithologic Log of Well PB-1574--Continued

Description	Thickness (feet)	Depth, feet below land surface
Limestone, interbedded with loosely consolidated sand sand as above.	4	100 - 104
Limestone, light-gray (N 7) to yellowish-gray (5 Y 8/1) as above; interbedded with about 30 to 40 percent sand as above.	3	104 - 107
Limestone, light-gray (N 7); sandy, sparse biosparite, bivalves; 20 to 30 percent quartz, medium to fine, moderately to well sorted, angular to subrounded; 5 to 10 percent heavy minerals, medium to fine, well sorted, subrounded to rounded; moderately to well cemented; very porous; calcite molds.	3	107 - 110
Limestone as above; interbedded with about 30 percent sand; quartzose, coarse to fine, poorly sorted, angular to subrounded; 5 percent heavy minerals, coase to fine, subrounded to rounded; 40 percent detrital carbonates and shell fragments.	4	110 - 114
Limestone and sand as above.	3	114 - 117
Limestone, light-gray (N 7); sandy, sparse biosparite, bivalves and gastropods; about 20 percent quartz, coarse to fine, poorly sorted, angular to subrounded; 5 percent heavy minerals, medium to fine, moderately sorted, subangular to rounded; well cemented; very porous; calcite molds, vugs; interbedded with about 10 to 20 percent sand as above.	3	117 - 120
Limestone, light-gray (N 7) to yellowish-gray (5 Y 8/1); sandy, sparse biosparite, bivalvia; 10 to 20 percent quartz, medium to fine, moderately sorted, angular to subrounded; about 5 percent heavy minerals, medium to very fine, subangular to rounded; well cemented; moderate to good porosity.	4	120 - 124
Limestone as above; interbedded with about 20 percent sand, detrital carbonates and shell fragments, bivalvia; 20 percent quartzose, coarse to fine, moderately to poorly sorted, angular to subrounded; 5 to 10 percent heavy minerals, medium to fine, well sorted, subrounded to rounded.	3	124 - 127

Lithologic Log of Well PB-1574--Continued

Description	Thickness (feet)	Depth, feet below land surface
Limestone, light-gray (N 7); sandy, sparse biosparite; 20 percent quartz, coarse to fine, angular to subrounded; 5 to 10 percent heavy minerals, medium to fine, subrounded to rounded; moderately cemented; good porosity; interbedded with about 20 to 30 percent sand; detrital carbonates and shell fragments, barnacles; 20 to 30 percent quartz, coarse to fine, angular to subrounded; 5 to 10 percent heavy minerals, medium to fine, subrounded to rounded.	3	127 - 130
Limestone, light-gray (N 7); sandy, sparse biosparite; abundant calcite molds; 10 to 20 percent quartz, coarse to fine, angular to subrounded; 3 to 5 percent heavy minerals, medium to fine, subrounded to rounded; moderately to well cemented; good porosity; interbedded with about 20 to 30 percent sand.	4	130 - 134
Limestone, light-gray (N 7) to yellowish-gray (5 Y 8/1); as above; moderately to poorly cemented; good porosity; interbedded with about 20 to 30 percent sand; detrital carbonates and shell fragments, barnacles and bivalves; 30 percent quartz, coarse to fine, poorly sorted, angular to subrounded; 5 to 10 percent heavy minerals, medium to fine, subrounded to rounded.	3	134 - 137
Limestone, light-gray (N 7) to yellowish-gray (5 Y 7/2); sandy, sparse biosparite, bivalves and gastropods; 20 percent quartz, coarse to fine, poorly sorted, angular to subrounded; 5 percent heavy minerals, fine to very fine, subrounded to rounded; well cemented; good porosity; interbedded with about 10 percent sand; detrital carbonates and shell fragments; 20 to 30 percent quartzose, coarse to fine, angular to subrounded; 5 to 10 percent heavy minerals, medium to very fine, subrounded to rounded.	3	137 - 140
Limestone, yellowish-gray (5 Y 7/2); sandy, sparse biosparite; 20 to 30 percent quartz, coarse to fine, poorly sorted, angular to subrounded; 5 percent heavy minerals, medium to fine, subrounded to rounded; well cemented; good porosity; interbedded with about 20 percent sand; loosely consolidated.	4	140 - 144
Limestone and sand as above.	3	144 - 147
Limestone as above with 20 to 30 percent sand	3	147 - 150

Lithologic Log of Well PB-1574--Continued

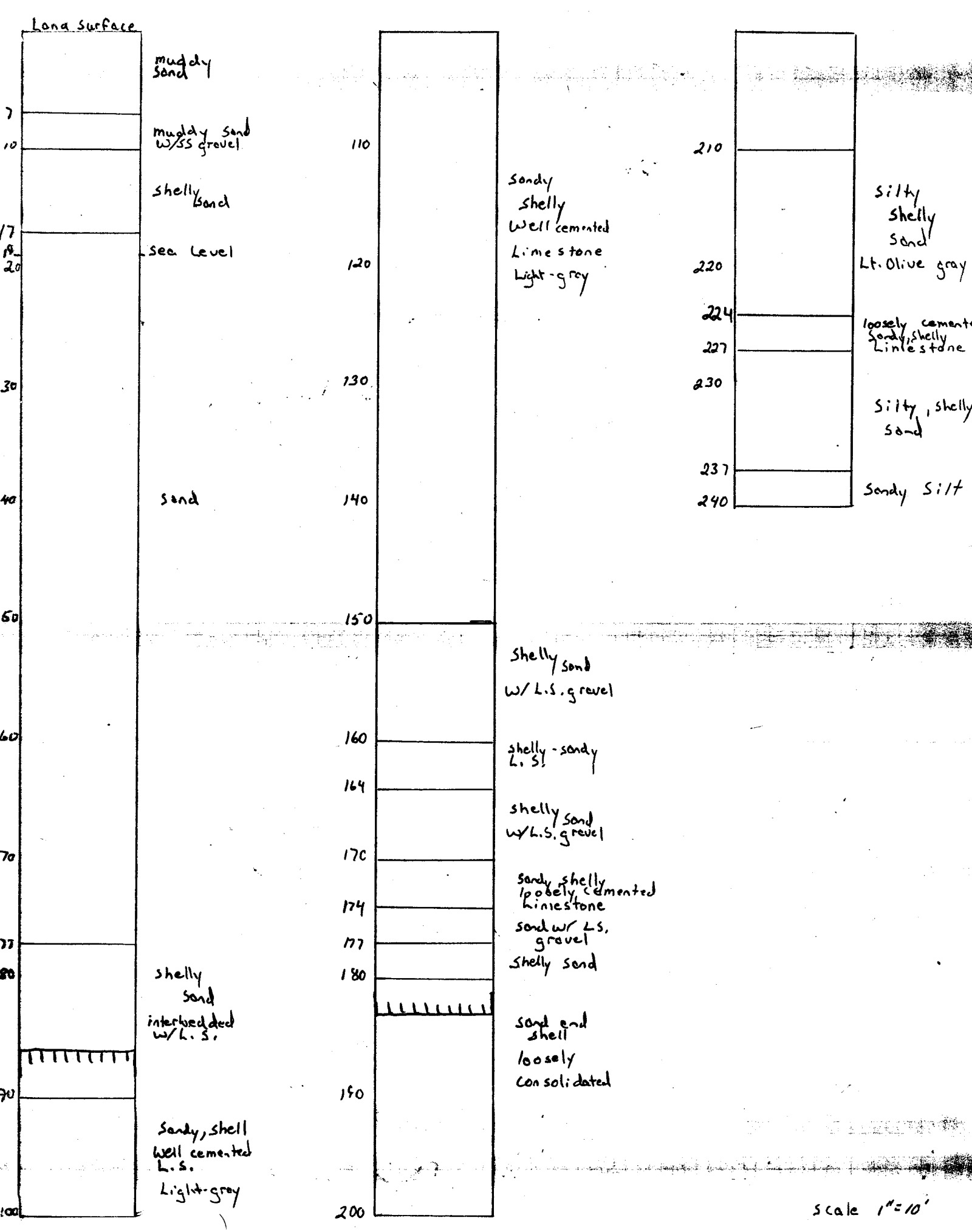
Description	Thickness (feet)	Depth, feet below land surface
Sand, yellowish-gray (5 Y 8/1); quartzose, coarse to fine, poorly sorted, angular to subrounded; 3 to 5 percent heavy minerals and phosphates, medium to fine, moderately sorted, subrounded to rounded; about 30 percent detrital carbonates and shell fragments; about 20 to 30 percent loosely consolidated rock fragments.	4	150 - 154
Sand as above.	3	154 - 157
Sand as above.	3	157 - 160
Limestone, light-olive-gray (5 Y 6/1) to yellowish-gray (5 Y 8/1); sandy, sparse biosparite; about 20 percent quartz, coarse to fine, angular to subrounded; 3 to 5 percent heavy minerals and phosphates, medium to very fine, subrounded to rounded; moderately to well cemented; good porosity; interbedded with about 40 percent sand as above.	4	160 - 164
Sand, yellowish-gray (5 Y 7/2); quartzose, coarse to fine, moderately sorted, angular to subrounded; 5 to 10 percent heavy minerals and phosphates, medium to fine, well sorted, subrounded to rounded; 30 percent detrital carbonates and shell fragments; about 20 percent loosely consolidated limestone as in 157 to 160 feet.	3	164 - 167
Sand as above.	3	167 - 170
Limestone, light-olive-gray (5 Y 6/1); sandy, sparse biosparite; 30 to 40 percent quartz, coarse to very fine, angular to subrounded; about 5 percent heavy minerals and phosphates, medium to fine, subrounded to rounded; loosely to moderately cemented; good porosity; interbedded with about 30 to 40 percent sand; quartzose, coarse to fine, poorly sorted, angular to subrounded; 5 percent heavy minerals and phosphates, medium to fine, subrounded to rounded; 30 to 40 percent detrital carbonates and shell fragments.	4	170 - 174
Sand, yellowish-gray (5 Y 7/2); as above with about 10 to 20 percent loosely cemented limestone as above.	3	174 - 177
Sand, light-gray (N 7) to yellowish-gray (5 Y 8/1); quartzose, coarse to fine, poorly sorted, angular to subrounded; 5 to 10 percent heavy minerals and phosphates, medium to fine, subrounded to rounded; 20 to 30 percent detrital carbonates and shell fragments.	3	177 - 180

Lithologic Log of Well PB-1574--Continued

Description	Thickness (feet)	Depth, feet below land surface
Sand as above; about 40 percent loosely consolidated; echinoid plates.	4	180 - 184
Sand, light-gray (N 7) to light-olive-gray (5 Y 6/1); quartzose as above; 5 percent heavy minerals and phosphates as above; 30 percent detrital carbonates and shell fragments; about 10 percent loosely cemented limestone.	3	184 - 187
Sand, light-gray (N 7) to yellowish-gray (5 Y 8/1); detrital carbonates and shell fragments; about 40 percent quartzose, coarse to fine, moderately sorted, angular to subrounded; 5 percent heavy minerals and phosphates, medium to fine, subrounded to rounded.	3	187 - 190
Sand, yellowish-gray (5 Y 8/1); detrital carbonates and shell fragments, barnacles, bryozoans, bivalves; 20 to 30 percent quartzose as above; 5 percent heavy minerals as above; loosely consolidated.	4	190 - 194
Sand as above.	3	194 - 197
Sand as above; 30 percent quartz as above.	3	197 - 200
Sand, light-olive-gray (5 Y 6/1); quartzose, coarse to fine, moderately sorted, angular to subrounded; 3 to 5 percent heavy minerals, medium to fine, subangular to rounded; about 40 percent detrital carbonates and shell fragments; about 20 percent loosely consolidated.	4	200 - 204
Sand as above, with about 10 percent limestone, sandy, biomicrite; very loosely cemented.	3	204 - 207
Sand with limestone as above.	3	207 - 210
Sand as above; about 10 percent micrite; loosely compacted.	4	210 - 214
Sand, light-olive-gray (5 Y 8/1); quartzose, medium to fine, moderately sorted, angular to subrounded; about 5 to 10 percent heavy minerals and phosphates, medium to fine, angular to rounded; 20 to 30 percent detrital carbonates and shell fragments; about 10 to 20 percent micrite and silt.	3	214 - 217

Lithologic Log of Well PB-1574--Continued

Description	Thickness (feet)	Depth, feet below land surface
Sand, light-olive-gray (5 Y 6/1); carbonates and shell fragments, echinoid plates, shark teeth, barnacles, oysters; 30 to 40 percent quartzose as above; about 5 percent heavy minerals and phosphates, medium to very fine, angular to rounded; about 10 to 20 percent micrite and silt.	3	217 - 220
Sand as above.	4	220 - 224
Limestone, light-olive-gray (5 Y 5/2); sandy, sparse biomicrite; about 20 percent quartz, medium to fine, angular to subrounded; 5 to 10 percent heavy minerals and phosphates, medium to very fine, angular to rounded; very loosely cemented; moderately porous; about 40 percent interlayered sand.	3	224 - 227
Sand, light-olive-gray (5 Y 6/1); carbonates and shell fragments, bryozoans, Pecten, barnacles, echinoid plates; 20 percent quartz, medium to fine, angular to subrounded; 3 to 5 percent heavy minerals and phosphates, medium to fine, subangular to rounded; 10 to 20 percent micrite and silt.	3	227 - 230
Sand as above; about 30 percent quartz; loosely compacted.	4	230 - 234
Sand as above.	3	234 - 237
Lime mud, light-olive-gray (5 Y 5/2); micrite and silt; 30 percent carbonates and shell fragments; 20 to 30 percent quartz, medium to very fine, moderately sorted, angular to subrounded; 3 to 5 percent heavy minerals and phosphates, medium to very fine, subangular to rounded; loosely compacted.	3	237 - 240

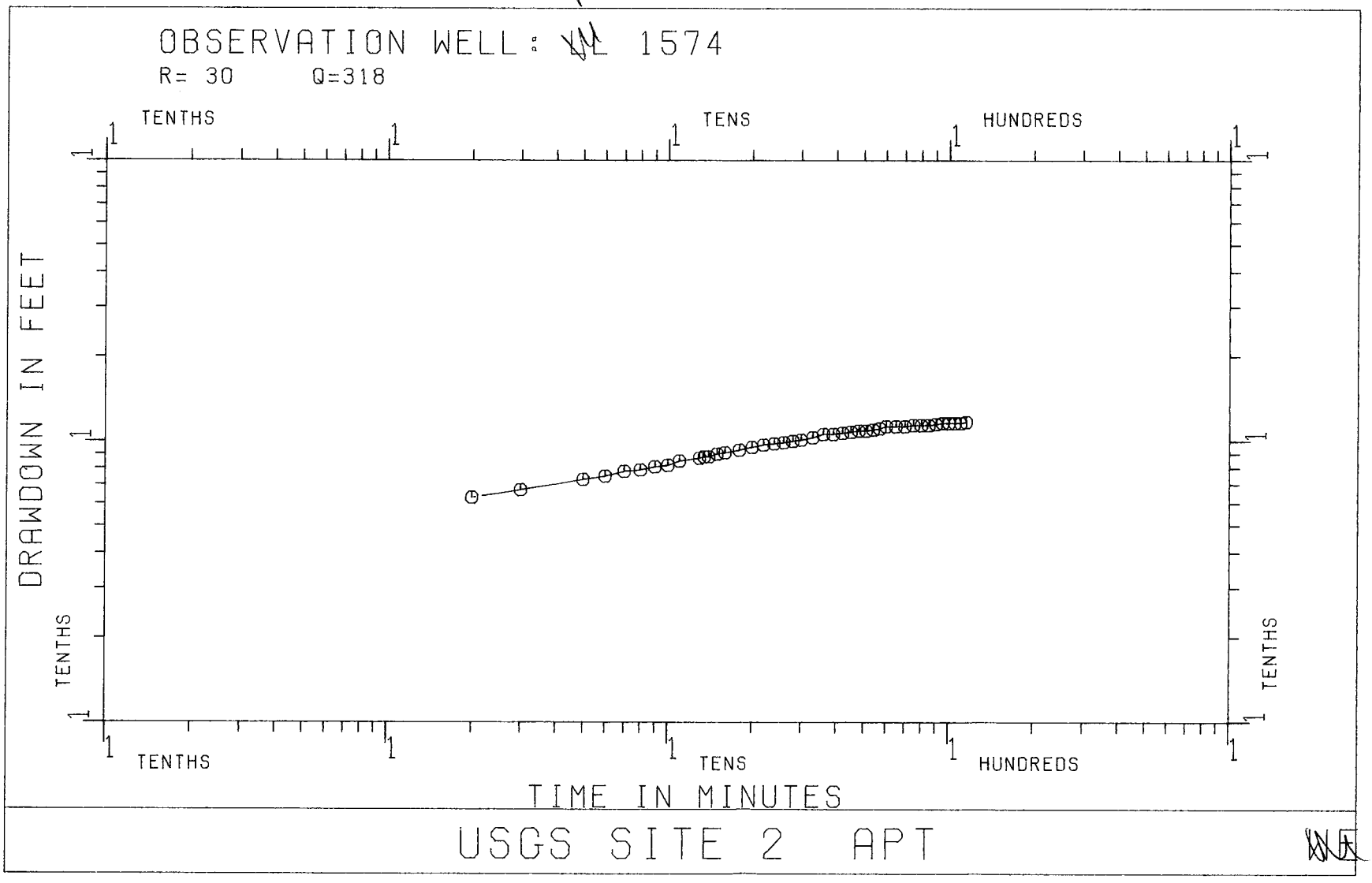

Land surface
muddy sand
7
muddy sand w/ss gravel
10
shelly sand
17
19
sea level
20
30
40
sand
60
60
70
77
80
shelly sand interbedded w/L.S.
90
Sandy, shell well cemented L.S. Light-gray
100
110
120
Sandy shelly Well cemented Limestone Light-gray
130
140
150
Shelly sand w/ L.S. gravel
160
shelly-sandy L.S.
164
shelly sand w/L.S. gravel
170
Sandy shelly loosely cemented limestone
174
sand w/ L.S. gravel
177
Shelly sand
180
sand and shell loosely consolidated
190
200
210
silty shelly sand
220
Lt. Olive gray
224
loosely cemented Sandy, shelly Limestone
227
230
Silty, shelly sand
237
240
Sandy Silt
scale 1" = 10'

HYDRAULIC ANALYSIS OF EASTERN PALM BEACH COUNTY

NOTE: DATA SUBJECT TO REVISION UPON REVIEW

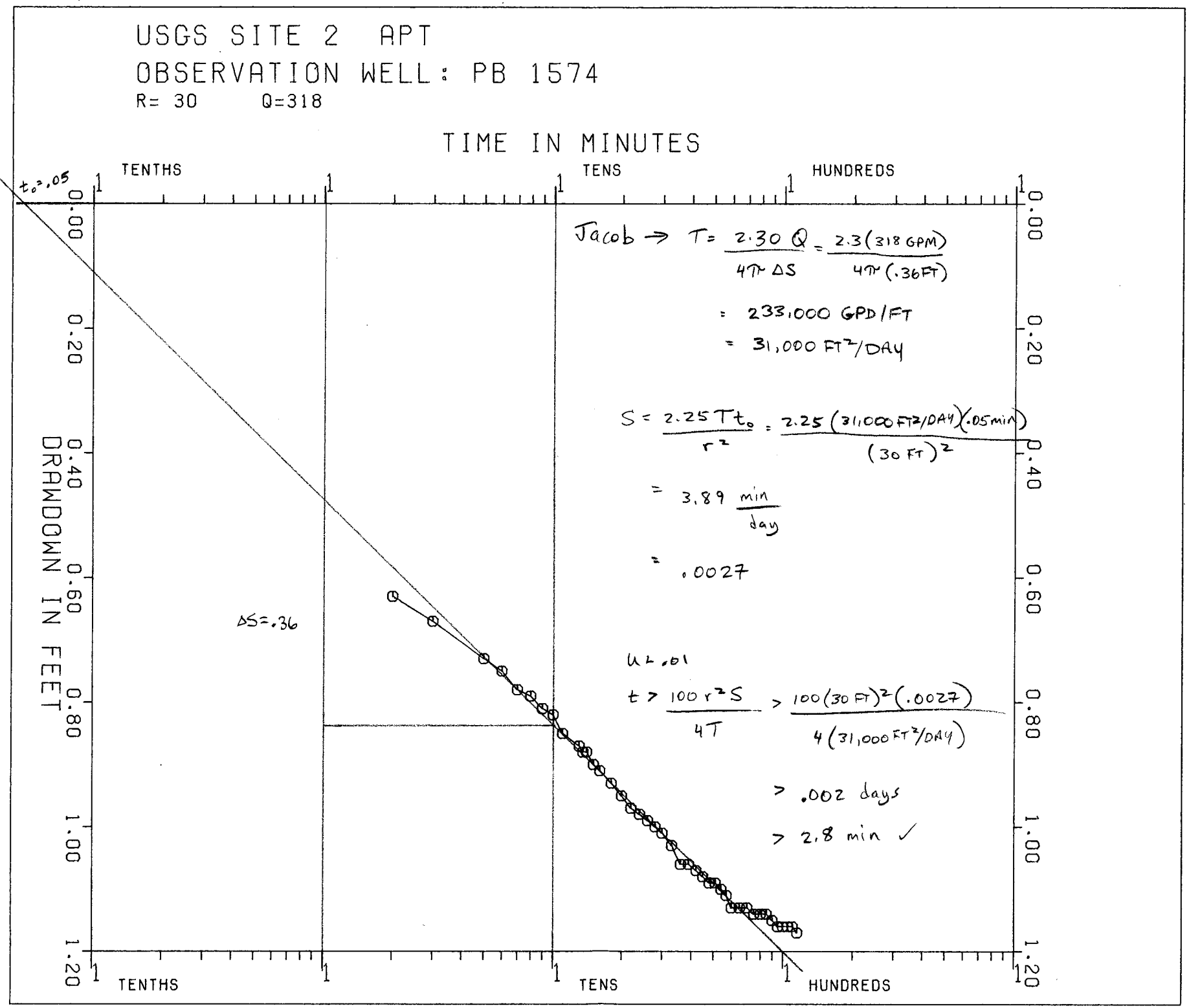
SITE NUMBER	LOCAL #	SCREENED INTERVAL	AQUIFER BOTTOM	STEP-DRAWDOWN	HANTUSH
* → 1	PB-1581 PB-1582	S 2 IN. 100 - 220 FT. 6 IN. 100 - 220 FT.		T = 54,000	T = 48,332 S = .0575 L = 7.06
2	PB-1573 PB-1574 PB-1575	2 IN. 40 - 60 FT. 2 IN. 86 - 183 FT. 6 IN. 80 - 180 FT.		T = 71,000	T=29,649 S=.0034 L=65
3 Trouble	PB-1605 PB-1606	S 2 IN. 60 - 250 FT. 6 IN. 40 - 180 FT.	NEEDS DEVELOPING NEEDS DEVELOPING		
→ 4	PB-1598 PB-1600 PB-1601 PB-1599	2 IN. 110 - 230 FT. S 2 IN. 110 - 230 FT. 2 IN. 110 - 230 FT. 6 IN. 110 - 230 FT.	DEVELOPED DEVELOPED DEVELOPED DEVELOPED		
5	PB-1602 PB-1603 PB-1604	2 IN. 30 - 50 FT. 2 IN. 60 - 170 FT. 6 IN. 60 - 170 FT.	DEVELOPED DEVELOPED DEVELOPED		
need submersible 6 Too far to pump	PB-1587 PB-1586 PB-1588	2 IN. 35 - 40 FT. 2 IN. 150 - 250 FT. 6 IN. 158 - 223 FT.	DEVELOPED DEVELOPED DEVELOPED		
→ 7	PB-1579 PB-1578 PB-1580	2 IN. 128 - 131 FT. S 2 IN. 156 - 226 FT. 6 IN. 151 - 221 FT.		T = 7,459	T = 6,704 S = .00000089 L = 266,506
→ 8	PB-1571 PB-1572	S 2 IN. 100 - 200 FT. 6 IN. 106 - 206 FT.		T = 135,000	T = 157,000 S = .0008 L = 360
→ 9	PB-1544 PB-1545	S 2 IN. 100 - 200 FT. 6 IN. 106 - 206 FT.		T = 34,615	T = 138,000 S = .02 L = 19
10	PB-1567 PB-1569 PB-1570 PB-1568	2 IN. 70 - 160 FT. S 2 IN. 70 - 160 FT. 2 IN. 70 - 160 FT. 6 IN 84 - 164 FT.		T = 7,500	T = 12,738 T = 11,437 T = 10,546 S = 3.6 X 10 -5 S = 4.9 X 10 -5 S = 5.9 X 10 -5 L = 1,822 L = 1,627 L = 2,964
11	PB-1563 PB-1566 PB-1564 PB-1565	2 IN. 38 - 58 FT. 2 IN. 36 - 37 FT. 2 IN. 71 - 131 FT. 6 IN. 68 - 128 FT.		T = 5,934	T = 4,650 S = 4.5 X 10 -4 L = 579
→ 12	PB-1558 PB-1559	S 2 IN. 90 - 150 FT. 6 IN. 93 - 153 FT.		T = 2,934	T = 2,606 S = 2.4 X 10 -5 L = 3,722
13	PB-1556 PB-1554 PB-1555 PB-1557	2 IN. 18 - 20 FT. 2 IN. 20 - 40 FT. 2 IN. 53 - 123 FT. 6 IN. 50 - 120 FT.		T = 36,000	T = 18,000 S = 9 X 10 -4 L = 338
14	PB-1550 PB-1551	S 2 IN. 75 - 135 FT. 6 IN. 70 - 130 FT.		T = 3,750	T = 4,250 S = 7 X 10 -5 L = 1,056
15	PB-1549 PB-1548 PB-1546 PB-1547	2 IN. 19 - 59 FT. 2 IN. 20 - 60 FT. 2 IN. 80 - 120 FT. 6 IN. 75 - 115 FT.		T = 9,183	T = 7,200 S = 1.13 X 10 -5 L = 42,000
16	PB-1576 PB-1577	S 2 IN. 60 - 160 FT. 6 IN. 56 - 146 FT.		T = 46,552	T = 32,377 S = 8.4 X 10 -5 L = 463
17	PB-1607 PB-1608	S 2 IN. 54 - 154 FT. 6 IN. 50 - 150 FT.	NEEDS DEVELOPING NEEDS DEVELOPING		

PB

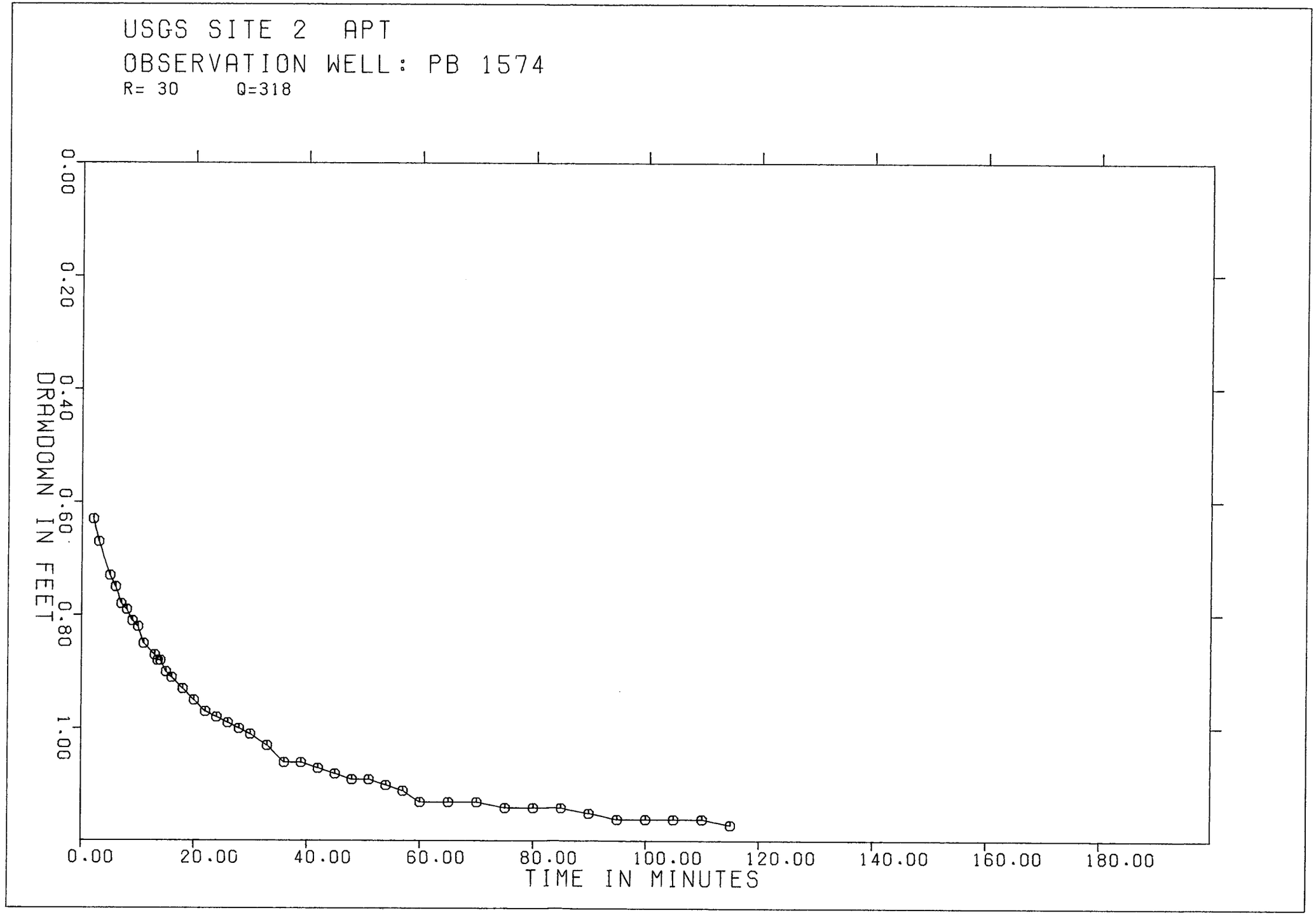


USGS SITE 2 APT

WE



WMO TAPENO 6158 PLOT NO 0001
USER NO SHINE DATE 87/08/13 TIME 09:51



WMD TAPENO 6158 PLOT NO 0004
USER NO SHINE DATE 87/08/13 TIME 09:51