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GEOLOGIC LOGS

AVB68-01
AVB68-02
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AVB68-04

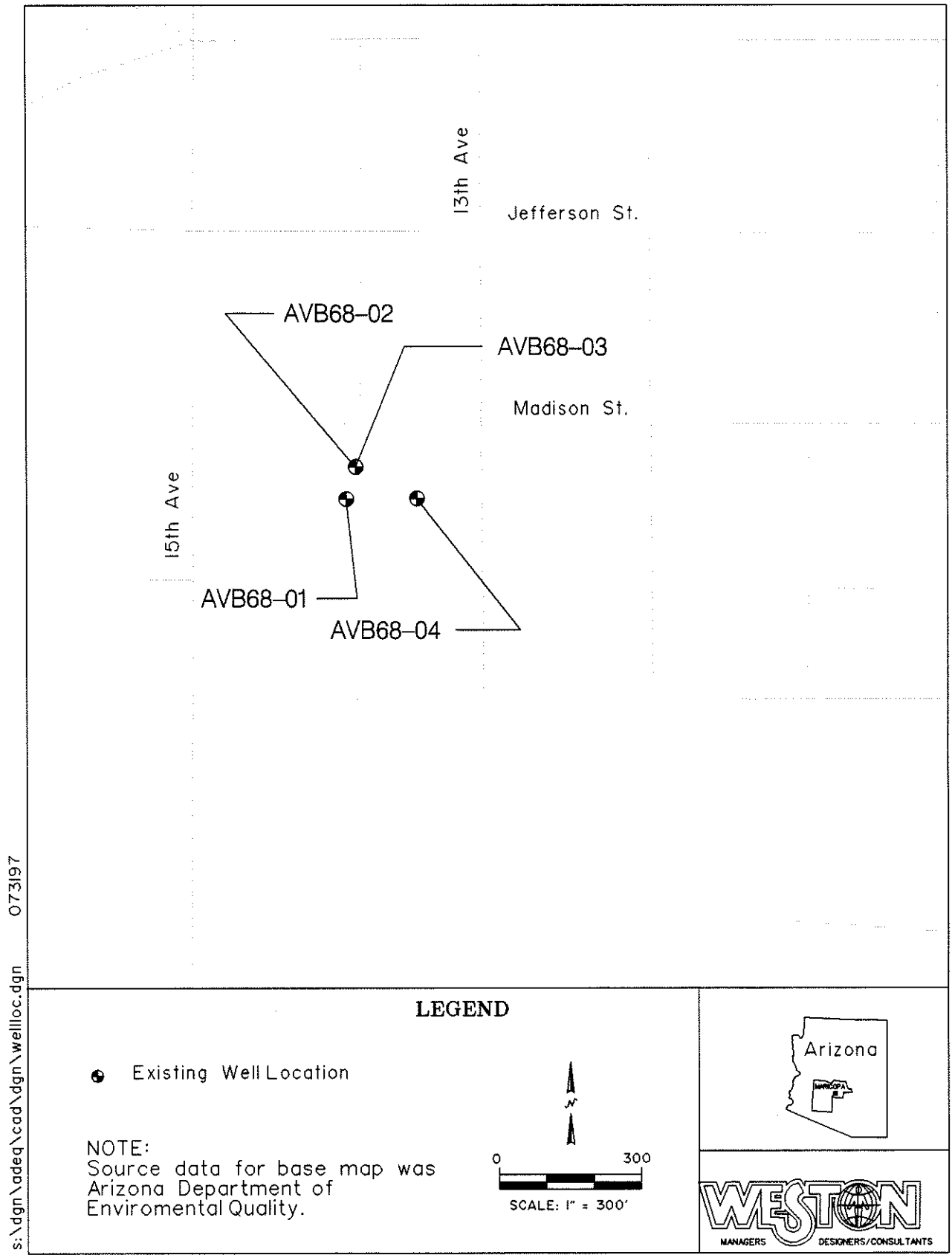


Figure Q-1 Site Location Map

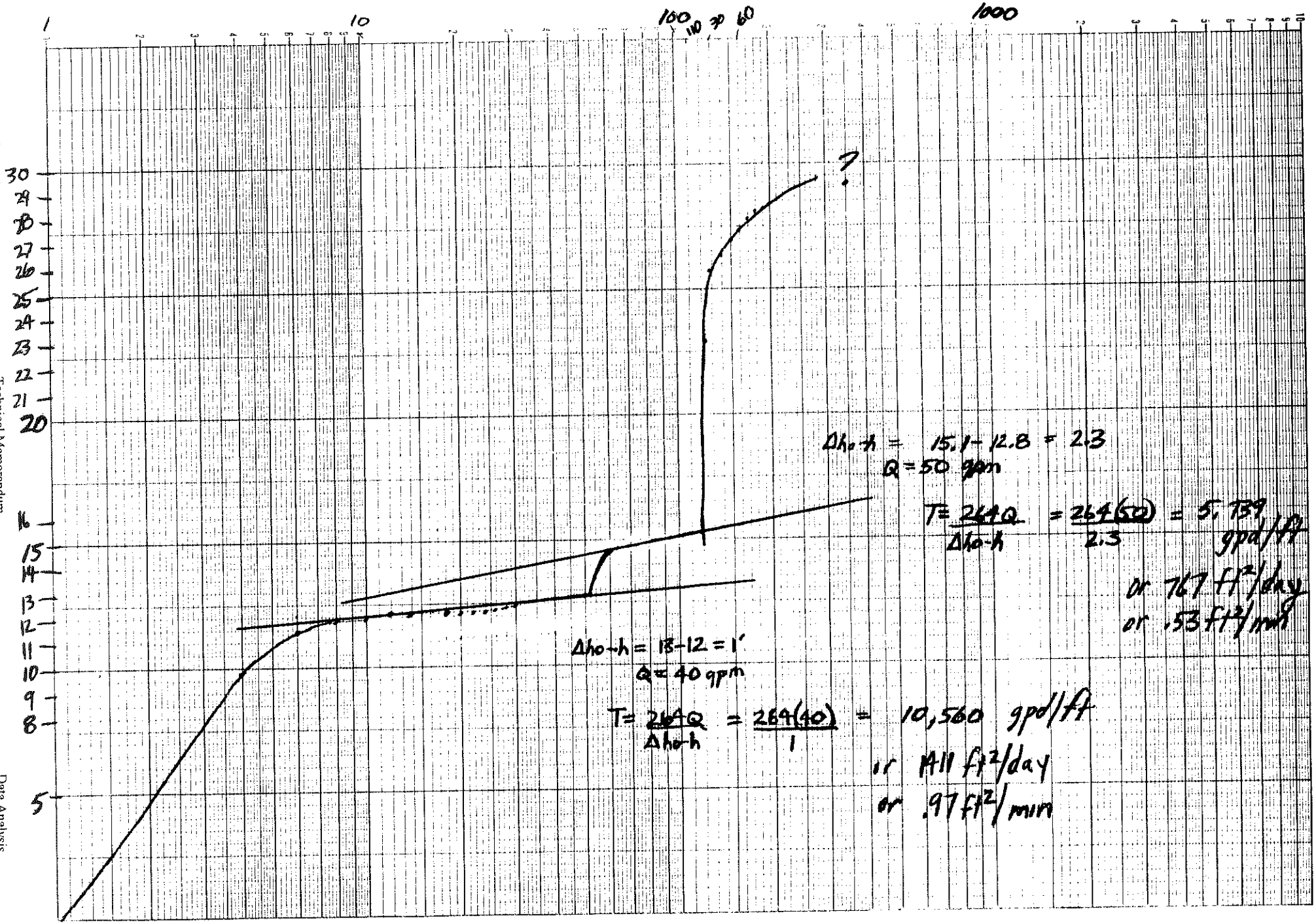


Figure Q-2. Step-drawdown Analysis for Pumping Well AVB68-01

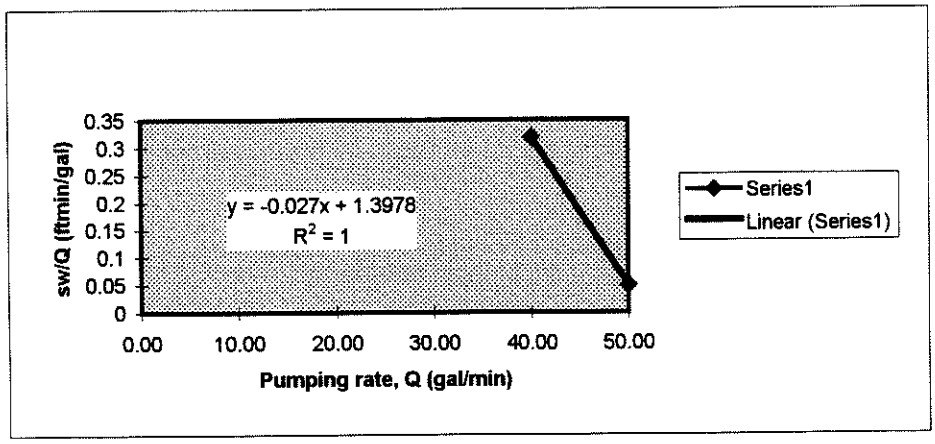


Figure Q-3 Head Loss Coefficients for Well AVB68-01

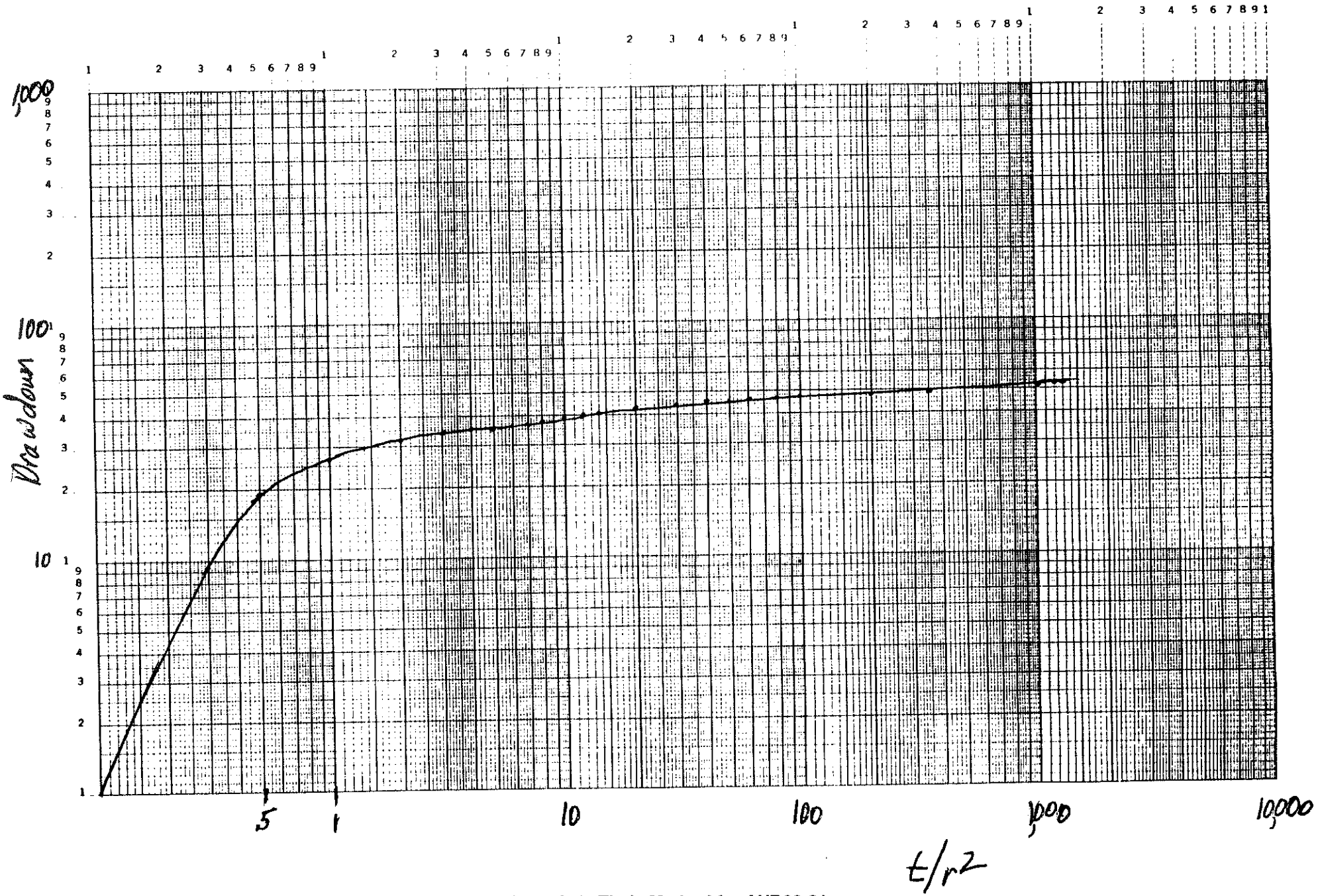
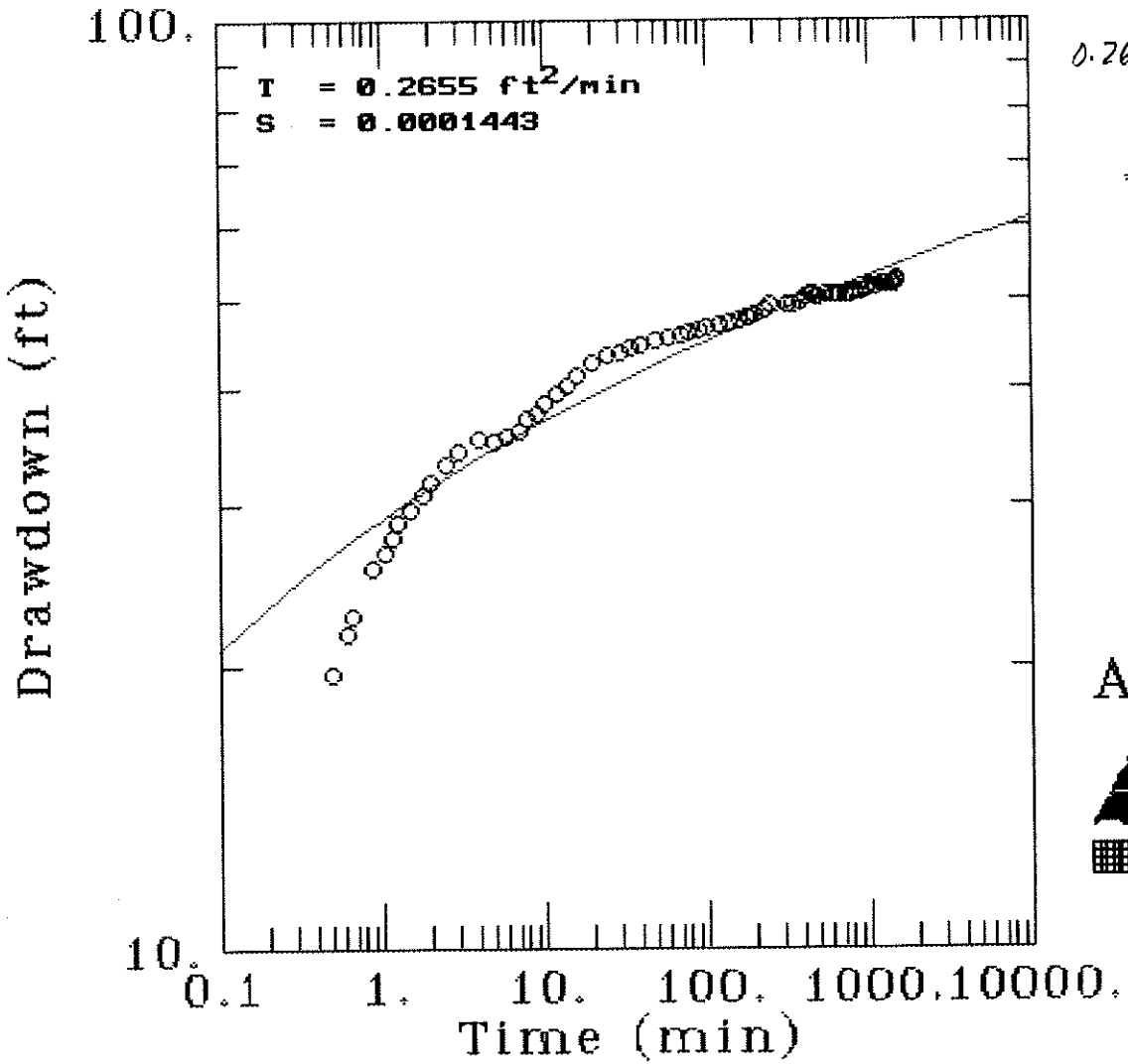


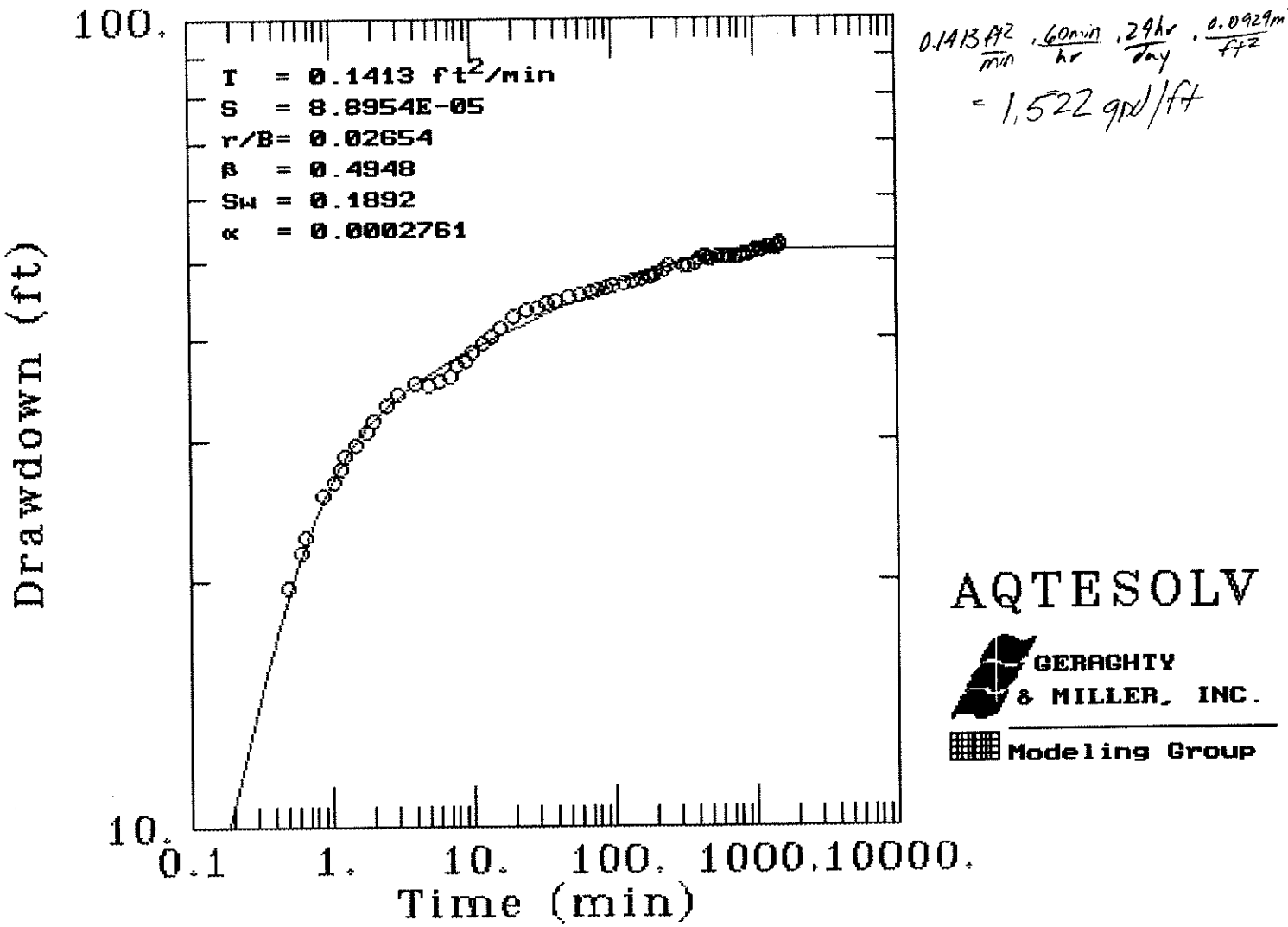
Figure Q-4 **Theis Method for AVB68-01**



$0.2655 \frac{ft^2}{min} \cdot \frac{60 min}{hr} \cdot \frac{24 hr}{day} \cdot \frac{0.0929 m^2}{ft^2} \cdot \frac{80.52 \frac{gpd/ft}{m^2}}{day}$

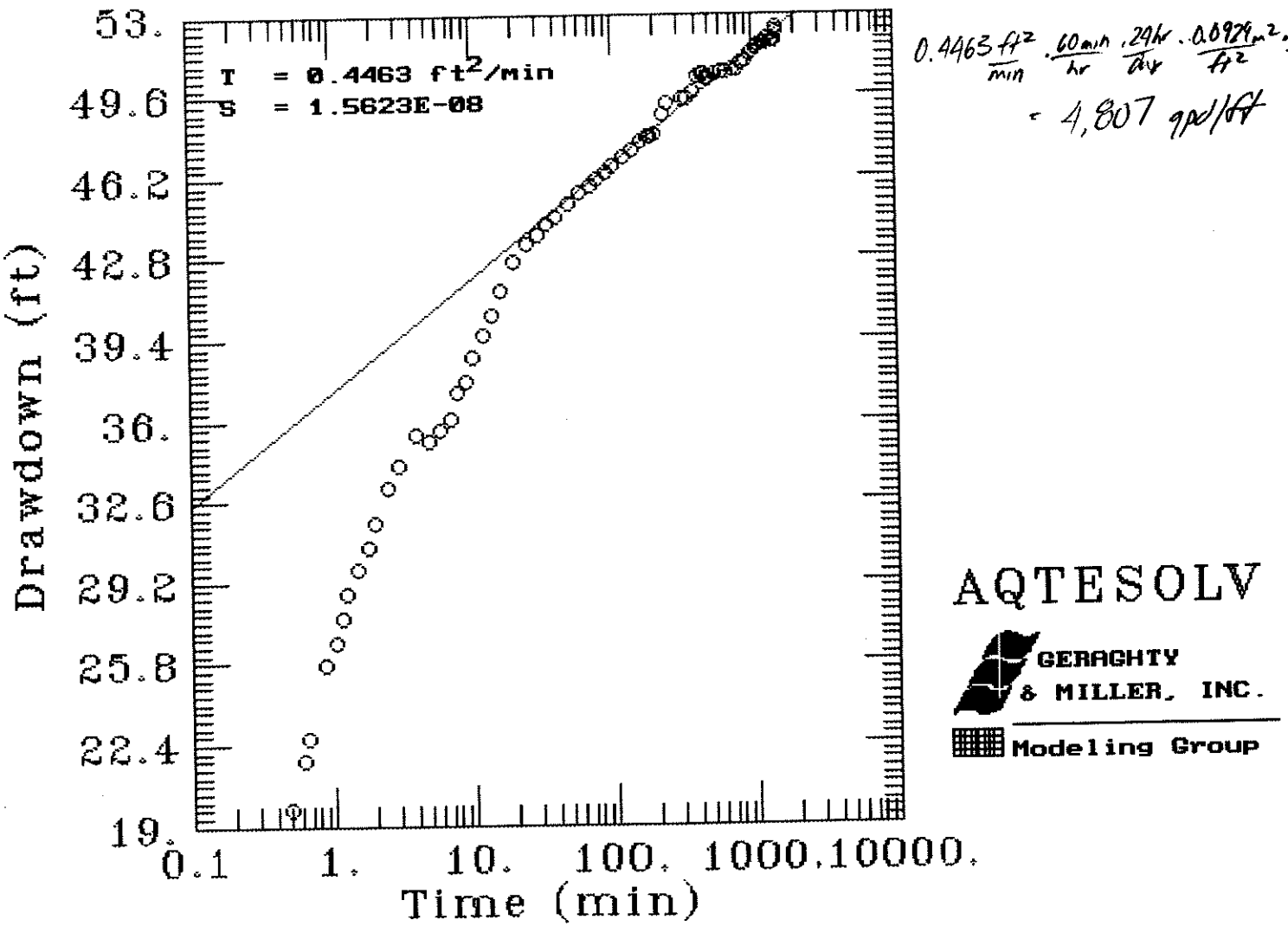
$= 2{,}860$ gpd/ft

Figure Q-5 Theis Method for AVB68-01 MAU Production Well (Drawdown)



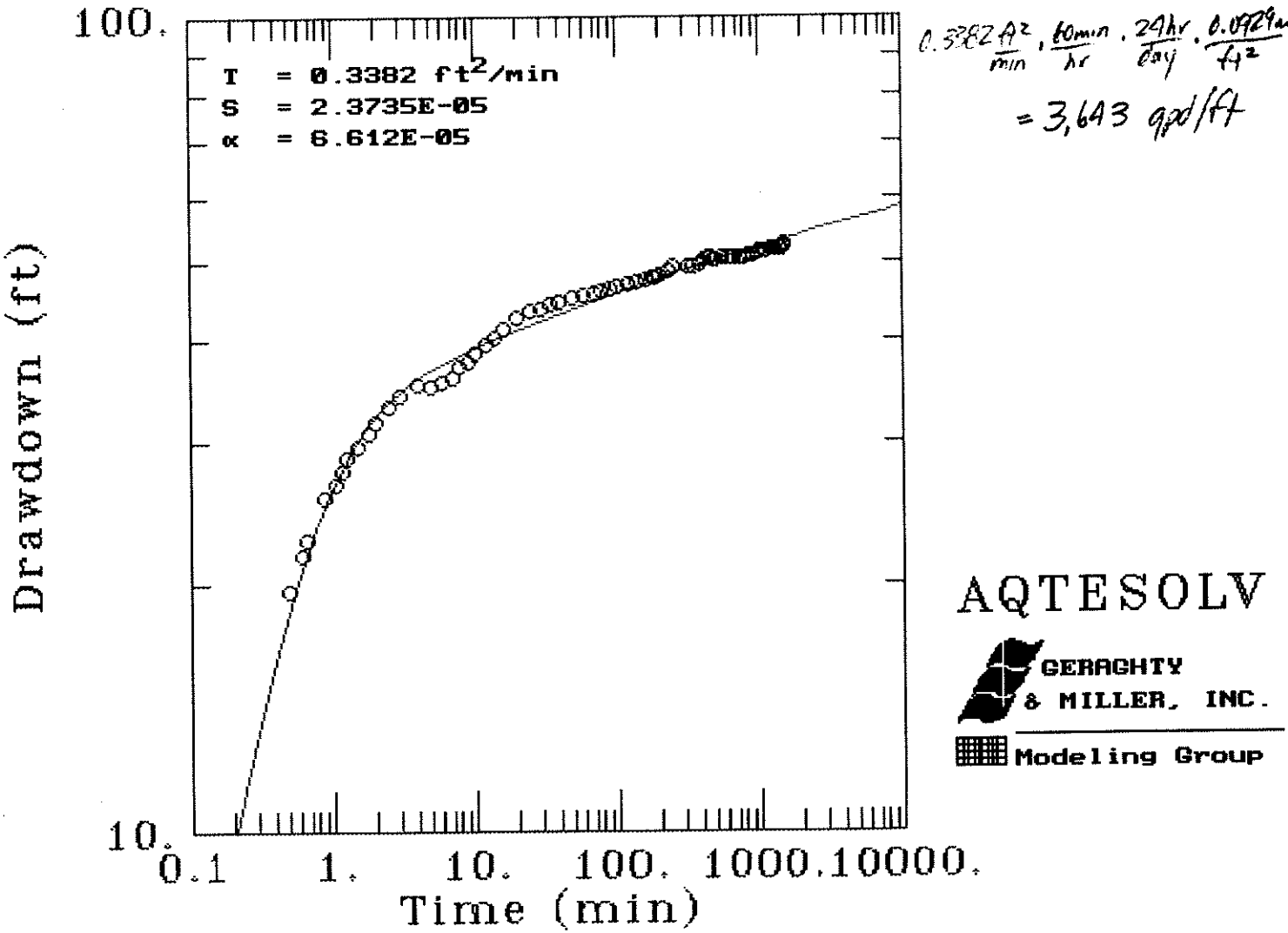
0.1413 ft²/min · 60 min/hr · 24 hr/day · 0.0929 m²/ft² · 80.52 gpd/ft/(m²/day)
= 1,522 gpd/ft

Figure Q-6 **Moench Method for AVB68-01 MAU Production Well (Drawdown)**



0.4463 ft²/min · 60 min/hr · 24 hr/day · 0.0929 m²/ft² · 80.52 gpd/ft / m²/day
= 4,807 gpd/ft

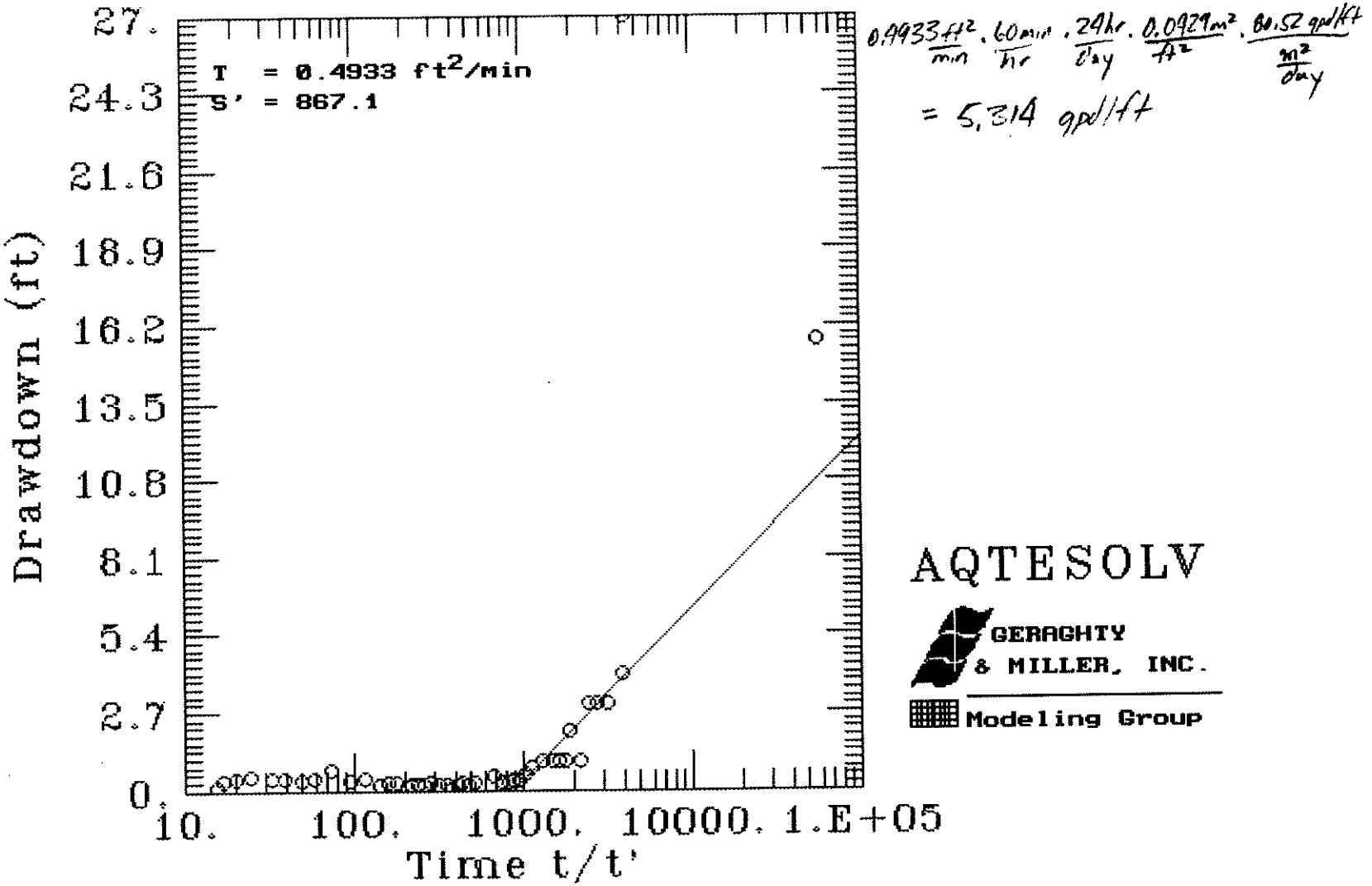
Figure Q-7 **Cooper-Jacob Method for AVB68-01 MAU Production Well (Drawdown)**



$0.3382 \frac{ft^2}{min} \cdot \frac{60 min}{hr} \cdot \frac{24 hr}{day} \cdot \frac{0.0929 m^2}{ft^2} \cdot \frac{80.52 gpd/ft}{m^2/day}$

$= 3,643$ gpd/ft

Figure Q-8 **Papadopoulos -Cooper Method for AVB68-01 MAU Production Well (Drawdown)**



$0.4933\ ft^2/min \cdot 60\ min/hr \cdot 24\ hr/day \cdot 0.0929\ m^2/ft^2 \cdot 80.52\ gpd/ft / m^2/day$

$= 5,314\ gpd/ft$

Figure Q-9 **Theis Recovery Method for AVB68-01 MAU Production Well (Recovery)**

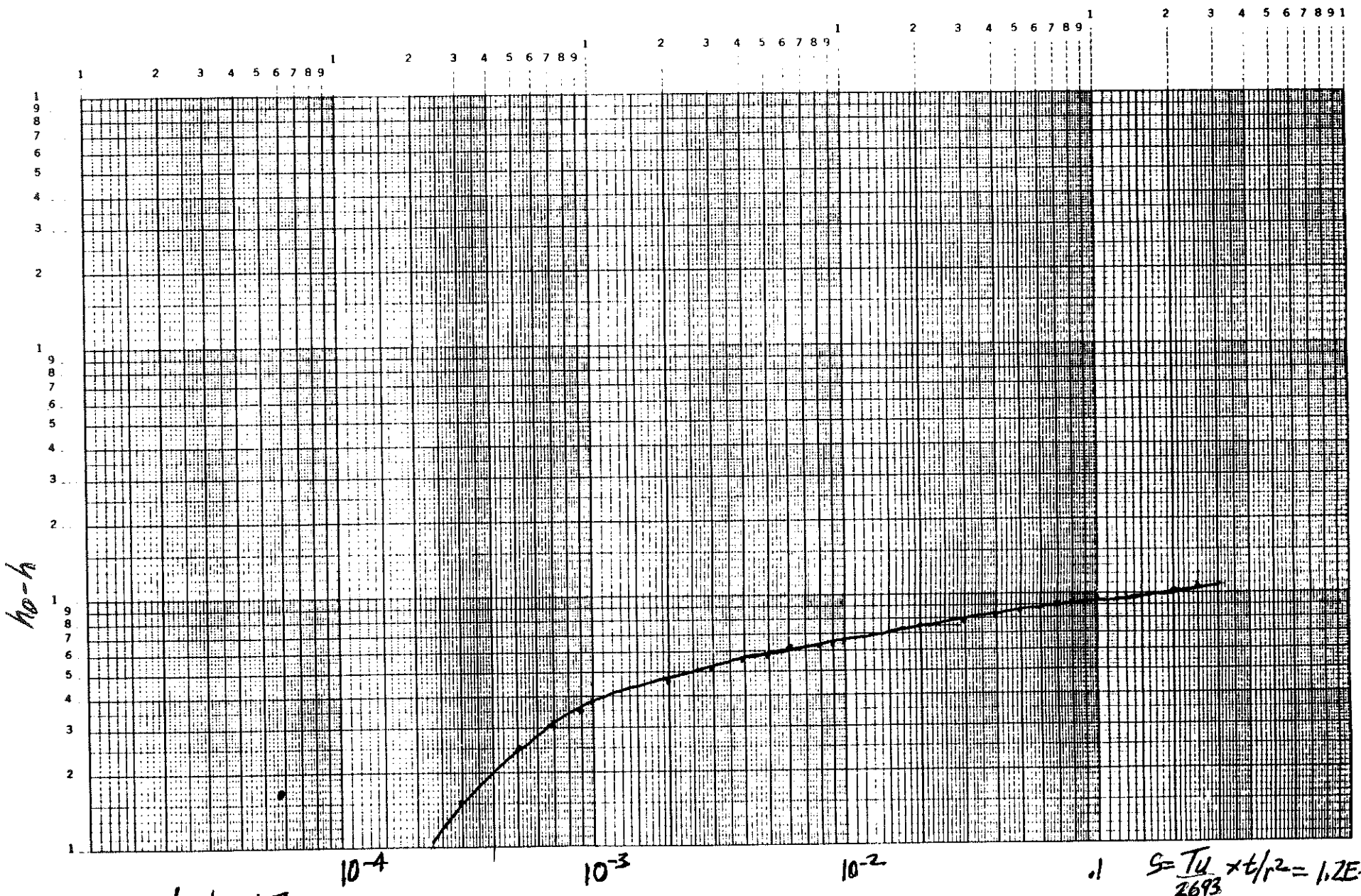
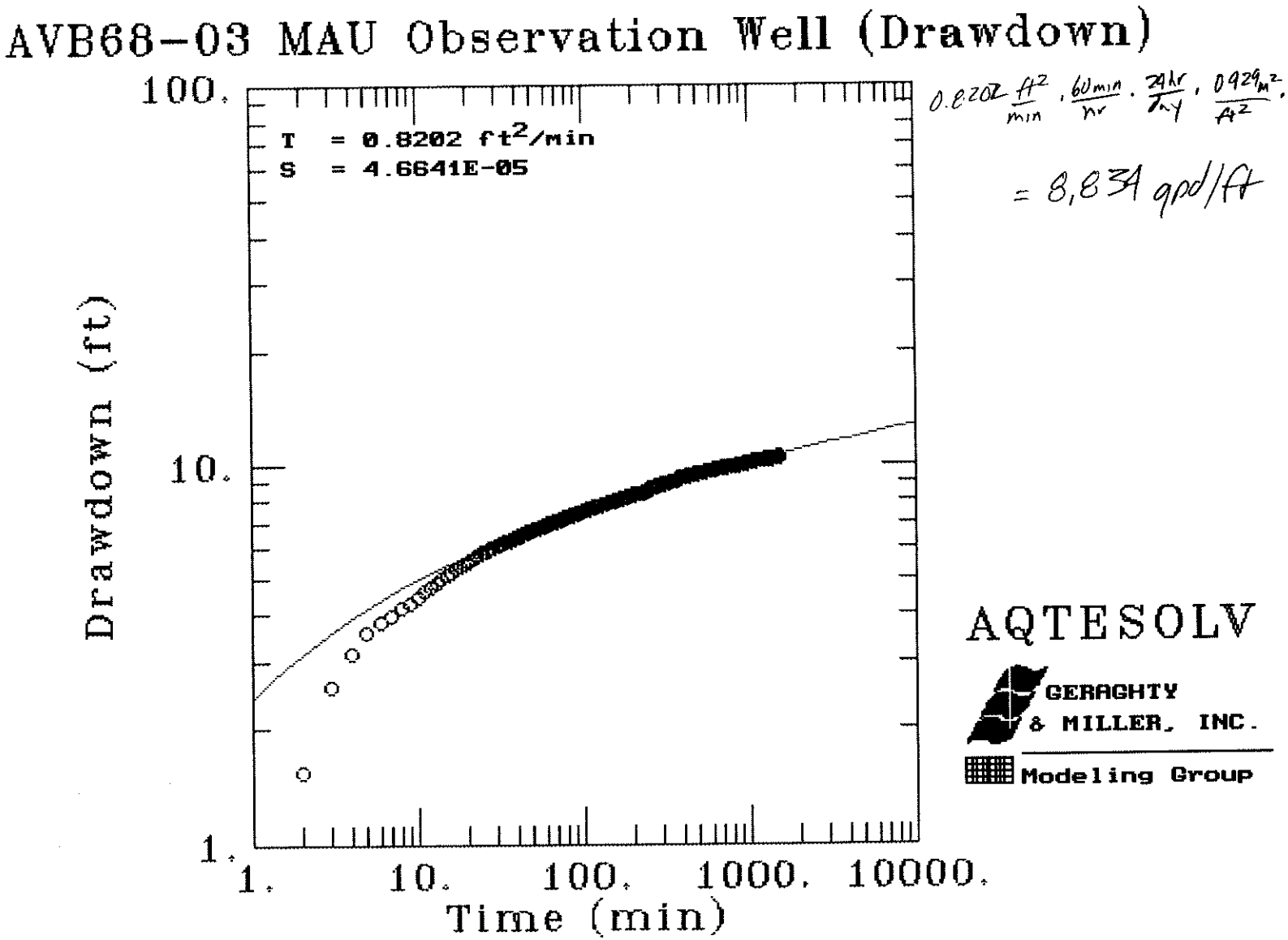


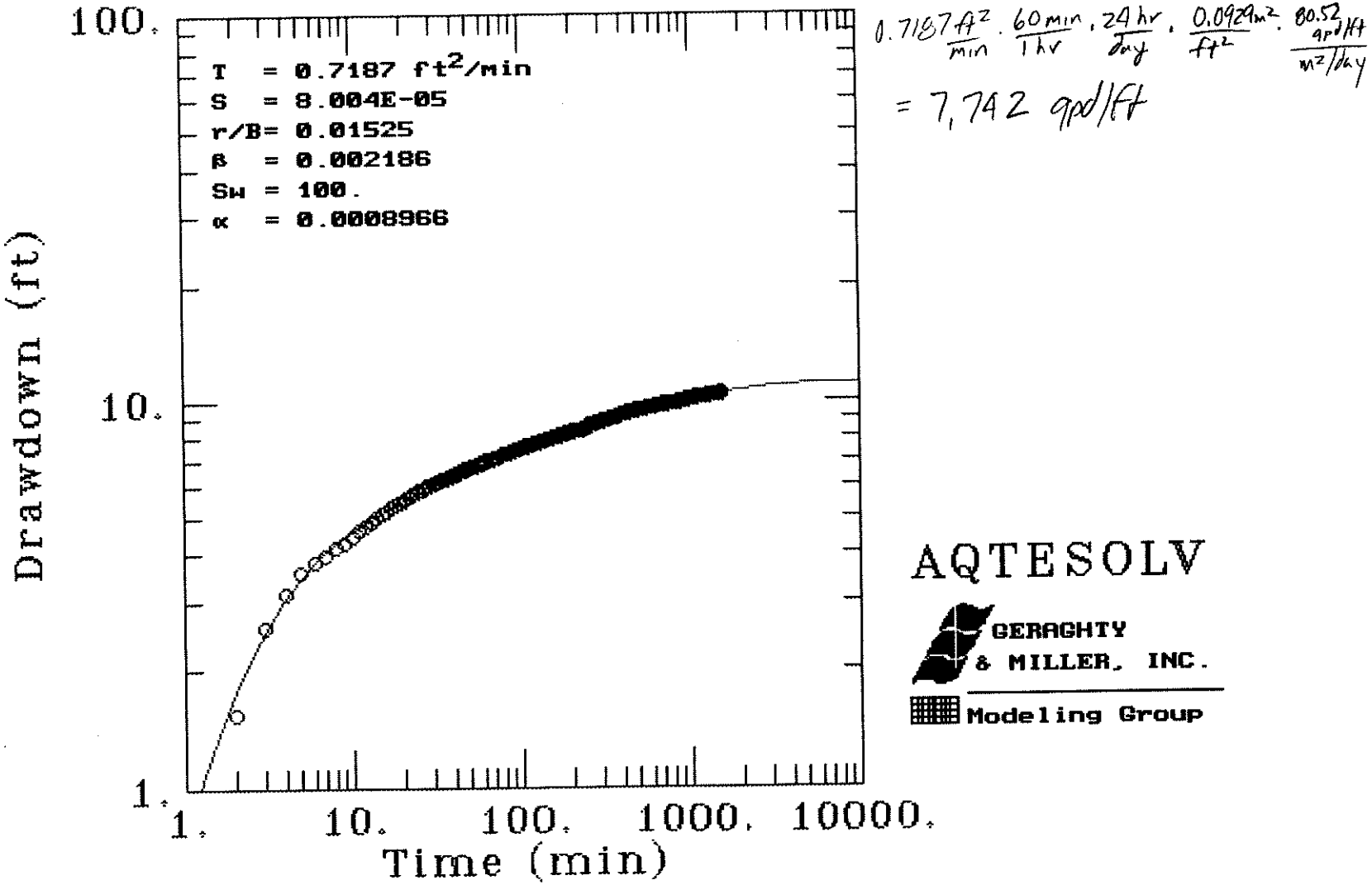
Figure Q-10 Theis Method for AVB68-03



$0.8202 \frac{ft^2}{min} \cdot \frac{60\,min}{hr} \cdot \frac{24\,hr}{day} \cdot \frac{0.929\,m^2}{ft^2} \cdot \frac{80.52\,gpd/ft}{\frac{m^2}{day}}$

$= 8,834\ gpd/ft$

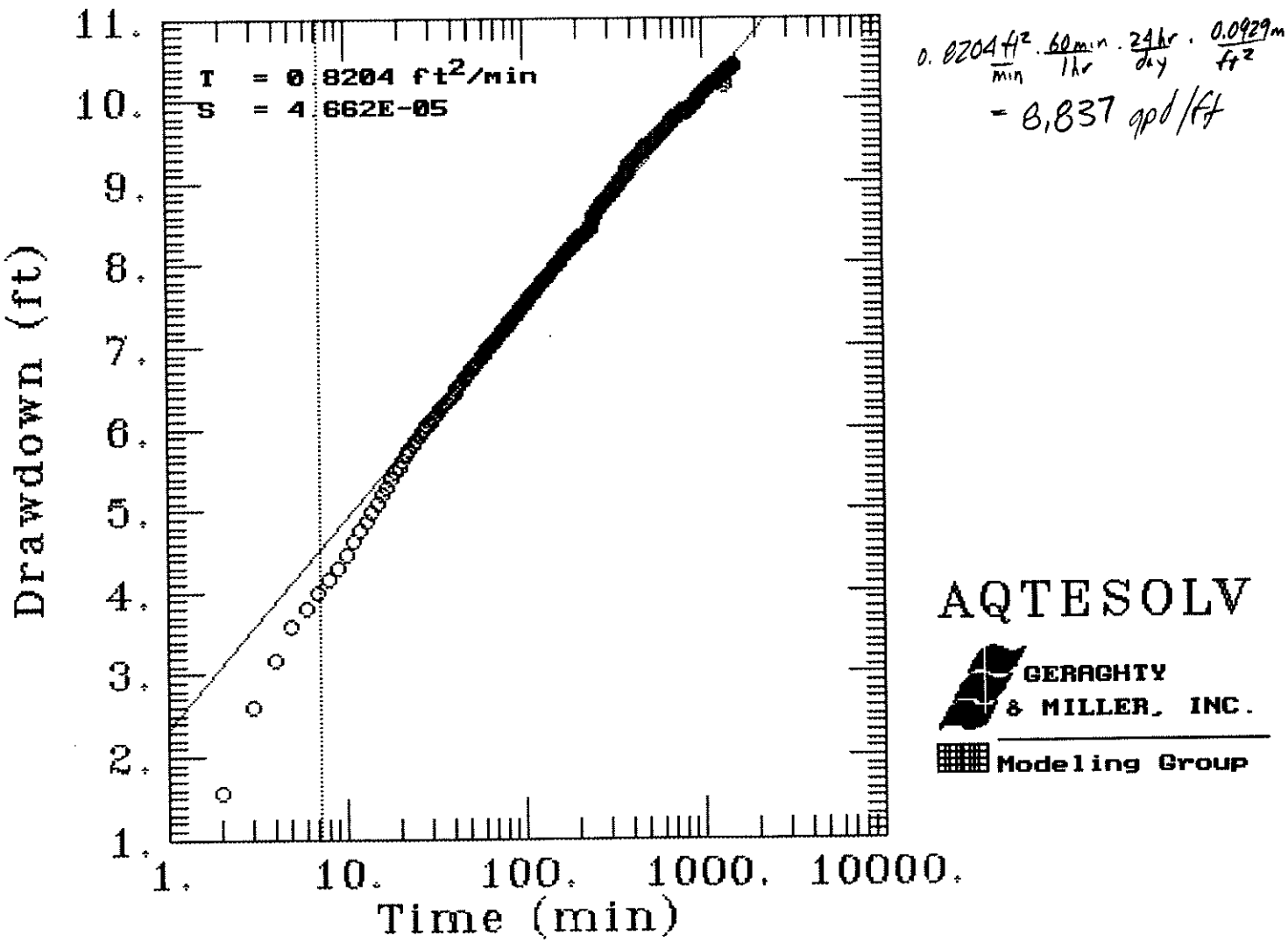
Figure Q-11 **Theis Method for AVB68-03 MAU Observation Well (Drawdown)**



$0.7187 \frac{ft^2}{min} \cdot \frac{60\,min}{1\,hr} \cdot \frac{24\,hr}{day} \cdot \frac{0.0929\,m^2}{ft^2} \cdot \frac{80.52\,gpd/ft}{m^2/day}$

$= 7,742\ gpd/ft$

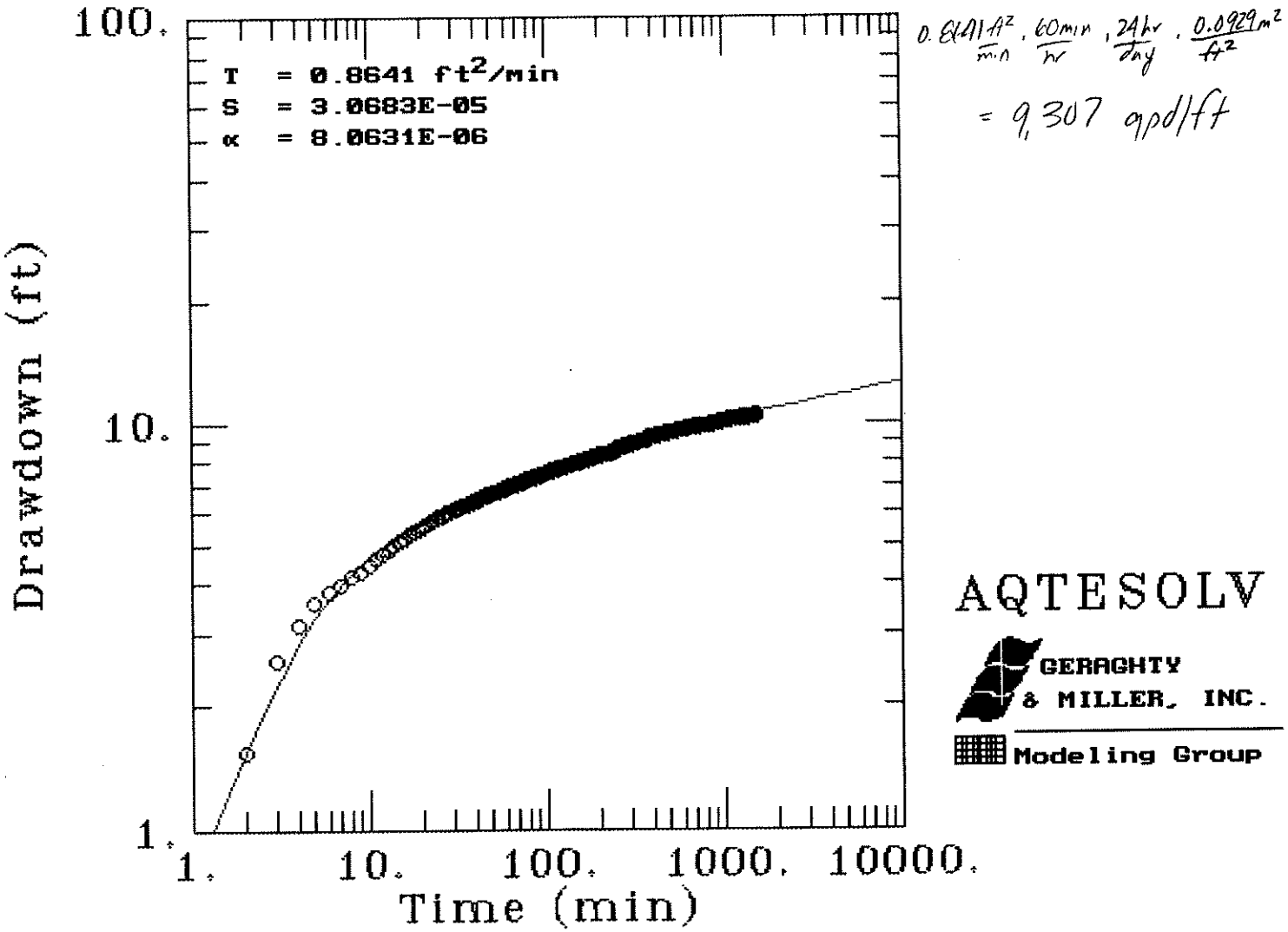
Figure Q-12 **Moench Method for AVB68-03 MAU Observation Well (Drawdown)**



$0.8204\ \frac{ft^2}{min} \cdot \frac{60\ min}{1\ hr} \cdot \frac{24\ hr}{day} \cdot \frac{0.0929\ m^2}{ft^2} \cdot \frac{80.52\ gpd/ft}{m^2/day}$

$= 8,837\ gpd/ft$

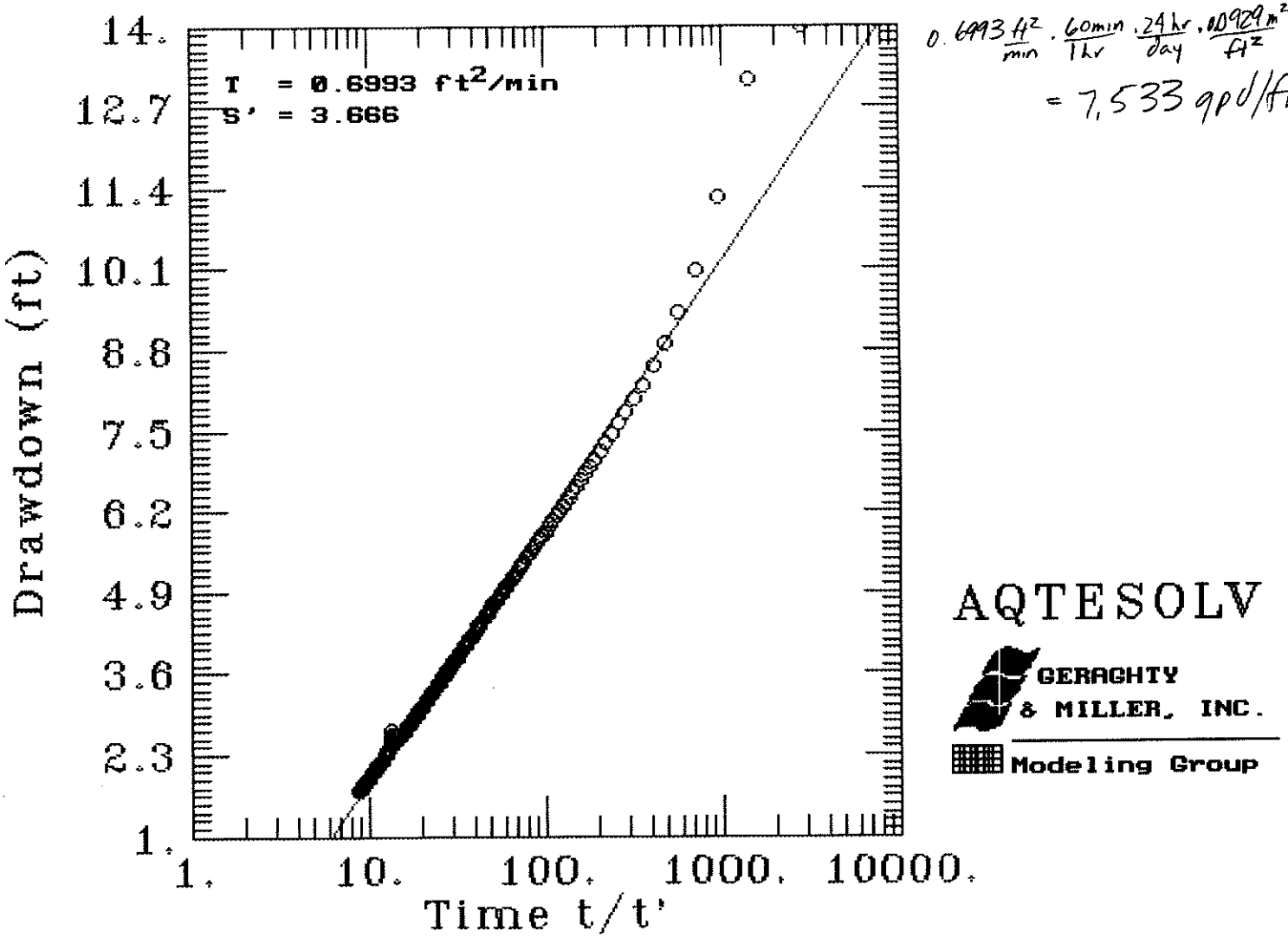
Figure Q-13 **Cooper-Jacob Method for AVB68-03 MAU Observation Well (Drawdown)**



0.8641 ft²/min · 60 min/hr · 24 hr/day · 0.0929 m²/ft² · 80.52 gpd/ft²/m²/day

= 9,307 gpd/ft

Figure Q-14 Papadopoulos-Cooper Method for AVB68-03 MAU Observation Well (Drawdown)



$0.6993\ \frac{ft^2}{min} \cdot \frac{60\ min}{1\ hr} \cdot \frac{24\ hr}{day} \cdot \frac{.0929\ m^2}{ft^2} \cdot \frac{80.52\ gpd/ft}{m^2/day}$

$= 7,533\ gpd/ft$

Figure Q-15 **Theis Recovery Method for AVB68-03 MAU Observation Well (Recovery)**

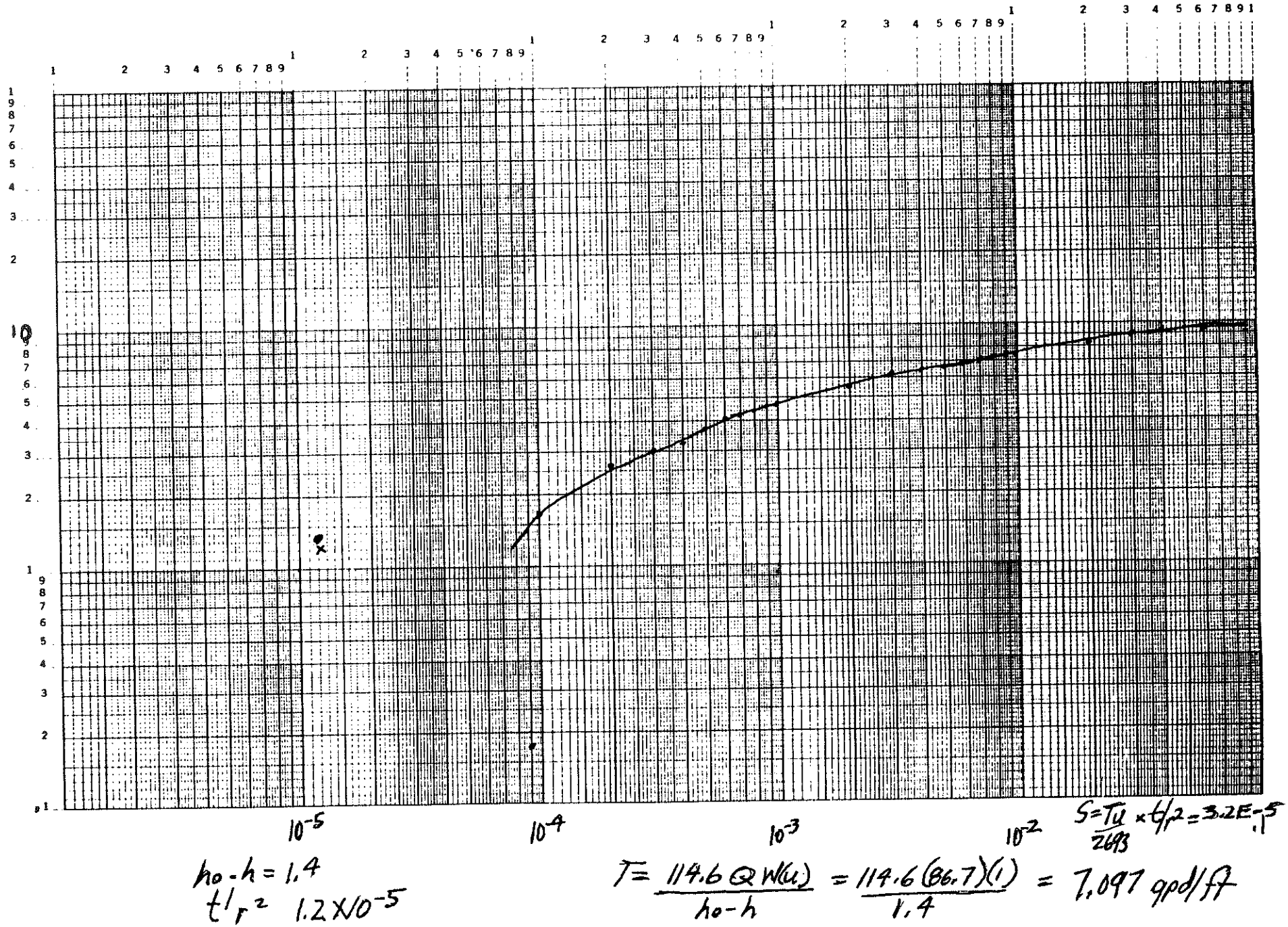
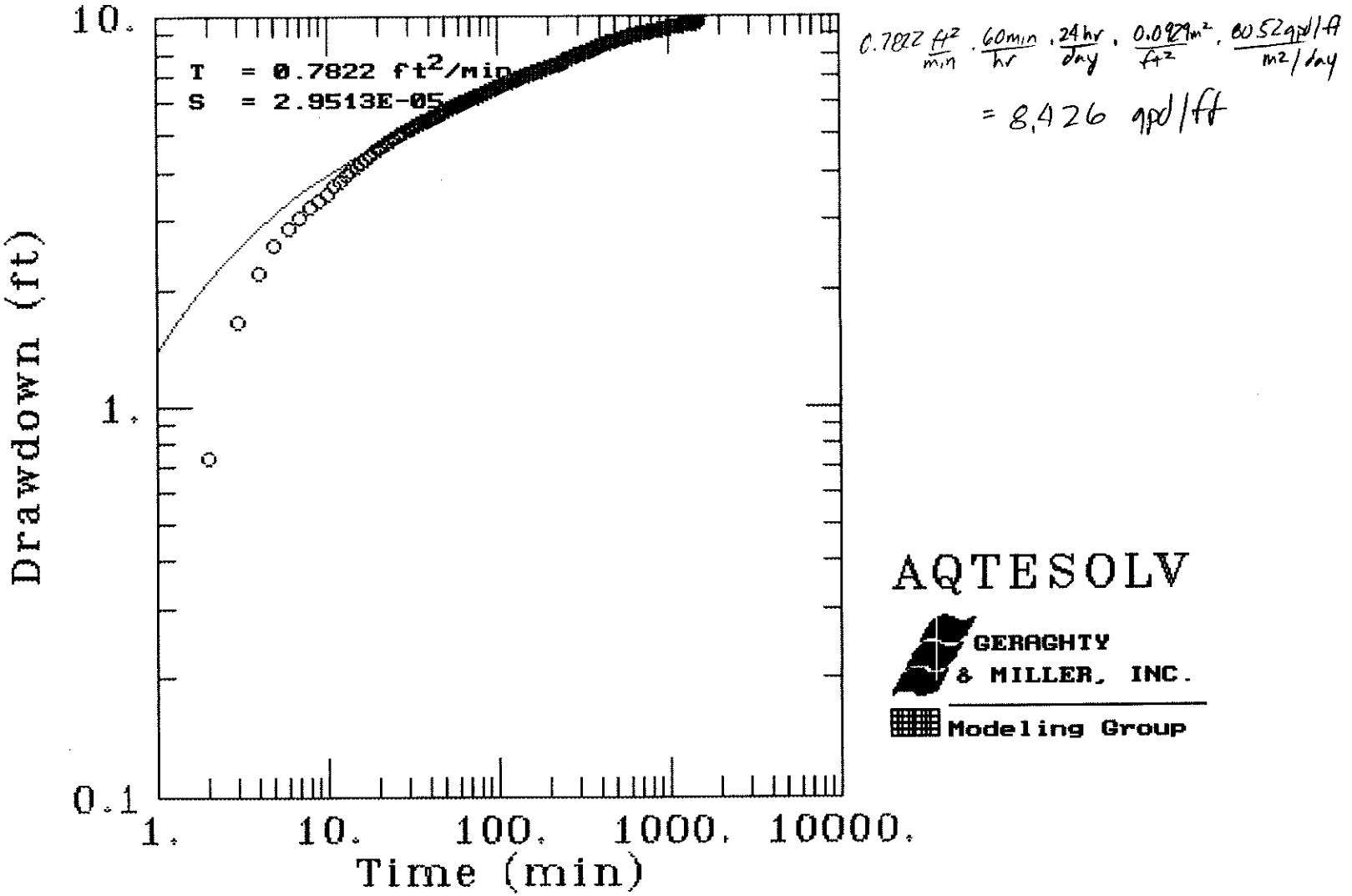


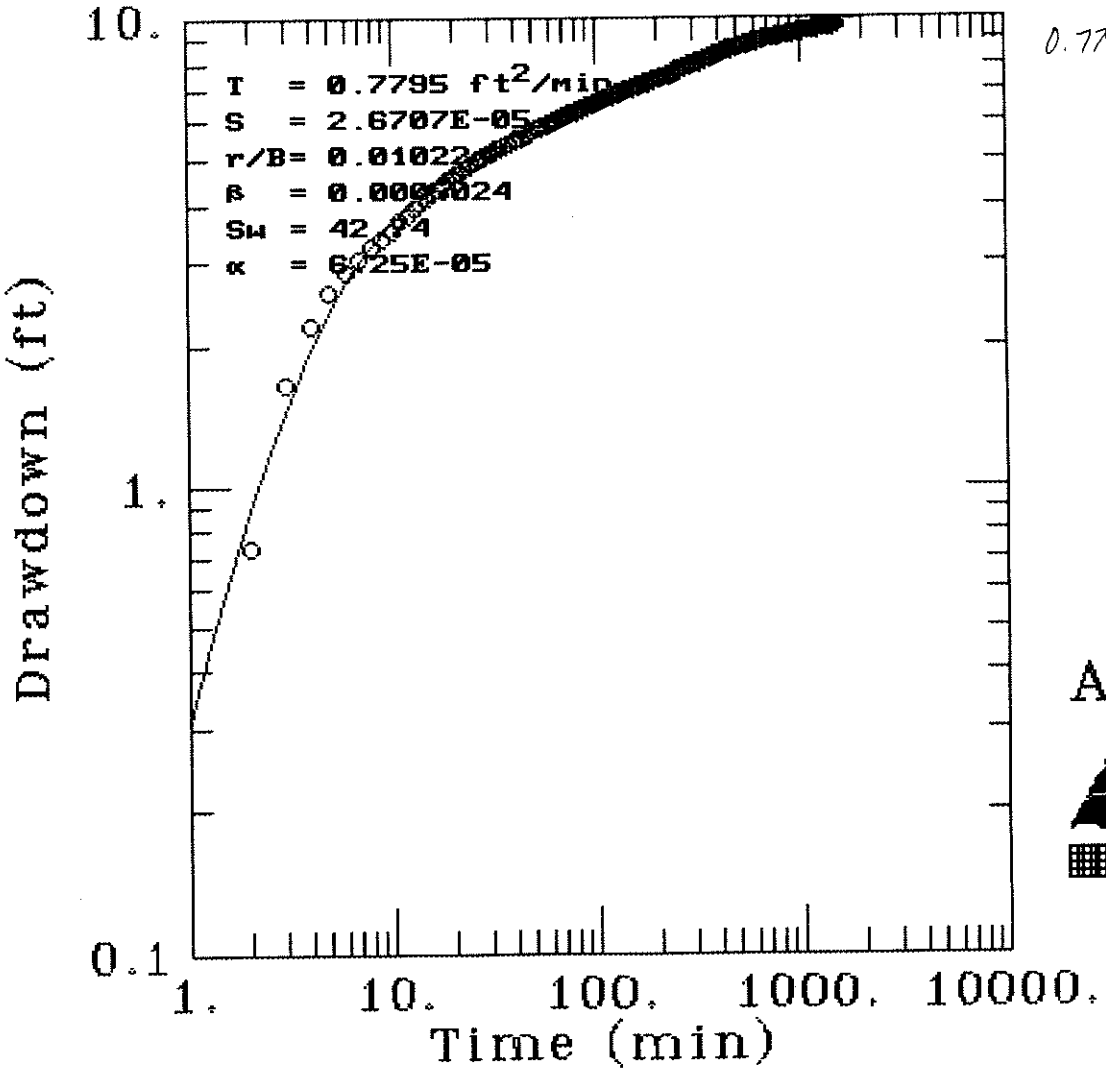
Figure Q-16 Theis Method for AVB68-04



$0.7822 \frac{ft^2}{min} \cdot \frac{60 min}{hr} \cdot \frac{24 hr}{day} \cdot \frac{0.0929 m^2}{ft^2} \cdot \frac{80.52 gpd/ft}{m^2/day}$

$= 8,426$ gpd/ft

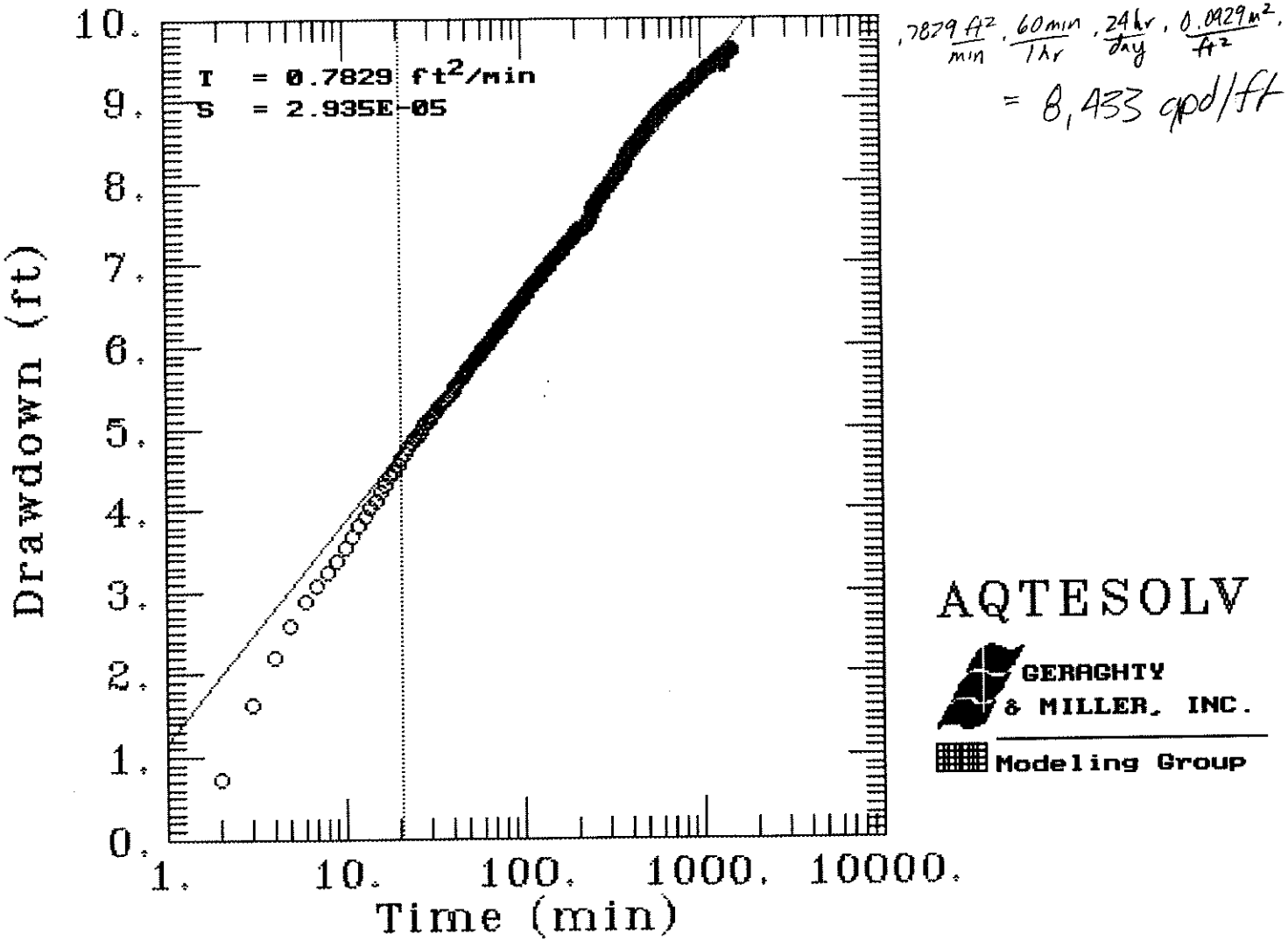
Figure Q-17 **Theis Method for AVB68-04 MAU Observation Well (Drawdown)**



$0.7795 \frac{ft^2}{min} \cdot \frac{60 min}{1 hr} \cdot \frac{24 hr}{day} \cdot \frac{0.093 m^2}{ft^2} \cdot \frac{80.52 gpd/ft}{m^2/day}$

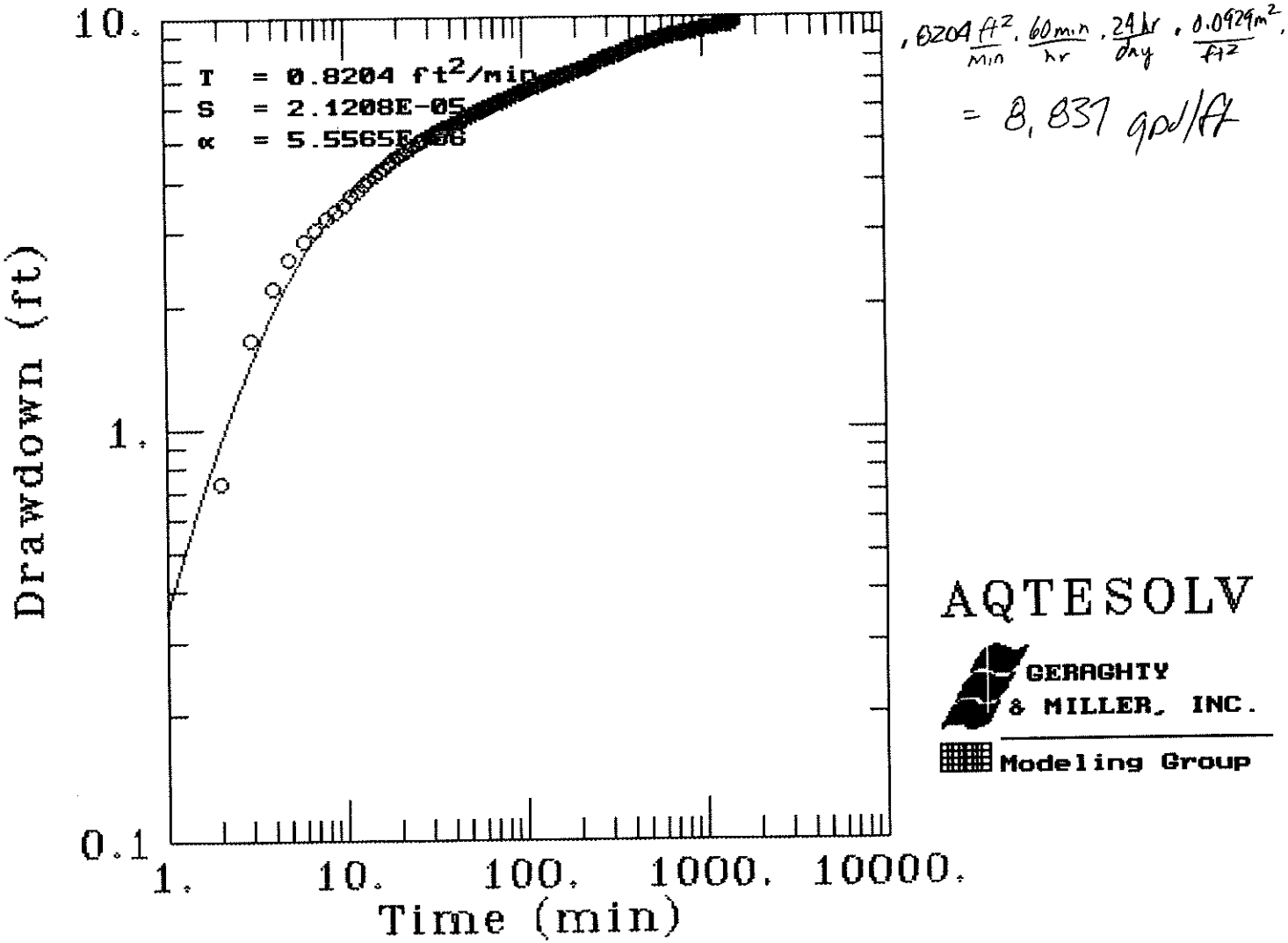
$= 8,396$ gpd/ft

Figure Q-18 Moench Method for AVB68-04 MAU Observation Well (Drawdown)



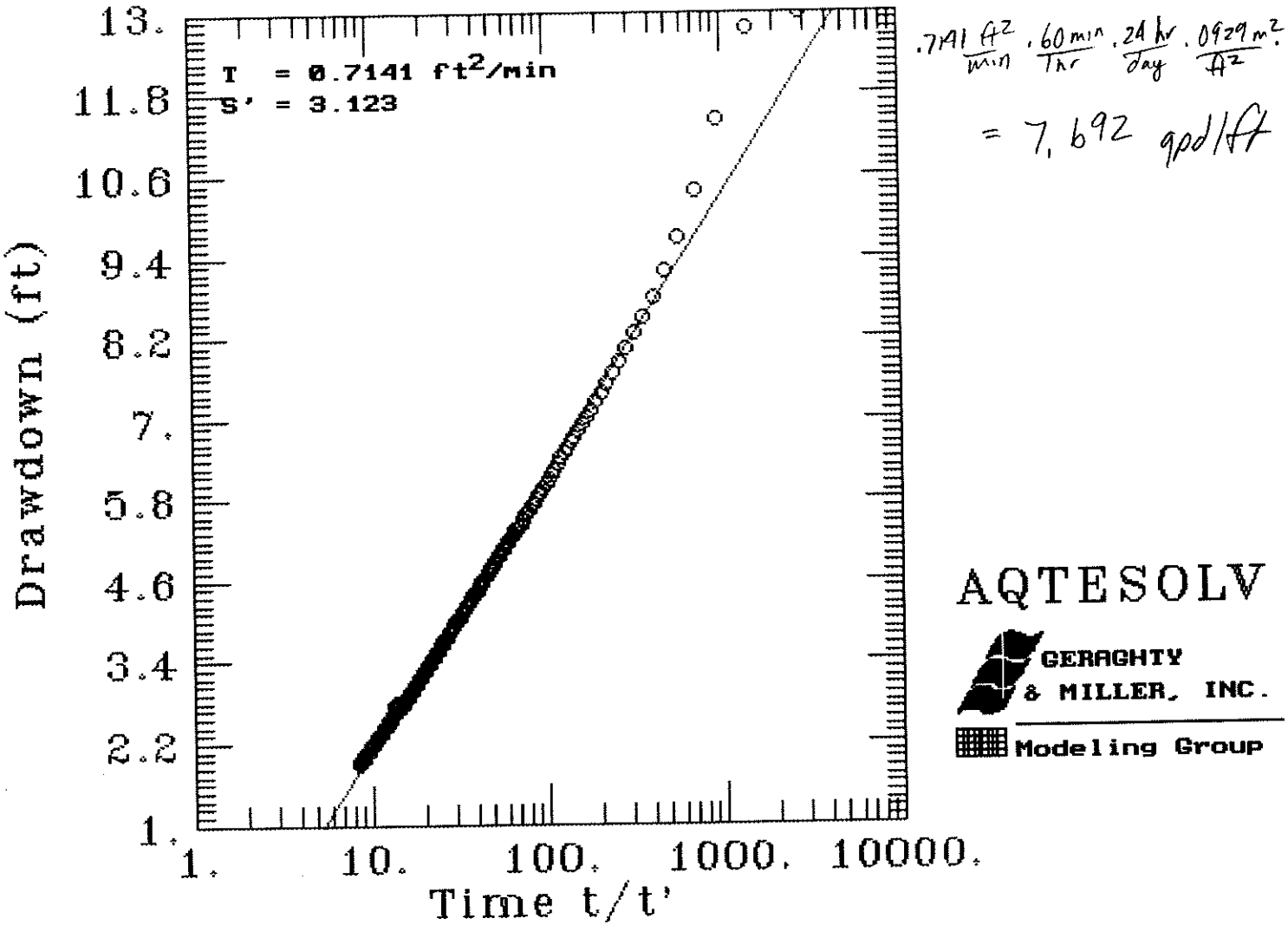
.7829 ft²/min . 60 min/1 hr . 24 hr/day . 0.0929 m²/ft² . 80.52 gpd/ft / m²/day
= 8,433 gpd/ft

Figure Q-19 Cooper-Jacob Method for AVB68-04 MAU Observation Well (Drawdown)



0.8204 ft²/min · 60 min/hr · 24 hr/day · 0.0929 m²/ft² · 80.52 gpd/ft/m²/day
= 8,837 gpd/ft

Figure Q-20 **Papadopoulos-Cooper Method for AVB68-04 MAU Observation Well (Drawdown)**



.7141 ft²/min · 60 min/hr · 24 hr/day · .0929 m²/ft² · 80.52 gpd/ft/m²/day

= 7,692 gpd/ft

Figure Q-21 **Theis Recovery Method for AVB68-04 MAU Observation Well (Recovery)**

FLUOR DANIEL GTI

Drilling Log AVB 68-01 (MW-1)

Monitoring Well **MAU Production Well**

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588
Surface Elev. _____ Total Hole Depth 304 ft. Diameter 12 in.
Top of Casing 1075.56 ft. Water Level Initial 55 ft. Static 80.6 ft.
Screen: Dia 6 in. Length 50 ft. Type/Size 0.020 in.
Casing: Dia 6 in. Length 250.5 ft. Type Low Carbon Steel
Fill Material Colorado Sand 10/20 Rig/Core AP 1000
Drill Co. Layne Environmental Method Air Hammer
Driller D. Peterson Log By M. Nation Date 5/12/97 Permit # 55-562206
Checked By _____ License No. AZ 21616

See Site Map For Boring Location

COMMENTS:

All USCS soil type boundaries are gradational. All percentages are approximate.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2 to 24						SW	0 – 20 Feet: Gravelly Clayey/Silty Sand Light tan, dry, moderately sorted, semi-hard. Sand is fine to coarse grained, subrounded. Gravel is fine, subrounded. No petroleum hydrocarbon odors. Sand 60%, clay/silt 20–30%, gravel 0–20%. Low gravel content below 14 feet.
						GW	20 – 67 Feet: Sandy Gravel/Cobbles Tan, dry, poorly sorted, semi-hard to hard. Gravel are medium to coarse, rounded to subrounded. Cobbles 4 inches maximum size. Sand is fine to coarse grained, subrounded to subangular. Gravel/cobbles 60–70%, sand 30–40%.

FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU Production Well**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							Sandy Gravel/Cobbles (continued)
26							
28							
30							30 – 67 Feet: Bimodal sorted cobbles and sand. Cobbles greater than 6 inches in size. Trace of clay/silt ≤10% present.
32							
34							
36							
38							
40						GW	
42							
44							
46							
48							
50							
52							
54							
56							

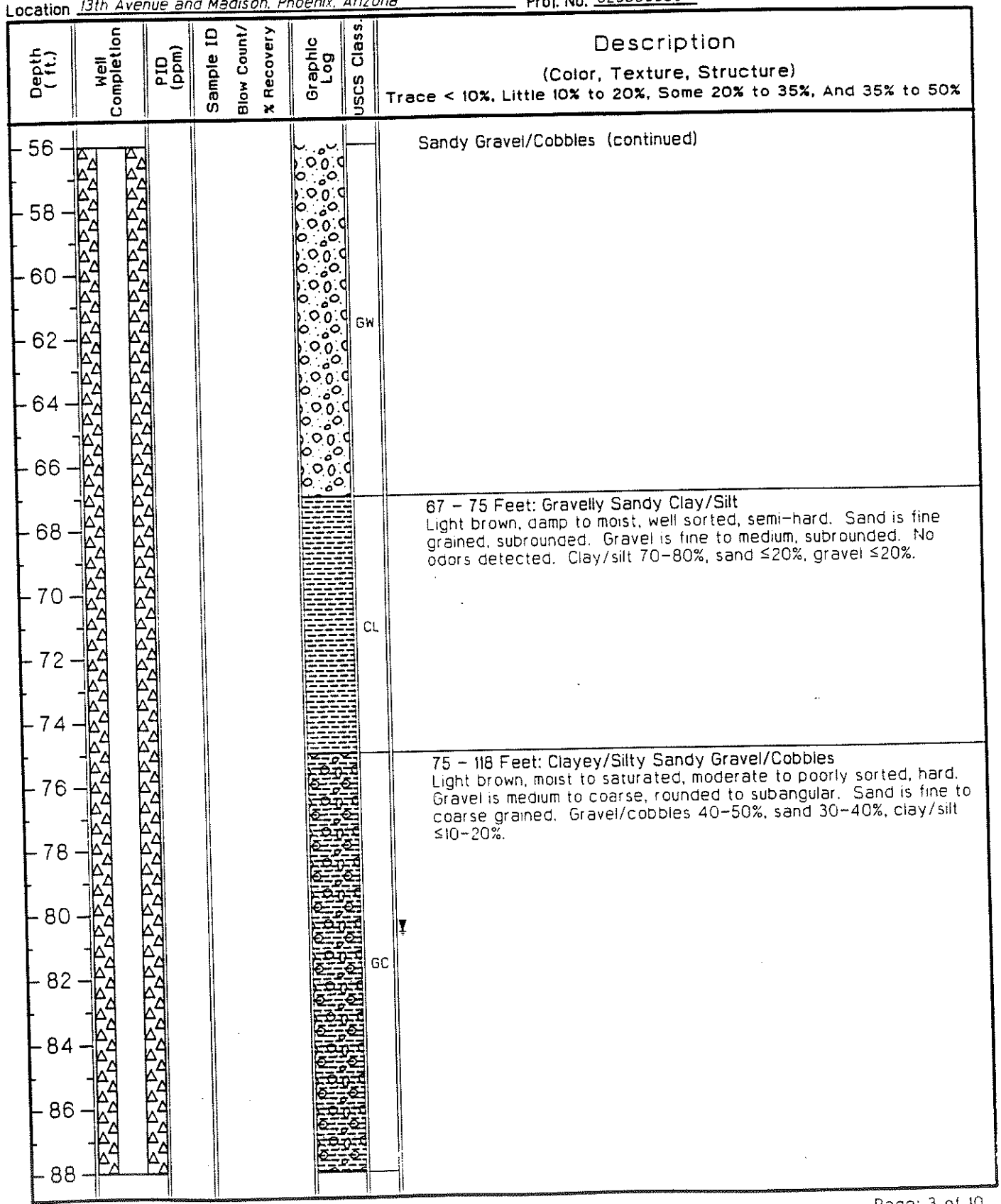
FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU Production Well**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*



FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU Production Well**

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
88							Clayey/Silty Sandy Gravel/Cobbles (continued)
90							
92							
94							
96							
98							
100							
102						GC	
104							
106							
108							
110							
112							
114							
116							
118						GW	118 – 178 Feet: Sandy Gravel/Cobbles Saturated, poorly sorted, hard. Gravel is fine to coarse, rounded to angular. Most gravel is coarse. Cobbles are up to 8 inches maximum size. Sand is fine to coarse grained, subangular. Gravel/cobbles 60–80%, sand 20%, clay/silt ≤10%
120							

FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU Production Well**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
120							Sandy Gravel/Cobbles (continued)
122							
124							
126							
128							
130							
132							
134							
136						GW	
138							
140		NR	ADEQWVB -PWCI composite				
142							
144							
146							
148							
150							
152							

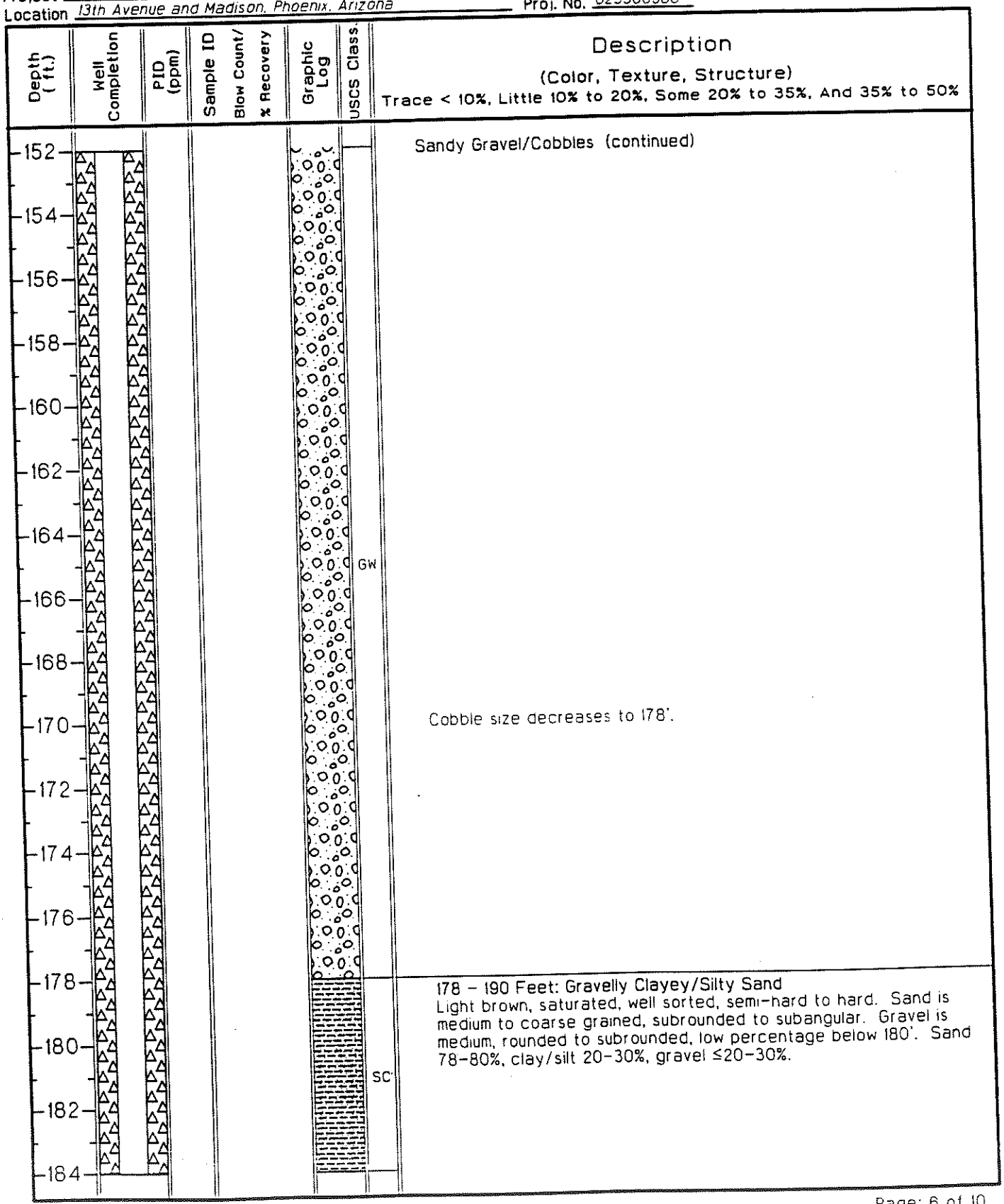
FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU Production Well**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*



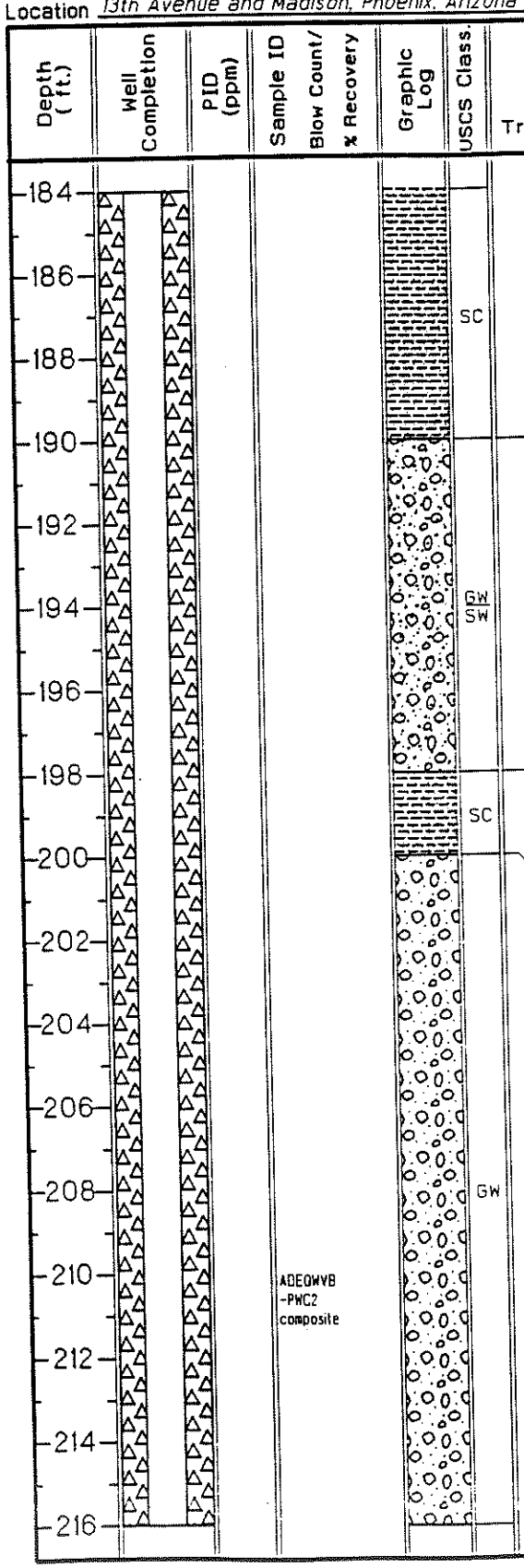
FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU Production Well**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*



Description

(Color, Texture, Structure)

Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

Gravelly Clayey/Silty Sand (continued)

190 – 198 Feet: Sandy Gravel/Cobbles
Tan gray, saturated, moderate to poorly sorted, well graded, semi-hard. Gravel is fine to coarse, rounded to subrounded. Sand is fine to coarse grained, mostly medium, subrounded to subangular. Gravel/cobbles 40-70%, sand 30-50%, clay/silt ≤10%.

198 – 200 Feet: Clayey/Silty Sand
Tan gray, saturated, well sorted, soft to semi-hard. Sand is fine to coarse grained, subrounded to subangular. Sand 80%±, clay/silt ≤20%.

200 – 224 Feet: Sandy Gravel/Cobbles
Gray/tan, saturated, poorly sorted, semi-hard to hard. Gravel is fine to coarse, rounded to subrounded. Sand is medium grained, subrounded. Gravel/cobbles 70-80%, sand 20-30%.

210 – 224 Feet: Gravel/cobbles 80%, sand ≤20%.

FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU Production Well**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

UAU
MAU

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
216–248						GW	Sandy Gravel/Cobbles (continued)
224–226						SC	224 – 227 Feet: Clayey/Silty Sand Tan/gray, saturated, well sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Sand 80%, clay/silt 20%.
227–240						ML	227 – 240 Feet: Sandy Clay/Silt Light brown, moist to wet, well sorted, semi-hard. Sand is fine to medium grained, subrounded to subangular. Approximately 50% of fines are silt. Clay/silt 60-70%, sand 30-40%.
240–254						SC	240 – 254 Feet: Clayey/Silty Sand Light brown/gray, damp, very well to well sorted, very hard, brittle. Sand is fine to medium grained, mostly medium gravel, subrounded to subangular. Sand is moderately indurated and laminae are present in some fragments. Sand 90%, clay/silt ≤10%.

FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU Production Well**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
248							Clayey/Silty Sand (continued)
250						SC	
252							
254							254 – 304 Feet: Sandy Clay/Silt Light brown, moist, well sorted, semi-hard. Sand is fine grained. Clay 50-60%, silt 20-30%, sand 10-20%.
256							
258							
260							
262							
264							
266						CL	
268							
270							270 – 290 Feet: Light brown, moist to wet, very well to well sorted, hard. Sand is fine grained, subrounded. Clay 40-50%, silt 30% sand 20-30%.
272							
274							
276							
278							
280							

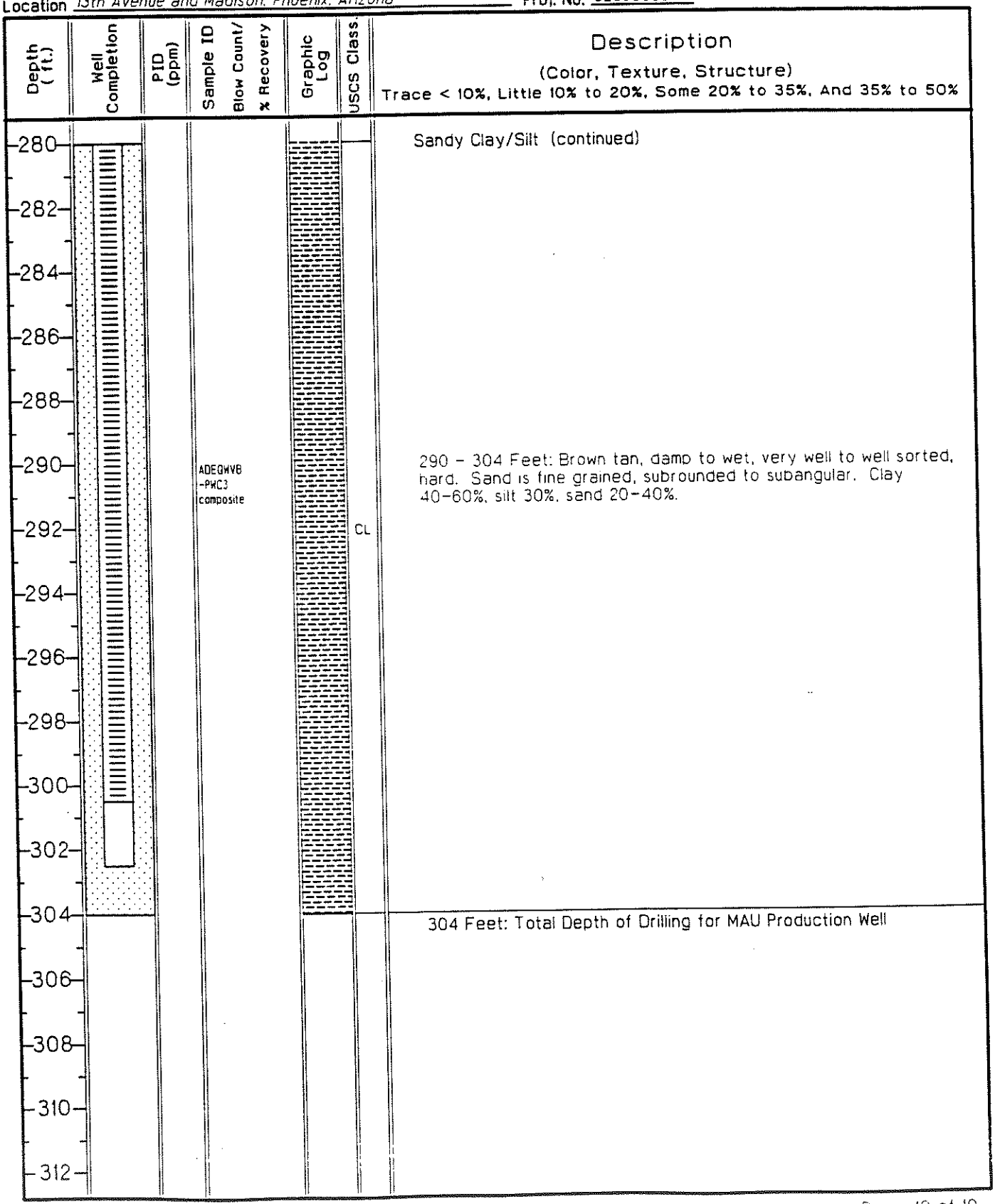
FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU Production Well**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*



AVB68-02 (MW-2A)
68-03 (MW-2B)

Drilling Log

Piezometer Well

FLUOR DANIEL GTI

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588
Surface Elev. ____ Total Hole Depth 303 ft. Diameter 10 in.
Top of Casing 1075.91 ft. Water Level Initial 75 ft. Static 79.16 ft.
Screen: Dia 2 in. Length 30/50 ft. Type/Size 0.020 in.
Casing: Dia 2 in. Length 250/70 ft. Type SCH 80 PVC
Fill Material Colorado Sand 10/20 Rig/Core AP 1000
Drill Co. Layne Environmental Method Air Hammer
Driller D. Peterson Log By M. Nation Date 5/15/97 Permit # 55-561942
Checked By ____ License No. AZ 21616

See Site Map For Boring Location

COMMENTS:

All USCS soil type boundaries are gradational. All percentages are approximate.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2 to 24						SW	0 – 14 Feet: Gravelly/Cobbly Sand Light brown, dry, moderately sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is medium to coarse, rounded to subrounded. Sand 60-80%, gravel/cobbles 10-30%, clay/silt ≤10%. Cobbles up to 6 inches in size below 12 feet.
						GW SW	14 – 40 Feet: Sandy Gravel/Cobbles Tan, dry, moderate to poorly sorted, hard. Gravel is fine to coarse, rounded to subangular. Sand and gravel occur in layers. Majority of interval is high gravel/cobbles content. Sand is fine to coarse grained. Gravel/cobbles 25-70%, sand 30-70%, clay/silt ≤5%. 22 – 23 Feet: Sand 70%.

Drilling Log

FLUOR DANIEL GTI

Piezometer Well

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							Sandy Gravel/Cobbles (continued)
26							
28							
30							
32						GW SW	
34							
36							
38							
40						SP	40 – 42 Feet: Gravelly Sand Tan gray, dry, moderately sorted, hard. Sand is medium to coarse grained, subrounded to subangular. Gravel is fine, subangular. Sand 80%, gravel 20%.
42							42 – 64 Feet: Sandy Gravel/Cobbles Tan-gray, dry to damp, moderate to poorly sorted, hard. Gravel is fine to coarse, rounded to subrounded. Sand is medium to coarse grained, subrounded to subangular. Gravel/cobbles 60-80%, sand 20-40%, clay/silt ≤5%.
44							
46							
48						GW	
50							
52							
54							
56							

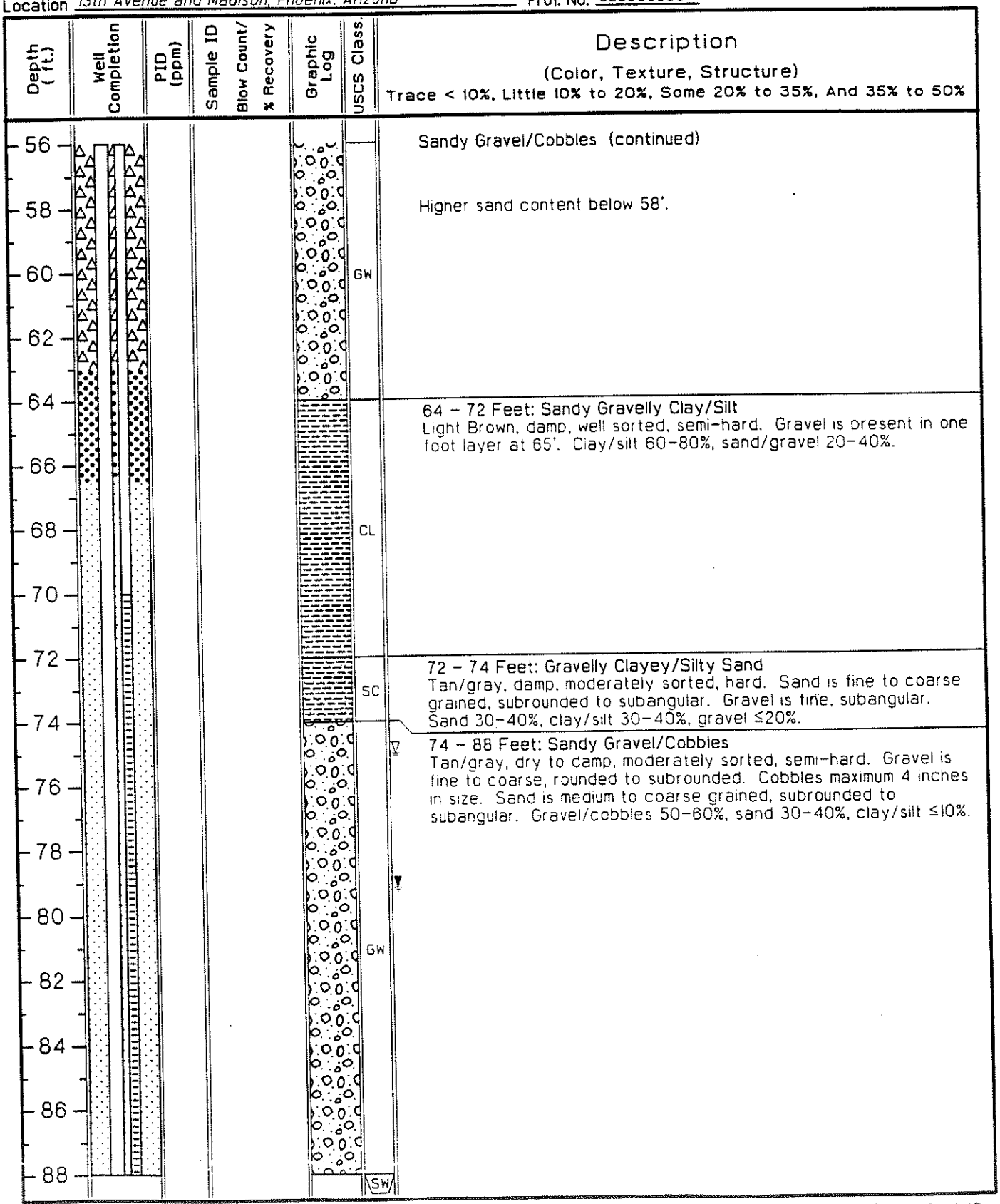
Drilling Log

FLUOR DANIEL GTI

Piezometer Well

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588



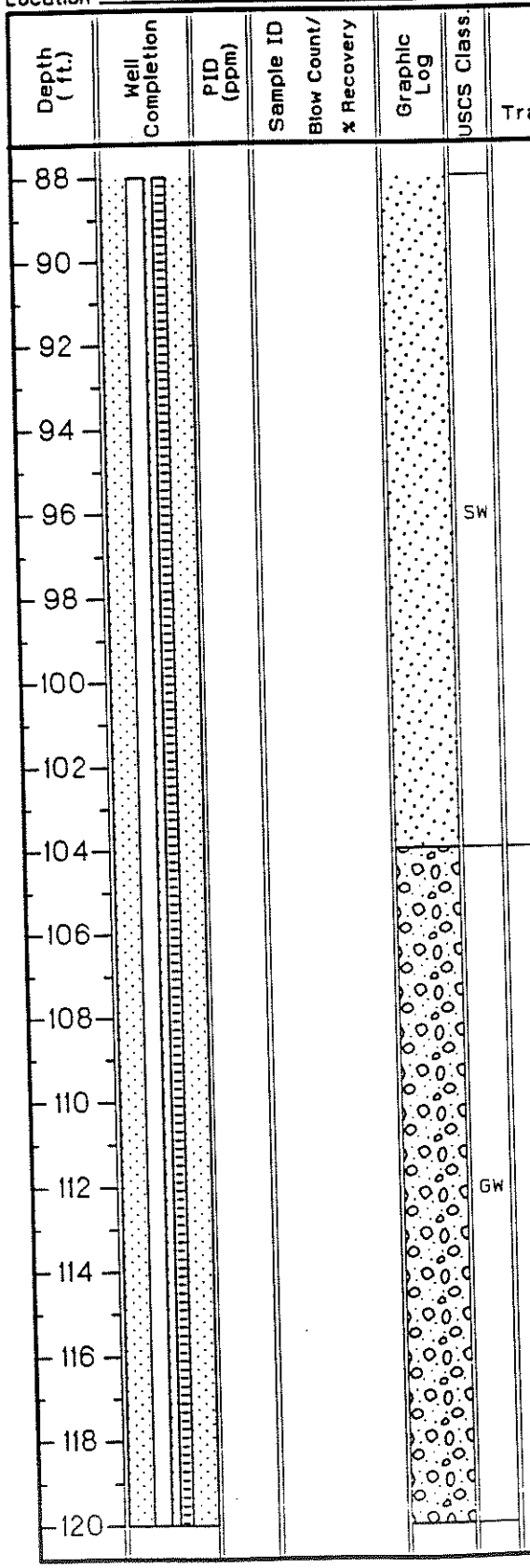
Drilling Log

FLUOR DANIEL GTI

Piezometer Well

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588



Description

(Color, Texture, Structure)

Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

88 – 104 Feet: Gravelly/Cobbly Sand
Light brown, damp to wet, moderately sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to medium, rounded. Sand 50-60%, gravel/cobbles 30-40%, clay/silt ≤10%.

104 – 164 Feet: Sandy Gravel/Cobbles
Tan, saturated, moderate to well sorted, semi-hard. Gravel is fine to coarse, rounded to subangular. Most cobbles approximately 4 inches. Sand is fine to coarse grained, mostly medium to coarse, subrounded to subangular. Gravel/cobbles 70-80%, sand 20-30%, clay/silt ≤5%.

Drilling Log

FLUOR DANIEL GTI

Piezometer Well

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
120							Sandy Gravel/Cobbles (continued)
122							
124							
126							
128							
130							
132							
134							
136						GW	
138							
140							
142							
144							
146							
148							
150							
152							

Drilling Log

FLUOR DANIEL GTI

Piezometer Well

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
152						GW	Sandy Gravel/Cobbles (continued)
154							
156							
158							
160							
162							
164						SW	164 – 168 Feet: Gravelly Sand Tan, saturated, moderately sorted, soft. Sand is medium to coarse grained, subrounded to subangular. Gravel is fine to medium, rounded. Sand 60–70%, gravel 30–40%.
166							
168						GW	168 – 170 Feet: Sandy Gravel/Cobbles Tan/gray, saturated, moderately sorted, semi-hard. Gravel is medium to coarse, mostly coarse, rounded to subrounded. Sand is medium to coarse grained, subrounded to subangular. Gravel/cobbles 60–70%, sand 30–40%.
170						SW	170 – 174 Feet: Gravelly Sand Tan, saturated, moderately sorted, soft. Sand is medium to coarse grained, subrounded to subangular. Gravel is fine to medium, rounded. Sand 60–70%, gravel 30–40%.
172							
174						GW	174 – 178 Feet: Sandy Gravel Gray, saturated, moderately sorted, semi-hard. Gravel is medium to coarse, rounded to subrounded. Sand is medium to coarse grained, subrounded to subangular. Gravel 70%, sand 30%.
176							
178						SP	178 – 204 Feet: Gravelly Sand Tan/gray, saturated, well sorted, soft. Sand is medium to coarse grained, subrounded to subangular. Gravel is fine, rounded to subrounded. Sand 80%, gravel ≤10–20%, clay/silt ≤10%.
180							
182							
184							

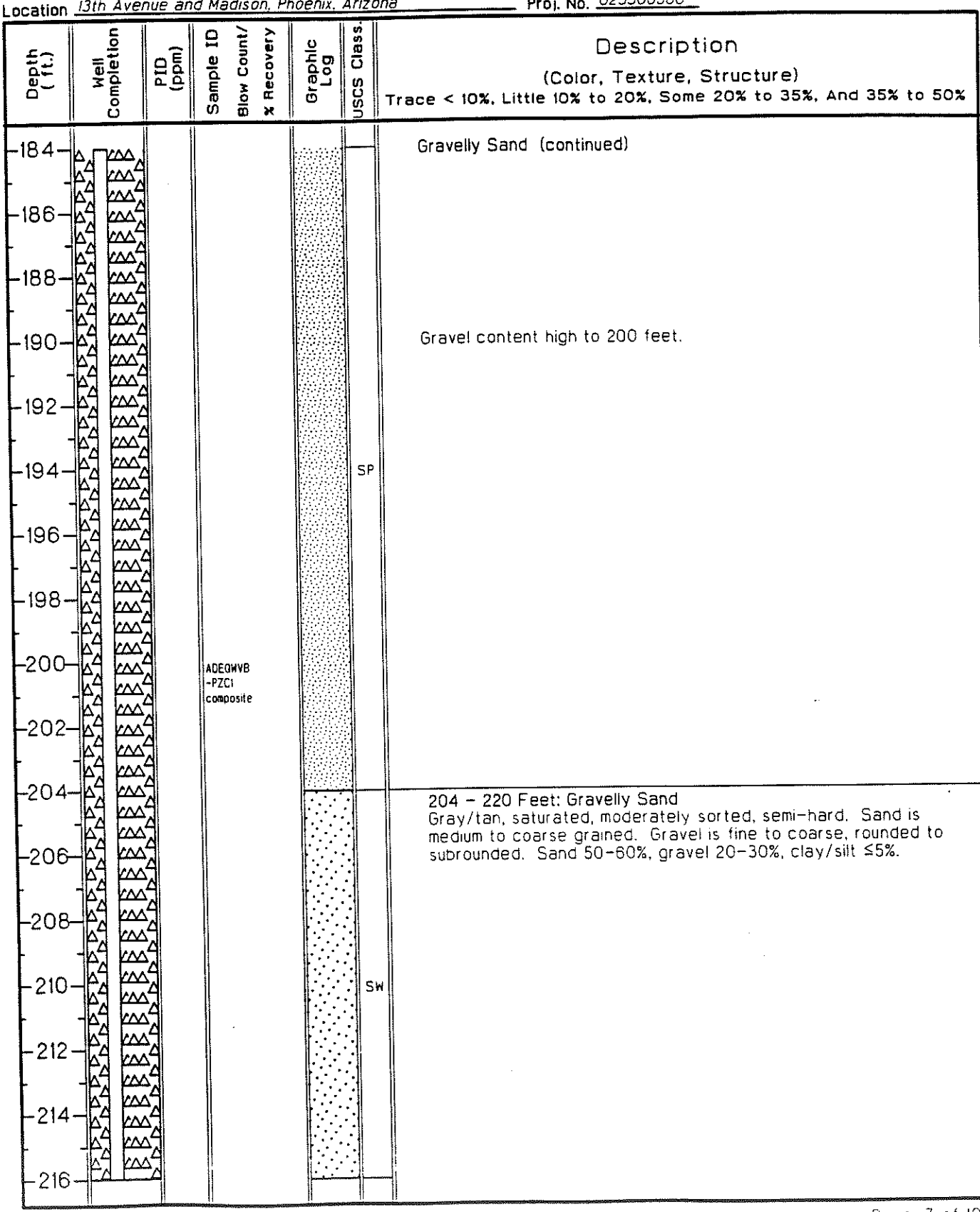
Drilling Log

FLUOR DANIEL GTI

Piezometer Well

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588



Drilling Log

FLUOR DANIEL GTI

Piezometer Well

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
216–218						SW	Sandy Gravel/Cobbles (continued)
220–222						GW SW	220 – 224 Feet: Sandy Gravel/Cobbles Gray, saturated, moderate to poorly sorted, soft to semi-hard. Gravel is medium to coarse, rounded to subrounded. Sand is medium to coarse grained, subrounded to subangular, increases to 224 feet. Gravel/cobbles 60-70%, sand ≤20-80%.
224–234						CL	224 – 234 Feet: Sandy Clay/Silt Brown, moist, very well to well sorted, semi-hard. Sand is very fine to fine grained, subrounded to subangular. Clay 30-40%, silt 20-30%, sand ≤20%.
234–239						SC	234 – 239 Feet: Clayey/Silty Sand Gray, saturated, very well sorted, soft. Sand is medium to coarse grained, subrounded to subangular. Sand 80%, clay/silt ≤20%.
239–248						CL SC	239 – 248 Feet: Sandy Clay/Silt Tan brown, damp, very well to well sorted, hard. Sand is fine grained, subrounded to subangular. Clay/silt 70-80%, sand 20-30%.

UAU
MAU

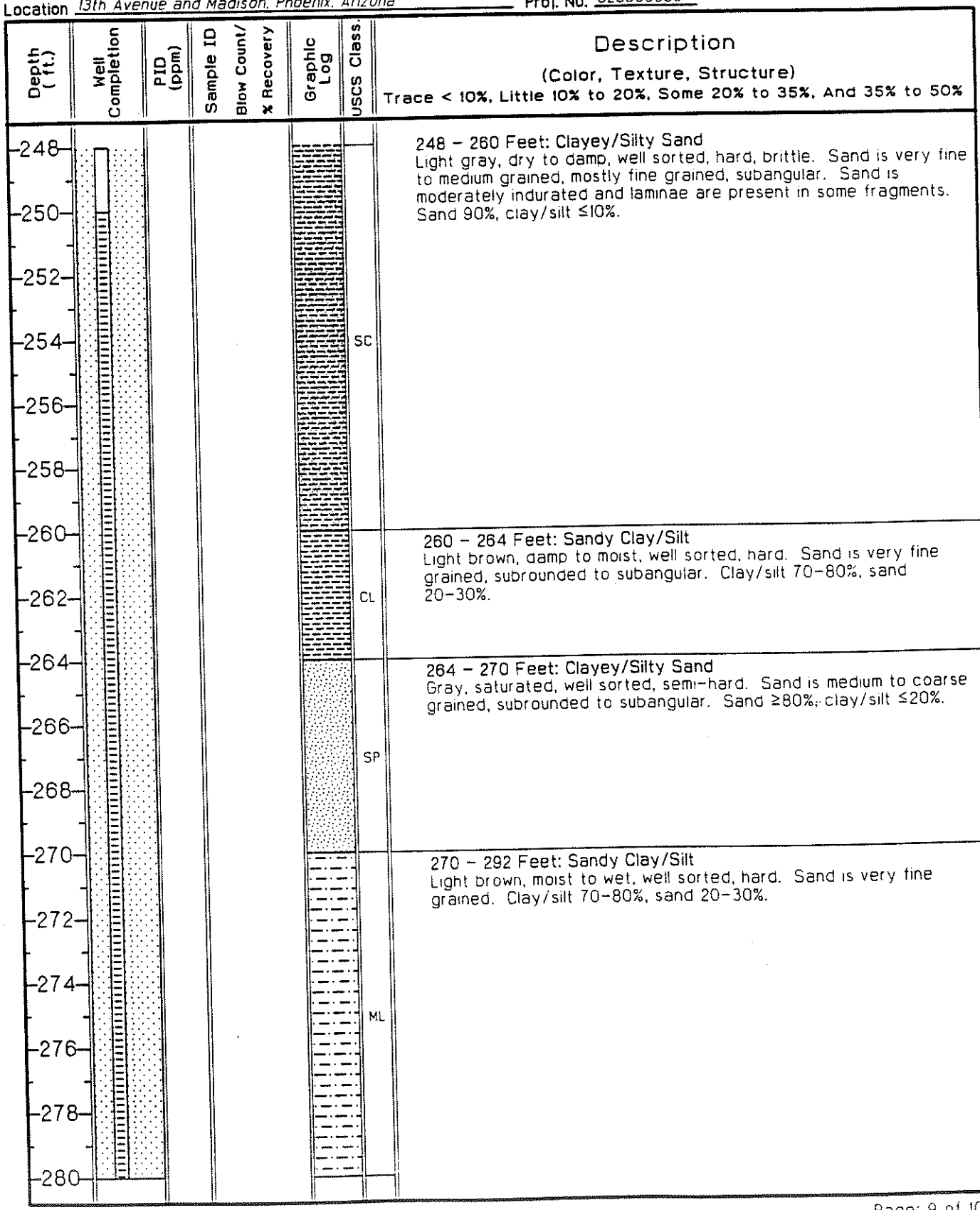
Drilling Log

FLUOR DANIEL GTI

Piezometer Well

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588



Description

(Color, Texture, Structure)

Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

248 – 260 Feet: Clayey/Silty Sand
Light gray, dry to damp, well sorted, hard, brittle. Sand is very fine to medium grained, mostly fine grained, subangular. Sand is moderately indurated and laminae are present in some fragments. Sand 90%, clay/silt ≤10%.

260 – 264 Feet: Sandy Clay/Silt
Light brown, damp to moist, well sorted, hard. Sand is very fine grained, subrounded to subangular. Clay/silt 70–80%, sand 20–30%.

264 – 270 Feet: Clayey/Silty Sand
Gray, saturated, well sorted, semi-hard. Sand is medium to coarse grained, subrounded to subangular. Sand ≥80%, clay/silt ≤20%.

270 – 292 Feet: Sandy Clay/Silt
Light brown, moist to wet, well sorted, hard. Sand is very fine grained. Clay/silt 70–80%, sand 20–30%.

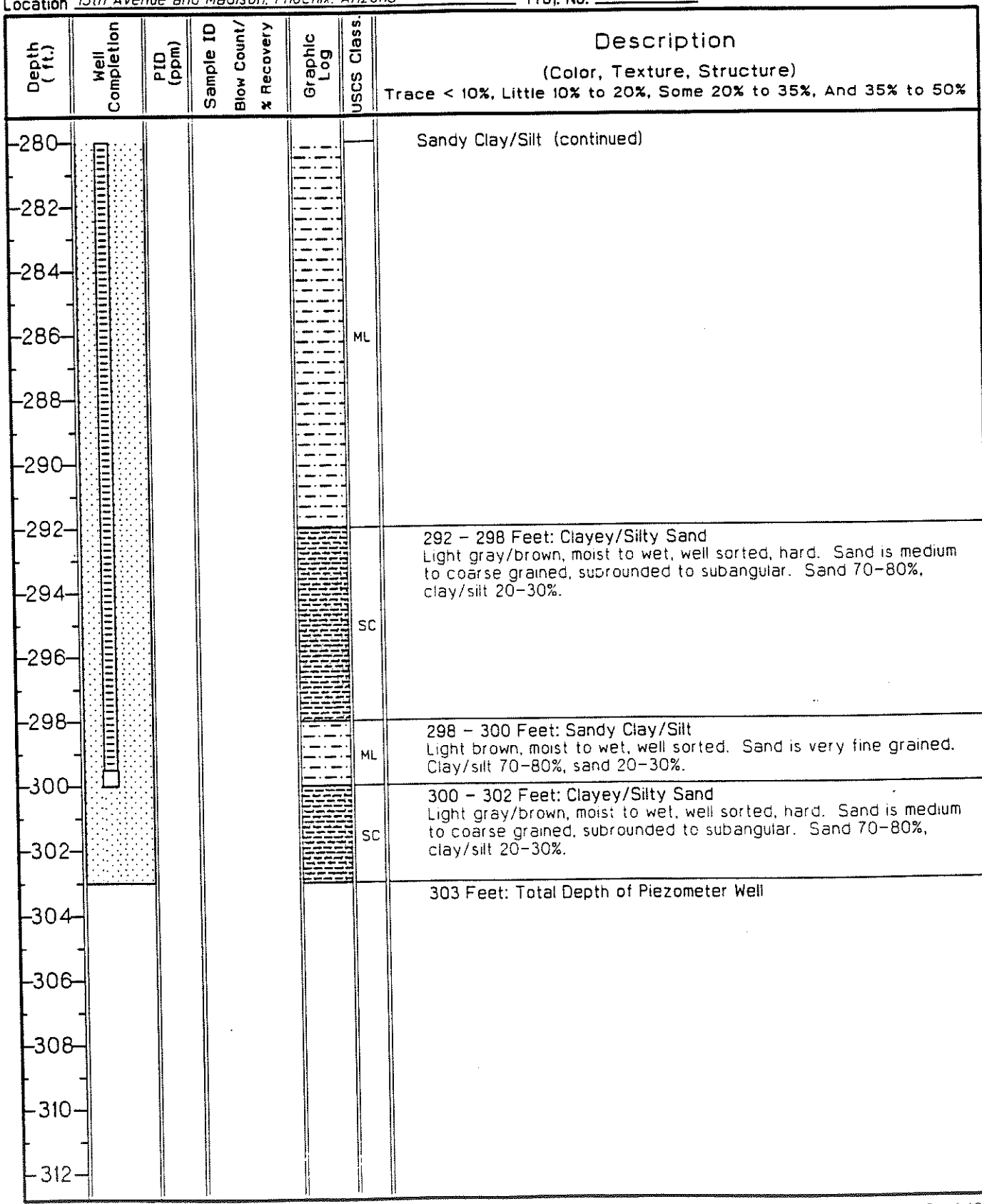
Drilling Log

FLUOR DANIEL GTI

Piezometer Well

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588



FLUOR DANIEL GTI

Drilling Log

AVB68-04 (MW-3)

Monitoring Well **MAU MW-1**

Project ADEQ/West Van Buren WQARF Owner ADEQ

Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Surface Elev. _____ Total Hole Depth 303 ft. Diameter 9 in.

Top of Casing 1075.60 ft. Water Level Initial 56 ft. Static 78 ft.

Screen: Dia 4 in. Length 50 ft. Type/Size 0.020 in.

Casing: Dia 4 in. Length 250.5 ft. Type SCH 40 Low Carbon Steel

Fill Material Colorado Sand 10/20 Rig/Core AP 1000

Drill Co. Layne Environmental Method Hammer Air

Driller D. Peterson Log By M. Nation Date 5/28-29/97 Permit # 55-561940

Checked By _____ License No. AZ 21616

See Site Map For Boring Location

COMMENTS:

All USCS soil type boundaries are gradational. All percentages are approximate.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2 to 24						ML	0 – 10 Feet: Gravelly Sandy Clay/Silt Light tan to brown, dry, well sorted, hard. Sand is fine grained, subrounded to subangular. Gravel is fine to medium, rounded, up to 3 inch in diameter. No odors detected. Clay/silt 70-80%, sand 20%, gravel 10% @ 8-10'.
						GW	10 – 28 Feet: Sandy Gravel Tan/gray, dry, poorly sorted, semi-hard. Gravel is fine to coarse, rounded to subangular. Sand is fine to coarse grained, subrounded to subangular. No odors detected. Gravel 65-75%, sand 30-40%, clay/silt ≤5%.

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU MW-1**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							Sandy Gravel (continued)
26						GW	
28							28 – 32 Feet: Gravelly/Cobbly Sand Tan, dry, moderately sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel/cobbles are medium to coarse, well rounded to subrounded. Gravel up to 5 inch in diameter. No odors detected. Sand 65–70%, gravel/cobbles 20–30%, clay/silt ≤5%.
30						SW	
32							32 – 66 Feet: Sandy Gravel/Cobbles Tan/gray, dry, moderate to poorly sorted, hard. Gravel/cobbles are fine to coarse, subrounded to subangular. Sand is fine to coarse grained, subrounded to subangular. Gravel size 3 to 4 inches maximum. No odors detected. Gravel/cobbles 70–80%, sand 20–30%.
34							
36							
38							
40							
42							
44						GW	
46							
48							
50							
52							
54							54 – 66 Feet: Light brown, moist to wet, poorly sorted. Gravel cobbles are fine to coarse, rounded to subangular. Sand is medium to coarse grained, subrounded to subangular. Gravel/cobbles 50–70%, sand 30–50%.
56							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU MW-1**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
56							Sandy Gravel/Cobbles (continued)
58							
60						GW	
62							
64							
66							66 – 74 Feet: Gravelly Sandy Clay Light brown, damp, moderate to well sorted, semi-hard. Sand is medium grained, subrounded to subangular. Gravel is medium to coarse, subrounded. No odors detected. Clay 50-70%, sand 20-30%, gravel 10-20%.
68							
70						CL	
72							
74							74 – 92 Feet: Gravelly Sand Tan gray, damp to moist, moderate to poorly sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is medium to coarse, rounded to subangular, mostly from 2-3 inches in diameter. Sand 60%, gravel 30-40%, clay/silt ≤5%.
76							
78							
80						SW	
82							
84							
86							
88							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU MW-1**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
88							Gravelly Sand (continued)
90						SW	
92							92 – 100 Feet: Sandy Gravel/Cobbles Light brown, wet, moderately sorted, semi-hard. Gravel/cobbles are medium to coarse, rounded to subrounded. Gravel from 2-3 inches in diameter. Sand is medium to coarse grained, subrounded to subangular. Gravel/cobbles 60-80%, sand 20-40%, clay/silt ≤5%.
94							
96						GW	
98							
100							100 – 110 Feet: Gravelly/Cobbly Sand Light brown, wet, moderate to poorly sorted, semi-hard. Sand is medium to coarse grained, subrounded to subangular. Gravel/Cobbles are medium, rounded to subrounded. Gravel from 2-3 inches in diameter. No odors detected. Sand 50%, gravel/cobbles 40%, clay/silt <10%.
102							
104						SW	
106							
108							
110							110 – 155 Feet: Sandy Gravel/Cobbles Light brown, wet to saturated, moderate to poorly sorted, semi-hard. Gravel/cobbles are fine to coarse, rounded to subrounded. Gravel is up to 3 inch in diameter. Cobbles mostly approximately 4 inches in size. Sand is medium to coarse grained, subrounded to subangular. No petroleum hydrocarbon odors. Gravel/cobbles 60-70%, sand ≤20-40%, clay/silt ≤5-10%.
112							
114						GW	
116							
118							
120							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU MW-1**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
120							Sandy Gravel/Cobbles (continued)
122							
124							
126							
128							
130							130 – 155 Feet: Sand and clay in layers with gravel.
132							
134							
136						GW	
138							
140							
142							
144							
146							
148							
150							
152							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU MW-1**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
152							Sandy Gravel/Cobbles (continued)
154						GW	
156							155 – 160 Feet: Gravelly/Cobbly Sand Light brown, saturated, moderately sorted, soft. Sand is fine to coarse grained. Gravel/cobbles are medium to coarse, rounded to subrounded, from 2–3 inches in diameter. Sand 65–70%, gravel/cobbles 20–35%, clay/silt ≤5%.
158						SW	
160							160 – 196 Feet: Gravelly Sand Tan, saturated, very well to moderately sorted, soft to semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to medium, rounded to subrounded, maximum size 2 inches. Sand 60–80%, gravel ≤10–30%, clay/silt ≤10%.
162							
164							
166							
168							
170							171 – 178 Feet: Gravel present in layers with sand.
172						SP	
174							
176							
178							
180							
182							
184							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU MW-1**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*
Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
184–196						SP	Gravelly Sand (continued)
196–200						SW	196 – 200 Feet: Gravelly/Cobbly Sand Tan, saturated, moderate to poorly sorted, semi-hard. Sand is medium to coarse grained, subrounded to subangular. Gravel/cobbles are medium to coarse, rounded to subrounded. Sand 50–60%, gravel/cobbles 30–40%, clay/silt ≤10%.
200–216						GW	200 – 225 Feet: Sandy Gravel/Cobbles Tan, saturated, moderate to poorly sorted, semi-hard. Gravel/cobbles are medium to coarse, rounded to subrounded. Gravel is mostly 3 inches in diameter. Cobbles up to 6 inches in size. Sand is fine to medium grained, subrounded to subangular. Gravel/cobbles 60–70%, sand 20–30%, clay/silt ≤10%.

Depth scale: 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU MW-1**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
216–248						GW / ML	Sandy Gravel/Cobbles (continued) 225 – 238 Feet: Sandy Clay/Silt Light brown, damp, very well to well sorted, semi-hard. Sand is fine grained. Silt 60–70%, clay 20%, sand 10–20%, gravel ≤5%. 230 – 238 Feet: Higher sand and gravel content. 238 – 250 Feet: Sandy Clayey Silt Light brown, damp, well sorted, semi-hard. Sand is fine to medium grained, rounded to subrounded. Silt 50–60%, clay 30–40%, sand ≤10%.

UAU / MAU

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU MW-1**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
248						ML	Sandy Clayey Silt (continued)
250						CL	250 – 267 Feet: Sandy/Gravelly Clay/Silt Light tan, dry to damp. Sand/gravel is fine to medium, subrounded to subangular. Gravel up to 0.5 inches in diameter. Clay/silt 70–80%, sand/gravel 20%.
252							
254							
256							
258							
260							
262							
264							
266							
268						SP	267 – 284 Feet: Clayey/Silty Sand Light brown, dry to damp, well sorted, semi-hard to hard. Sand is fine to coarse grained, subrounded to subangular and brittle. Sand ≥80%, clay/silt ≤20%.
270							
272							
274							
276							
278							
280							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU MW-1**

Project *ADEQ/West Van Buren WQARF* Owner *ADEQ*

Location *13th Avenue and Madison, Phoenix, Arizona* Proj. No. *023300588*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
280							Clayey/Silty Sand (continued)
282						SP	
284							284 – 288 Feet: Sandy Clay/Silt Light brown, damp, very well to well sorted. Sand is fine to medium grained, subrounded to subangular. Clay/silt ≥80%, sand≤20%.
286						CL	
288							288 – 295 Feet: Clayey/Silty Sand Light brown, damp to moist, moderately sorted, semi-hard. Sand is fine to medium grained. Gravel is fine to medium, subangular. Sand 60%, clay/silt 40%, gravel ≤10%.
290							
292						SC	
294							
296							295 – 303 Feet: Gravelly/Cobbly Sandy Clay/Silt Light tan/brown, damp to wet, moderately sorted, semi-hard. Sand is fine to medium grained, subrounded to subangular. Gravel/cobbles are medium to coarse, subangular. Clay/silt 60-70%, sand 20%, gravel/cobbles 10-20% (≤5% cobbles).
298							
300						CL	
302							
304							303 Feet: Total Depth of Drilling for Monitoring Well MAU MW-1
306							
308							
310							
312							