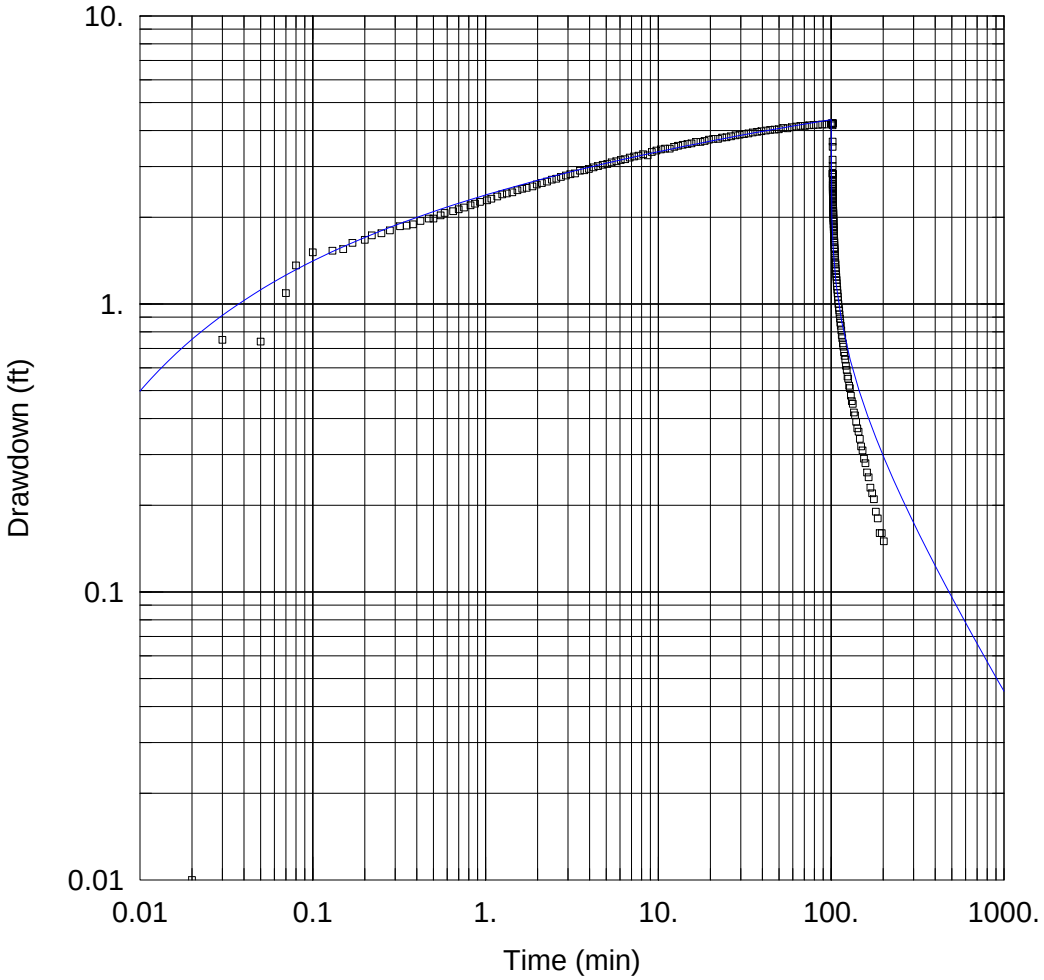
APPENDIX C

OTTER CREEK MINE BASELINE REPORT 304E

AQUIFER TEST DATA



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\A4 Pump Test (59.7 GPM)_final.aqt
Date: 07/17/12 Time: 11:29:32

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: A4
Test Date: 08/10/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
A4	0	0

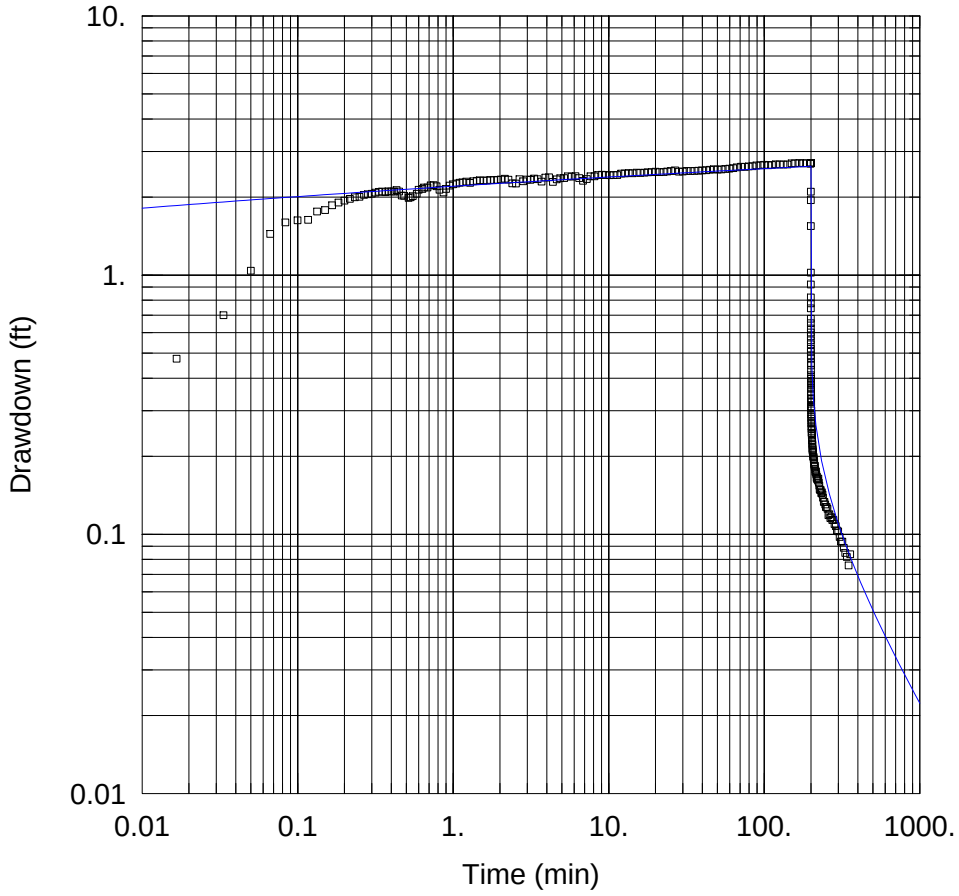
Observation Wells

Well Name	X (ft)	Y (ft)
▫ A4	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 2130. ft^2/day
S = 0.1151
Kz/Kr = 1.
b = 50. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\A6 Pump Test (50 GPM).aqt
Date: 07/17/12 Time: 11:57:59

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: A6
Test Date: 07/06/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
A6	0	0

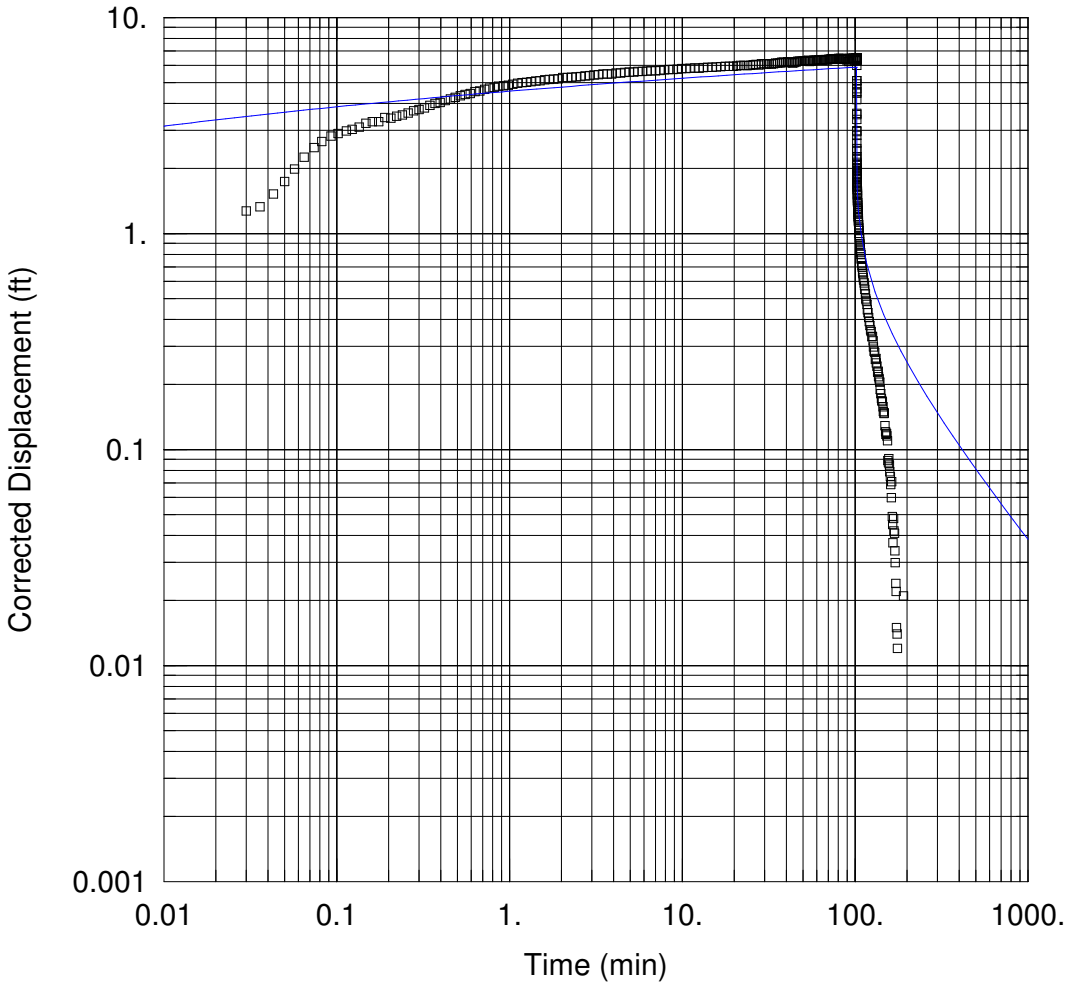
Observation Wells

Well Name	X (ft)	Y (ft)
▫ A6	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis

T = 7750. ft^2/day
S = 3.843E-9
Kz/Kr = 1.
b = 14. ft



WELL TEST ANALYSIS

Data Set: H:\...\A8 Pump Test (55 GPM).aqt
Date: 10/15/14 Time: 10:00:47

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: A8
Test Date: 6/18/2014

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
A8	0	0

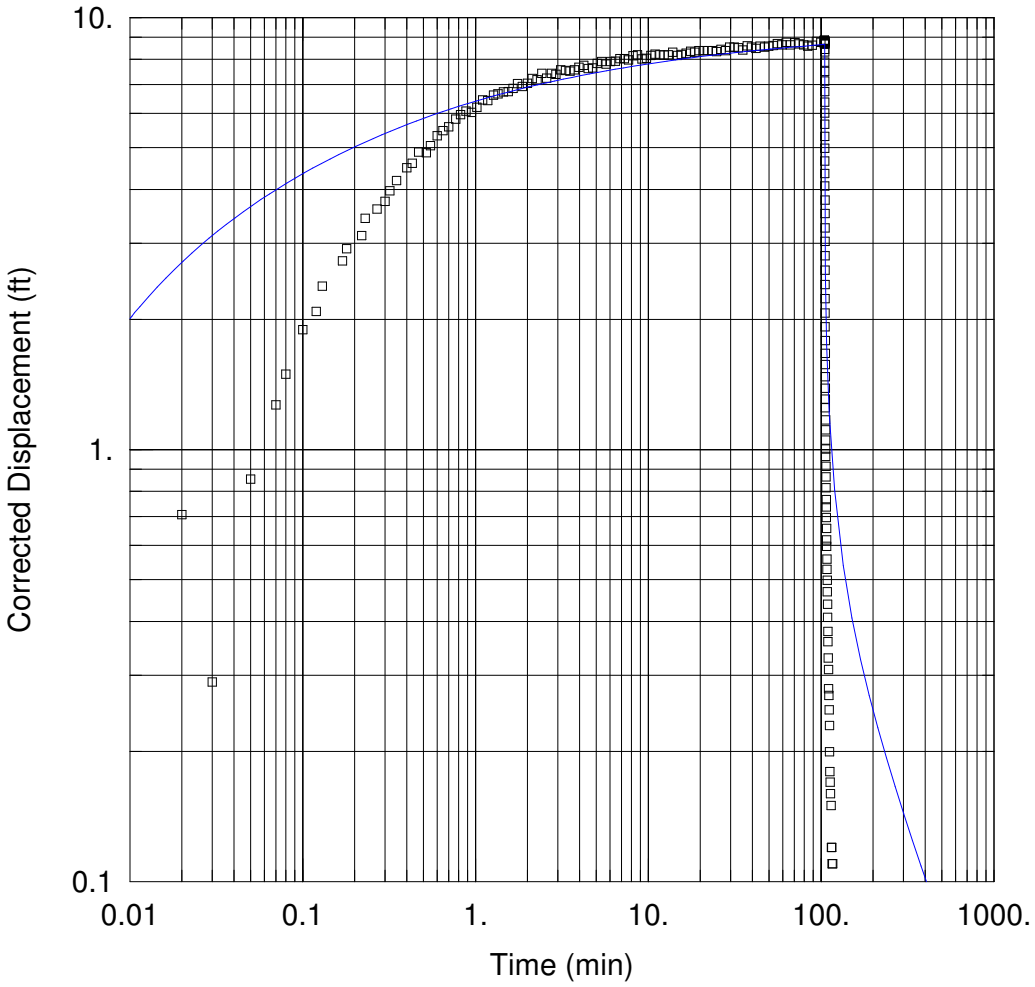
Observation Wells

Well Name	X (ft)	Y (ft)
▫ A8	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis

T = 2400. ft^2/day
S = 3.087E-5
Kz/Kr = 0.1
b = 30. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Preliminary\A9\A9 Pump Test.aqt
Date: 10/15/14 Time: 10:04:01

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: A9
Test Date: 07/08/2014

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
A9	0	0

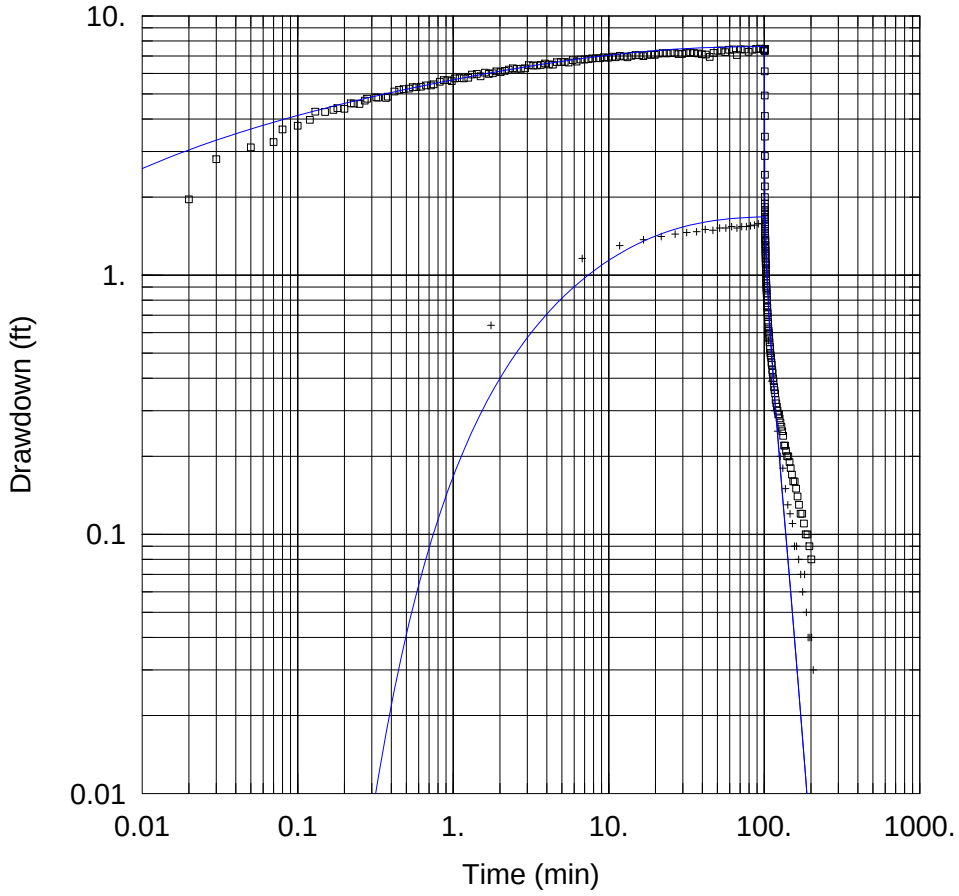
Observation Wells

Well Name	X (ft)	Y (ft)
▫ A9	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis

T = 850. ft^2/day
Kz/Kr = 1.
S = 0.02259
b = 70. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\AVF1-2 Pump Test (60 gpm).aqt
Date: 07/17/12 Time: 11:58:48

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: AVF1-2
Test Date: 11/17/11

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AVF1-2	2809578.219	492760.99

Observation Wells

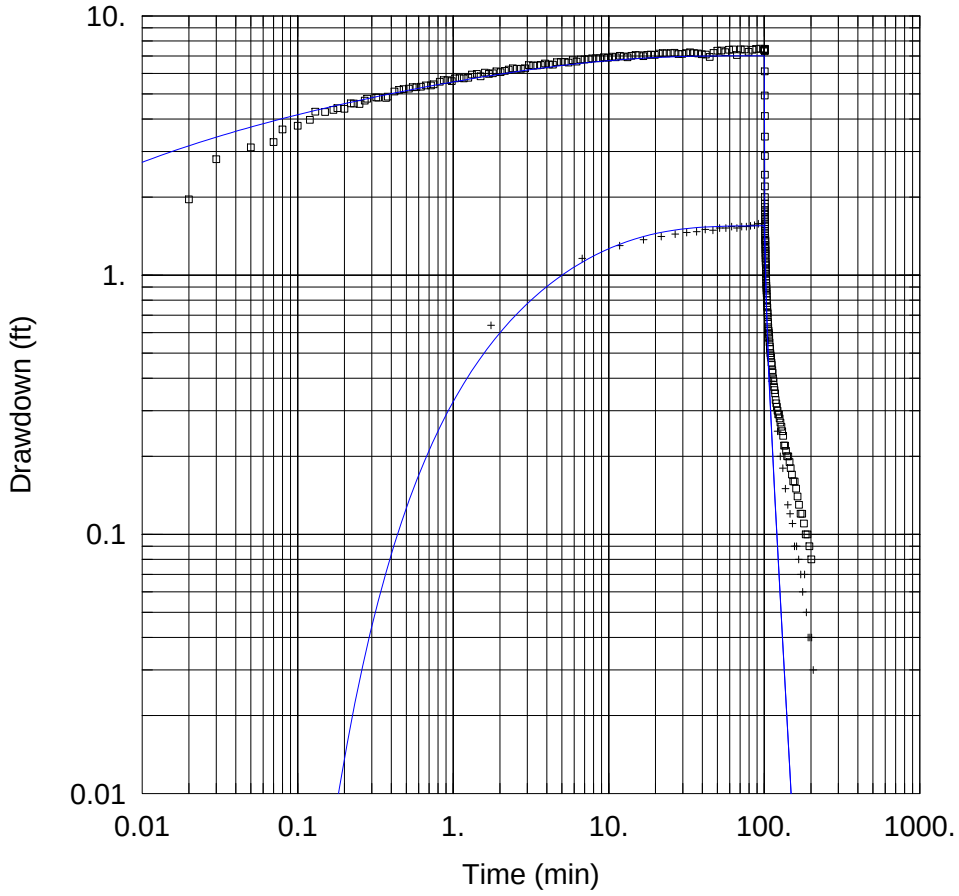
Well Name	X (ft)	Y (ft)
▫ AVF1-2	2809578.219	492760.99
+ AVF1-1	2809604.691	492770.889

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 1363. ft^2/day
1/B = 0.01228 ft^{-1}
b = 17. ft

S = 0.004358
Kz/Kr = 1.



WELL TEST ANALYSIS

Data Set: H:\...\AVF1-2 Pump Test (60 gpm)_OBS AVF1-1.aqt
Date: 07/17/12 Time: 11:59:43

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: AVF1-2
Test Date: 11/17/11

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AVF1-2	2809578.219	492760.99

Observation Wells

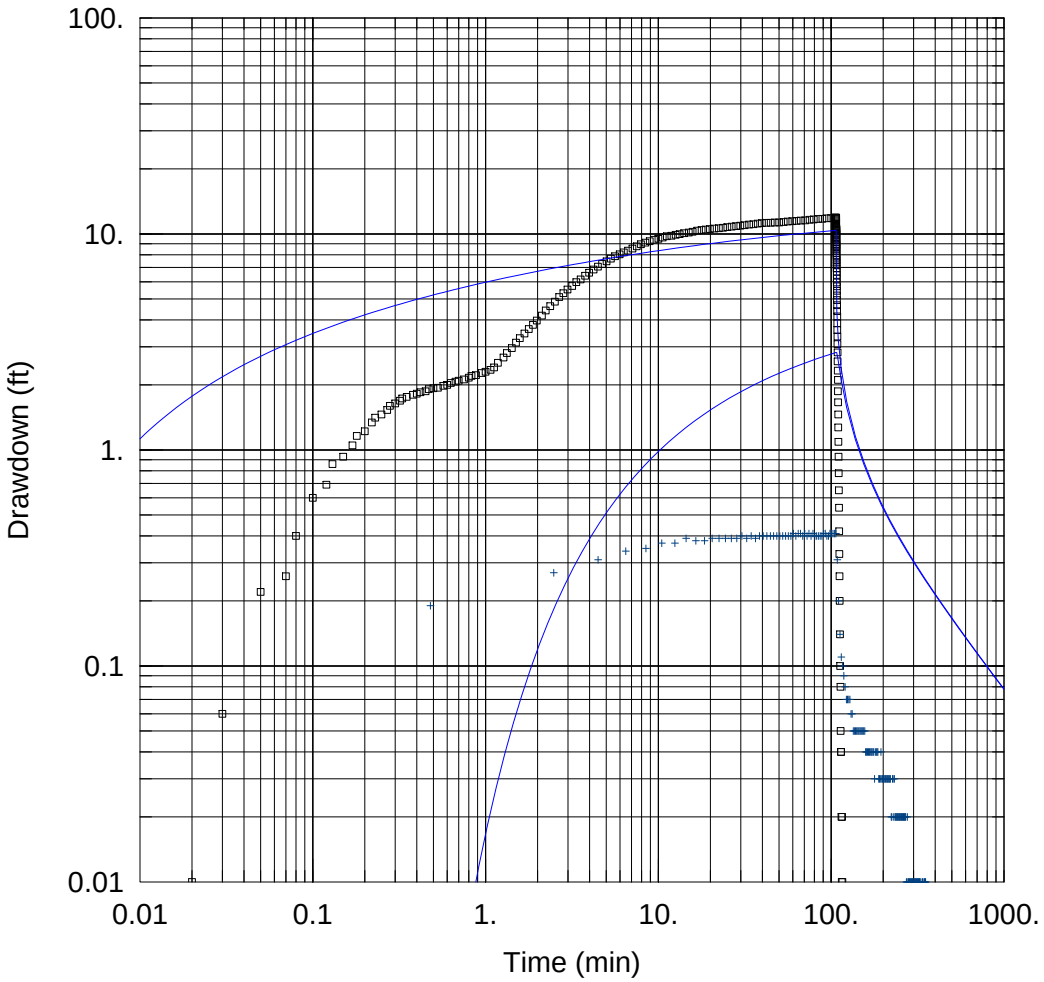
Well Name	X (ft)	Y (ft)
▫ AVF1-2	2809578.219	492760.99
+ AVF1-1	2809604.691	492770.889

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 1480.8 ft^2/day
1/B = 0.01228 ft^{-1}
b = 17. ft

S = 0.002671
Kz/Kr = 1.



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\AVF3-1 Pump Test (10.6 gpm).aqt
Date: 07/17/12 Time: 12:00:23

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: AVF3-1
Test Date: 05/08/12

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AVF3-1	2823451.75	470051.63

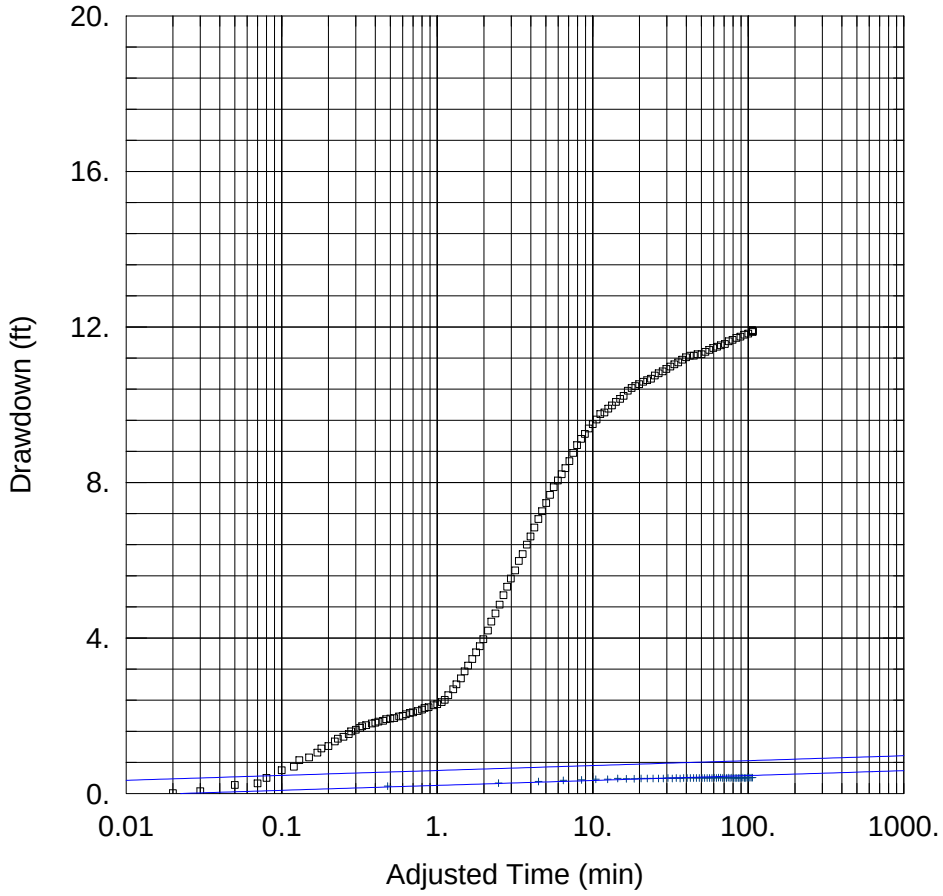
Observation Wells

Well Name	X (ft)	Y (ft)
AVF3-1	2823451.75	470051.63
AVF3-2	2823459.65	470043.96

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 234.7 ft^2/day
S = 0.01558
Kz/Kr = 1.
b = 69.5 ft



WELL TEST ANALYSIS

Data Set: H:\...\AVF3-1 Pump Test (10.6 gpm)_OBS AVF3-2.aqt
Date: 07/17/12 Time: 12:01:03

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: AVF3-1
Test Date: 05/08/12

AQUIFER DATA

Saturated Thickness: 69.5 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AVF3-1	2823451.75	470051.63

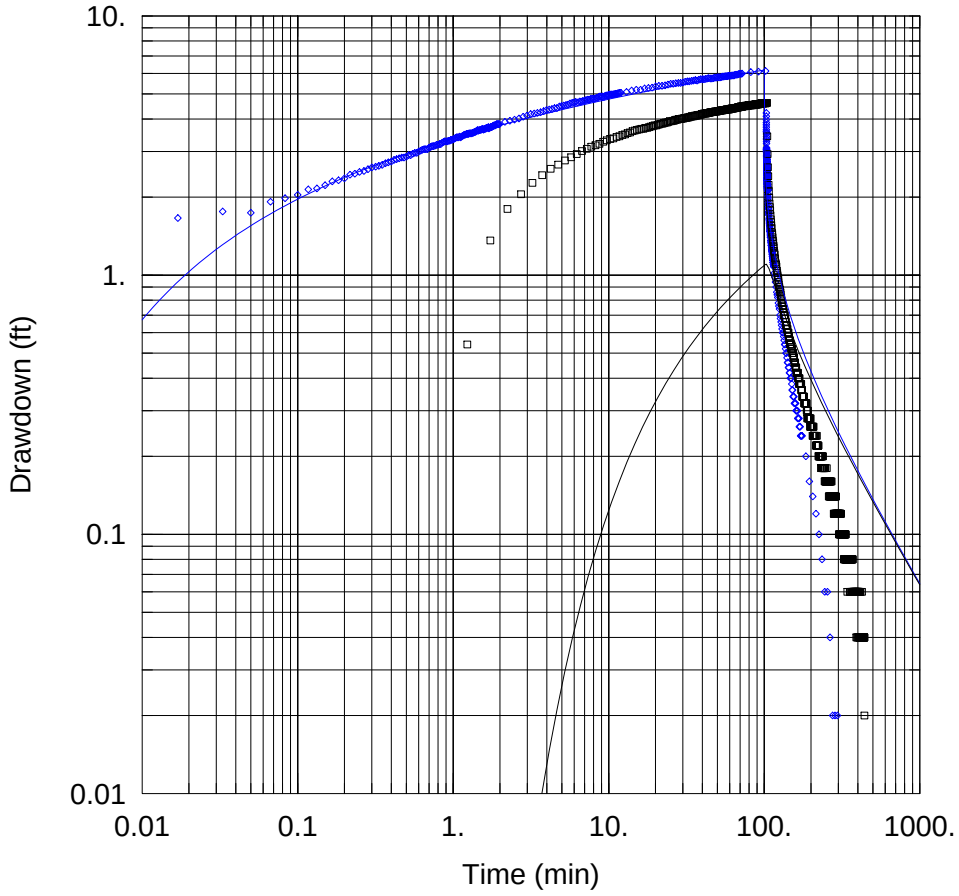
Observation Wells

Well Name	X (ft)	Y (ft)
AVF3-1	2823451.75	470051.63
AVF3-2	2823459.65	470043.96

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 2958.2 ft^2/day S = 0.0008519



AVF4-4 PUMPING TEST DATA

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\AVF4-4 Pump Test (110 GPM).aqt
Date: 07/17/12 Time: 12:01:32

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: AVF4-4
Test Date: 10/20/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AVF4-4	2825342.295	461307.541

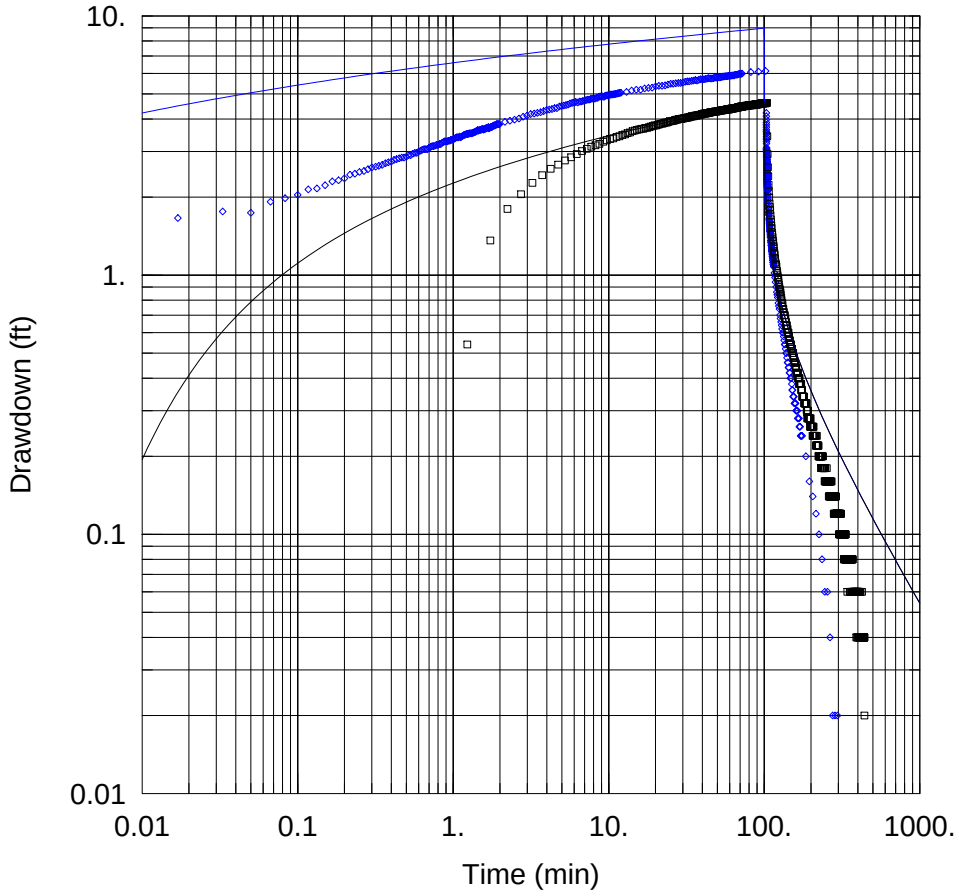
Observation Wells

Well Name	X (ft)	Y (ft)
◇ AVF4-4	2825342.295	461307.541
▫ AVF4-1	2825333.128	461327.911

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 2749.2 ft^2/day
S = 0.1608
Kz/Kr = 1.
b = 17. ft



AVF4-4 PUMPING TEST DATA

Data Set: H:\...\AVF4-4 Pump Test (110 GPM)_OBSAVF4-1.aqt
Date: 07/17/12 Time: 12:02:17

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: AVF4-4
Test Date: 10/20/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AVF4-4	2825342.295	461307.541

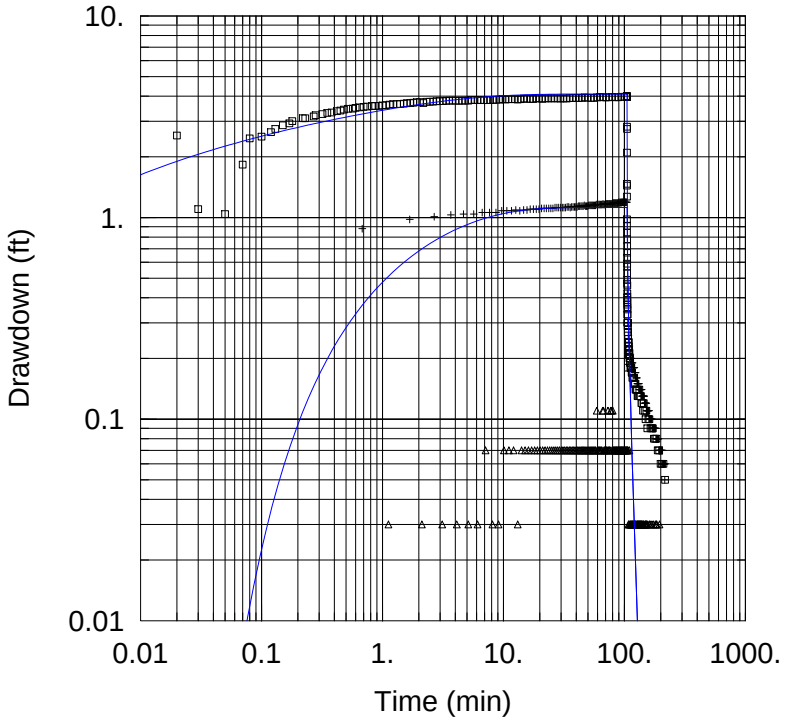
Observation Wells

Well Name	X (ft)	Y (ft)
◇ AVF4-4	2825342.295	461307.541
▫ AVF4-1	2825333.128	461327.911

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 3271.4 ft^2/day
S = 0.0001266
Kz/Kr = 1.
b = 17. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\AVF5-2 Pump Test (99 gpm).aqt
Date: 07/17/12 Time: 12:02:46

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: AVF5-2
Test Date: 11/02/11

AQUIFER DATA

Saturated Thickness: 50. ft
Aquitard Thickness (b'): 1. ft
Anisotropy Ratio (Kz/Kr): 0.1
Aquitard Thickness (b"): 1. ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AVF5-2	2819885.35	489701.138

Observation Wells

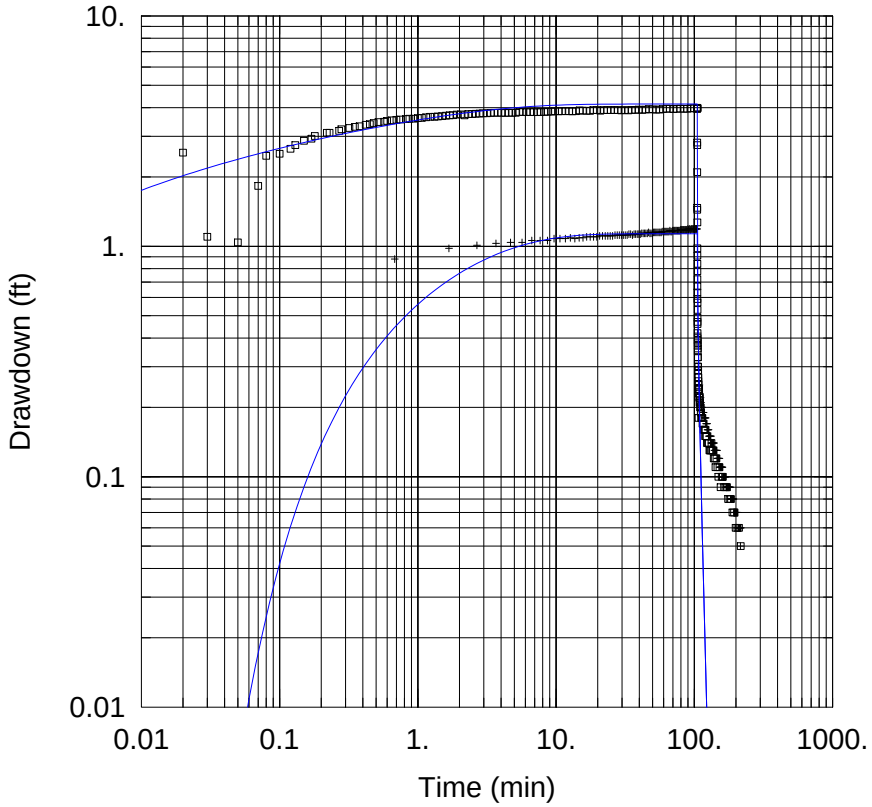
Well Name	X (ft)	Y (ft)
□ AVF5-2	2819885.35	489701.138
+ AVF5-3	2819885.116	489716.273
△ AVF5-4	2819988.685	489376.302

SOLUTION

Aquifer Model: Leaky
Solution Method: Cooley-Case

T = 3842.2 ft^2/day
1/B = 0.01881 ft^{-1}
S'/Sy = 0.

S = 0.00878
ß/r = 3.0E-5 ft^{-1}
L/b' = 0.



WELL TEST ANALYSIS

Data Set: H:\...\AVF5-2 Pump Test (99 gpm)_obsAVF5-3.aqt
Date: 07/17/12 Time: 12:05:52

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: AVF5-2
Test Date: 11/02/11

AQUIFER DATA

Saturated Thickness: 50. ft
Aquitard Thickness (b'): 1. ft
Anisotropy Ratio (Kz/Kr): 0.1
Aquitard Thickness (b"): 1. ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AVF5-2	2819885.35	489701.138

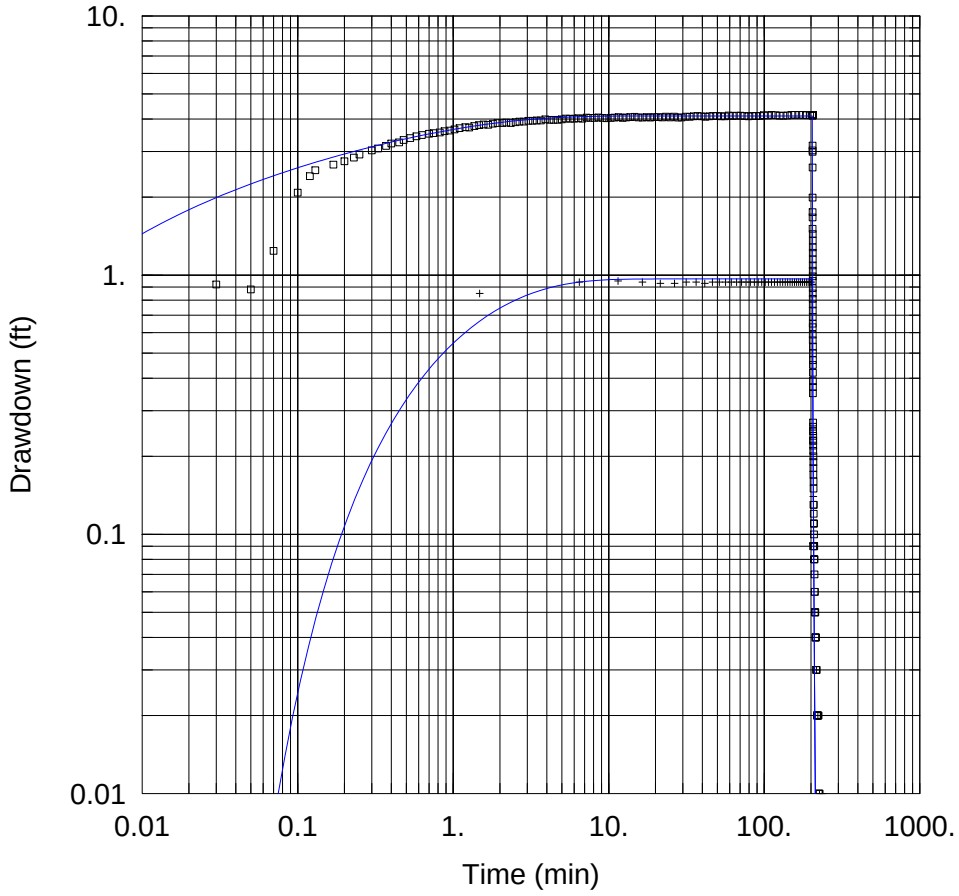
Observation Wells

Well Name	X (ft)	Y (ft)
□ AVF5-2	2819885.35	489701.138
+ AVF5-3	2819885.116	489716.273

SOLUTION

Aquifer Model: Leaky
Solution Method: Cooley-Case

T = 3795.7 ft^2/day
1/B = 0.01884 ft^{-1}
S'/Sy = 0.
S = 0.00673
ß/r = 3.0E-5 ft^{-1}
L/b' = 0.



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\AVF6-3 Pump Test (102 gpm).aqt
Date: 07/17/12 Time: 12:07:08

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: AVF6-3
Test Date: 11/16/11

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AVF6-3	2822620.037	477471.58

Observation Wells

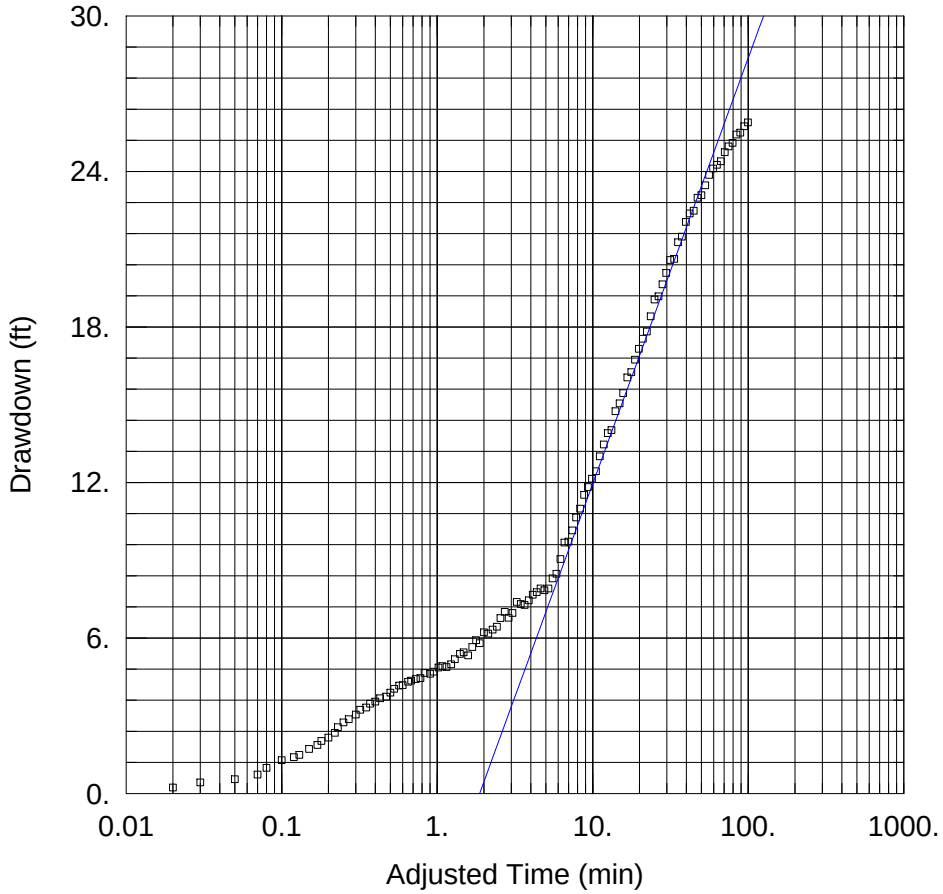
Well Name	X (ft)	Y (ft)
▫ AVF6-3	2822620.037	477471.58
+ AVF6-5	2822619.158	477463.637

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 3059.8 ft^2/day
1/B = 0.06126 ft^{-1}
b = 34. ft

S = 0.02668
Kz/Kr = 1.



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B10-KL PUMP TEST (1.3 GPM).aqt
Date: 07/17/12 Time: 12:07:52

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B10-KL
Test Date: 07/07/2011

AQUIFER DATA

Saturated Thickness: 10.5 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B10-KL	0	0

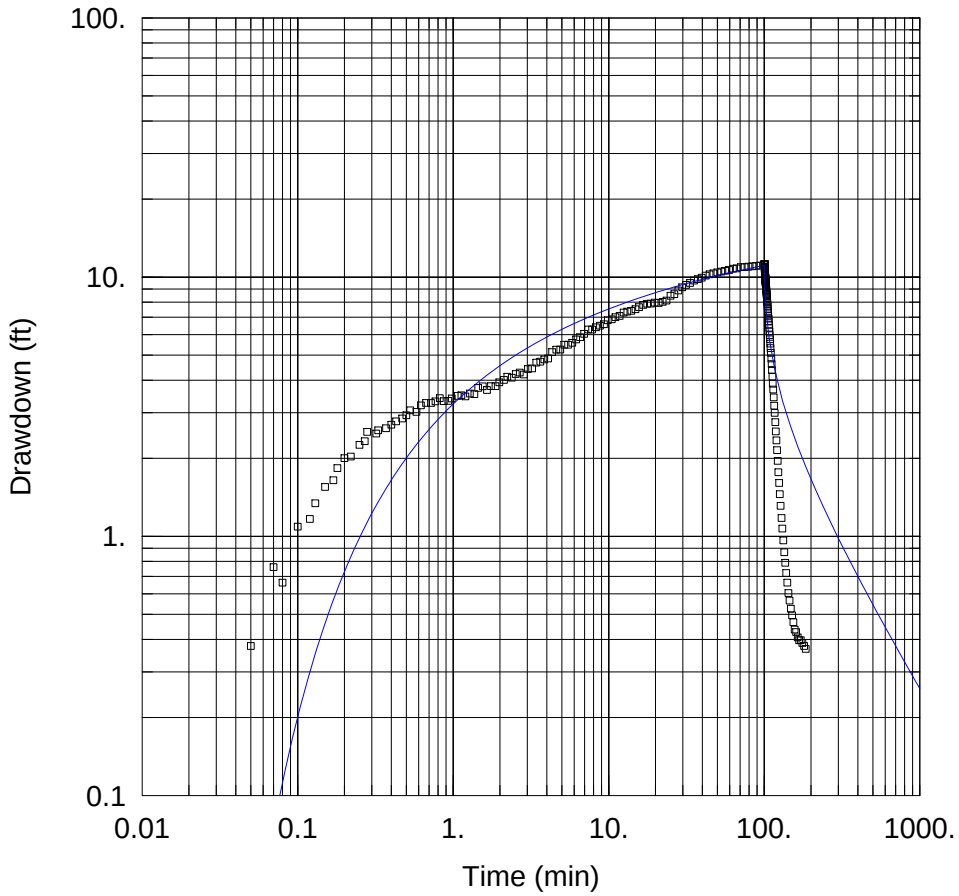
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B10-KL	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 2.858 ft^2/day S = 0.07519



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B10-KU Pump Test (2.7 GPM).aqt
Date: 07/17/12 Time: 12:08:19

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B10-KU
Test Date: 03/10/11

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B10-KU	0	0

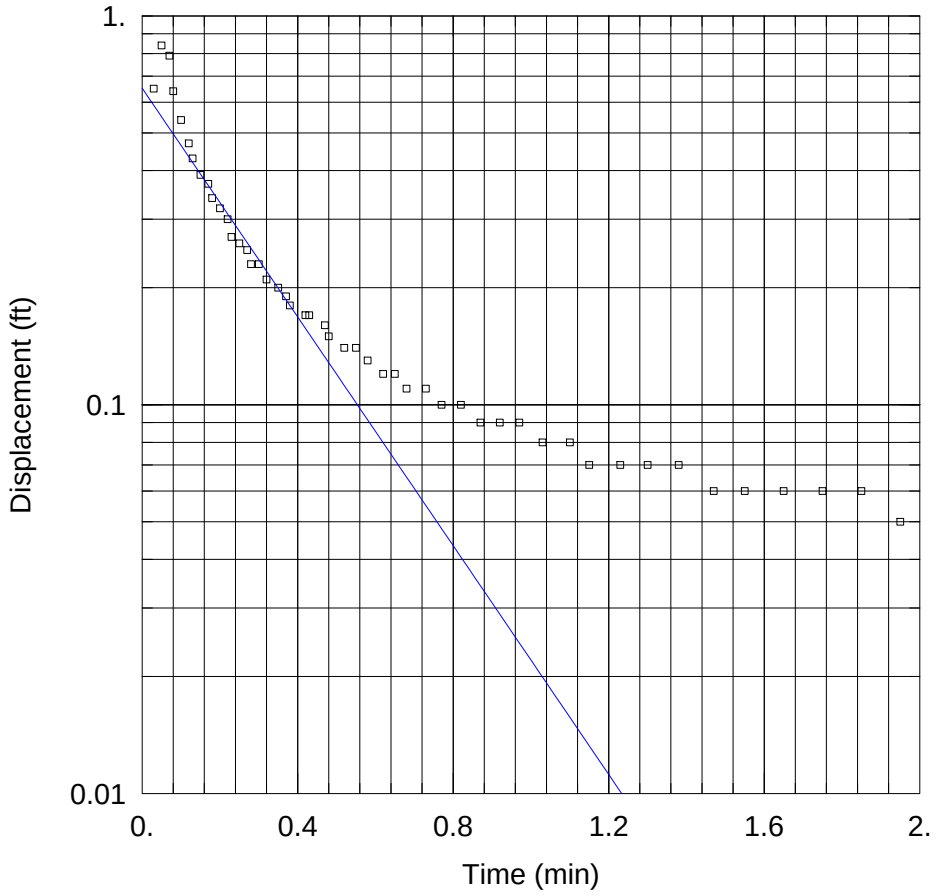
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B10-KU	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis

T = 16.78 ft^2/day
S = 0.06871
Kz/Kr = 1.
b = 31.5 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B10-O Slug In.aqt
Date: 07/17/12 Time: 12:10:44

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B10-O
Test Date: 07/06/2011

AQUIFER DATA

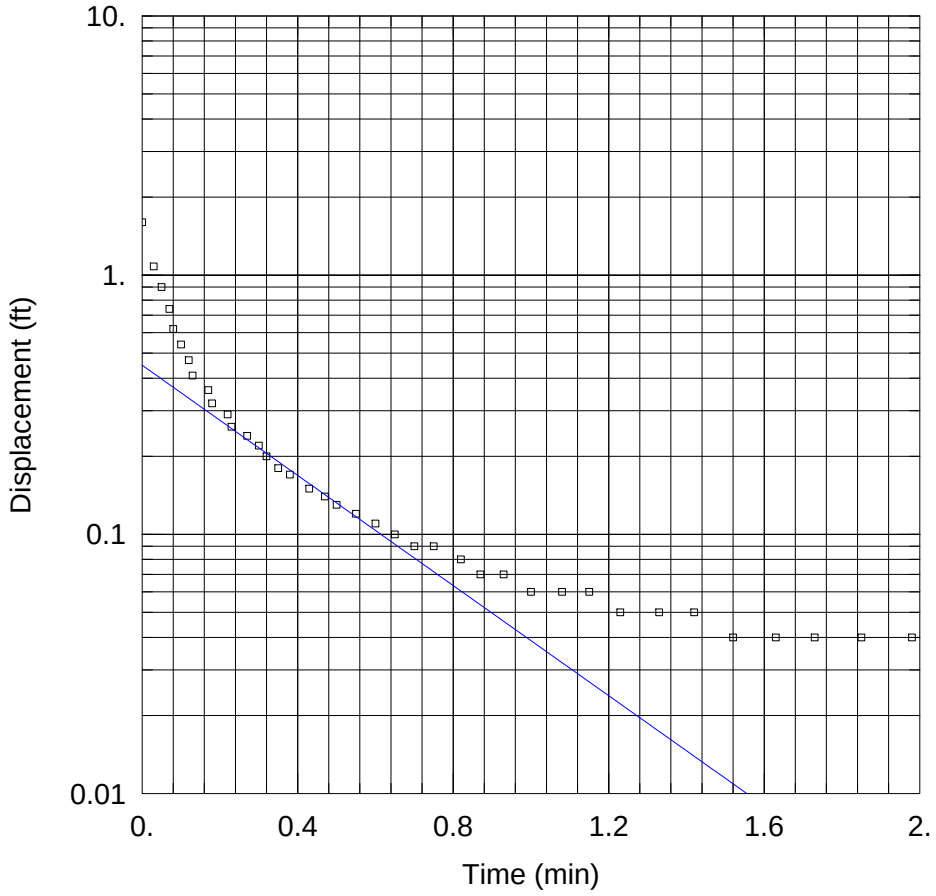
Saturated Thickness: 3.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B10-O)

Initial Displacement: 1.6 ft
Total Well Penetration Depth: 3.5 ft
Casing Radius: 0.1875 ft
Static Water Column Height: 3.5 ft
Screen Length: 3.5 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 41.36 ft/day
y0 = 0.6518 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B10-O Slug Out.aqt
Date: 07/17/12 Time: 12:12:11

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B10-O
Test Date: 07/06/2011

AQUIFER DATA

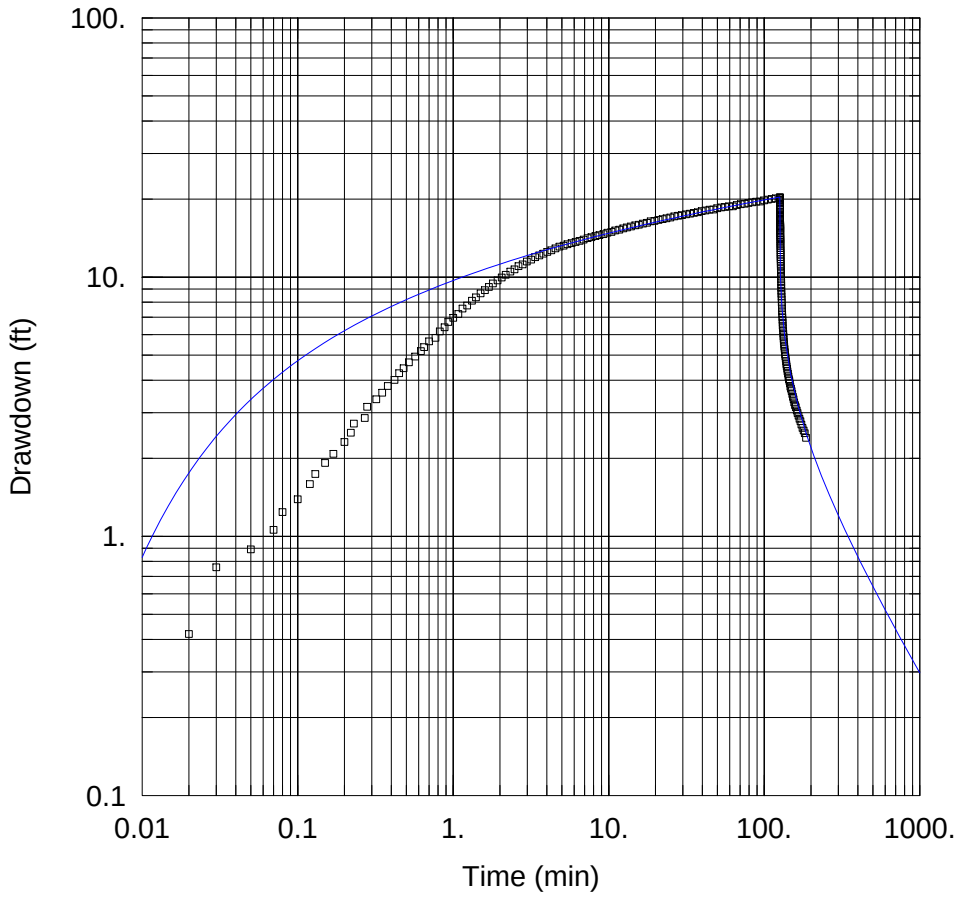
Saturated Thickness: 3.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B10-O)

Initial Displacement: 1.6 ft
Total Well Penetration Depth: 3.5 ft
Casing Radius: 0.1875 ft
Static Water Column Height: 3.5 ft
Screen Length: 3.5 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 29.88 ft/day
y0 = 0.4492 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B10-U Pump Test (8.1 GPM).aqt
Date: 07/17/12 Time: 12:12:59

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B10-U
Test Date: 03/10/11

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B10-U	0	0

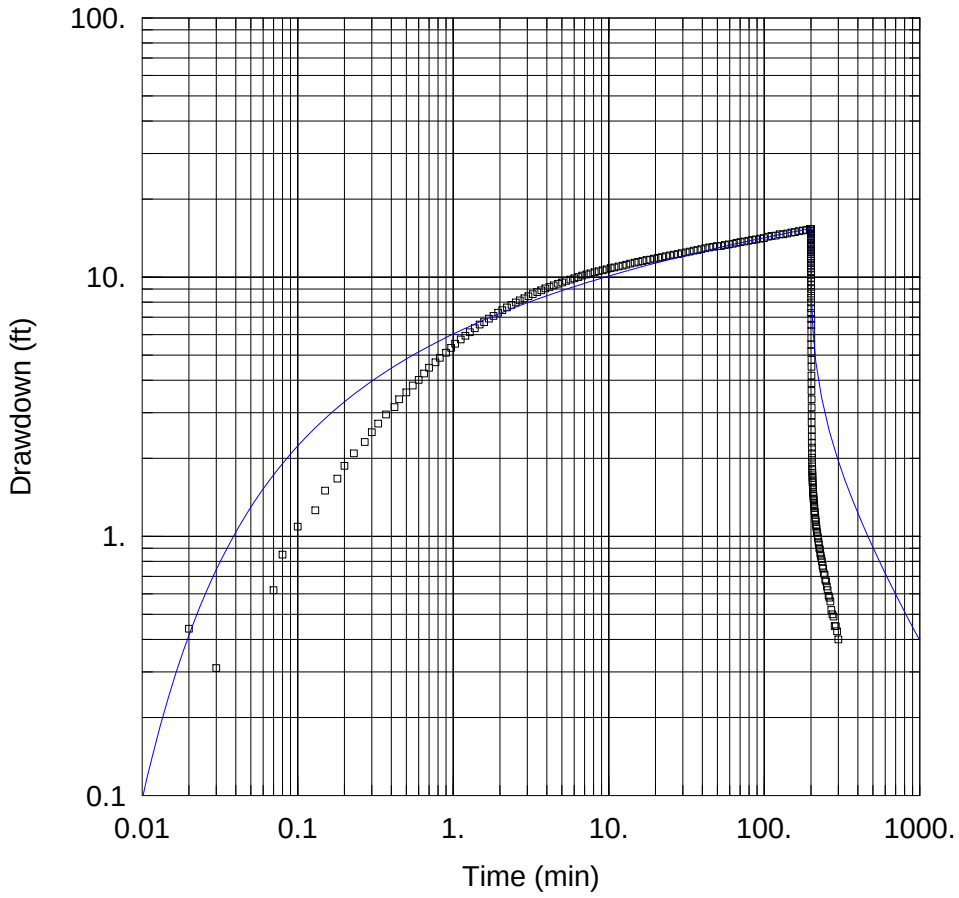
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B10-U	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 56.21 ft^2/day
S = 0.009803
Kz/Kr = 1.
b = 90. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B11-K Pump Test (9.9 GPM).aqt
Date: 07/17/12 Time: 12:13:19

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B11K
Test Date: 07/21/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B11-K	0	0

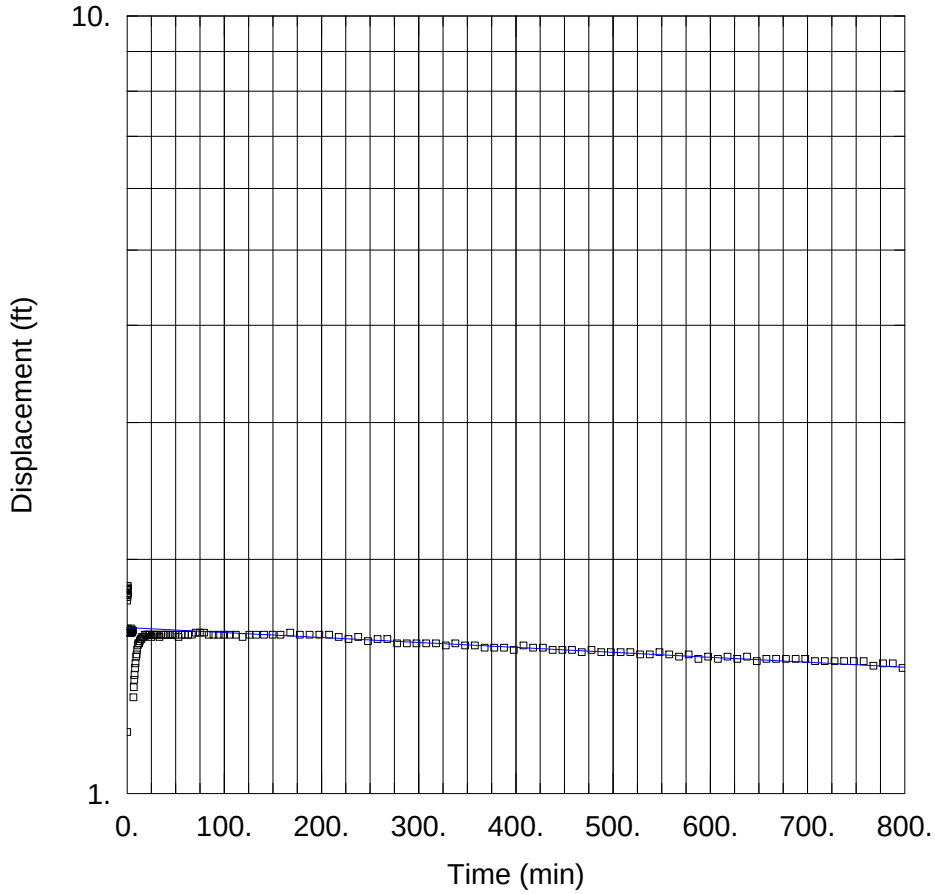
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B11-K	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 85.29 ft^2/day
S = 0.04104
Kz/Kr = 1.
b = 75. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B11-O Slug In.aqt
Date: 07/17/12 Time: 12:13:47

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B11-O
Test Date: 08/10/2011

AQUIFER DATA

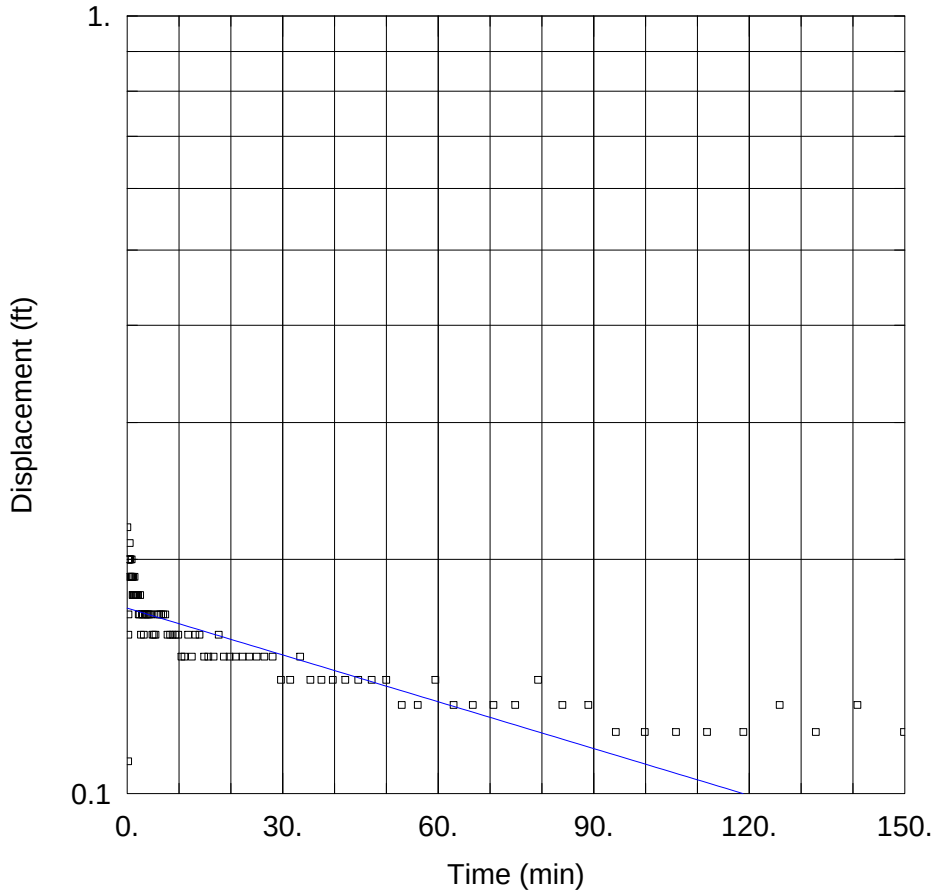
Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B11-O)

Initial Displacement: 1.2 ft
Total Well Penetration Depth: 5. ft
Casing Radius: 0.1875 ft
Static Water Column Height: 38. ft
Screen Length: 5. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.001247 ft/day
y0 = 1.635 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B11-O Slug Out.aqt
Date: 07/17/12 Time: 12:14:16

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B11-O
Test Date: 08/10/2011

AQUIFER DATA

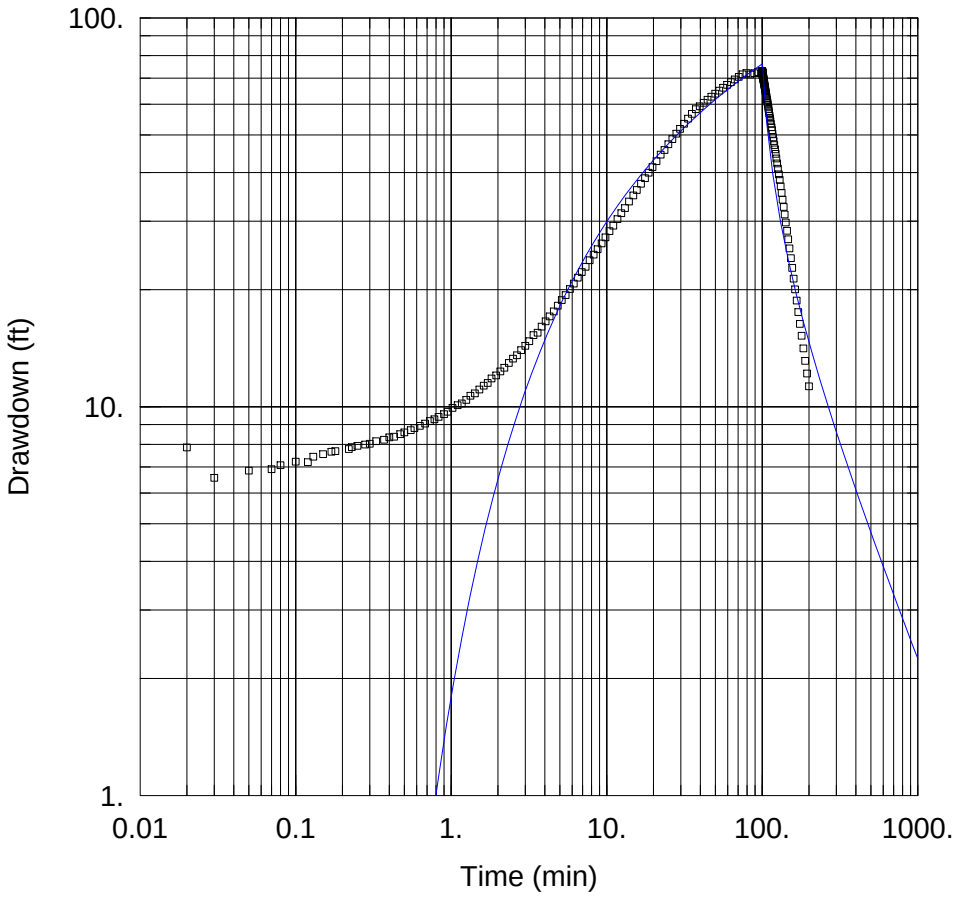
Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B11-O)

Initial Displacement: 1.2 ft Static Water Column Height: 38. ft
Total Well Penetration Depth: 5. ft Screen Length: 5. ft
Casing Radius: 0.1875 ft Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice
K = 0.03931 ft/day y0 = 0.1732 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B11-U Pump Test (1.6 GPM).aqt
Date: 07/17/12 Time: 12:14:43

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B11-U
Test Date: 07/20/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B11-U	0	0

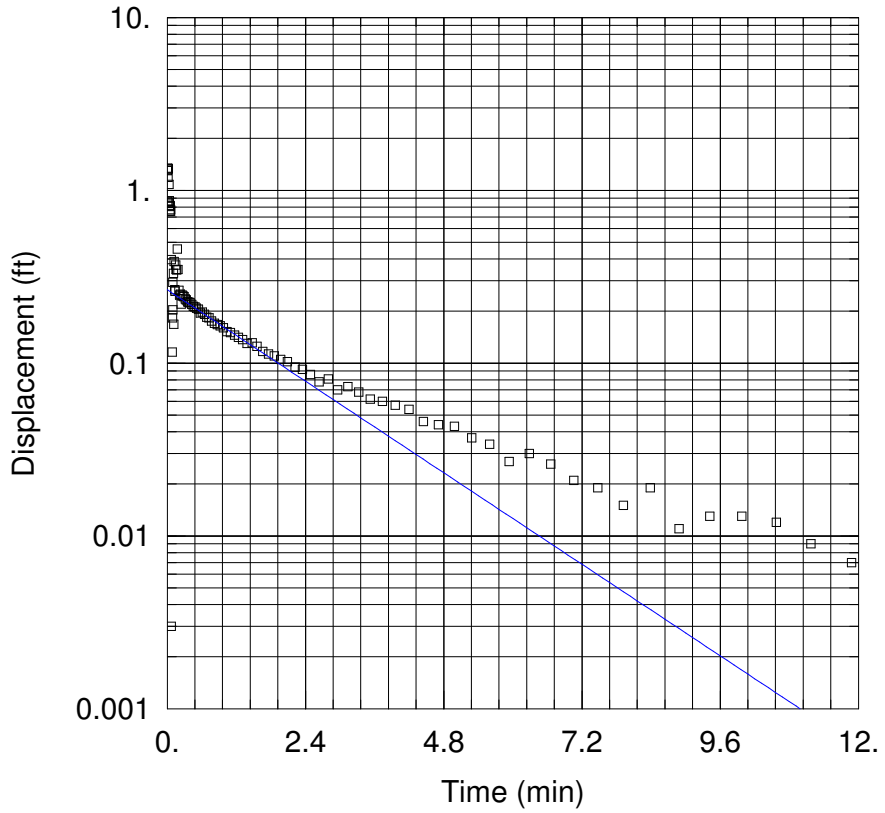
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B11-U	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1.146 ft^2/day
S = 0.04651
Kz/Kr = 1.
b = 23. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Preliminary\B12-CO\B12-CO Slug In.aqt
Date: 10/15/14 Time: 10:04:40

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B12-CO
Test Date: 6/16/2014

AQUIFER DATA

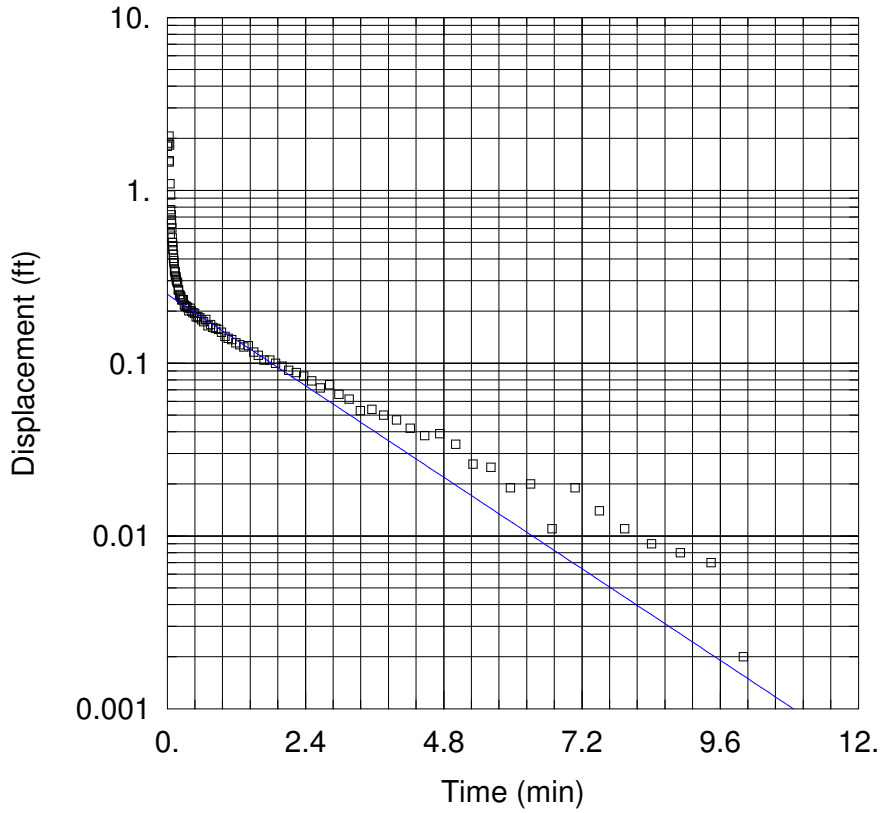
Saturated Thickness: 11.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B12-CO)

Initial Displacement: 1.3 ft
Total Well Penetration Depth: 10.23 ft
Casing Radius: 0.1875 ft
Static Water Column Height: 11.5 ft
Screen Length: 10.23 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3. ft/day
y0 = 0.2658 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Preliminary\B12-CO\B12-CO Slug Out.aqt
Date: 10/15/14 Time: 10:04:55

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B12-CO
Test Date: 6/16/2014

AQUIFER DATA

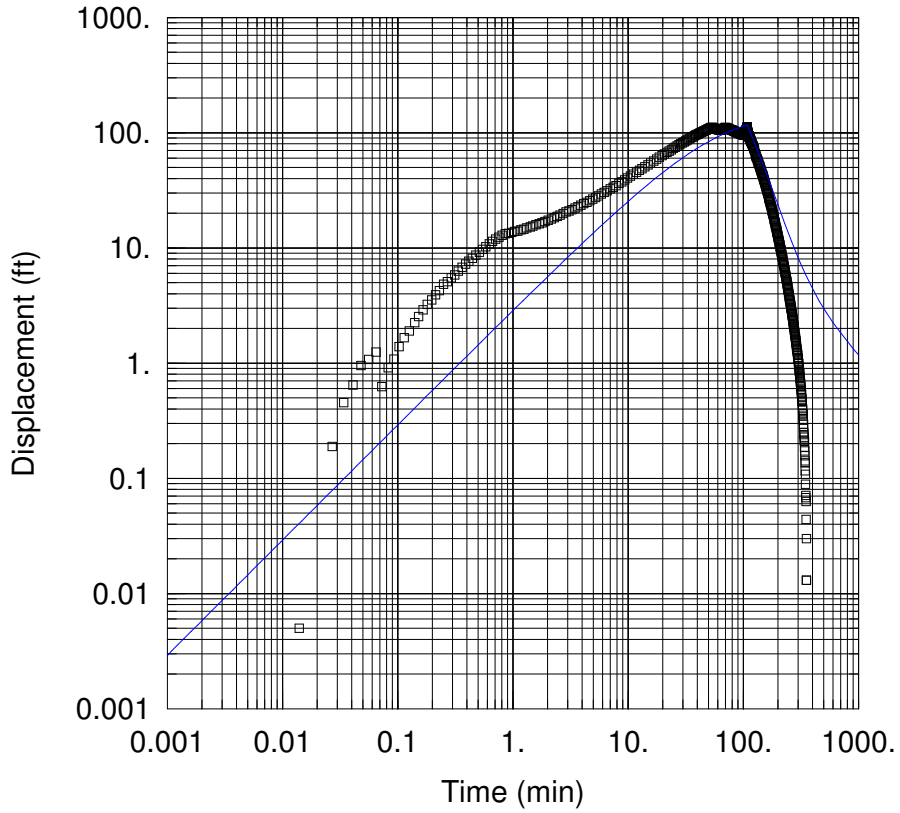
Saturated Thickness: 11.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B12-CO)

Initial Displacement: 1.8 ft
Total Well Penetration Depth: 10.23 ft
Casing Radius: 0.1875 ft
Static Water Column Height: 11.5 ft
Screen Length: 10.23 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3. ft/day
y0 = 0.2504 ft



WELL TEST ANALYSIS

Data Set: H:\...\B12-KL Pump Test Weighted.aqt
Date: 10/15/14 Time: 10:09:55

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B12-KL
Test Date: 6/16/2014

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B12-KL	0	0

Observation Wells

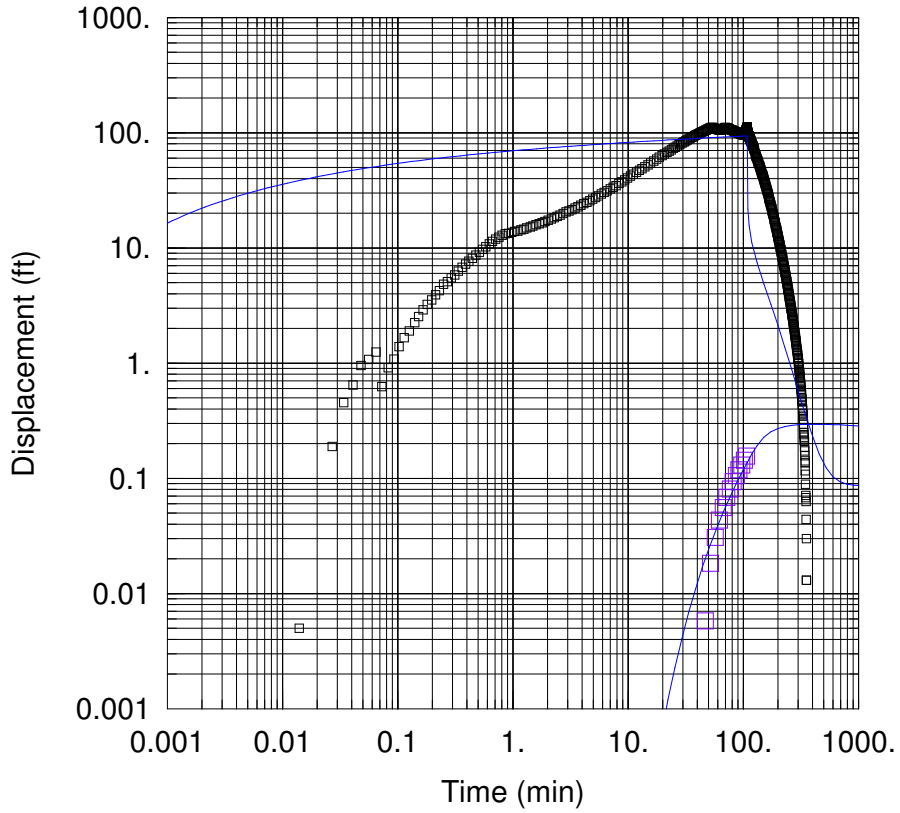
Well Name	X (ft)	Y (ft)
▫ B12-KL	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Barker

K = 0.25 ft/day
n = 2.
Sw = 0.
r(c) = 0.1875 ft

Ss = 1.339E-7
b = 16. ft
r(w) = 0.3333 ft



WELL TEST ANALYSIS

Data Set: H:\...\B12-KL Pump Test (2.4 GPM).aqt
Date: 10/15/14 Time: 16:53:10

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B12-KL
Test Date: 6/16/2014

AQUIFER DATA

Saturated Thickness: 16. ft
Aquitard Thickness (b'): 1. ft
Anisotropy Ratio (Kz/Kr): 0.1
Aquitard Thickness (b"): 1. ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B12-KL	2842007	454392

Observation Wells

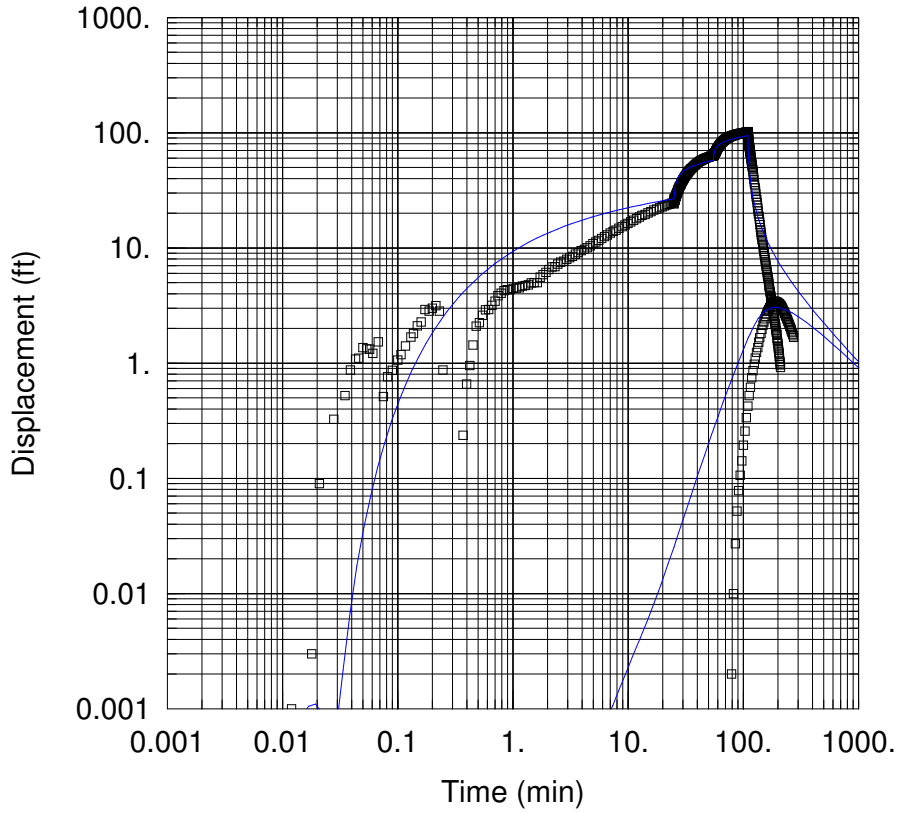
Well Name	X (ft)	Y (ft)
B12-KL	2842007	454392
B12-UK1	2842005	454404.3

SOLUTION

Aquifer Model: Leaky
Solution Method: Neuman-Witherspoon

T = 4. ft^2/day
1/B = 0.0185 ft^{-1}
T2 = 0.22 ft^2/day

S = 1.0E-5
ß/r = 0.02276 ft^{-1}
S2 = 0.01



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Preliminary\B12-U\B12-U Pump Step.aqt
Date: 10/15/14 Time: 10:12:02

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B12-U
Test Date: 6/17/2014

AQUIFER DATA

Saturated Thickness: 25. ft
Aquitard Thickness (b'): 1. ft
Anisotropy Ratio (Kz/Kr): 0.1
Aquitard Thickness (b"): 1. ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B12-U	2842009	454380.8

Observation Wells

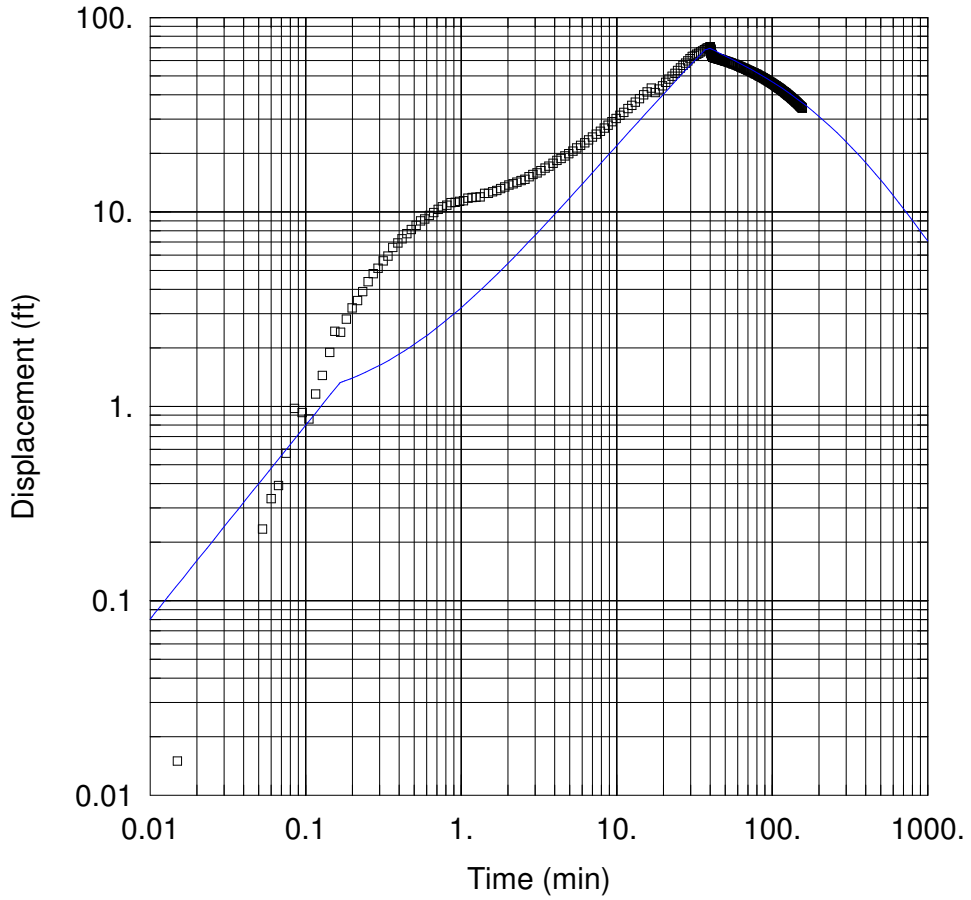
Well Name	X (ft)	Y (ft)
▫ B12-U	2842009	454380.8
▫ B12-LK	2842007	454392

SOLUTION

Aquifer Model: Leaky
Solution Method: Neuman-Witherspoon

T = 4. ft^2/day
1/B = 0.9061 ft^{-1}
T2 = 4. ft^2/day

S = 0.01888
ß/r = 0.001808 ft^{-1}
S2 = 0.0001



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B12-UK1 Pump.aqt
Date: 10/15/14 Time: 16:58:21

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B12-UK1
Test Date: 6/18/2014

AQUIFER DATA

Saturated Thickness: 11.5 ft Anisotropy Ratio (Kz/Kr): 0.09333

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B12-KU1	2842005	454404.3

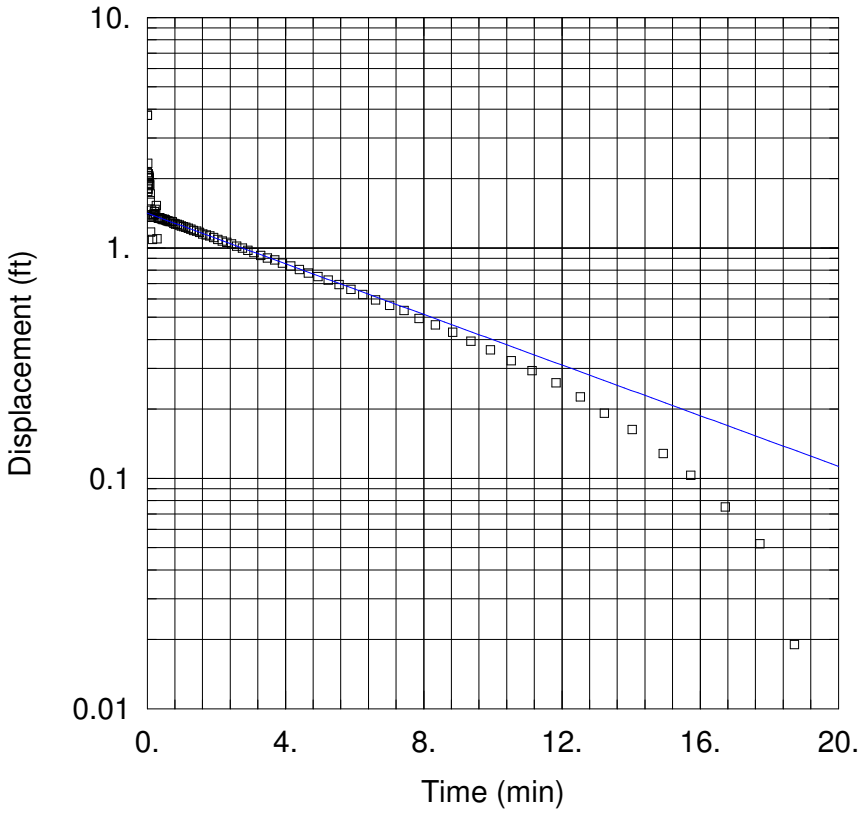
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B12-KU1	2842005	454404.3

SOLUTION

Aquifer Model: Confined Solution Method: Papadopulos-Cooper

T = 0.22 ft^2/day S = 0.04973
r(w) = 0.3333 ft r(c) = 0.1875 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B12-UK2 Slug In.aqt
Date: 10/15/14 Time: 16:59:15

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B12-UK2
Test Date: 6/16/2014

AQUIFER DATA

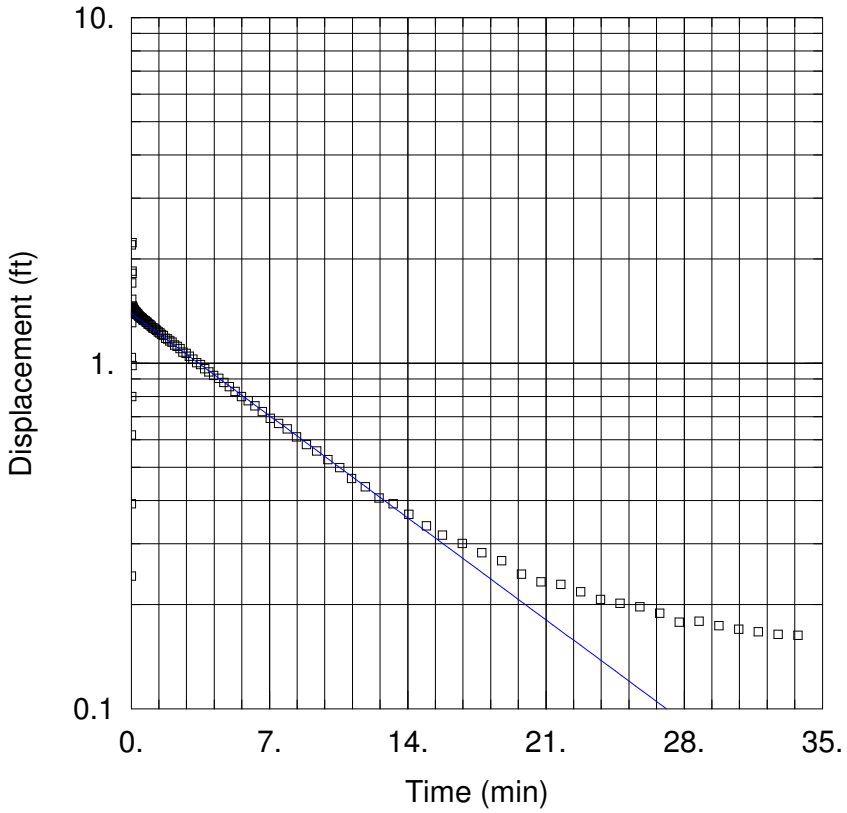
Saturated Thickness: 21. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B12-KU2)

Initial Displacement: 3.76 ft
Total Well Penetration Depth: 10.23 ft
Casing Radius: 0.1875 ft
Static Water Column Height: 21. ft
Screen Length: 10.23 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.7 ft/day
y0 = 1.415 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B12-UK2 Slug Out.aqt
Date: 10/15/14 Time: 17:00:32

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B12-UK2
Test Date: 6/16/2014

AQUIFER DATA

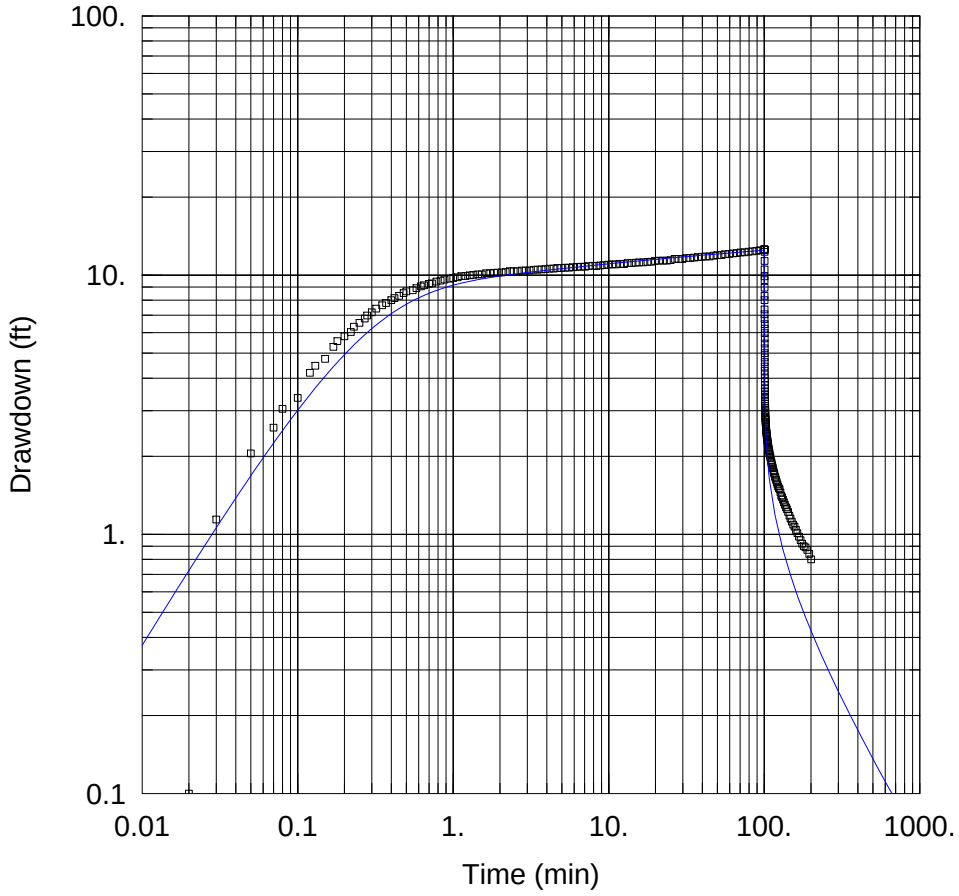
Saturated Thickness: 11.8 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B12-KU2)

Initial Displacement: 2.2 ft
Static Water Column Height: 21. ft
Total Well Penetration Depth: 10.23 ft
Screen Length: 10.23 ft
Casing Radius: 0.1875 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.57 ft/day
y0 = 1.392 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B1-U Pump Test (31.8 gpm).aqt
Date: 07/17/12 Time: 12:15:07

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B1-U
Test Date: 11/17/11

AQUIFER DATA

Saturated Thickness: 43. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B1-U	0	0

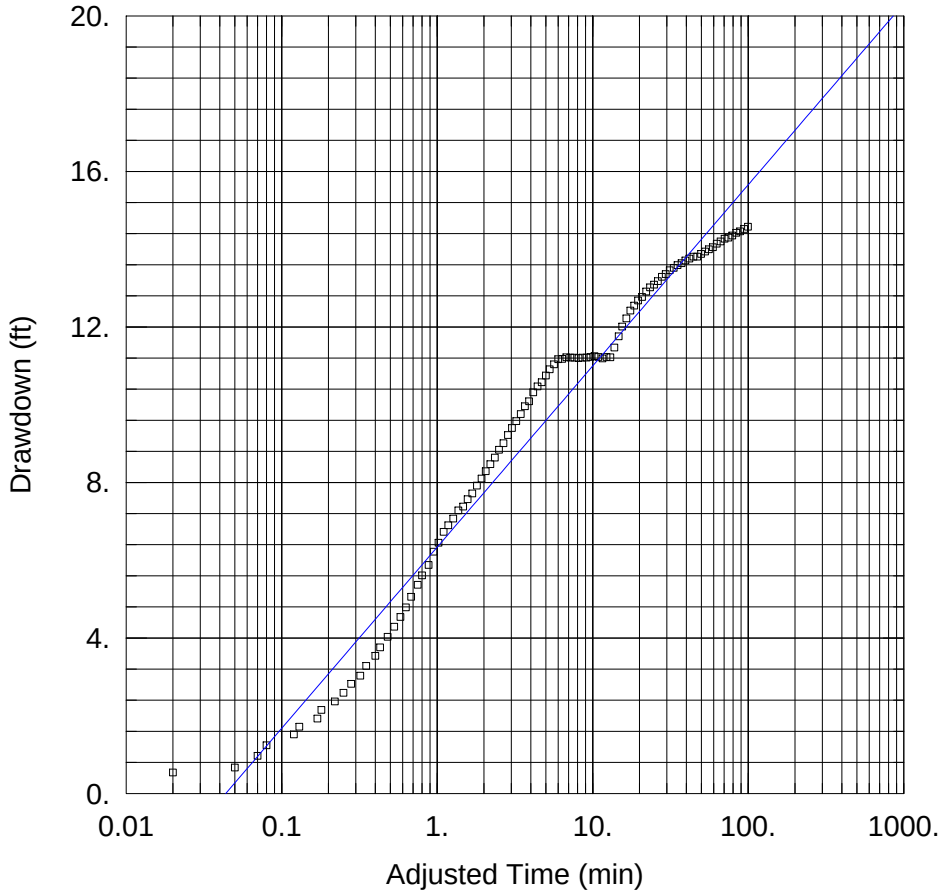
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B1-U	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Papadopulos-Cooper

T = 799.7 ft^2/day S = 1.383E-6
r(w) = 0.3333 ft r(c) = 0.1875 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B2-K Pump Test (5.6 gpm).aqt
Date: 07/17/12 Time: 12:15:33

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek Coal, LLC
Project: 10068.303
Location: Ashland, MT
Test Well: B2-K
Test Date: 09/14/11

AQUIFER DATA

Saturated Thickness: 61.5 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B2-K	0	0

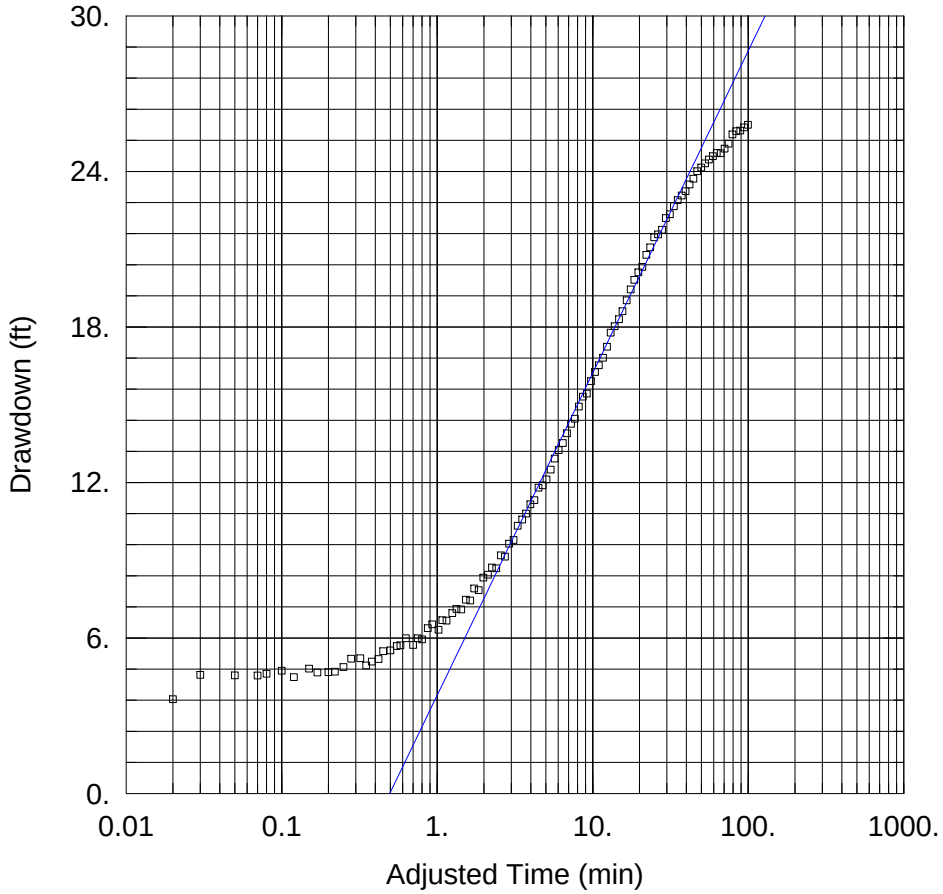
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B2-K	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 42.39 ft^2/day S = 0.08217



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B2-U Pump Test (1.7 gpm).aqt
Date: 07/17/12 Time: 12:15:55

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B2-U
Test Date: 9/14/11

AQUIFER DATA

Saturated Thickness: 53. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B2-U	0	0

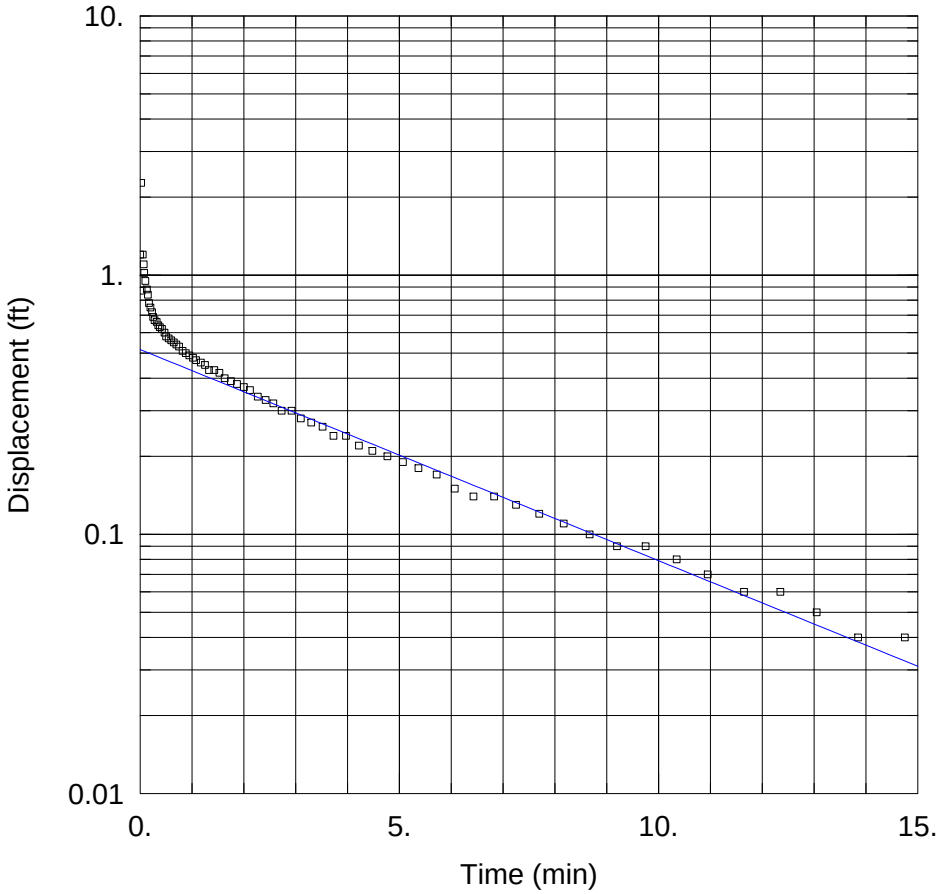
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B2-U	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 4.823 ft^2/day S = 0.03357



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B3-K Slug Out.aqt
Date: 07/17/12 Time: 12:16:23

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B3-K
Test Date: 6/6/12

AQUIFER DATA

Saturated Thickness: 15.36 ft Anisotropy Ratio (Kz/Kr): 1.

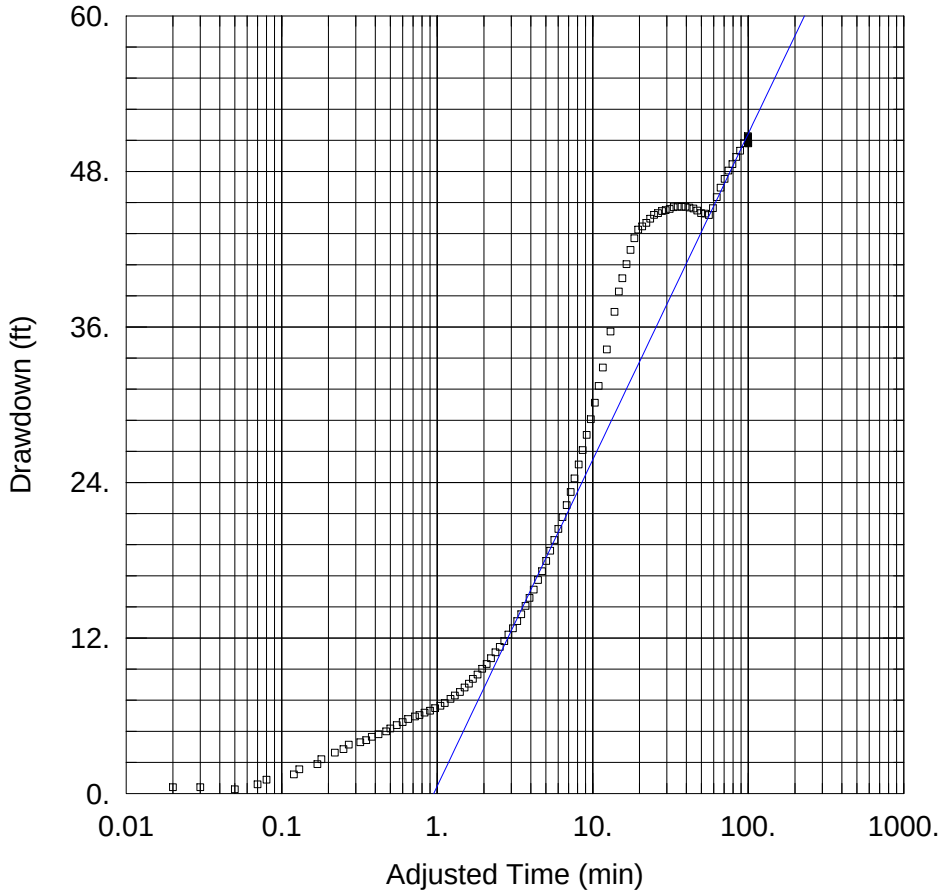
WELL DATA (B3-K)

Initial Displacement: 1.2 ft Static Water Column Height: 15.36 ft
Total Well Penetration Depth: 44. ft Screen Length: 44. ft
Casing Radius: 0.1875 ft Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.4068 ft/day y0 = 0.5164 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B3-U Pump Test (1.5 GPM).aqt
Date: 07/17/12 Time: 12:17:16

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B3-U
Test Date: 07/22/2011

AQUIFER DATA

Saturated Thickness: 9. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B3-U	0	0

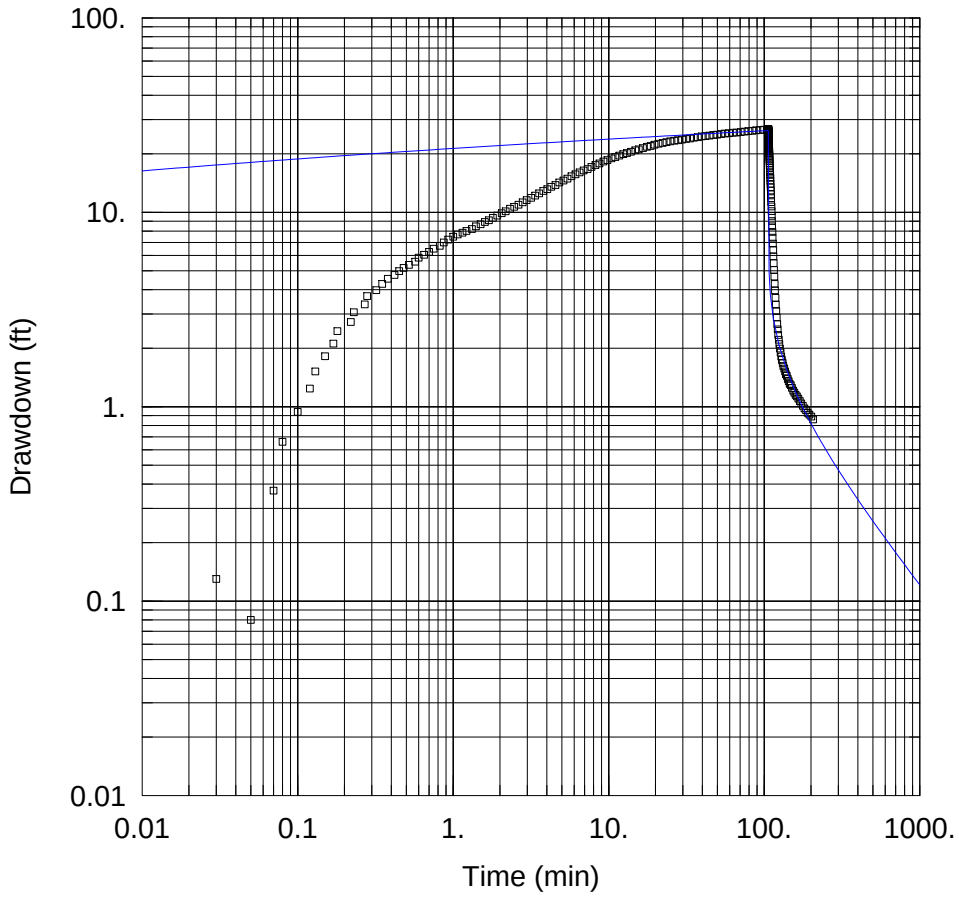
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B3-U	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 2.102 ft^2/day S = 0.02802



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B4-K Pump Test (4.0 GPM).aqt
Date: 07/17/12 Time: 12:17:35

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B4-K
Test Date: 09/06/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B4-K	0	0

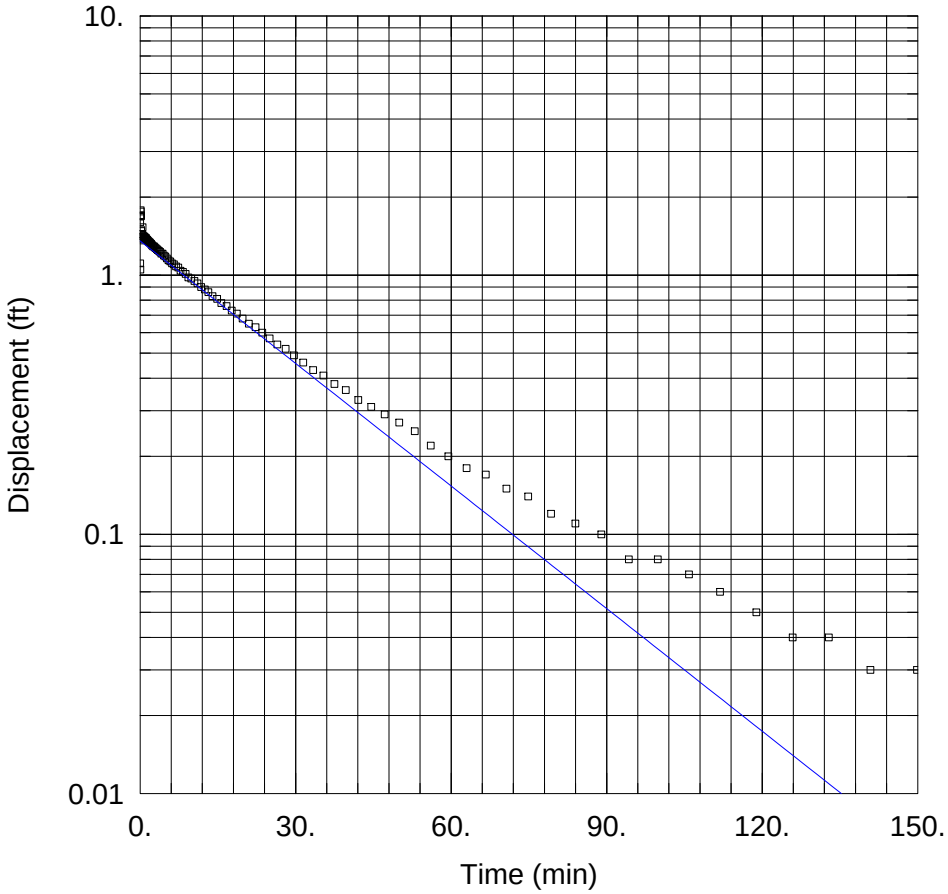
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B4-K	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 56.73 ft^2/day
S = 2.158E-9
Kz/Kr = 1.
b = 66. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B4-O Slug In.aqt
Date: 07/17/12 Time: 14:06:03

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B4-O
Test Date: 09/07/2011

AQUIFER DATA

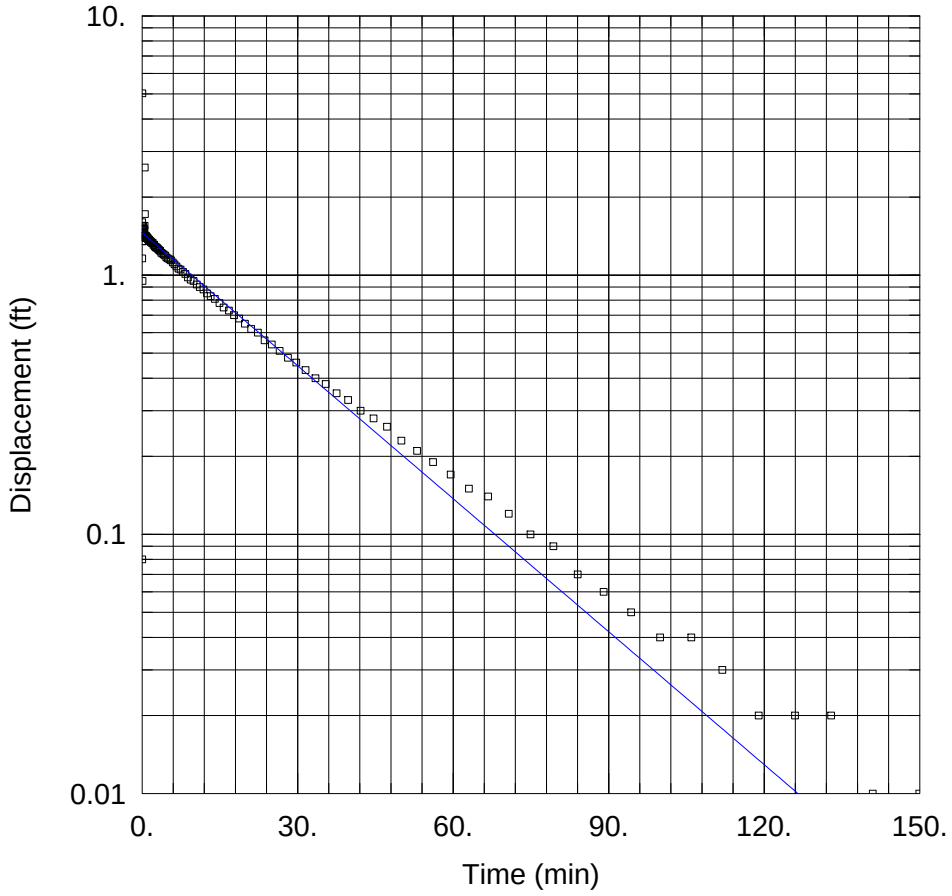
Saturated Thickness: 12.2 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B4-O)

Initial Displacement: 1.6 ft
Total Well Penetration Depth: 12.95 ft
Casing Radius: 0.1875 ft
Static Water Column Height: 11.49 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.2509 ft/day
y0 = 1.355 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B4-O Slug Out.aqt
Date: 07/17/12 Time: 12:19:20

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B4-O
Test Date: 09/07/2011

AQUIFER DATA

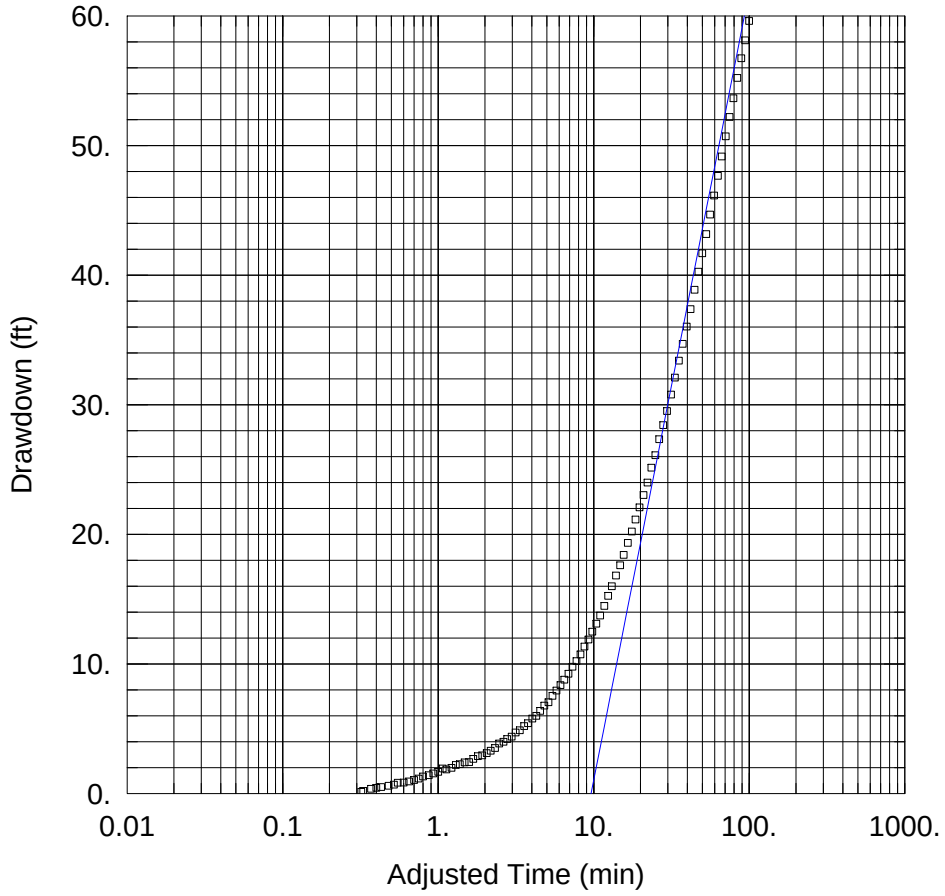
Saturated Thickness: 12.2 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B4-O)

Initial Displacement: 1.6 ft
Total Well Penetration Depth: 12.95 ft
Casing Radius: 0.1875 ft
Static Water Column Height: 11.49 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.2722 ft/day
y0 = 1.456 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B4-U Pump Test (1.0 GPM).aqt
Date: 07/17/12 Time: 12:29:48

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B4-U
Test Date: 09/01/2011

AQUIFER DATA

Saturated Thickness: 41. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B4-U	0	0

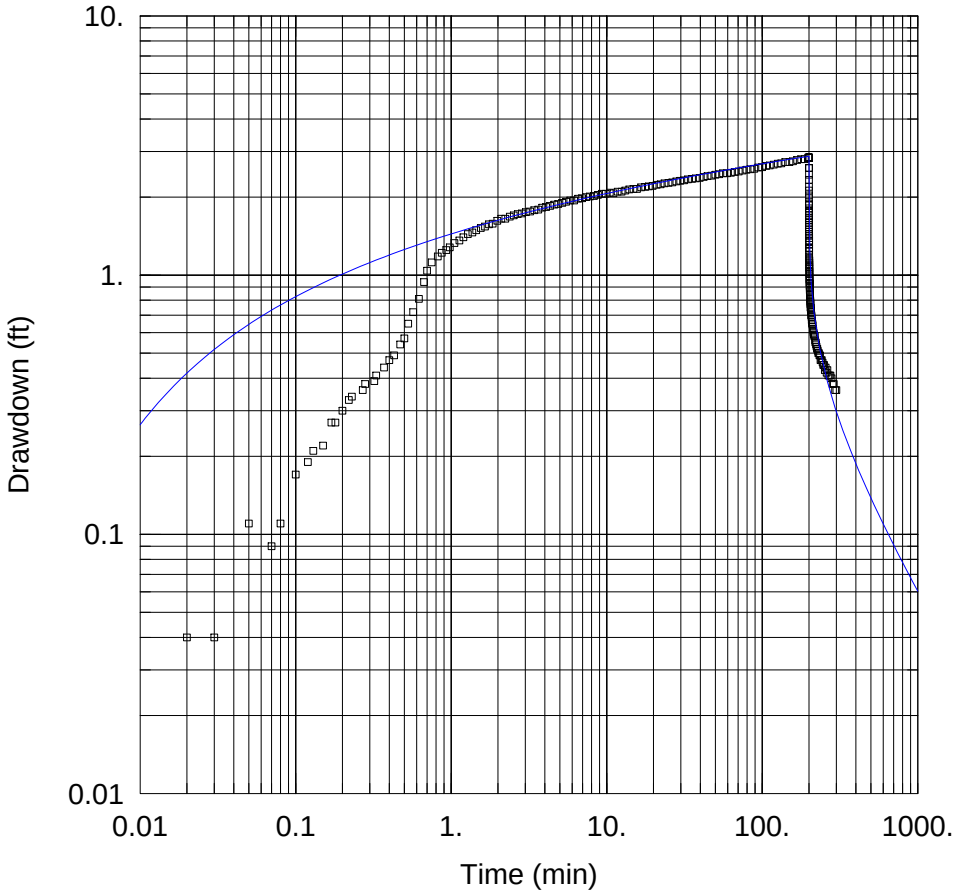
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B4-U	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 0.5798 ft^2/day S = 0.07829



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B5-K Pump Test (12.2 GPM).aqt
Date: 07/17/12 Time: 12:56:45

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B5-K
Test Date: 07/14/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B5-K	0	0

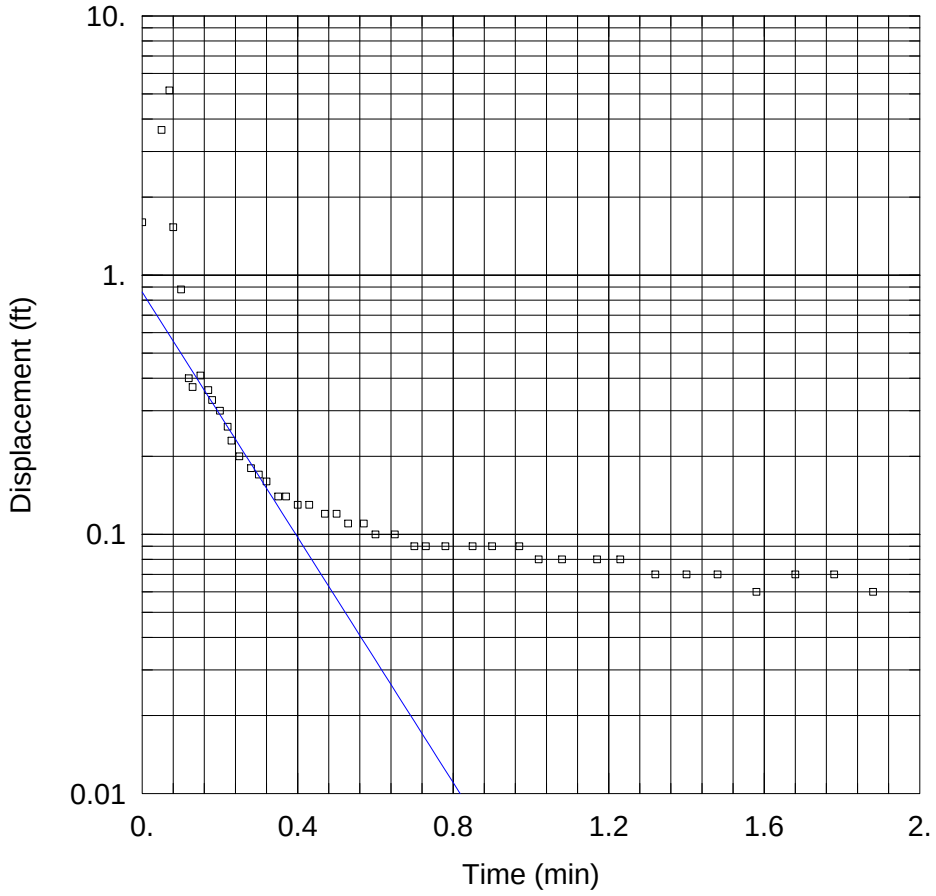
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B5-K	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 691.1 ft^2/day
S = 0.04702
Kz/Kr = 1.
b = 70. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B5-O Slug In.aqt
Date: 07/17/12 Time: 12:57:08

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B5-O
Test Date: 08/31/2011

AQUIFER DATA

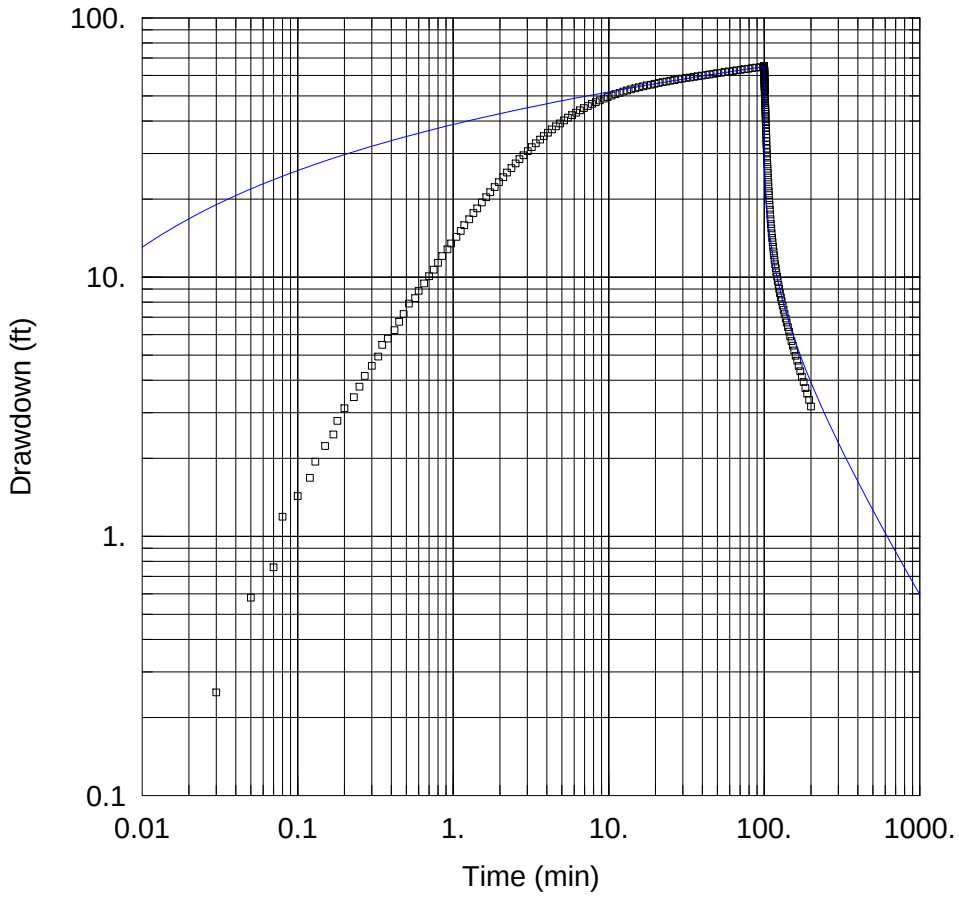
Saturated Thickness: 11.8 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (B5-O)

Initial Displacement: 1.6 ft
Static Water Column Height: 10.23 ft
Total Well Penetration Depth: 10.23 ft
Screen Length: 10.23 ft
Casing Radius: 0.1875 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 31.95 ft/day
y0 = 0.8603 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B5-U Pump Test (11.8 GPM).aqt
Date: 07/17/12 Time: 12:58:48

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B5-U
Test Date: 07/14/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B5-U	0	0

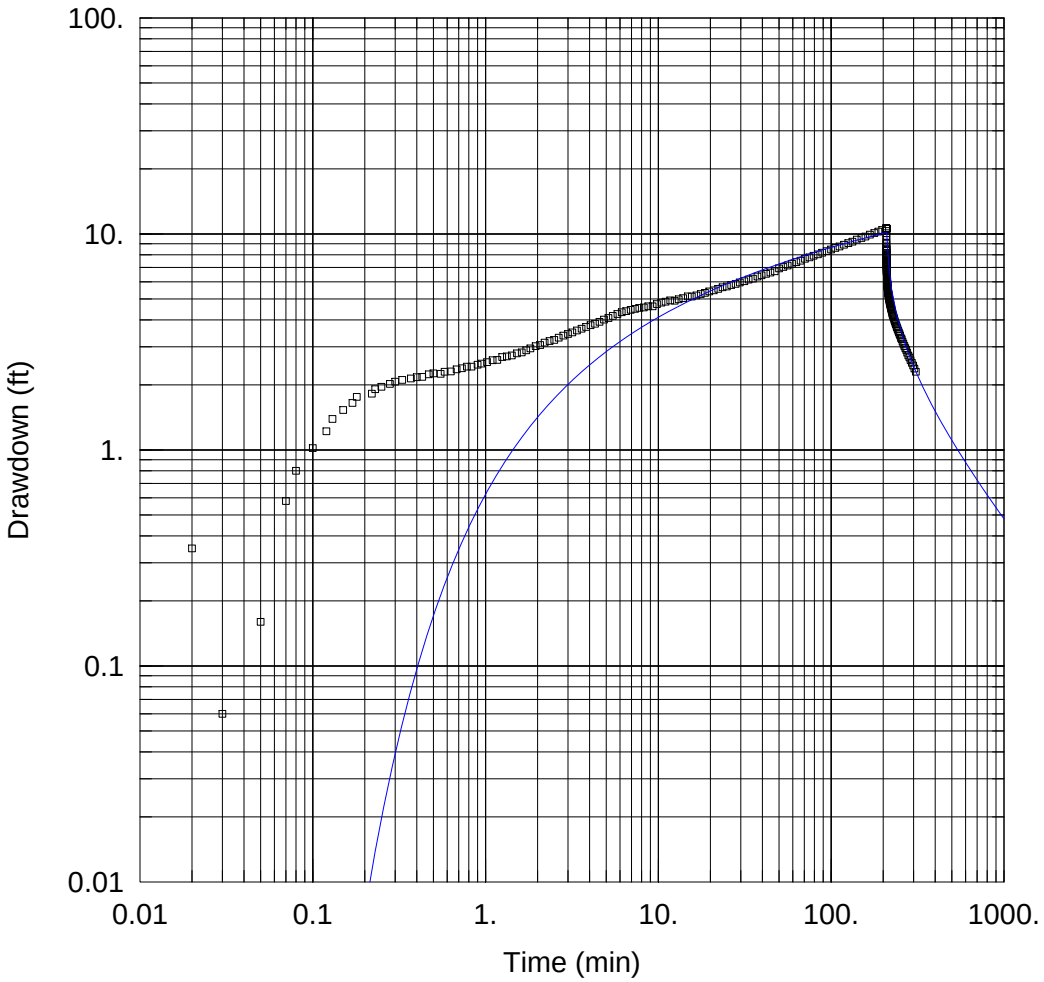
Observation Wells

Well Name	X (ft)	Y (ft)
B5-U	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 31.91 ft^2/day
S = 0.0004761
Kz/Kr = 1.
b = 60. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B6-K Pump Test (8.6 GPM).aqt
Date: 07/17/12 Time: 12:59:16

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B6-K
Test Date: 9/8/11

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B6-K	0	0

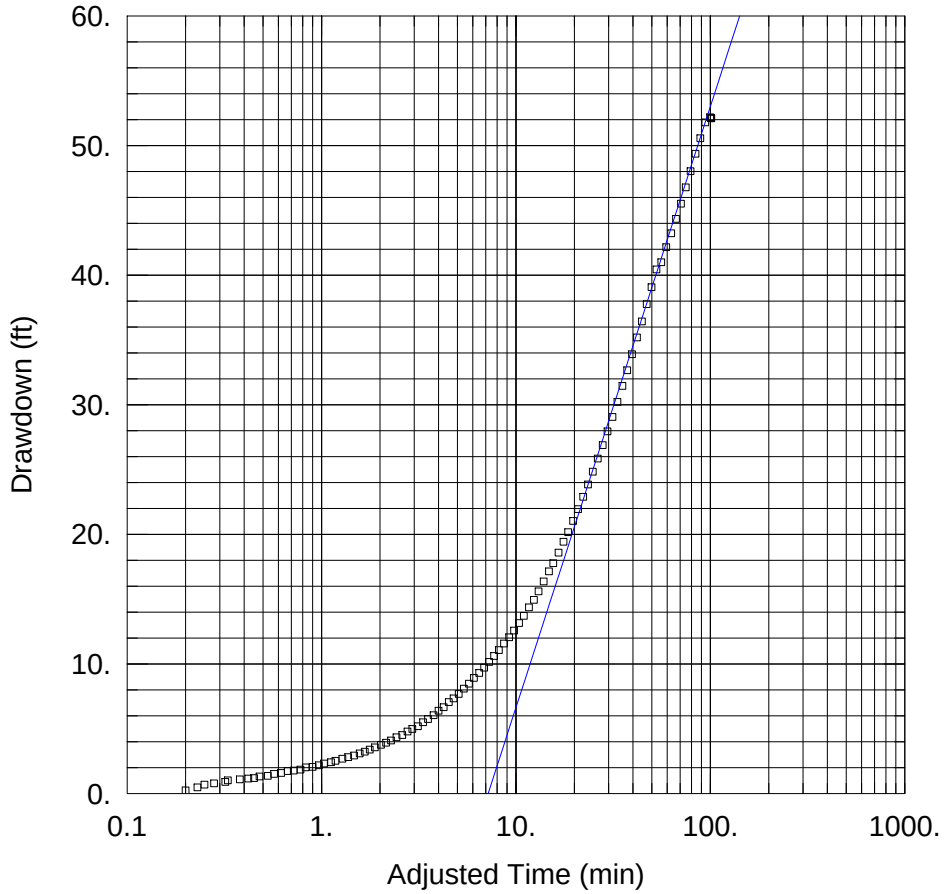
Observation Wells

Well Name	X (ft)	Y (ft)
B6-K	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 64.63 ft^2/day
S = 1.309
Kz/Kr = 1.
b = 66. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B6-O Pump Test (1.0 GPM).aqt
Date: 07/17/12 Time: 12:59:43

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B6-O
Test Date: 09/07/2011

AQUIFER DATA

Saturated Thickness: 18. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B6-O	0	0

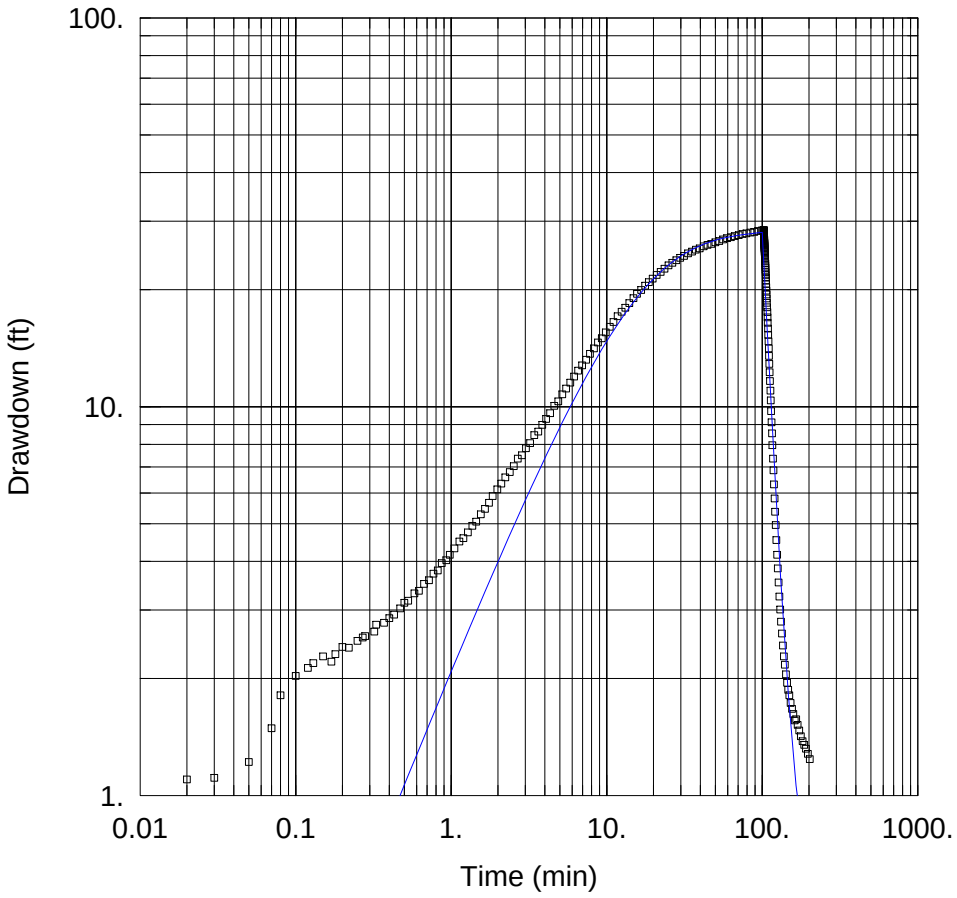
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B6-O	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 0.7606 ft^2/day S = 0.07685



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B6-U Pump Test (1.8 GPM).aqt
Date: 07/17/12 Time: 13:00:10

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B6-U
Test Date: 09/7/11

AQUIFER DATA

Saturated Thickness: 8. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B6-U	0	0

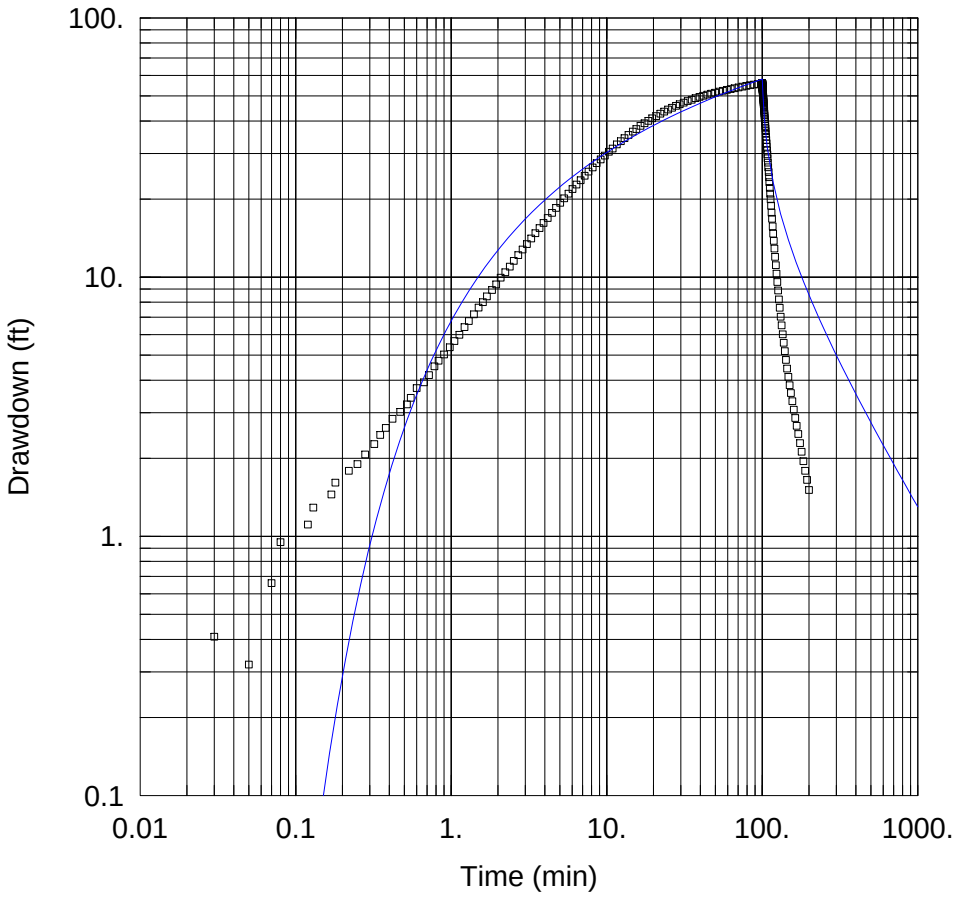
Observation Wells

Well Name	X (ft)	Y (ft)
B6-U	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Papadopulos-Cooper

T = 39.84 ft^2/day
S = 9.903E-17
r(w) = 0.3333 ft
r(c) = 0.1875 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B7-KL Pump Test (3.6 GPM).aqt
Date: 07/17/12 Time: 13:00:33

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B7-KL
Test Date: 07/19/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B7-KL	0	0

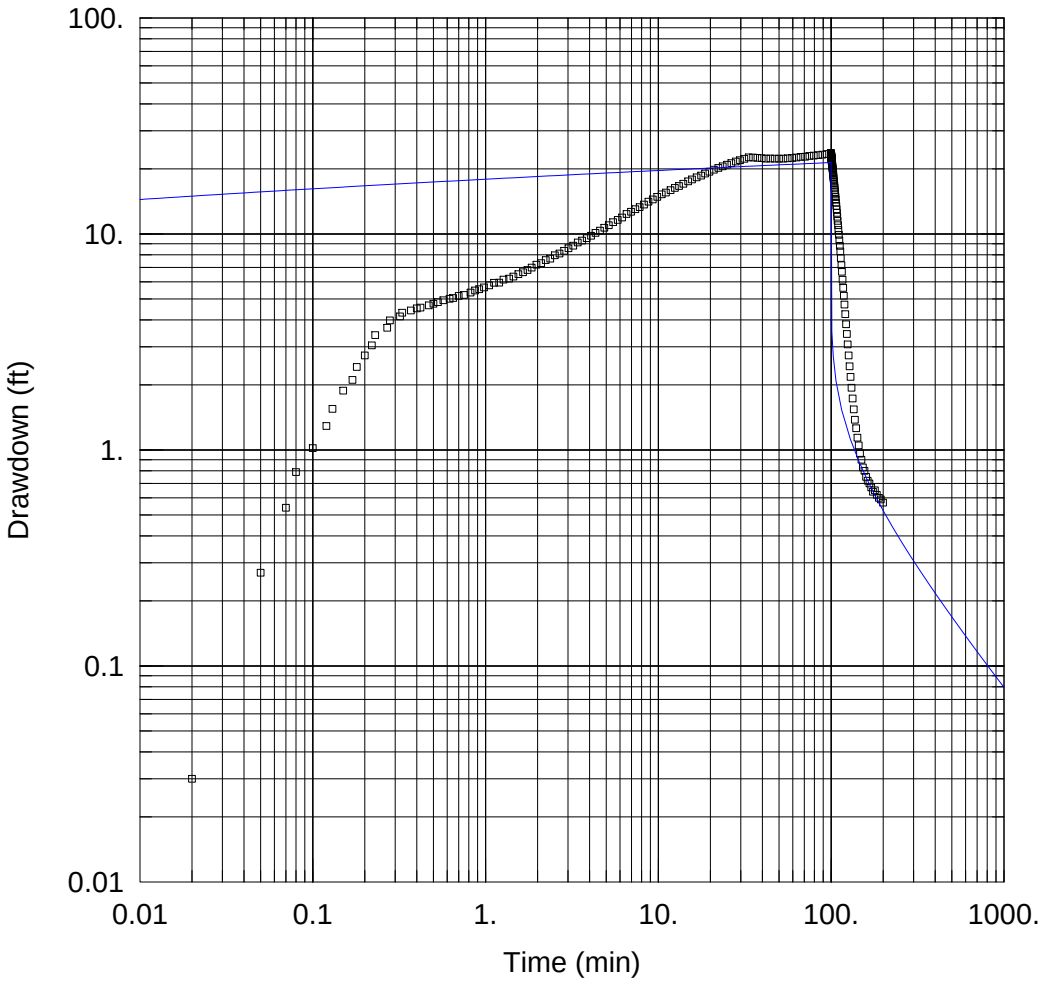
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B7-KL	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 4.47 ft^2/day
S = 0.05688
Kz/Kr = 1.
b = 19. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B7-KU Pump Test (1.2 GPM).aqt
Date: 07/17/12 Time: 13:01:03

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B7-KU
Test Date: 07/15/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B7-KU	0	0

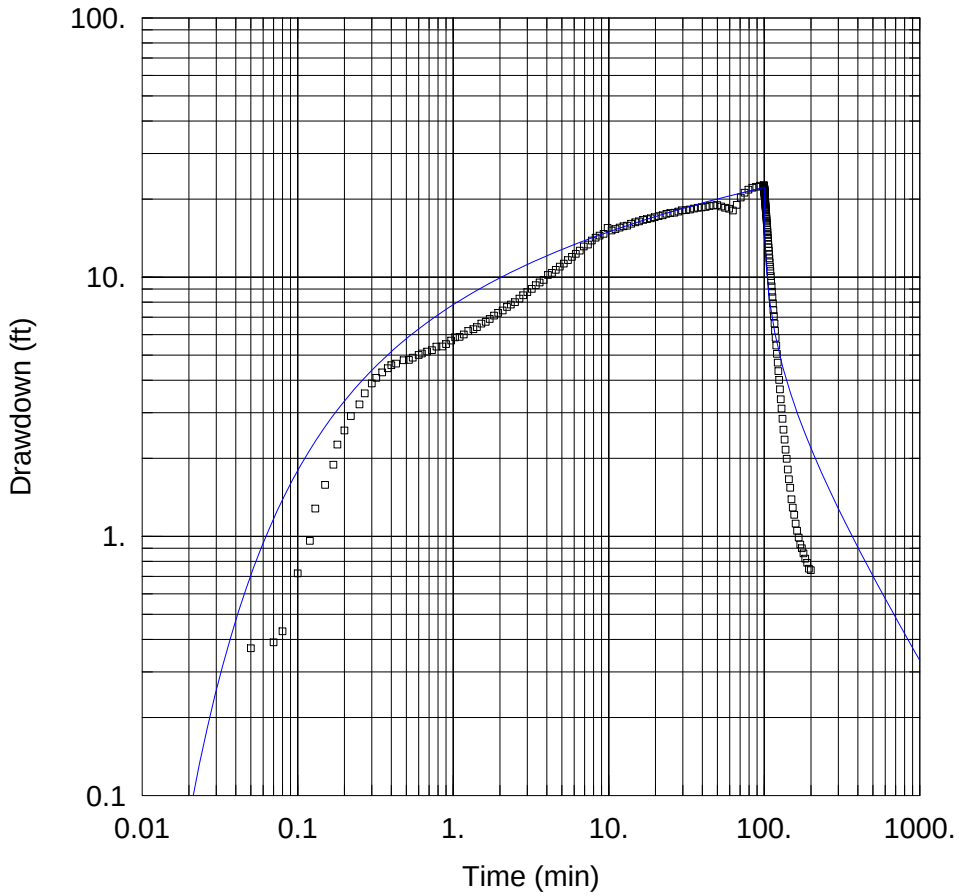
Observation Wells

Well Name	X (ft)	Y (ft)
B7-KU	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 24.3 ft^2/day
S = 1.768E-11
Kz/Kr = 1.
b = 10. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B7-O Pump Test (1.3 GPM).aqt
Date: 07/17/12 Time: 13:02:05

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B7-O
Test Date: 07/19/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B7-O	0	0

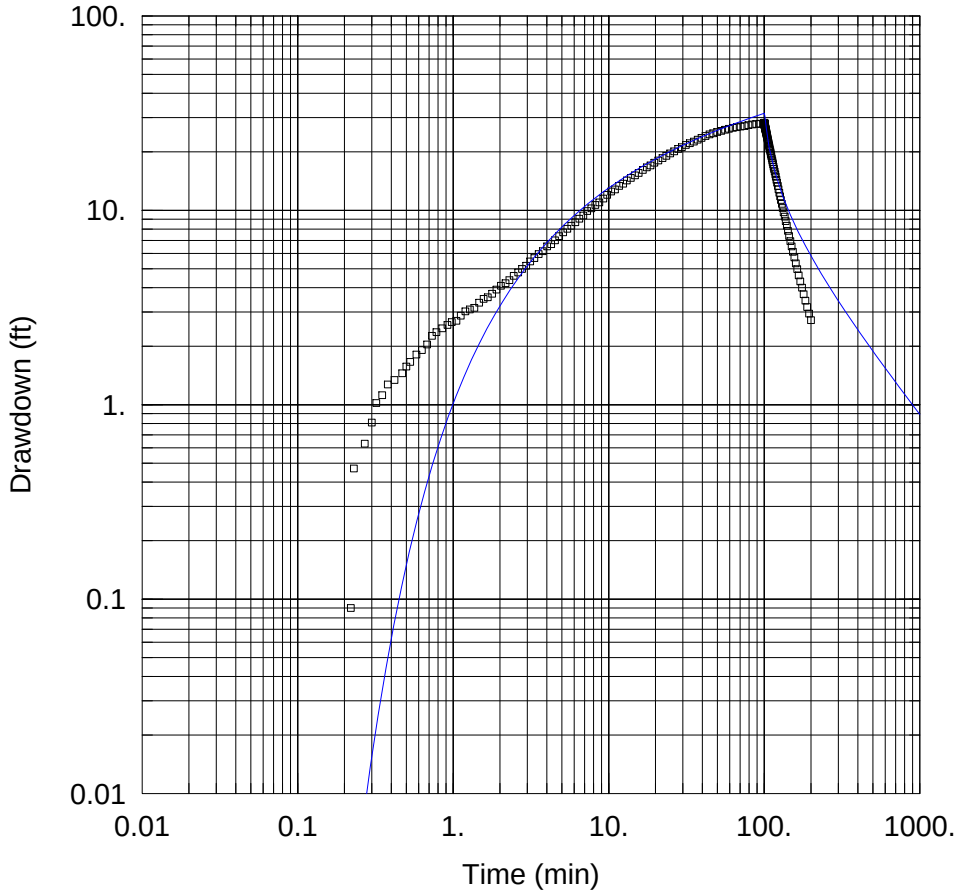
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B7-O	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 6.314 ft^2/day
S = 0.007787
Kz/Kr = 1.
b = 5. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B7-U Pump Test (0.8 GPM).aqt
Date: 07/17/12 Time: 13:02:27

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B7-U
Test Date: 07/20/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B7-U	0	0

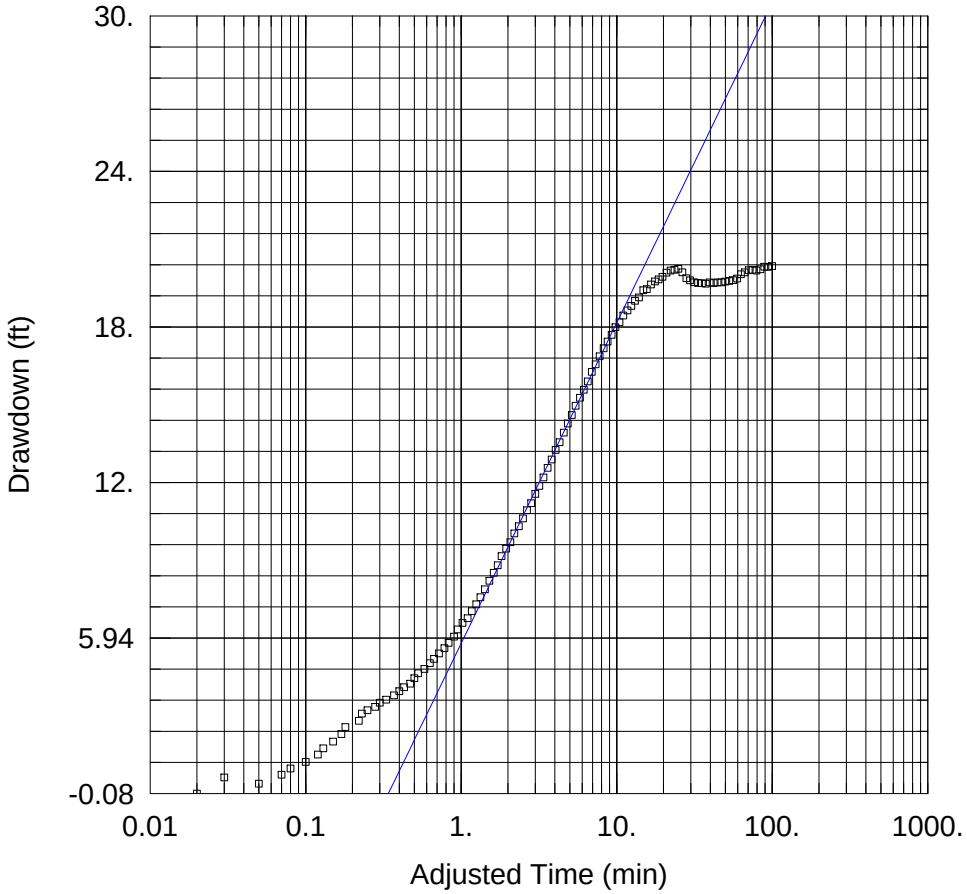
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B7-U	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1.517 ft^2/day
S = 0.0524
Kz/Kr = 1.
b = 35. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B8-KL Pump Test (3.5 GPM).aqt
Date: 07/17/12 Time: 13:03:41

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B8-KL
Test Date: 08/20/2011

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B8-KL	0	0

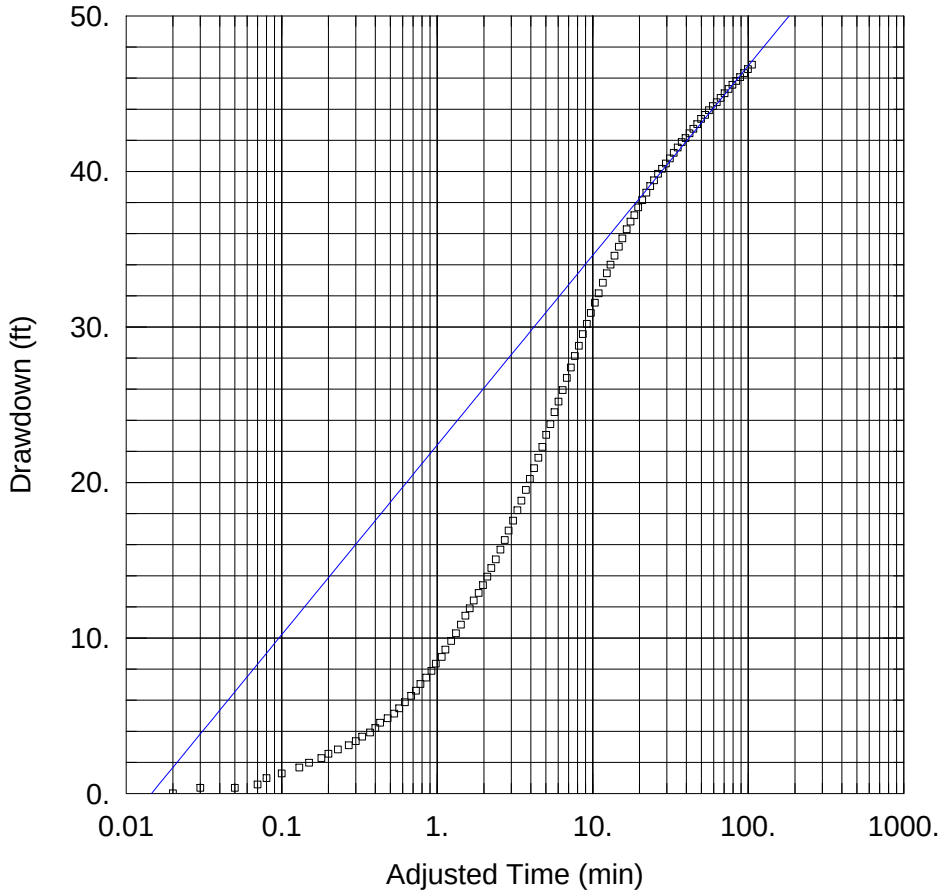
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B8-KL	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 9.955 ft^2/day S = 0.04826



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B8-KU Pump Test (5.8 GPM).aqt
Date: 07/17/12 Time: 13:04:25

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B8-KU
Test Date: 08/11/2011

AQUIFER DATA

Saturated Thickness: 48. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B8-KU	0	0

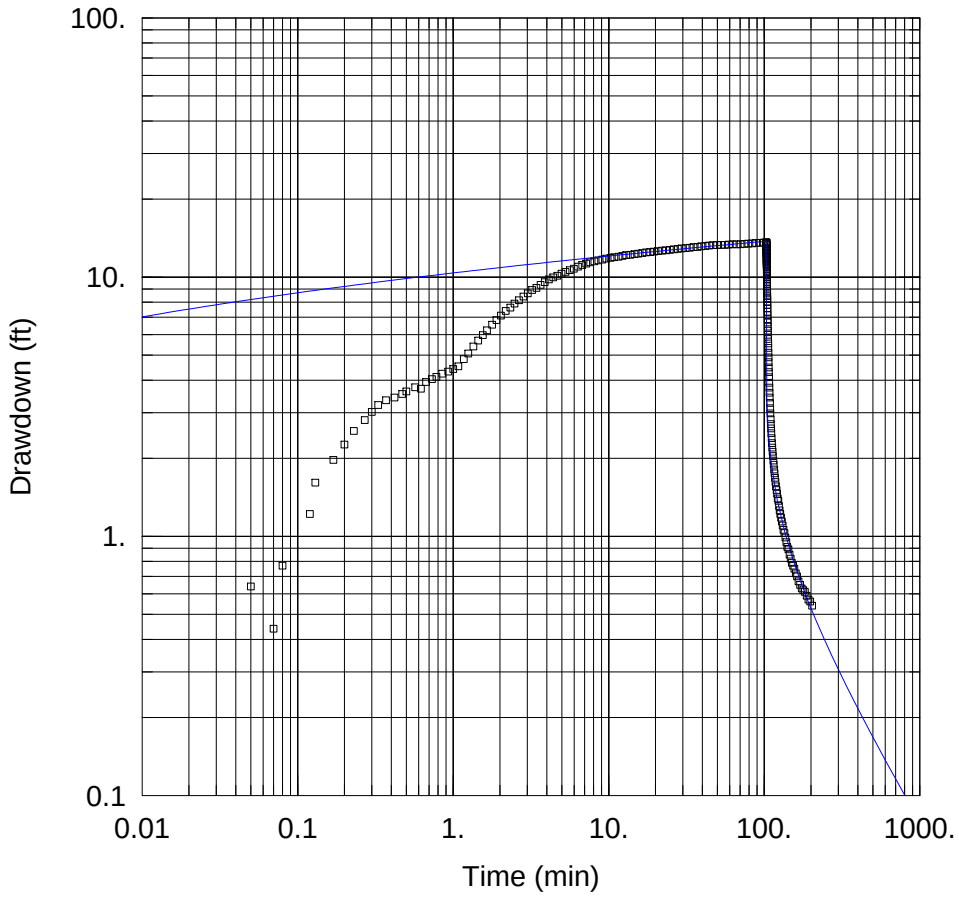
Observation Wells

Well Name	X (ft)	Y (ft)
B8-KU	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 16.77 ft^2/day S = 0.003428



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B8-O Pump Test (4.3 GPM).aqt
Date: 07/17/12 Time: 13:04:56

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: B8-O
Test Date: 08/10/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B8-O	0	0

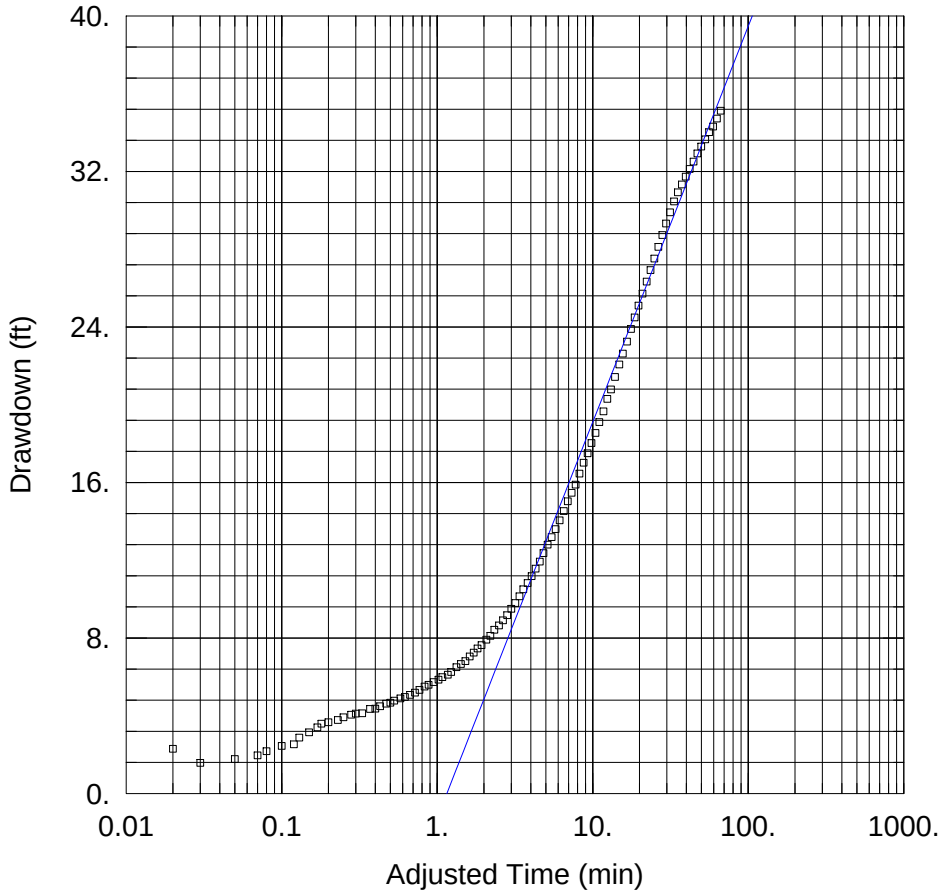
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B8-O	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 90.44 ft^2/day
S = 8.235E-7
Kz/Kr = 1.
b = 53. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B8-U Pump Test (1.6 GPM).aqt
Date: 07/17/12 Time: 13:05:17

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B8-U
Test Date: 08/30/2011

AQUIFER DATA

Saturated Thickness: 38. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B8-U	0	0

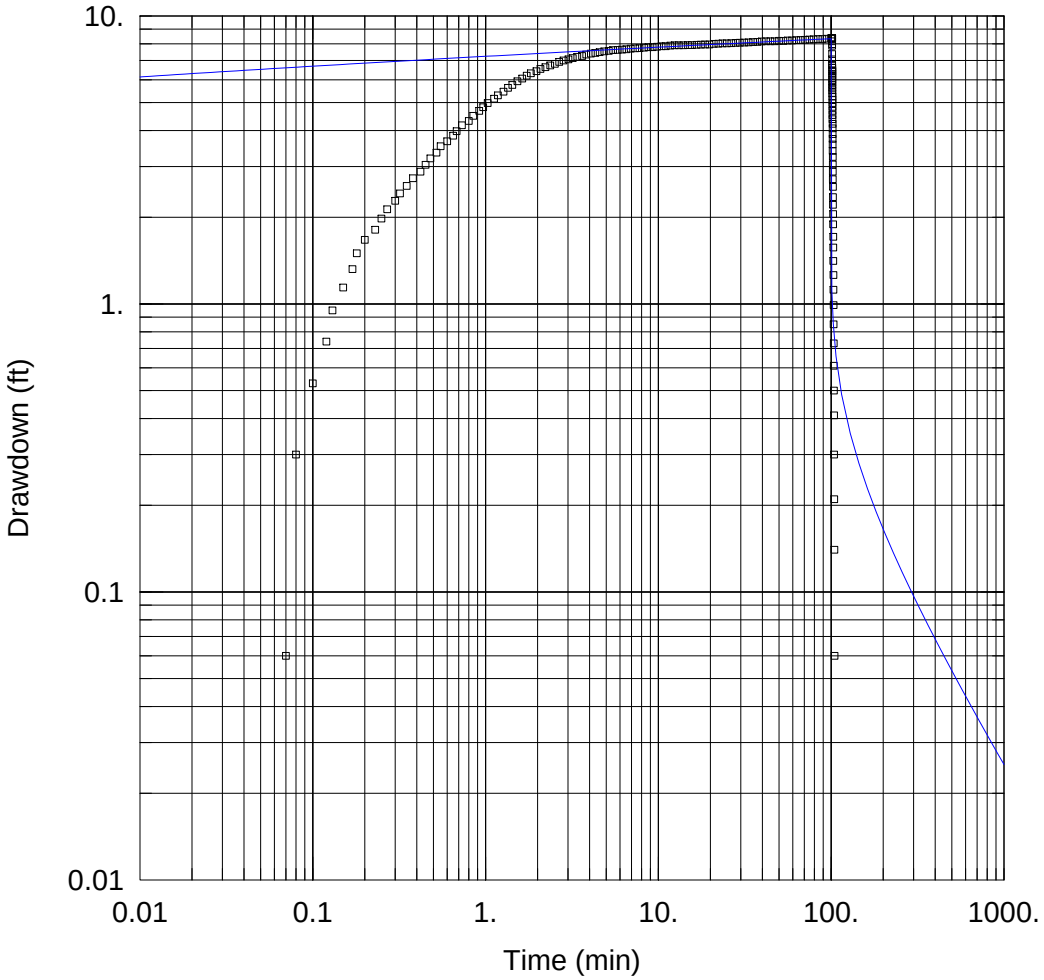
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B8-U	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 2.771 ft^2/day S = 0.04489



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B9-K Pump Test (7.5 GPM).aqt
Date: 07/17/12 Time: 13:05:40

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B9-K
Test Date: 08/31/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B9-K	0	0

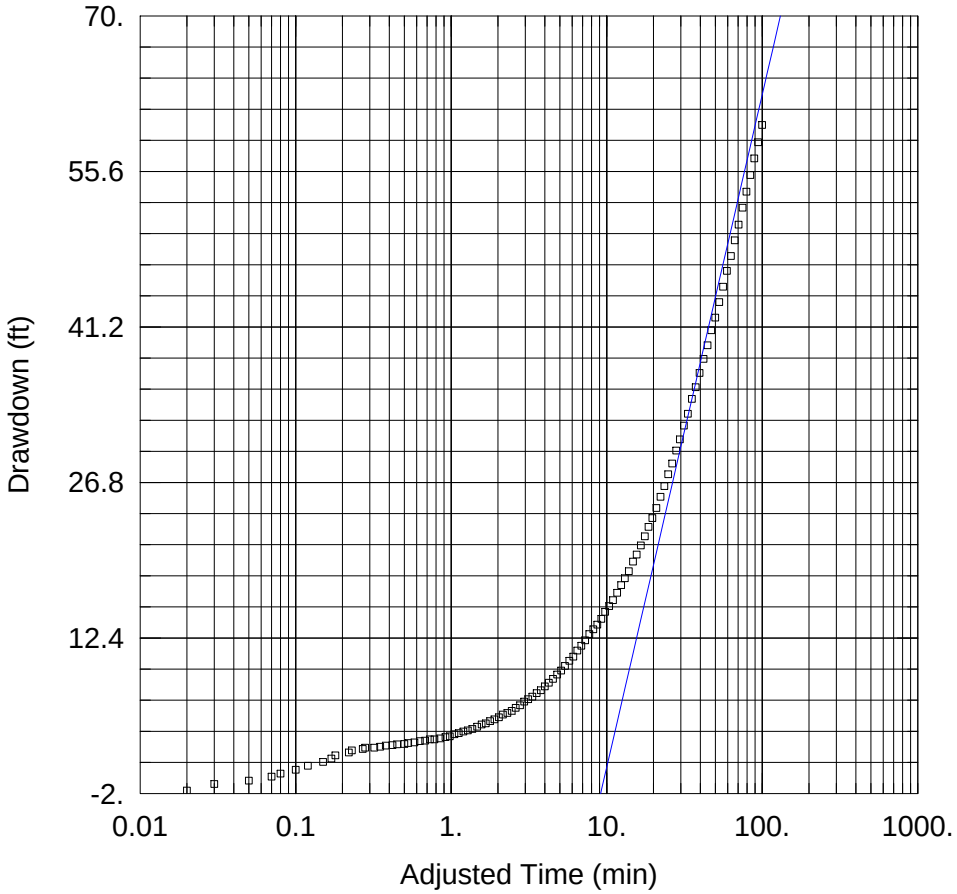
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B9-K	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 481.1 ft^2/day
S = 4.64E-13
Kz/Kr = 1.
b = 67.5 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\B9-U Pump Test (1.0 GPM).aqt
Date: 07/17/12 Time: 13:06:04

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: B9-U
Test Date: 08/31/2011

AQUIFER DATA

Saturated Thickness: 11. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
B9-U	0	0

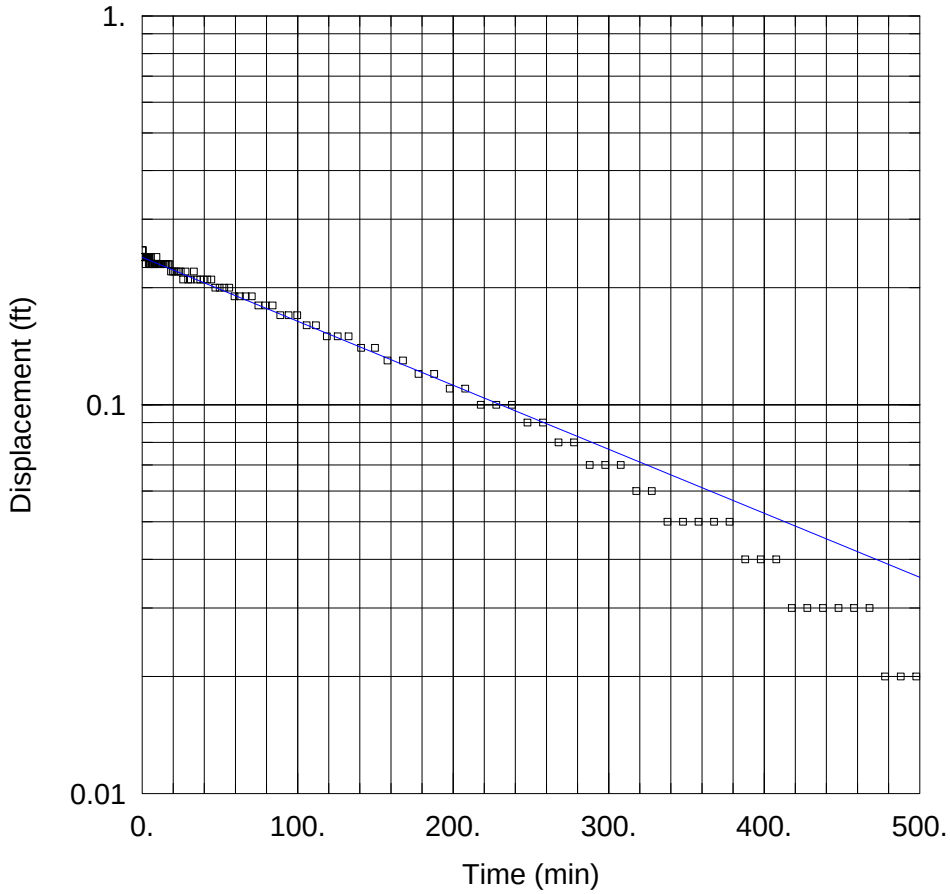
Observation Wells

Well Name	X (ft)	Y (ft)
▫ B9-U	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 0.6004 ft^2/day S = 0.08298



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\C-1 Slug Out.aqt
Date: 07/17/12 Time: 13:06:30

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: C-1
Test Date: 09/06/2011

AQUIFER DATA

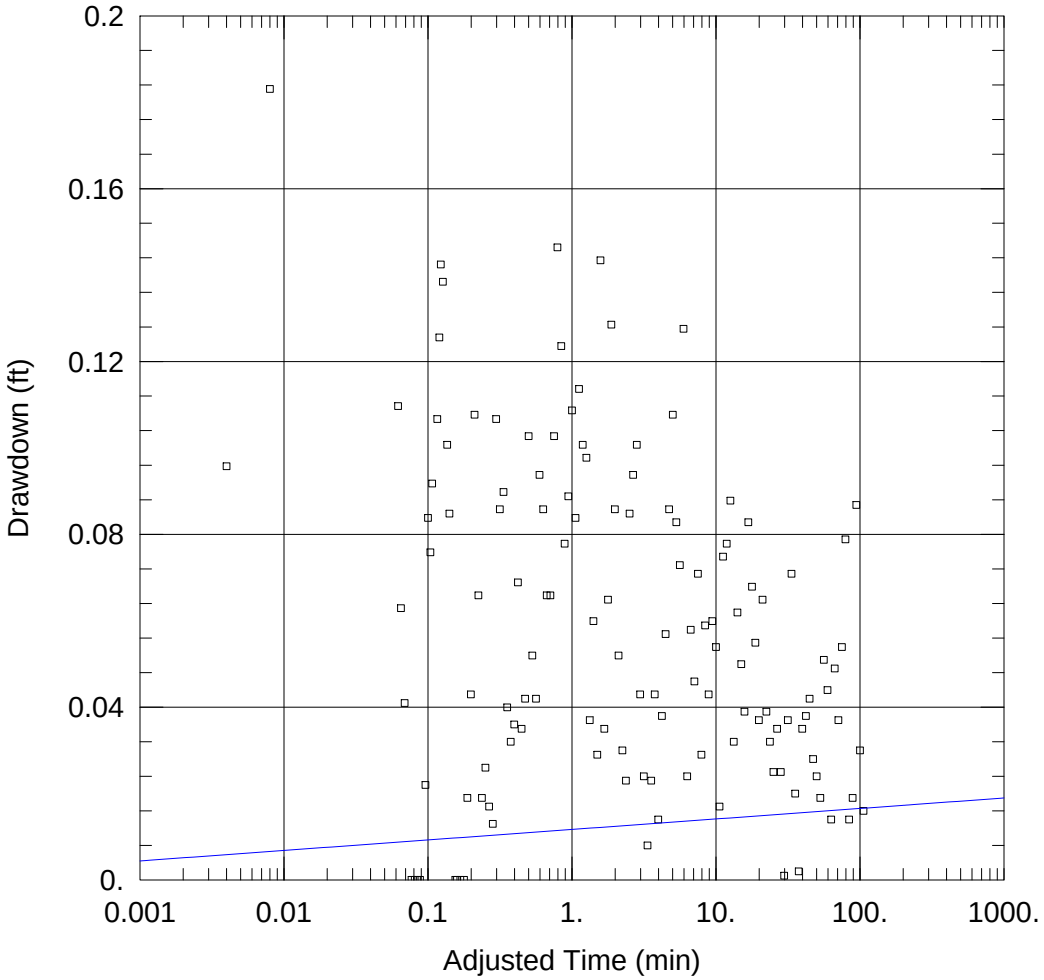
Saturated Thickness: 1.22 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (C-1)

Initial Displacement: 1.6 ft
Total Well Penetration Depth: 1.22 ft
Casing Radius: 0.1875 ft
Static Water Column Height: 1.22 ft
Screen Length: 1.22 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.07537 ft/day
y0 = 0.2394 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\C2 Pump Test (90gpm).aqt
Date: 07/17/12 Time: 13:07:26

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Date: 2/8/2011

AQUIFER DATA

Saturated Thickness: 18.5 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
C2	476059.44	2818546.45

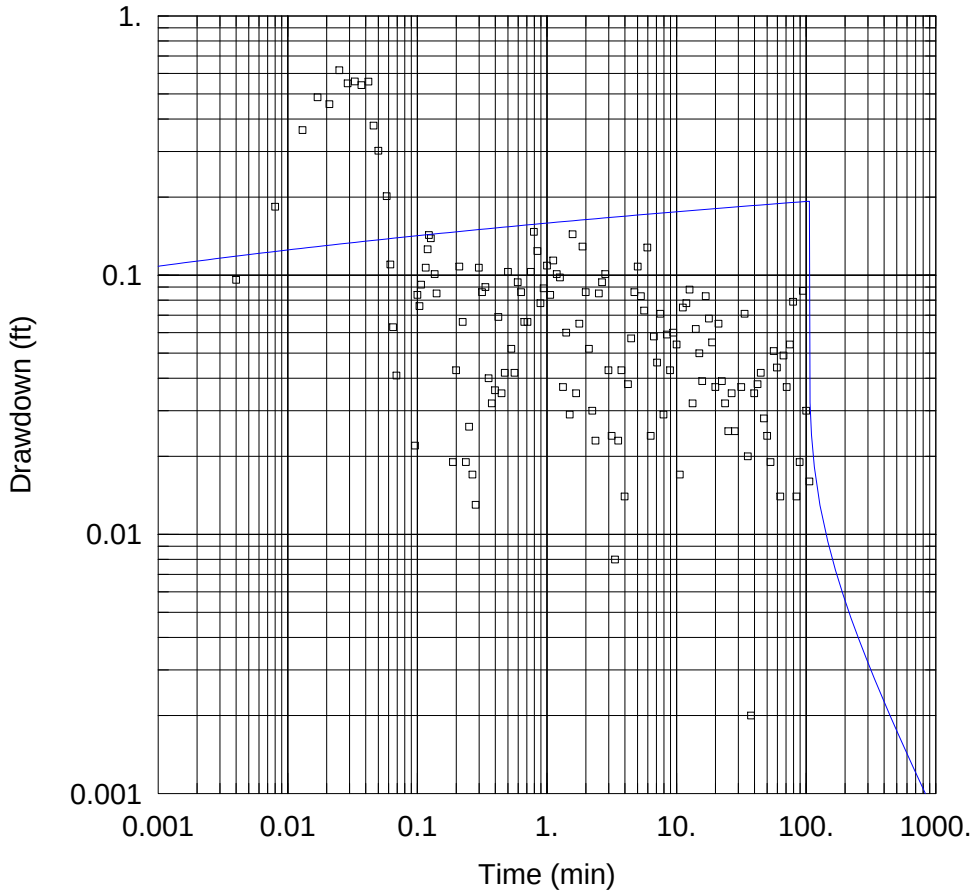
Observation Wells

Well Name	X (ft)	Y (ft)
C2	476059.44	2818546.45

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 1.3E+6 ft^2/day S = 0.2847



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\C4 Pump Test (365 gpm).aqt
Date: 07/17/12 Time: 13:07:56

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068.303
Location: Ashland, MT
Test Well: C-4
Test Date: 11/02/11

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
C4	2824994.612	469778.422

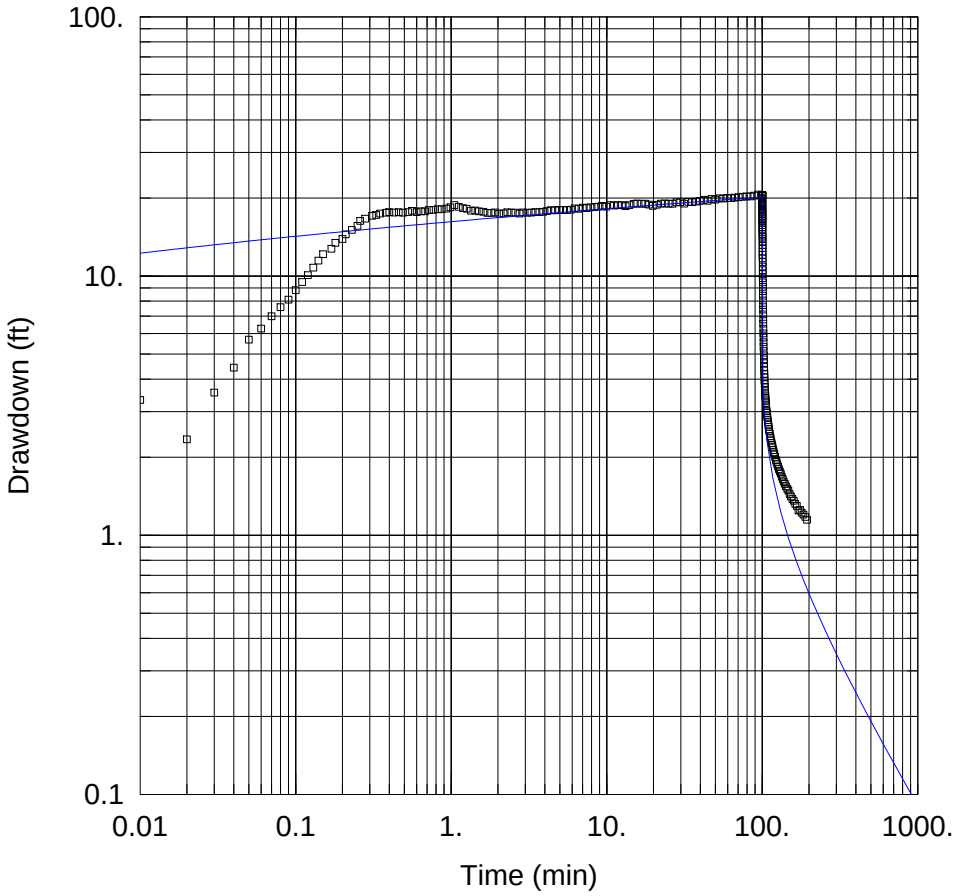
Observation Wells

Well Name	X (ft)	Y (ft)
▫ C4	2824994.612	469778.422

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis

T = 7.622E+5 ft^2/day
S = 4.145E-6
Kz/Kr = 1.
b = 50. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\K-1 PUMP TEST (13 GPM).aqt
Date: 07/17/12 Time: 13:08:24

PROJECT INFORMATION

Company: Hydrometrics, Inc.
Client: Otter Creek Coal, LLC
Project: 10068.300
Location: Ashland, MT
Test Well: K-1
Test Date: 1/25/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
K-1	0	0

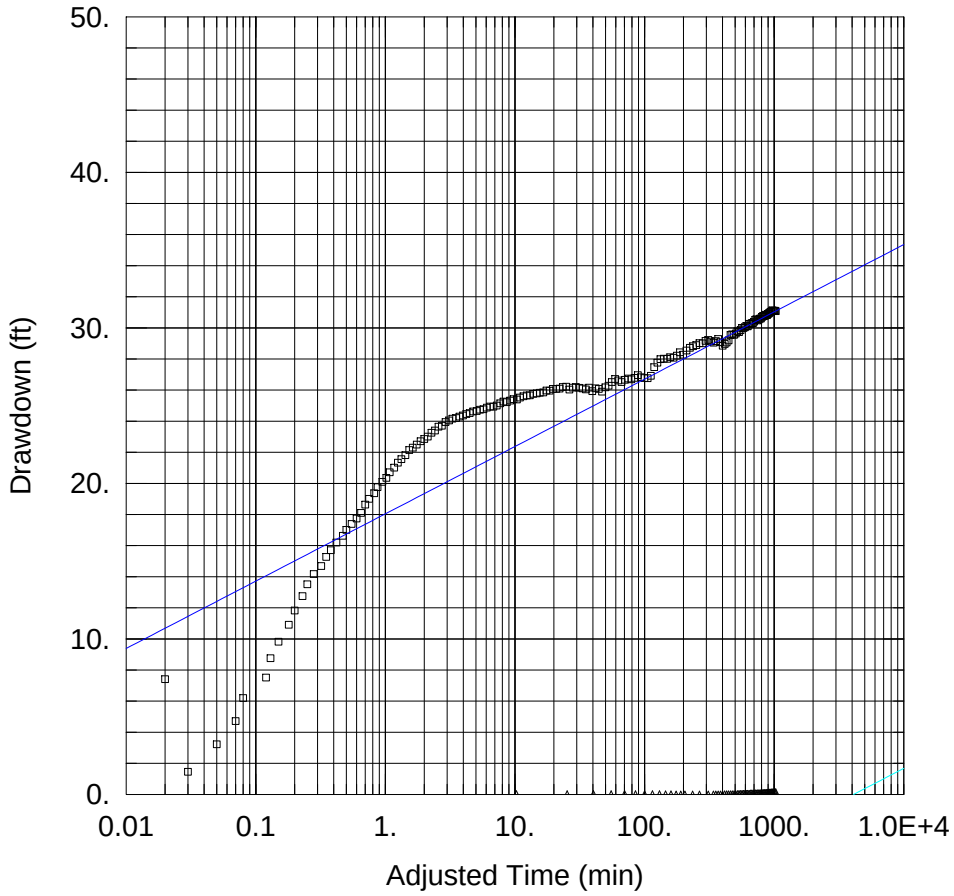
Observation Wells

Well Name	X (ft)	Y (ft)
K-1	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 232. ft^2/day
S = 2.054E-8
Kz/Kr = 1.
b = 72. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\K-1 PUMP TEST (17 GPM).aqt
Date: 07/17/12 Time: 13:08:52

PROJECT INFORMATION

Company: Hydrometrics, Inc.
Client: Otter Creek Coal, LLC
Project: 10068.300
Location: Ashland, MT
Test Well: K-1
Test Date: 1/25/2011

AQUIFER DATA

Saturated Thickness: 72. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
K-1	2825490.644	467480.099

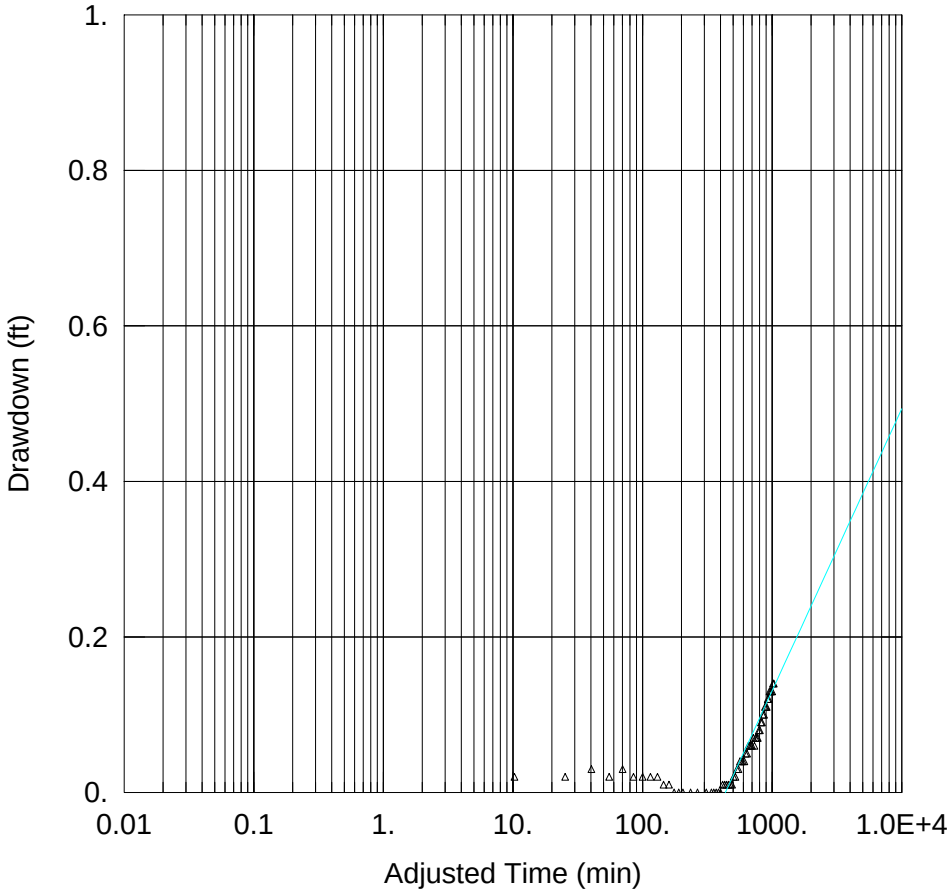
Observation Wells

Well Name	X (ft)	Y (ft)
▫ K-1	2825490.644	467480.099
▵ OC83-04	2827855.635	468541.1105

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 136.1 ft^2/day S = 0.0001297



WELL TEST ANALYSIS

Data Set: H:\...\K-1 PUMP TEST (17 GPM) obs oc83 04.aqt
Date: 07/17/12 Time: 13:09:34

PROJECT INFORMATION

Company: Hydrometrics, Inc.
Client: Otter Creek Coal, LLC
Project: 10068.300
Location: Ashland, MT
Test Well: K-1
Test Date: 1/25/2011

AQUIFER DATA

Saturated Thickness: 72. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
K-1	2825490.644	467480.099

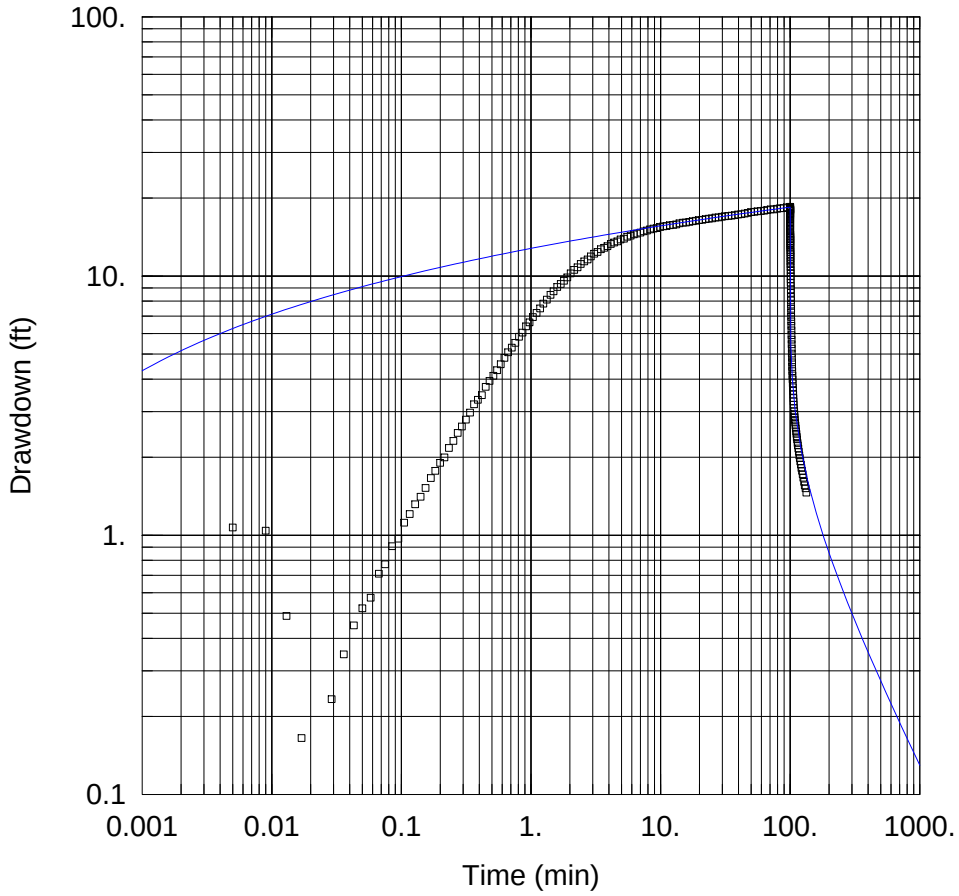
Observation Wells

Well Name	X (ft)	Y (ft)
▫ K-1	2825490.644	467480.099
▵ OC83-04	2827855.635	468541.1105

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 1624.9 ft^2/day S = 0.0001644



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\K-2 PUMP TEST (8.4 GPM).aqt
Date: 07/17/12 Time: 13:10:07

PROJECT INFORMATION

Company: Hydrometrics, Inc.
Client: Otter Creek Coal, LLC
Project: 10068.300
Location: Ashland, MT
Test Well: K-2
Test Date: 1/26/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
K-2	0	0

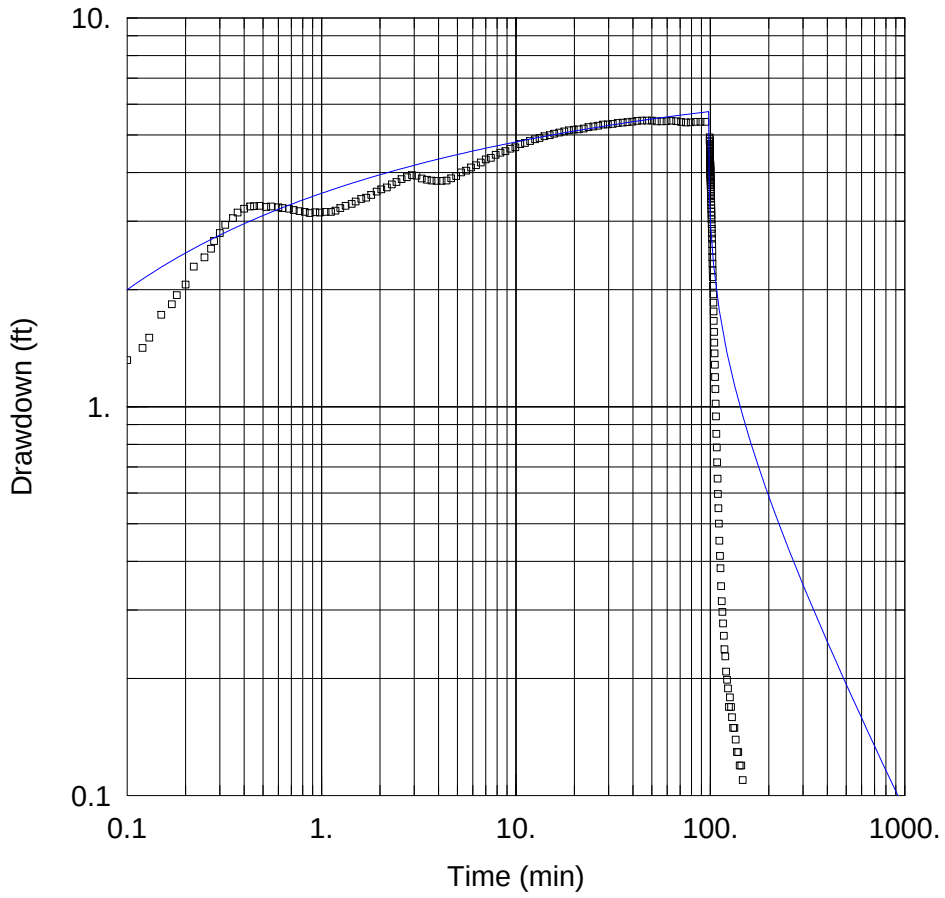
Observation Wells

Well Name	X (ft)	Y (ft)
K-2	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 104.6 ft^2/day
S = 4.499E-5
Kz/Kr = 1.
b = 18. ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\K-3 PUMP TEST (2 GPM).aqt
Date: 07/17/12 Time: 13:10:55

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: K-3
Test Date: 07/08/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
K-3	0	0

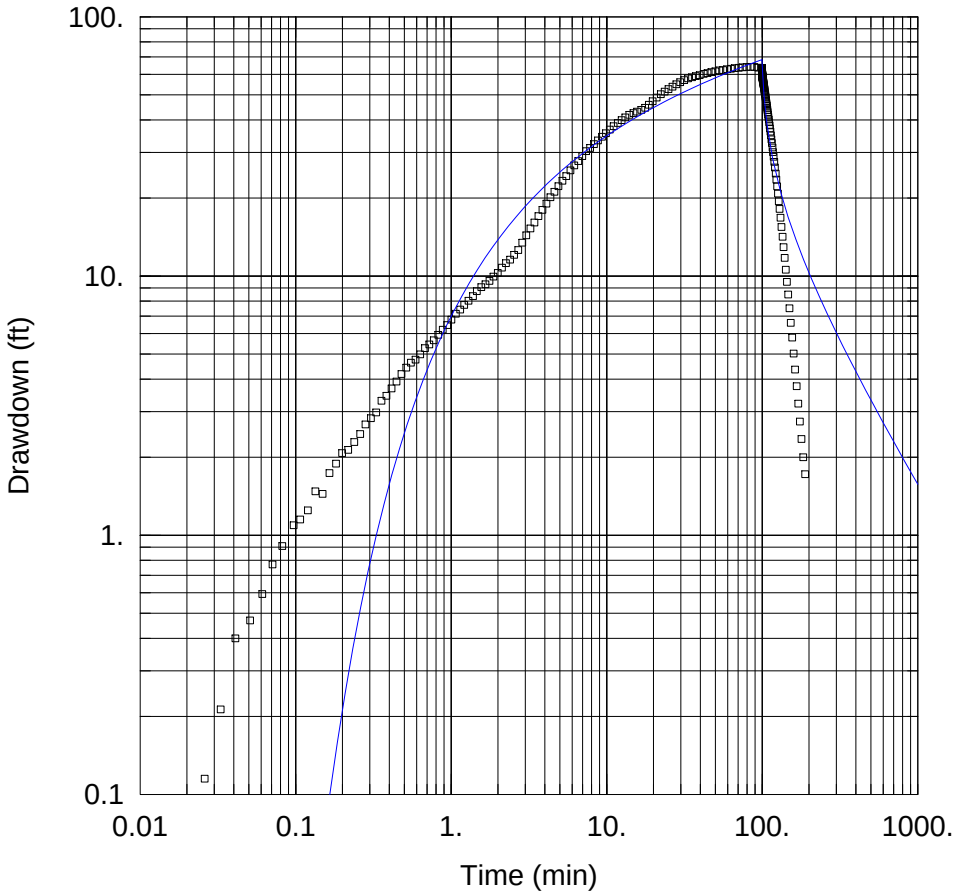
Observation Wells

Well Name	X (ft)	Y (ft)
K-3	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis

T = 34.31 ft^2/day
S = 0.00444
Kz/Kr = 1.
b = 13.5 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\K-4 PUMP TEST (1.7 GPM).aqt
Date: 07/17/12 Time: 13:11:20

PROJECT INFORMATION

Company: Hydrometrics, Inc.
Client: Otter Creek Coal, LLC
Project: 10068.300
Location: Ashland, MT
Test Well: K-4
Test Date: 1/26/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
K-4	0	0

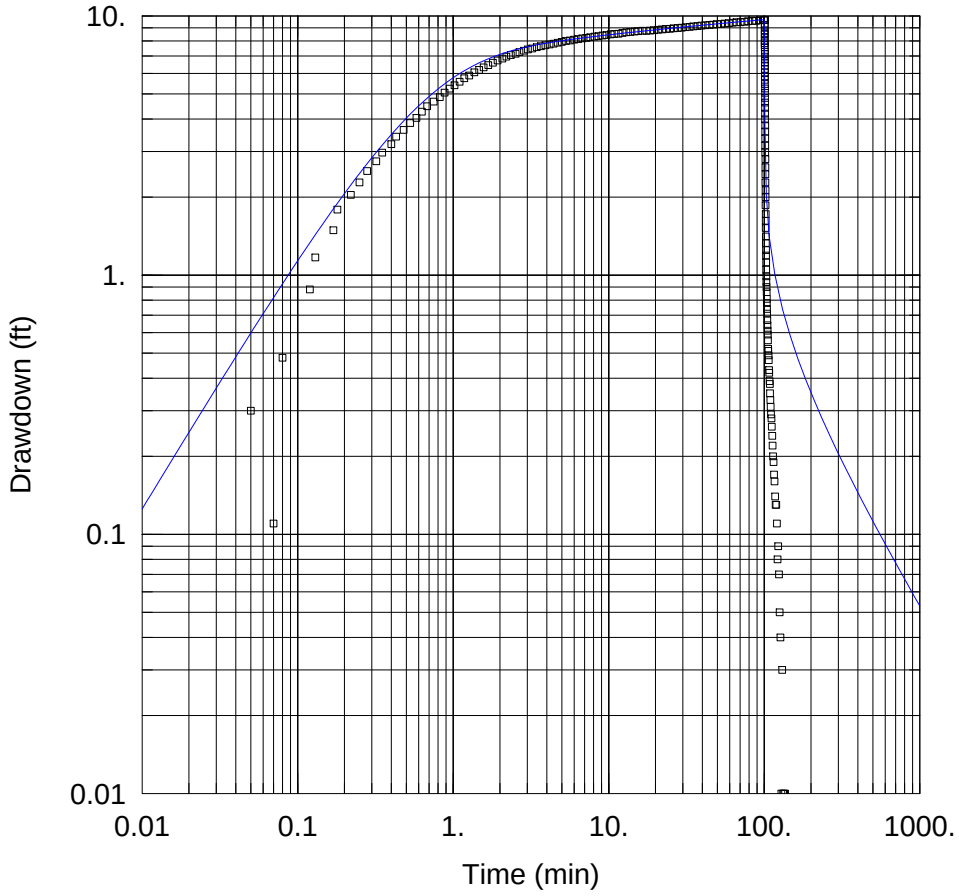
Observation Wells

Well Name	X (ft)	Y (ft)
▫ K-4	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1.738 ft^2/day
S = 0.0255
Kz/Kr = 1.
b = 17.5 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\K-5 Pump Test (10.5 gpm).aqt
Date: 07/17/12 Time: 13:11:46

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek Coal, LLC
Project: 10068.303
Location: Ashland, MT
Test Well: K-5
Test Date: 09/13/11

AQUIFER DATA

Saturated Thickness: 71.5 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
K-5	0	0

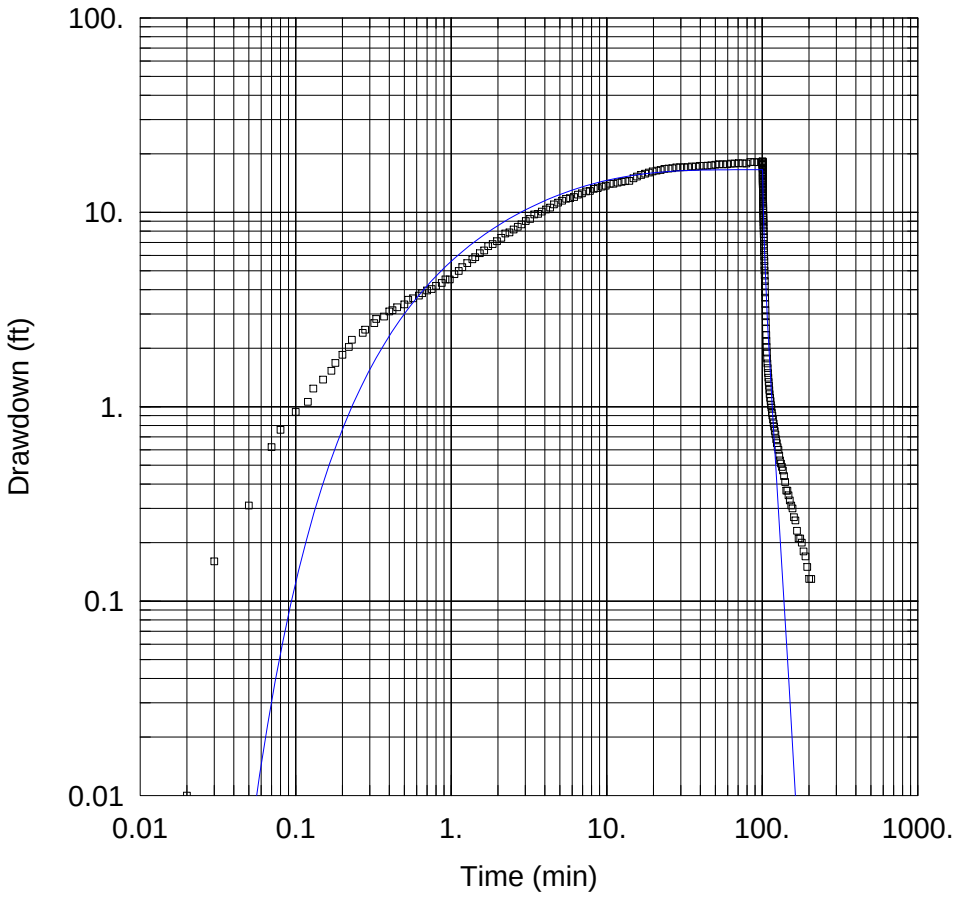
Observation Wells

Well Name	X (ft)	Y (ft)
K-5	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Papadopulos-Cooper

T = 320.6 ft^2/day S = 5.9E-6
r(w) = 0.1875 ft r(c) = 0.1875 ft



WELL TEST ANALYSIS

Data Set: H:\PROJECTS\OTRCR\Hydrology\Aquifer Testing\Final\K-6 PUMP TES (5.5 GPM).aqt
Date: 07/17/12 Time: 13:12:11

PROJECT INFORMATION

Company: Hydrometrics
Client: Otter Creek
Project: 10068
Location: Ashland, MT
Test Well: K-6
Test Date: 07/08/2011

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
K-6	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ K-6	0	0

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 14.64 ft^2/day
S = 0.09521
r/B = 0.2767
Kz/Kr = 1.
b = 45. ft