Appendix 3—Electromagnetic (EM) Flowmeter Analyses of Transect Wells with Flow-Log Analysis of Single Holes (FLASH) Numerical Model Inputs and Results

Appendix 3. Electromagnetic (EM) Flowmeter Analyses of Transect Wells with Flow-Log Analysis of Single Holes (FLASH) Numerical Model Inputs and Results

FLASH **F**low-**L**og **A**nalysis of **S**ingle **H**oles

Units

FT	feet
FT^2/day	feet squared per day
GPM	gallons per minute
IN	inch

Required Input

Δh an estimate of the head for the zone relative to ambient water level, in feet

ABS(Δh) maximum inversion constraint on the maximum absolute difference between the head of any zone and the water level in the well, in feet

Ambient flow above the flow in the well, during non-pumping conditions, above the given zone, with upward flow positive, in GPM

Depth at bottom of casing depth at which the well is open to the formation, in feet. The hydraulic solution will be plotted from this depth down to the depth at the bottom of the well

Depth at bottom of well depth at the bottom of the well, in feet. The hydraulic solution will be plotted to this depth

Depth to ambient water level depth from measurement point to water level in well in absence of stress, in feet

Drawdown the distance between the ambient and the quasi-steady state water level measured under stressed (pumping or injection conditions), in feet

Elevation of measuring point elevation used for calculation of water levels based on drawdown and depths, in feet

Farfield head the head of the given zone at large distance from the well, in feet. Note that this is calculated and not entered directly by the user

Fracture or layer option for each zone the following is specified: depth, in feet, below the reference point. Fractures are numbered automatically from bottom to top

Number of flow Zones number of transmissive zones (layers or fractures)

Pumped flow above the flow in the well above the given zone, under stressed conditions, with upward flow positive, in GPM (or injected flow rate in the case of an injection test)

Regularization weight weight applied to the regularization term in the inversion when "Solve with Regularization" is specified, dimensionless. Note, regularization is useful in cases where the inversion converges to unrealistic head or transmissivity values, but giving too much weight to the regularization term will degrade the match to the data

Radius of influence (ROI) the radial distance from the well at which all transmissive zones remains at equilibrium condition, in feet

Tfactor the proportion of the given zone's transmissitivity to the total tranmissivity of the well; that is, if the estimate is 4 ft^2/day, you would enter a 0.04 zone's Tfactor for a total transmissivity of 100 ft^2/day, and for a total tranmissivity of 40 ft^2/day, you would enter 0.10 for the Tfactor; in decimal fraction of total, dimensionless

Tfactor minimum inversion constraint on the minimum TFactor; this is useful in cases where the inversion converges to unrealistically small transmissivity values for certain zones

Total Transmissivity the transmissivity based on an open-hole pump test, used for a starting value, in feet squared per day

Well diameter diameter of well in the interval over which drawdown occurs, in inches

Appendix 3. Electromagnetic (EM) Flowmeter Analyses of Transect Wells with Flow-Log Analysis of Single Holes (FLASH) Numerical Model Inputs and Results

Simulated Profiles Output

Ambient WL calculated water level for ambient conditions subtracted from the elevation of the reference point, in feet

Estimated Ttotal the total transmissivity estimated for the well, in FT^2/day

MSE mean squared error, in GPM^2; this quantifies the misfit between the interpreted and simulated flows

Pumped WL calculated water level for stressed conditions subtracted from the elevation of the reference point, in feet

Regularized misfit the combined, weighted misfit for regularized inversion, equal to the MSE plus the regularization weight multiplied by the Sum Δh^2

Sum Δh^2 the sum of squared differences between simulated and interpreted heads

Sum Tfactor sum of the TFactor estimates, dimensionless. If this value is 1.0, then the total transmissivity in cell D13 is honored

Reference

Day-Lewis, F.D., Johnson, C.D., Paillet, F.L., and Halford, K.J., 2011: A computer program for flow-log analysis of single holes (FLASH): Ground Water, v. 49, no. 6, p. 926-931, accessed December 8, 2012, at http://onlinelibrary.wiley.com/doi/10.1111/j.1745-6584.2011.00798.x/pdf.

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: **291443099325801 (East Uvalde - 1)**

Elevation of measuring point [FT]	874
Number of flow zones [-]	4
Well diameter [IN]	6.63
Drawdown [FT]	7.20
Depth to ambient water level [FT]	120.11
Depth at bottom of casing [FT]	985
Depth at bottom of well [FT]	1,490
Radius of influence (R_0) [FT]	192
Total transmissivity (T_{total}) [FT²/day]	418

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI

- Solve without Regularization
- Solve with Regularization

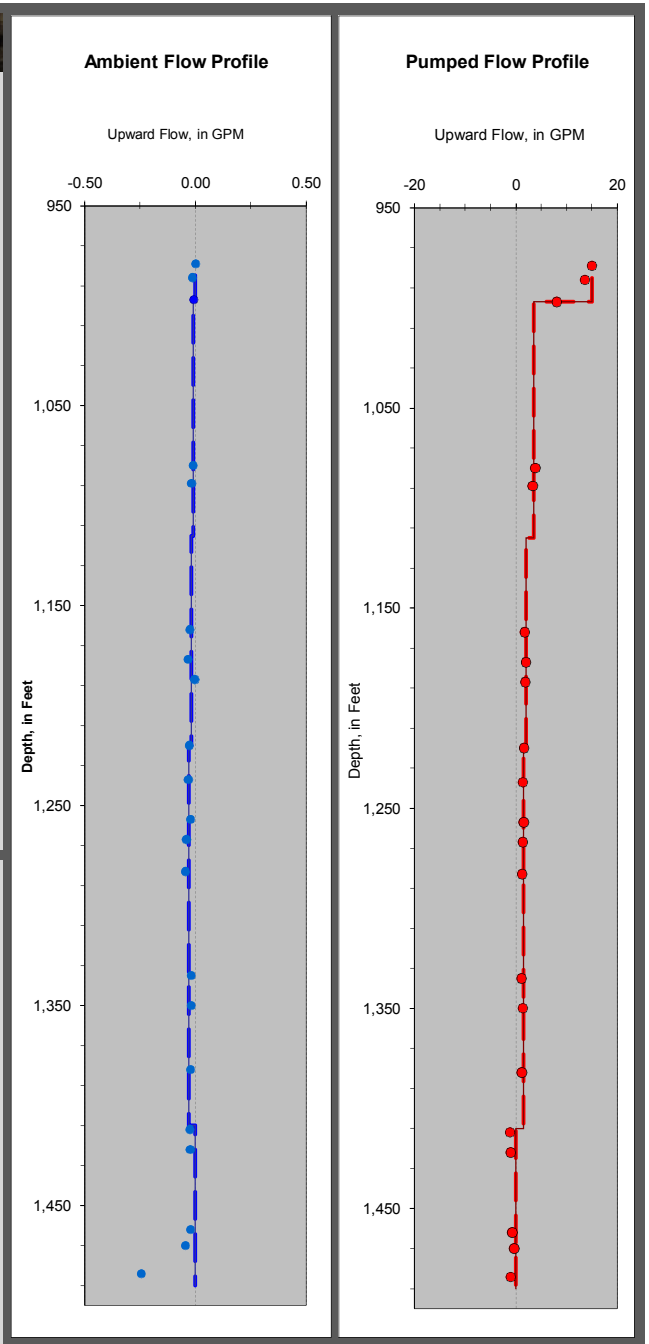
ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

FRACTURES	Bottom Depth [FT]	Flow above layer bottom depths Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
4	997	0.00	15.0	0.77	0.01	753.90
3	1,115	-0.01	3.5	0.10	0.04	753.93
2	1,220	-0.02	2.0	0.03	0.18	754.07
1	1,410	-0.03	1.5	0.10	-0.14	753.75

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh^2	0.05
Ambient WL [FT]	753.89	Estimated Ttotal [FT²/day]	418	Regularized Misfit	0.00
Pumped WL [FT]	746.69				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
4	997	0.00	15.0	0.000	0.000	320	0.77
3	1,115	-0.01	3.5	0.000	0.000	41.6	0.10
2	1,220	-0.02	2.0	0.000	0.000	13.6	0.03
1	1,410	-0.03	1.5	0.000	0.000	42.6	0.10



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.01 FLASH modeling results of data collected from transect Well East Uvalde - 1

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: 291612099302001 (East Uvalde - 2)

Elevation of measuring point [FT]	900
Number of flow zones [-]	4
Well diameter [IN]	6.63
Drawdown [FT]	5.19
Depth to ambient water level [FT]	145.13
Depth at bottom of casing [FT]	1,073
Depth at bottom of well [FT]	1,553
Radius of influence (R_0) [FT]	193
Total transmissivity (T_{total}) [FT²/day]	437

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI

- Solve without Regularization
- Solve with Regularization

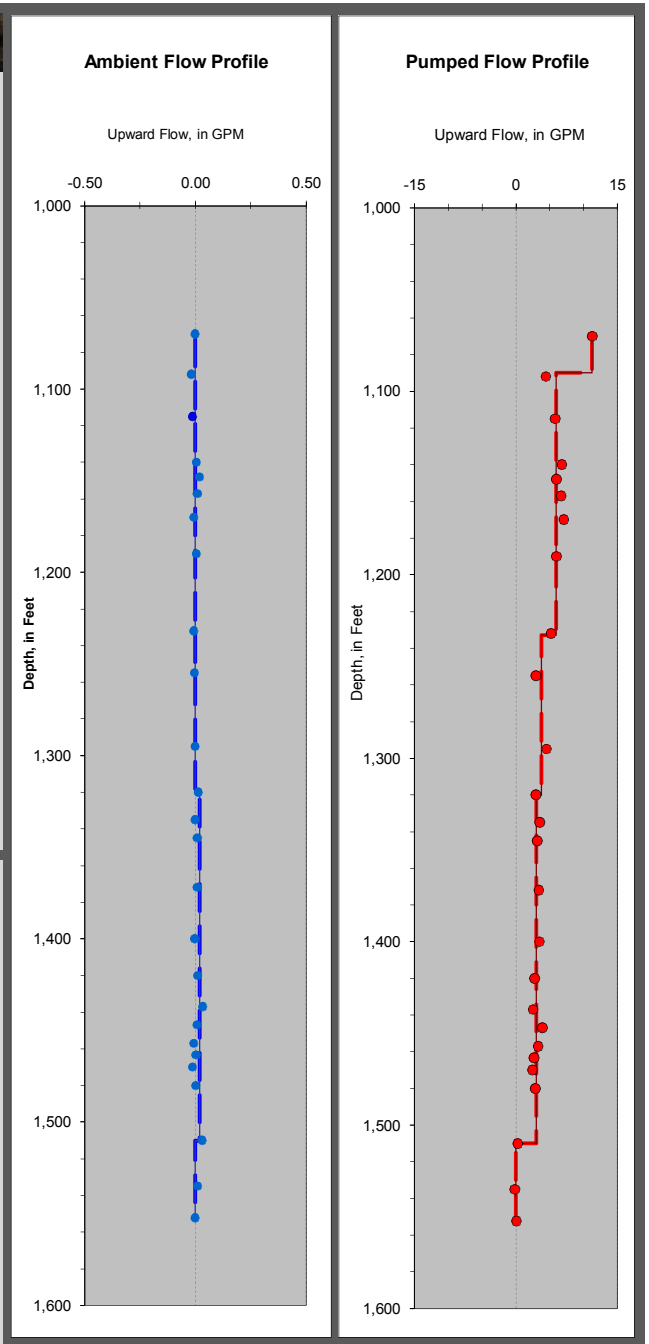
ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

FRACTURES	Bottom Depth [FT]	Flow above layer bottom depths: Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
4	1,090	0.00	11.3	0.47	0.00	754.78
3	1,233	0.00	6.0	0.20	0.00	754.78
2	1,320	0.00	3.8	0.07	-0.13	754.65
1	1,510	0.02	3.0	0.26	0.03	754.81

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh^2	0.02
Ambient WL [FT]	754.78	Estimated Ttotal [FT²/day]	436.940	Regularized Misfit	0.00
Pumped WL [FT]	749.59				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
4	1,090	0.00	11.3	0.000	0.000	205	0.47
3	1,233	0.00	6.0	0.000	0.000	87.0	0.20
2	1,320	0.00	3.8	0.000	0.000	29.8	0.07
1	1,510	0.02	3.0	0.000	0.000	115	0.26



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.02 FLASH modeling results of data collected from transect Well East Uvalde - 2

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: **293424098134701** **(Tri-County - 2)**

Elevation of measuring point [FT]	709
Number of flow zones [-]	5
Well diameter [IN]	6
Drawdown [FT]	1.02
Depth to ambient water level [FT]	38.30
Depth at bottom of casing [FT]	486
Depth at bottom of well [FT]	1,025
Radius of influence (R_0) [FT]	177
Total transmissivity (T_{total}) [FT²/day]	2,460

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI

- Solve without Regularization
- Solve with Regularization

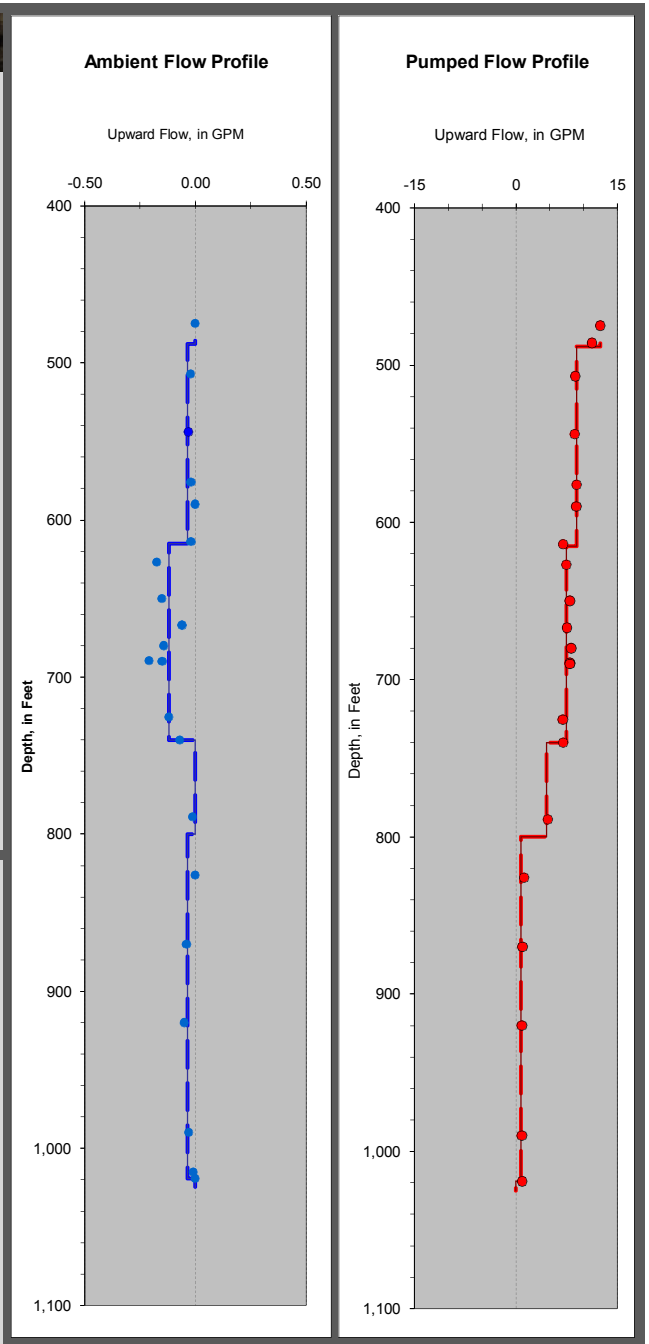
ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

FRACTURES	Bottom Depth [FT]	Flow above layer bottom depths: Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
5	488	0.00	12.5	0.28	0.01	670.71
4	615	-0.04	9.0	0.11	0.06	670.76
3	740	-0.12	7.5	0.25	-0.04	670.66
2	800	0.00	4.5	0.29	0.01	670.71
1	1,019	-0.04	0.8	0.07	-0.04	670.66

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh^2	0.01
Ambient WL [FT]	670.70	Estimated Ttotal [FT²/day]	2460.000	Regularized Misfit	0.00
Pumped WL [FT]	669.68				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
5	488	0.00	12.5	0.000	0.000	682	0.28
4	615	-0.03	9.0	0.000	0.000	278	0.11
3	740	-0.12	7.5	0.000	0.000	614	0.25
2	800	0.00	4.5	0.000	0.000	721	0.29
1	1,019	-0.03	0.8	0.000	0.000	164	0.07



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.03 FLASH modeling results of data collected from transect Well Tri-County - 2

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: **293245098121001** **(Tri-County - 3)**

Elevation of measuring point [FT]	674
Number of flow zones [-]	3
Well diameter [IN]	6.63
Drawdown [FT]	0.11
Depth to ambient water level [FT]	11.03
Depth at bottom of casing [FT]	656
Depth at bottom of well [FT]	1,170
Radius of influence (R_0) [FT]	240
Total transmissivity (T_{total}) [FT²/day]	24,900

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI
- Solve without Regularization
- Solve with Regularization

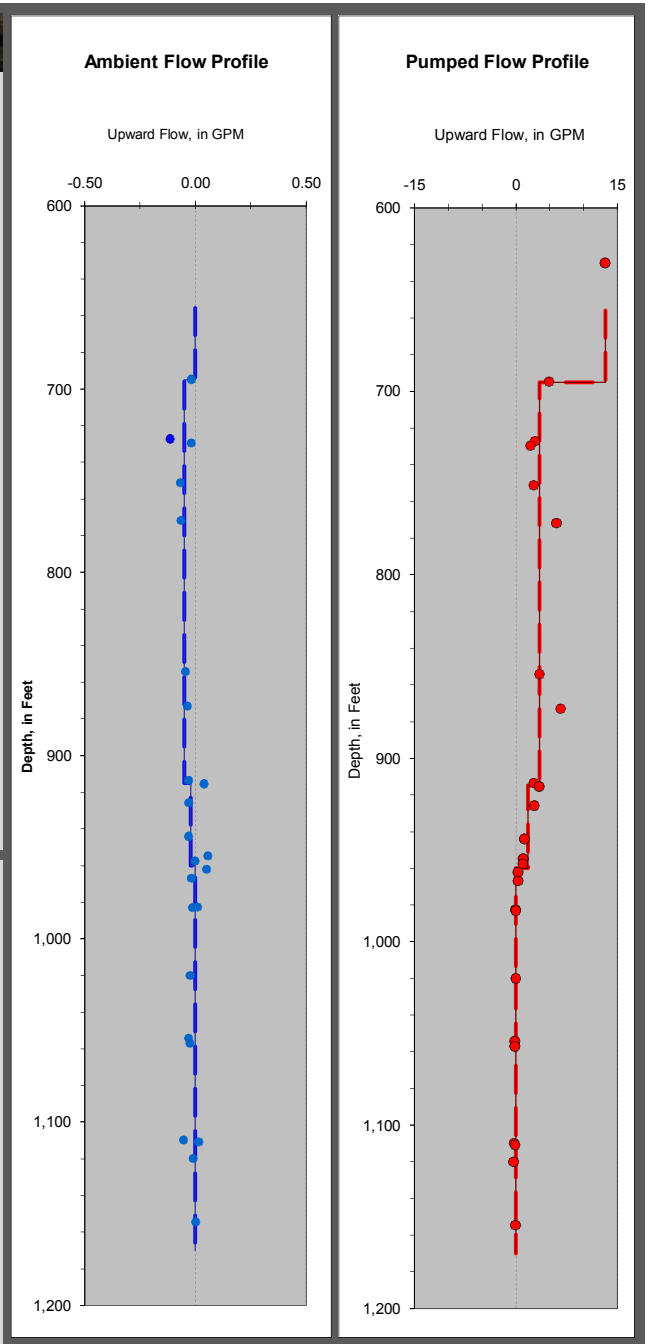
ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

FRACTURES	Bottom Depth [FT]	Flow above layer bottom depths: Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
3	695	0.00	13.2	0.73	0.00	662.97
2	915	-0.05	3.5	0.13	0.00	662.97
1	960	-0.02	1.8	0.13	0.00	662.97

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh²	0.00
Ambient WL [FT]	662.97	Estimated Ttotal [FT²/day]	24900.000	Regularized Misfit	0.00
Pumped WL [FT]	662.86				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
3	695	0.00	13.2	0.000	0.000	18,200	0.73
2	915	-0.05	3.5	0.000	0.000	3,360	0.13
1	960	-0.02	1.8	0.000	0.000	3,340	0.13



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.04 FLASH modeling results of data collected from transect Well Tri-County - 3

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: 293058098110501 (Tri-County - 4)

Elevation of measuring point [FT]	649
Number of flow zones [-]	4
Well diameter [IN]	6
Drawdown [FT]	9.43
Depth to ambient water level [FT]	3.30
Depth at bottom of casing [FT]	1,000
Depth at bottom of well [FT]	1,550
Radius of influence (R_0) [FT]	174
Total transmissivity (T_{total}) [FT²/day]	266

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI

- Solve without Regularization
- Solve with Regularization

ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

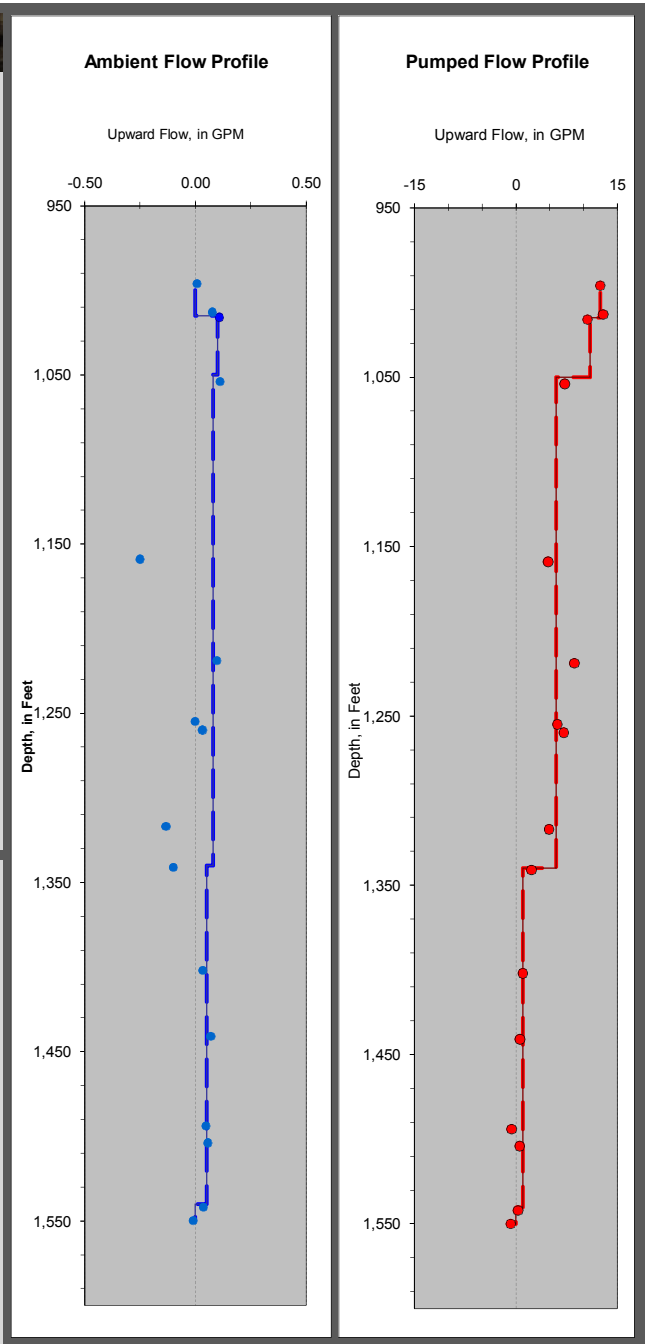
Flow above layer bottom depths

FRACTURES	Bottom Depth [FT]	Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
4	1,015	0.00	12.5	0.13	-0.59	645.03
3	1,050	0.10	11.0	0.40	0.04	645.66
2	1,340	0.08	6.0	0.40	0.06	645.68
1	1,540	0.05	1.0	0.08	0.50	646.12

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh^2	0.60
Ambient WL [FT]	645.62	Estimated Ttotal [FT²/day]	265.923	Regularized Misfit	0.00
Pumped WL [FT]	636.19				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
4	1,015	0.00	12.5	0.000	0.000	34.0	0.13
3	1,050	0.10	11.0	0.000	0.000	106	0.40
2	1,340	0.08	6.0	0.000	0.000	106	0.40
1	1,540	0.05	1.0	0.000	0.000	20.2	0.08



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.05 FLASH modeling results of data collected from transect Well Tri-County - 4

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: 294946097574501 (Fish Hatchery - 2)

Elevation of measuring point [FT]	643
Number of flow zones [-]	4
Well diameter [IN]	5.58
Drawdown [FT]	6.84
Depth to ambient water level [FT]	51.00
Depth at bottom of casing [FT]	510
Depth at bottom of well [FT]	980
Radius of influence (R_0) [FT]	162
Total transmissivity (T_{total}) [FT²/day]	528

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI

- Solve without Regularization
- Solve with Regularization

ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

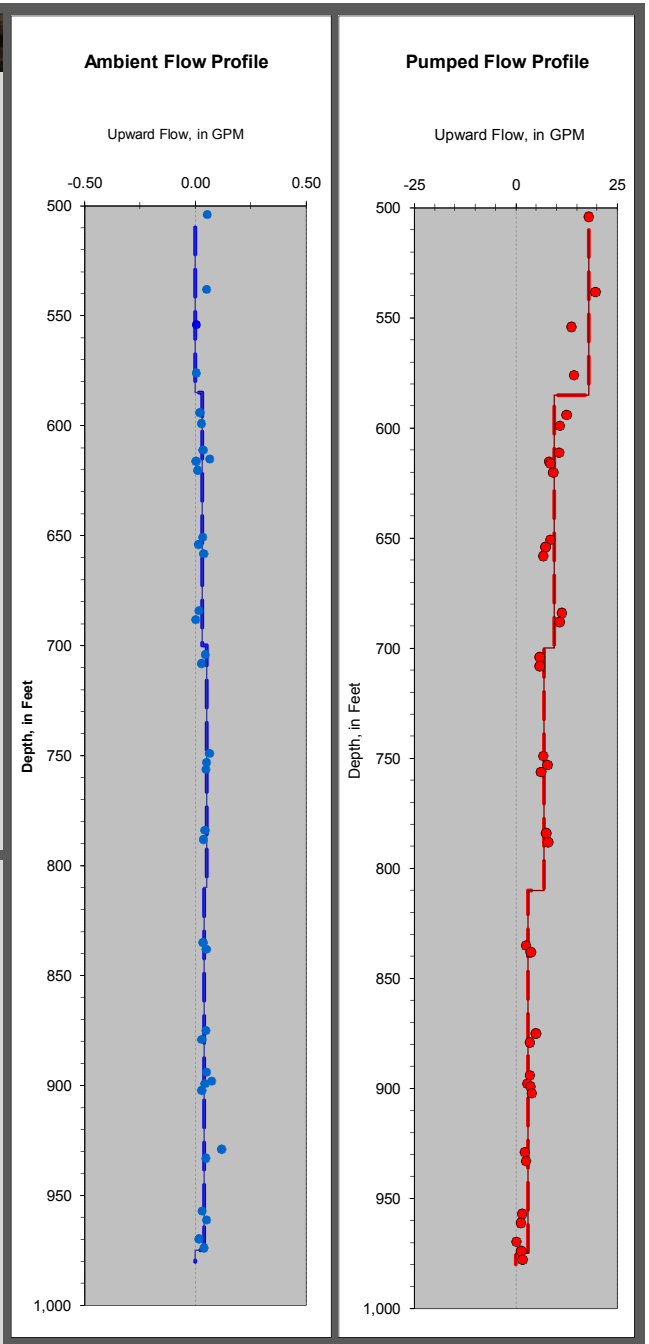
Flow above layer bottom depths

FRACTURES	Bottom Depth [FT]	Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
4	585	0.00	18.0	0.47	-0.02	591.48
3	700	0.03	9.5	0.14	-0.05	591.45
2	810	0.05	7.0	0.22	0.02	591.52
1	975	0.04	3.0	0.16	0.09	591.59

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh^2	0.01
Ambient WL [FT]	591.50	Estimated Ttotal [FT²/day]	527.995	Regularized Misfit	0.00
Pumped WL [FT]	584.66				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
4	585	0.00	18.0	0.000	0.000	250	0.47
3	700	0.03	9.5	0.000	0.000	73.9	0.14
2	810	0.05	7.0	0.000	0.000	117	0.22
1	975	0.04	3.0	0.000	0.000	86.8	0.16



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.06 FLASH modeling results of data collected from transect Well Fish Hatchery - 2

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: 295853097532901 (Kyle - 1)

Elevation of measuring point [FT]	771
Number of flow zones [-]	4
Well diameter [IN]	6.63
Drawdown [FT]	7.63
Depth to ambient water level [FT]	182.78
Depth at bottom of casing [FT]	307
Depth at bottom of well [FT]	802
Radius of influence (R_0) [FT]	131
Total transmissivity (T_{total}) [FT²/day]	297

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI

- Solve without Regularization
- Solve with Regularization

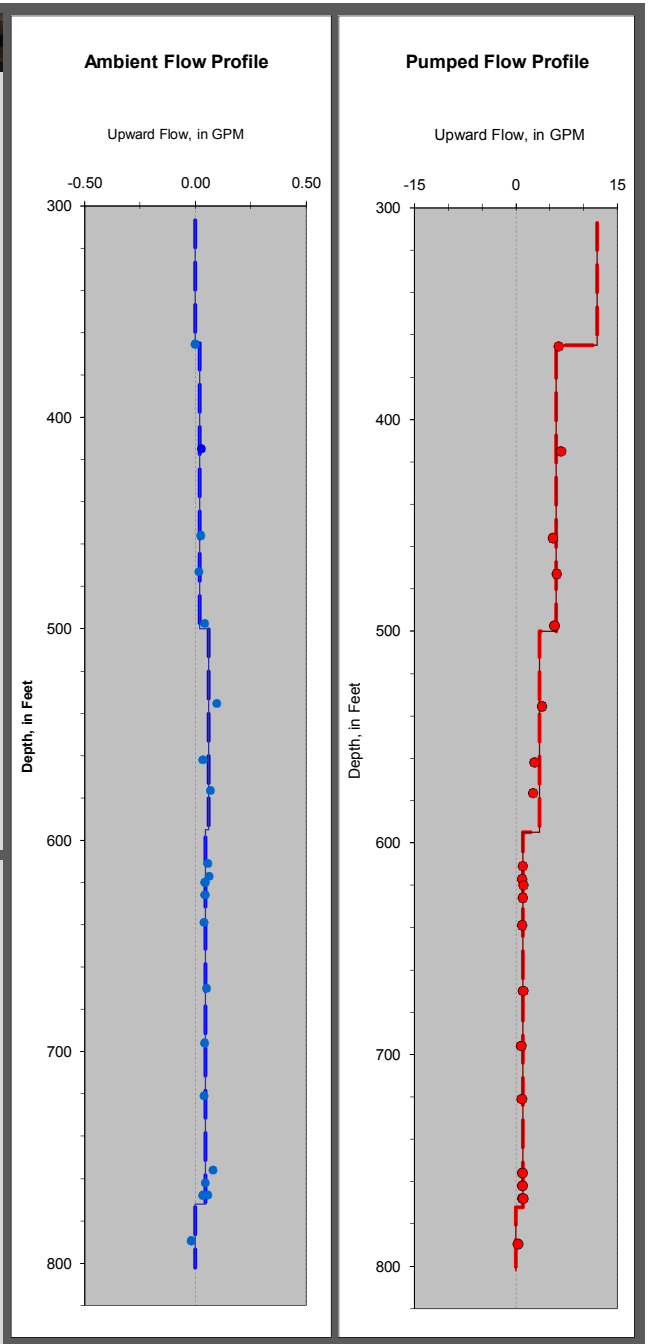
ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

FRACTURES	Bottom Depth [FT]	Flow above layer bottom depths: Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
4	365	0.00	12.0	0.50	-0.03	587.71
3	500	0.02	6.0	0.21	-0.12	587.62
2	595	0.06	3.5	0.21	0.05	587.79
1	772	0.05	1.0	0.08	0.36	588.10

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh^2	0.15
Ambient WL [FT]	587.74	Estimated Ttotal [FT²/day]	296.831	Regularized Misfit	0.00
Pumped WL [FT]	580.11				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
4	365	0.00	12.0	0.000	0.000	149	0.50
3	500	0.02	6.0	0.000	0.000	62.8	0.21
2	595	0.06	3.5	0.000	0.000	61.5	0.21
1	772	0.04	1.0	0.000	0.000	23.6	0.08



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.07 FLASH modeling results of data collected from transect Well Kyle - 1

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: 295858097521801 (Kyle - 2)

Elevation of measuring point [FT]	675
Number of flow zones [-]	6
Well diameter [IN]	6.63
Drawdown [FT]	5.09
Depth to ambient water level [FT]	93.23
Depth at bottom of casing [FT]	427
Depth at bottom of well [FT]	917
Radius of influence (R_0) [FT]	192
Total transmissivity (T_{total}) [FT²/day]	472

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI

- Solve without Regularization
- Solve with Regularization

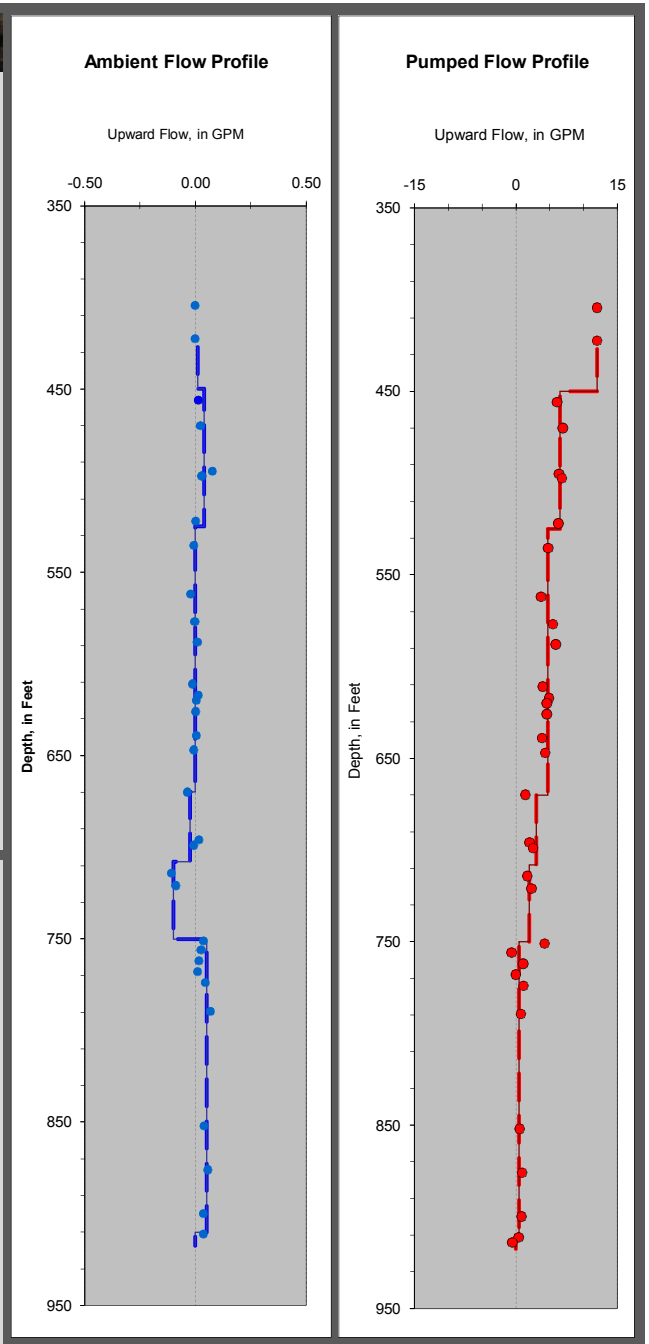
ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

FRACTURES	Bottom Depth [FT]	Flow above layer bottom depths: Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
6	450	0.01	12.0	0.46	-0.03	581.54
5	525	0.04	6.5	0.14	0.12	581.69
4	670	0.00	4.8	0.14	0.07	581.64
3	708	-0.03	3.0	0.08	0.41	581.98
2	750	-0.10	2.0	0.14	-0.46	581.11
1	910	0.05	0.5	0.04	0.56	582.13

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh^2	0.72
Ambient WL [FT]	581.57	Estimated Ttotal [FT²/day]	472.379	Regularized Misfit	0.00
Pumped WL [FT]	576.48				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
6	450	0.01	12.0	0.000	0.000	218	0.46
5	525	0.04	6.5	0.000	0.000	67.4	0.14
4	670	0.00	4.7	0.000	0.000	68.0	0.14
3	708	-0.03	3.0	0.000	0.000	36.4	0.08
2	750	-0.10	2.0	0.000	0.000	65.0	0.14
1	910	0.05	0.5	0.000	0.000	17.7	0.04



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.08 FLASH modeling results of data collected from transect Well Kyle - 2

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: 295829097512601 (Kyle - 3)

Elevation of measuring point [FT]	678
Number of flow zones [-]	4
Well diameter [IN]	6.63
Drawdown [FT]	8.01
Depth to ambient water level [FT]	100.92
Depth at bottom of casing [FT]	600
Depth at bottom of well [FT]	1,042
Radius of influence (R_0) [FT]	192
Total transmissivity (T_{total}) [FT²/day]	451

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI

- Solve without Regularization
- Solve with Regularization

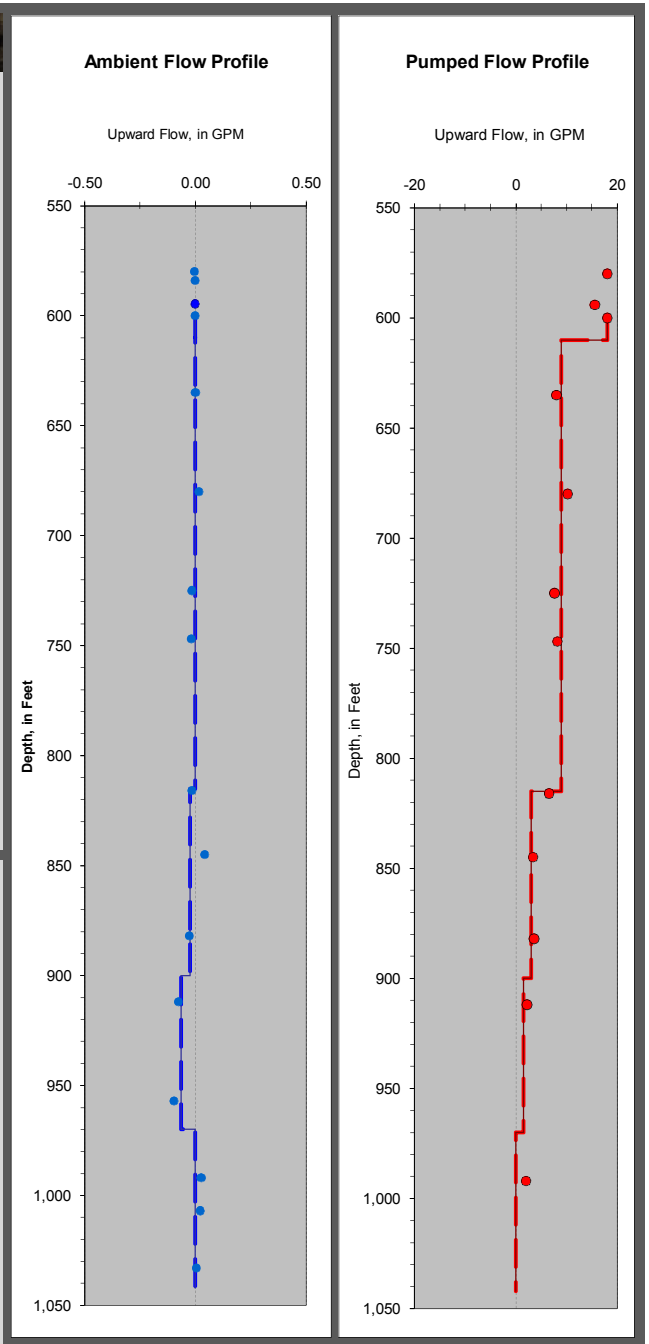
ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

FRACTURES	Bottom Depth [FT]	Flow above layer bottom depths: Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
4	610	0.00	18.0	0.50	0.00	577.36
3	815	0.00	9.0	0.33	0.03	577.39
2	900	-0.03	3.0	0.08	0.22	577.58
1	970	-0.07	1.5	0.09	-0.33	577.03

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh^2	0.16
Ambient WL [FT]	577.36	Estimated Ttotal [FT²/day]	450.699	Regularized Misfit	0.00
Pumped WL [FT]	569.35				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
4	610	0.00	18.0	0.000	0.000	225	0.50
3	815	0.00	9.0	0.000	0.000	150	0.33
2	900	-0.03	3.0	0.000	0.000	36.6	0.08
1	970	-0.06	1.5	0.000	0.000	39.2	0.09



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.09 FLASH modeling results of data collected from transect Well Kyle - 3

FLASH - Flow Log Analysis of Single Holes

USGS science for a changing world

REQUIRED INPUT:

Wellname: 295730097503201 (Kyle - 4)

Elevation of measuring point [FT]	647
Number of flow zones [-]	4
Well diameter [IN]	6.63
Drawdown [FT]	1.17
Depth to ambient water level [FT]	71.95
Depth at bottom of casing [FT]	562
Depth at bottom of well [FT]	947
Radius of influence (R_0) [FT]	195
Total transmissivity (T_{total}) [FT²/day]	3,440

Run Solver

SOLVE

- Estimate Transmissivity
- Estimate ROI

- Solve without Regularization
- Solve with Regularization

ABS(Δh) maximum	5.00E-08
Regularization weight	1.00E-06
Tfactor minimum [-]	1.00E-09

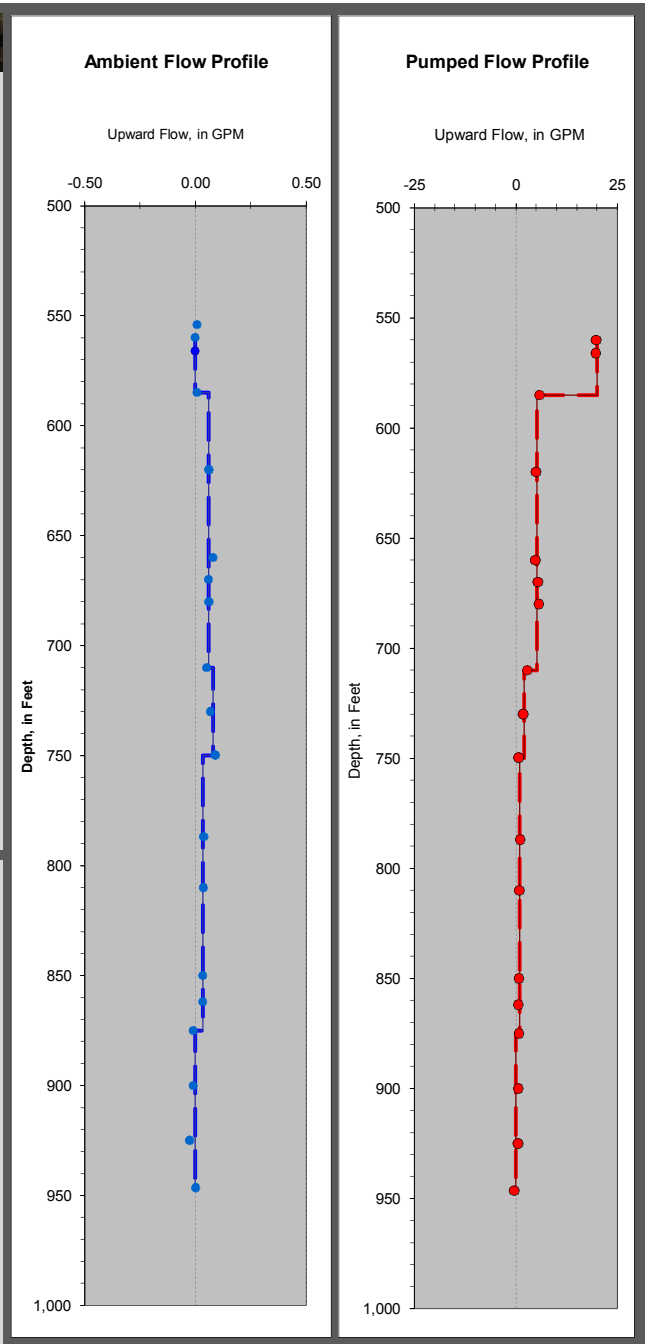
Flow above layer bottom depths

FRACTURES	Bottom Depth [FT]	Ambient [GPM]	Stressed [GPM]	Tfactor [FT²/day]	Δh [FT]	Farfield head [FT]
4	585	0.00	20.0	0.74	0.00	574.75
3	710	0.06	5.3	0.16	-0.01	574.74
2	750	0.08	2.0	0.05	0.06	574.81
1	875	0.04	1.0	0.05	0.04	574.79

SIMULATED PROFILES (DO NOT EDIT)

MSE [GPM²]	0.000	Sum T_{factor}	1.000	Sum Δh^2	0.00
Ambient WL [FT]	574.75	Estimated Ttotal [FT²/day]	3442.681	Regularized Misfit	0.00
Pumped WL [FT]	573.58				

FRACTURES:	Depth [FT]	Ambient Flow above [GPM]	Stressed Flow above [GPM]	Ambient Error [GPM]	Stressed Error [GPM]	Zone T [FT²/day]	Fraction of total transmissivity
4	585	0.00	20.0	0.000	0.000	2,550	0.74
3	710	0.06	5.3	0.000	0.000	562	0.16
2	750	0.08	2.0	0.000	0.000	164	0.05
1	875	0.04	1.0	0.000	0.000	166	0.05



Dashed lines indicate interpretations of measured data. Solid lines indicate simulated profiles.

3.10 FLASH modeling results of data collected from transect Well Kyle - 4