Documentation of Files for Canutillo Wellfield Groundwater Flow Model

William R. Hutchison, P.G.
El Paso Water Utilities
P.O. Box 511
El Paso, TX 79961-0001

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1.0 INTRODUCTION

CH2M Hill completed a groundwater flow model of the Canutillo Area of the Mesilla Bolson for the El Paso Water Utilities (EPWU). The documentation for the model development, calibration and application is described in CH2M Hill (2002).

Due to the expressed interest of others, and to facilitate consistent use of the model, EPWU has developed this report that documents the model input files the model. The DVD that accompanies this report has all model input and output files for the calibrated model, and the source code and executable file of MODFLOW-96 as previously modified (*mf96canu.exe*).

In the future, EPWU plans to publish additional reports that will present results from simulations using this model, and document any updates and/or enhancements to the model. In this way, the model will become a tool that is regularly used and improved.

This report is organized around the input files that constitute the model. It is intended to be a supplement to CH2M Hill (2002). As appropriate, various graphs and tables are included. Prior to a presentation of the model files, a section on the modified source code is presented.

2.0 MODIFIED MODFLOW SOURCE CODE

As described in CH2M Hill (2002), the MODFLOW source code was modified in the development of the model. The CH2M Hill model was based on Weeden and Maddock (1999), a flow model of a larger portion of the Mesilla Bolson. Specifically, Hamilton and Maddock (1993) and Weeden and Maddock (1999) modified the Stream Routing Package. The modified package calculates streamflow based on known inflows, known diversions (including diversions from individual segments for application to crops), and aquifer interaction. The primary modification to the STR package is the ability to input fractional diversions. A release is specified at the top of the system and individual diversions are specified. The model then calculates the portion of flow into each canal and lateral according to the fraction of flow that is input into the *canu_com_5.str* file. The source code for this modified package is included on the accompanying DVD.

In addition to those changes, the source code that is included on the accompanying DVD includes the following modifications:

- All calls to open and write to "unformatted" files in the *bas5_bin.for* and *utl5_bin.for* have been changed to also open and write to "binary" files in order to import the results into Groundwater Vistas, a commercially available program to graphically view results and export results to ArcView.
- A screen "counter" has been added to *modflw96_b.for* so that when the MODFLOW program is running, the stress period, time step and iteration is reported on the screen.
- In order to easily retrieve the volumetric budget, code was added to *bas5_bin.for* that opens a new file (as unit 78) named *wb.out*. This file contains the same volumetric water budget (in the same format) that is contained in the standard output file. This file is useful in post-processing total water budget information. The output files for the model are included on the accompanying DVD.

3.0 MODEL FILES

The model input and output files are contained in the name file *canuflow.txt*. When MODFLOW is executed, it opens a file named *modflow.bf*, which contains a name file. The accompanying DVD includes a *modflow.bf* file, and it has *canuflow.txt* as its only entry.

The model consists of input files are listed below:

MODFLOW Package	**Input File Name**
Basic	canu.bas
Output Control	canu_all.oc
Block Centered Flow	canu.bcf
Pre-Conditioned Conjugate Gradient (Solver)	canu.pcg
Well	canu.wel
Stream Routing	canu_com_5.str
Evapotranspiration	canu.evt
Recharge	canu.rch
Time Variant Specified Head	canu.chd

As presented on the accompanying CD, the output files for the annual state model are as follows:

MODFLOW Package	**Output File Name**
Standard Output	canu.lst
Head Save	canu.hds
Drawdown	canu.ddn
Cell-by-Cell Flow	canu.cbb

Note that the head save, drawdown, and cell-by-cell flow files are in binary form in order to be read as output files by Groundwater Vistas.

3.1 Basic Package

The file *canu.bas* contains the input data that define the model domain, active and no flow cells, the starting heads, and the time discretization. The starting heads are part of the input file. The model domain is discretized into 4 layers of 216 rows and 135 columns. Each cell is approximately 209 meters by 216 meters. The model grid for each layer is presented in Figures 3-1 to 3-4. Starting heads for each layer are presented in Figures 3-5 to 3-8.

The model has 163 stress periods, each of which has four time steps. Stress periods are defined in seconds. The simulation begins in January 1915. The first stress period is about 61 days long, and ends in March 1915. The second stress period runs until roughly the end of October 1915. Essentially, the model stress periods end in early March and late October until 1995 in order to simulate the irrigation season (March to October) and non-irrigation season (November to February). The last stress period ends at the end of 1995. Each stress period has four time steps.

3.2 Output Control Package

The file *canu.oc* contains specifications for how output is written. This particular version of the file specifies saving heads and cell-by-cell flows for each time step.

3.3 Block Centered Flow Package

The file *canu.bcf* contains the input data that defines the layer type, horizontal anisotropy (assumed to be 1.0 for all layers), and row and column dimensions for the entire model domain. The layer specifications are summarized in Table 3-1. As detailed in Table 3-1, the input parameters for the BCF package are presented in Figures 3-9 to 3-20. Note that the parameters in Table 3-1 are listed in the same order as they appear in the BCF file.

3.4 Pre-Conditioned Conjugate Gradient Package

The file *canu..pcg* contains specifications for the chosen solver package. Note that in this particular implementation that the head closure criterion is 1.0e-03, and the residual closure criterion is 1.00.

3.5 Well Package

The file *canu.wel* contains specified flux input data related to mountain-front and slope-front recharge, and specified flux data related to pumping wells. Recharge points are presented in Figure 3-21; pumping wells are presented in Figure 3-22.

As described in CH2M Hill (2002, pg.4-4), recharge along the southwestern portion of the model area that was included in the Weeden and Maddock (1999) model was removed based on an analysis of water quality data.

3.6 Stream Routing Package

The file *canu_com_5.str* contains the input data for the modified stream routing package. As explained in CH2M Hill (2002, pg. 4-11), the package includes the Rio Grande, and various canals and drains as detailed in Table 3-2. The finer grid associated with this model allowed for inclusion of more canals and drains than in Weeden and Maddock (1999). The location of these features is presented in Figure 3-23.

It should be noted that due to the changes in the STR package, the input file will not work with standard compilations of MODFLOW and cannot be directly imported into pre- and post-processing programs such as Groundwater Vistas.

Table 3-2
Surface Water Features Simulated by STR Package

Anthony Drain
Anthony Lateral
Baker Lateral
Canutillo Lateral
Central Drain
Chamberino Drain
Chamberino East Lateral
Combined La Union Canal
Crawford Lateral
Del Rio Drain
East Drain
La Mesa Drain
La Union East Canal
La Union West Canal
Little La Union Lateral
Lower Chamberino Lateral
Mesquite Drain
Montoya Drain
Montoya Main Lateral
Nemexas Drain
Rio Grande
San Miguel Lateral
Three Saints East Lateral
Three Saints Lateral
Three Saints Main Canal
Three Saints West Lateral
Upper Chamberino Lateral
Vinton Drain
Vinton Lateral
Wastewater Return
West Drain
Westside Canal

3.7 Evapotranspiration Package

The file *canu.evt* contains head dependent boundary data related to evapotranspiration processes from the groundwater basin. Figure 3-24 presents the area where

evapotranspiration occurs, and the surface elevation input data for this area. The evapotranspiration rate varies with each stress period as shown in Figure 3-25.

3.8 Recharge Package

The recharge package was used in this model as it was in Weeden and Maddock (1999) using the concept of "Net Irrigation Flux" (NIF). As described in CH2M Hill (2002, pg. 4-3):

> *"It is assumed … that full evapotranspiration demand of irrigated areas … is met each year. Agricultural pumping is the portion of ET demand that is not met through surface sources. Agricultural pumping corresponds to a negative NIF, whereas a positive NIF represents recharge to the aquifer."*

Therefore, the recharge package contains both positive and negative numbers depending on the balance of the NIF, and represents both recharge in times of surplus and agricultural pumping in times of deficit. Figure 3-26 presents the history of positive NIF values, and Figure 3-27 presents the history of negative NIF values. Note that positive NIF are generally high from March to October, the irrigation season and appear to represent return flows. Also, negative NIF values dominate from October to March, which appears to represent the time when surface water is not available for irrigation.

3.9 Time Variant Specified Head

The Time Variant Specified Head (CHD) package was used to simulate flow across the western and northern boundaries of the model. The parameters were derived from the Weeden and Maddock (1999) model as described in CH2M Hill (2002, pg. 4-11). Figures 3-28 to 3-31 present the location of the boundaries for each model layer.

3.10 Output Files

The standard MODFLOW output is in the file *canu.lst*, the head-save file is *canu.hds*, the saved drawdowns are in *canu.ddn*, and the cell-by-cell flows are in *canu.cbb*. The overall water budget summary for the end of each stress period is presented in Table 3-3.

4.0 PLANS FOR FUTURE WORK

The groundwater flow model developed by CH2M Hill is the latest in a series of investigations and models by numerous investigators. As more data are collected and additional studies are completed, this model can be updated and enhanced. In the interim, this model can be used to evaluate various scenarios related to managing the groundwater resource.

The most significant new study that recently been released is Hawley and Kennedy (2004), which includes detailed hydrostratigraphy of the Mesilla Basin. This work is currently being used to update and enhance the layering concepts of the model. As noted in CH2M Hill (2002, pg. 2-3), the layering used in Weeden and Maddock (1999) was simplified from earlier models.

5.0 REFERENCES

CH2M Hill, 2002. Groundwater Modeling of the Canutillo Wellfield. Final Report prepared for El Paso Water Utilities Public Service Board.

Hamilton, S.L. and Maddock, T., 1993. Application of a Ground-Water Flow Model to the Mesilla Basin, New Mexico and Texas. University of Arizona, Department of Hydrology and Water Resources.

Hawley, John W., and Kennedy, John F., 2004. Creation of a Digital Hydrogeologic Framework Model of the Mesilla Basin and Southern Jornada Del Muerto Basin. New Mexico Water Resources Research Institute Technical Completion Report 332.

Weeden, C. and Maddock T., 1999. Simulation of Groundwater Flow in the Rincon Valley Area and Mesilla Basin, New Mexico and Texas. University of Arizona, Department of Hyrology and Water Resources.

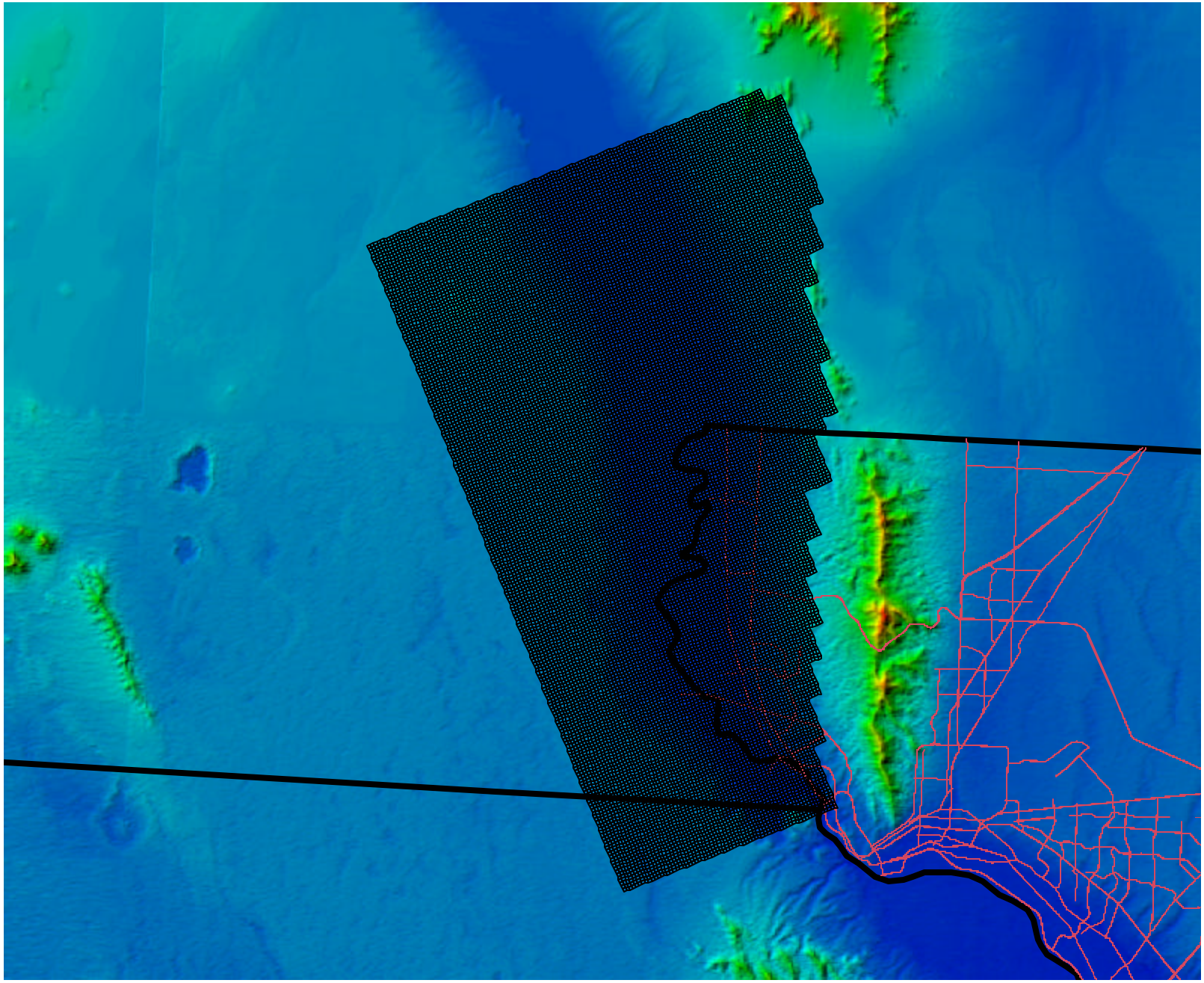


Figure 3-1
Model Grid - Layer 1

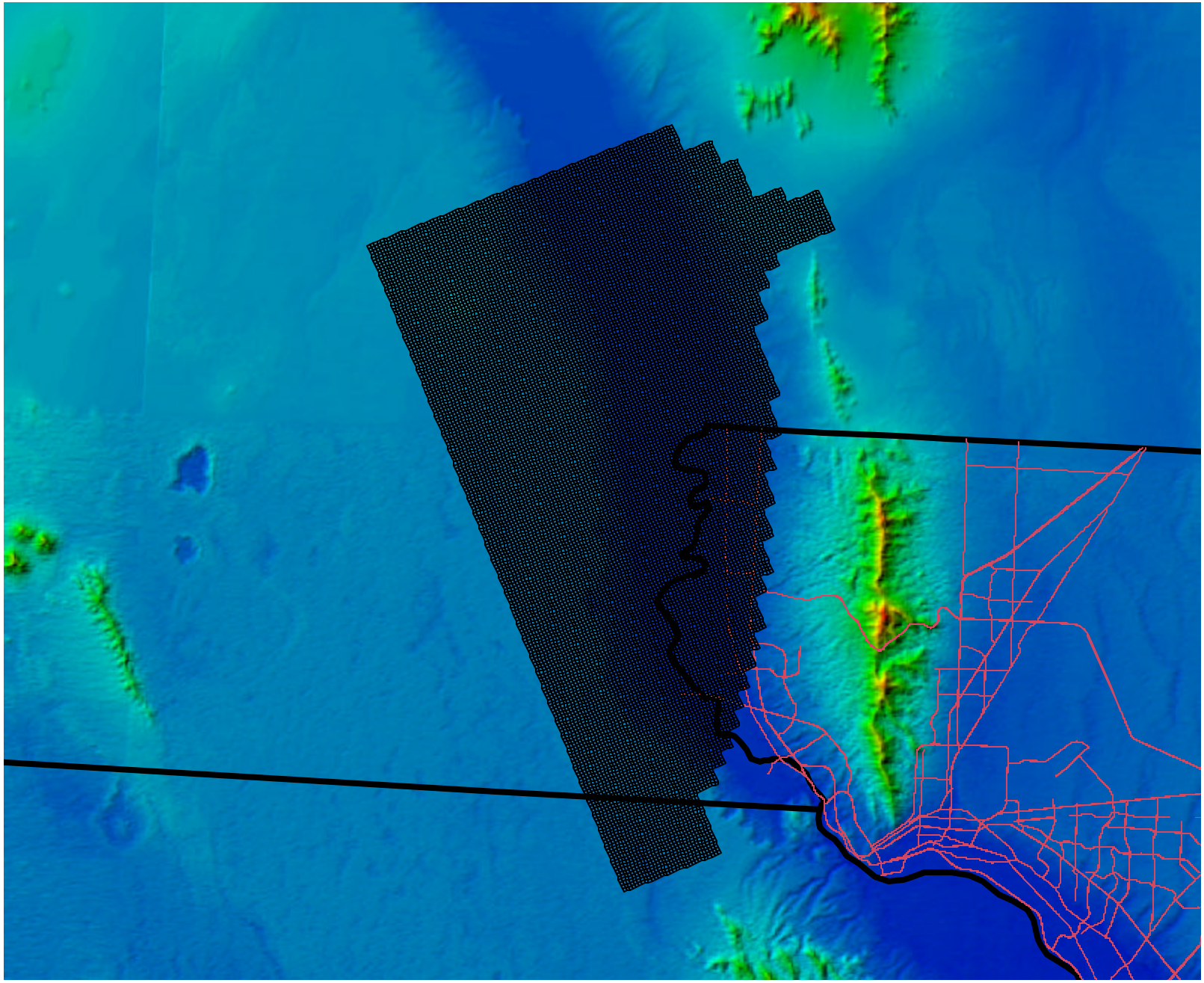


Figure 3-2
Model Grid - Layer 2

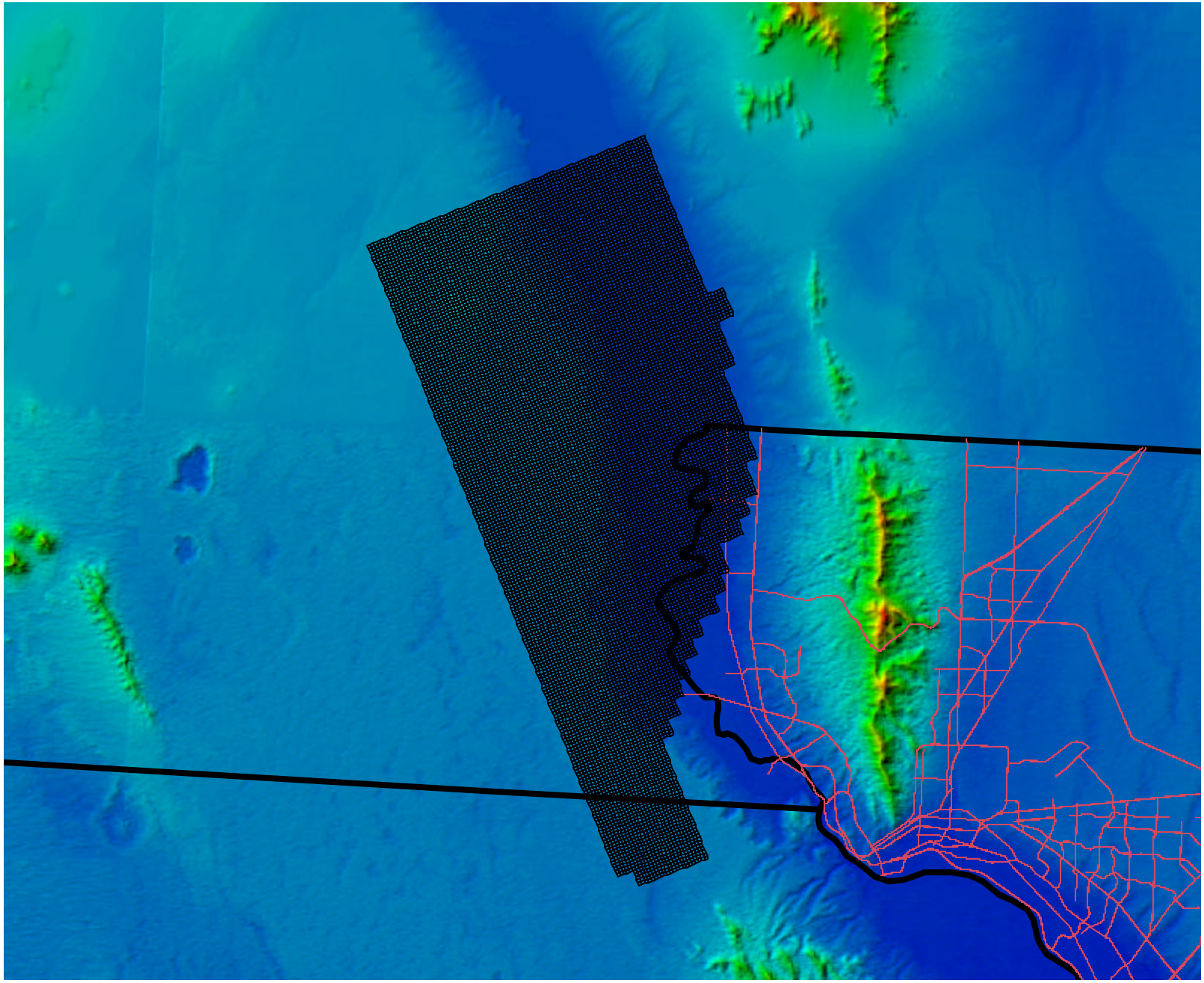


Figure 3-3
Model Grid - Layer 3

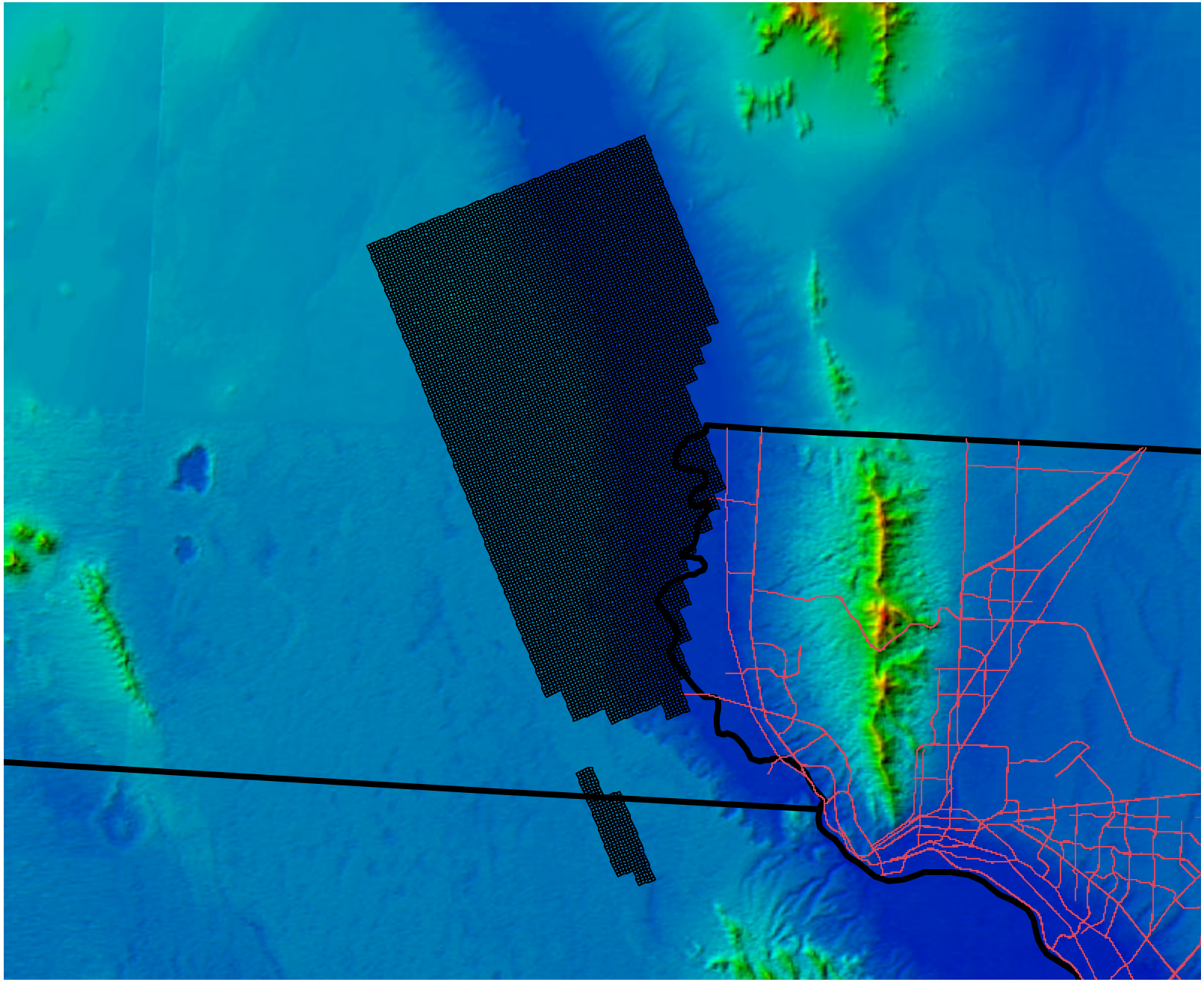


Figure 3-4
Model Grid - Layer 4

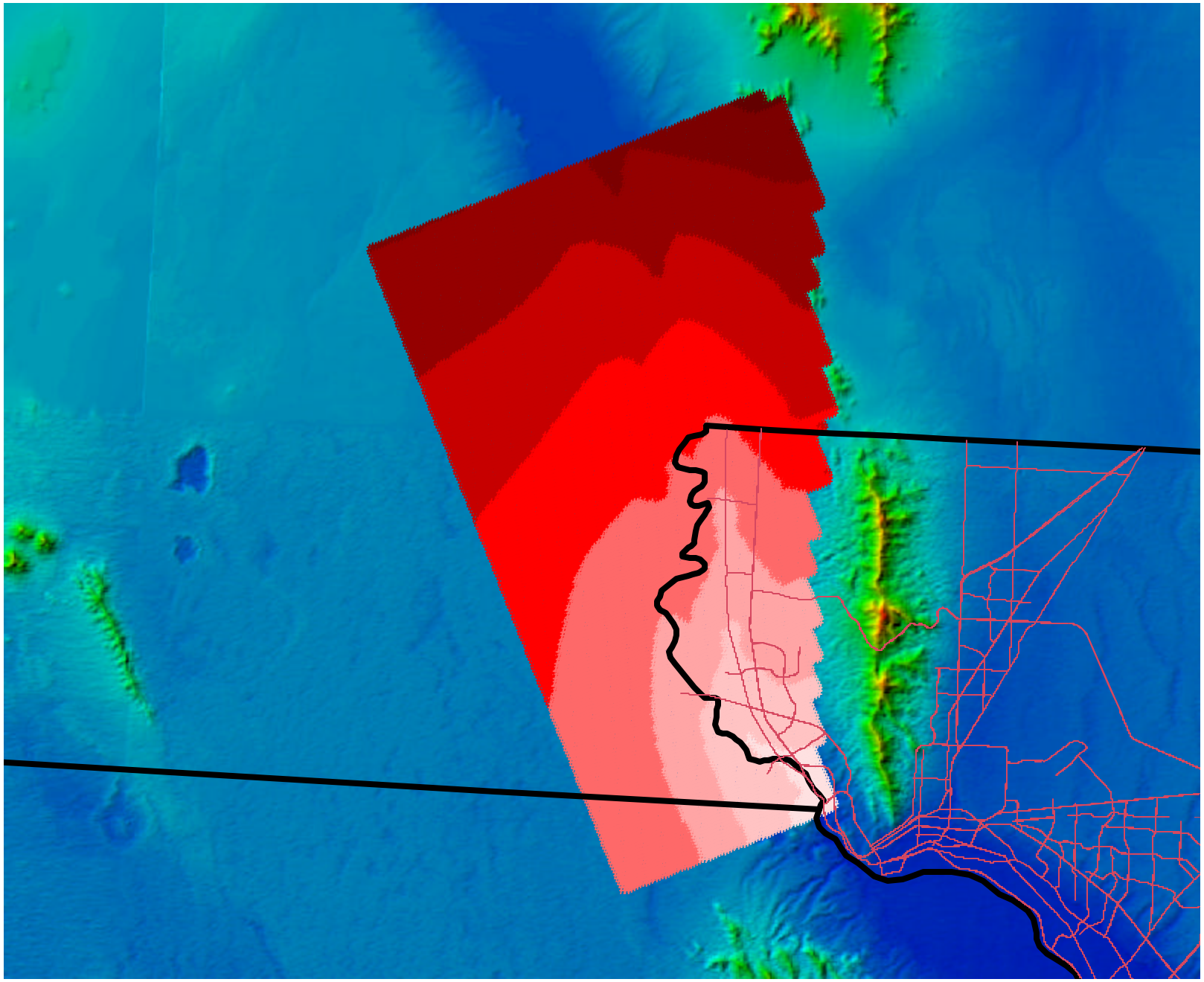


Figure 3-5
Starting Heads - Layer 1

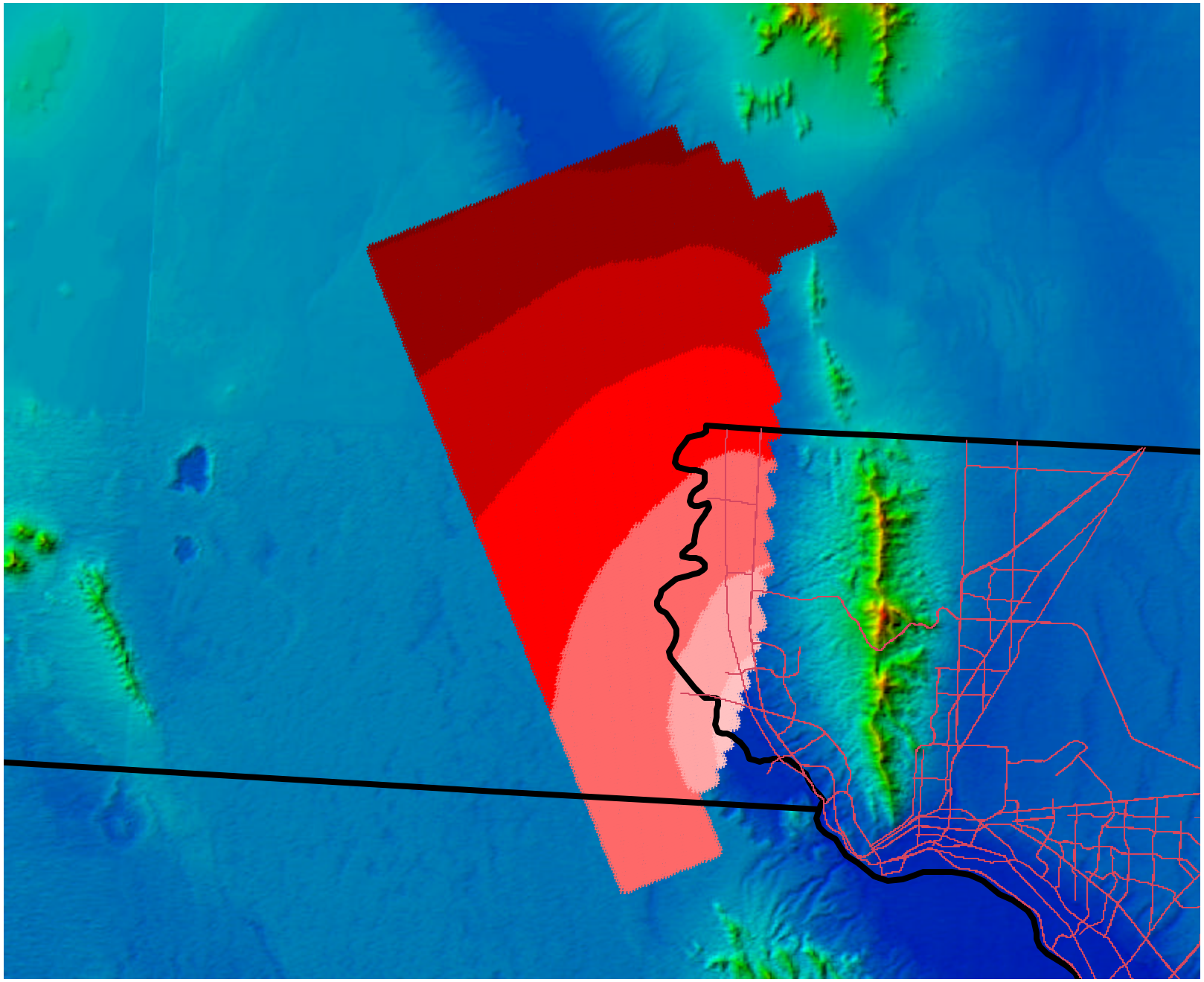


Figure 3-6
Starting Heads - Layer 2

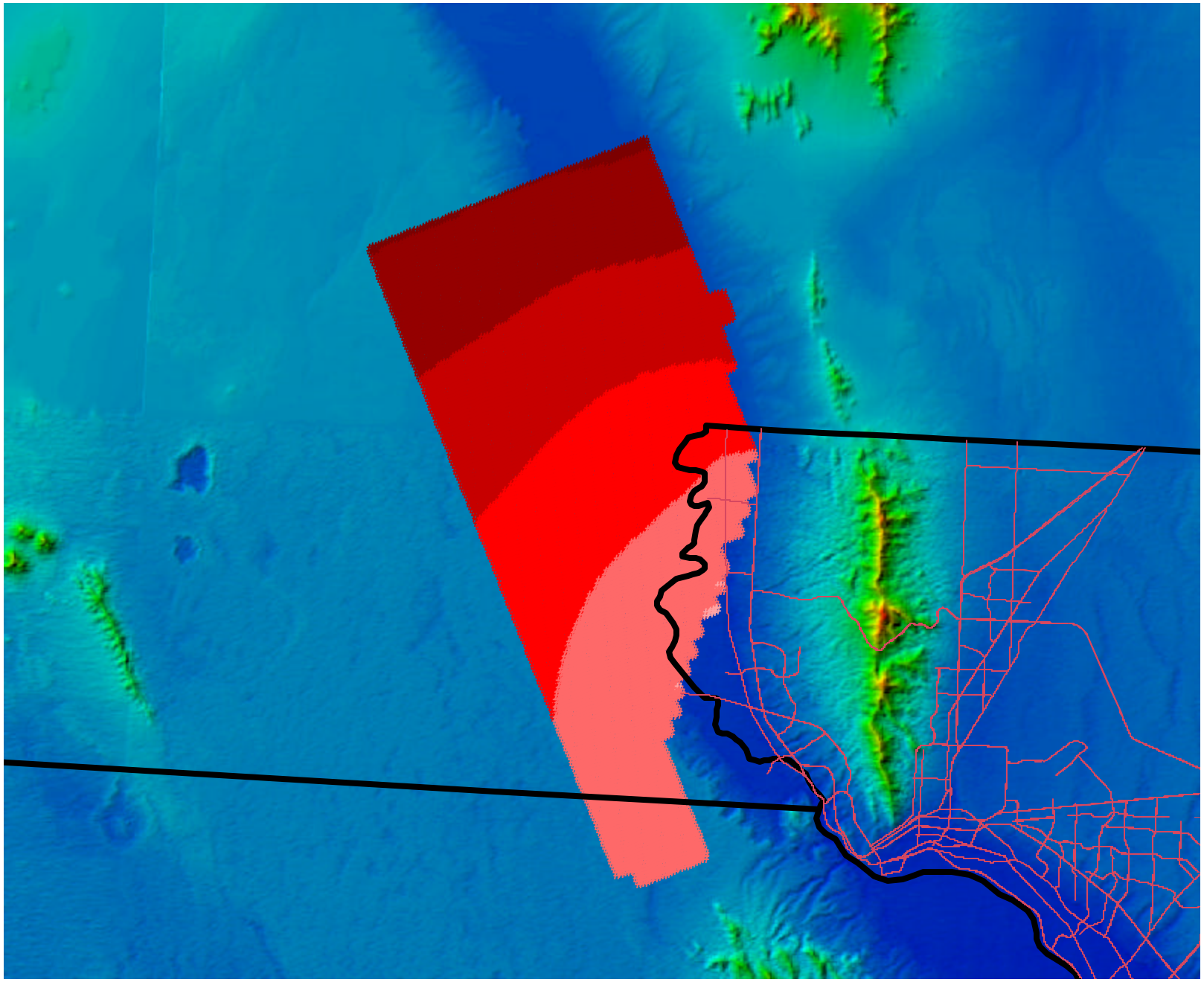


Figure 3-7
Starting Heads - Layer 3

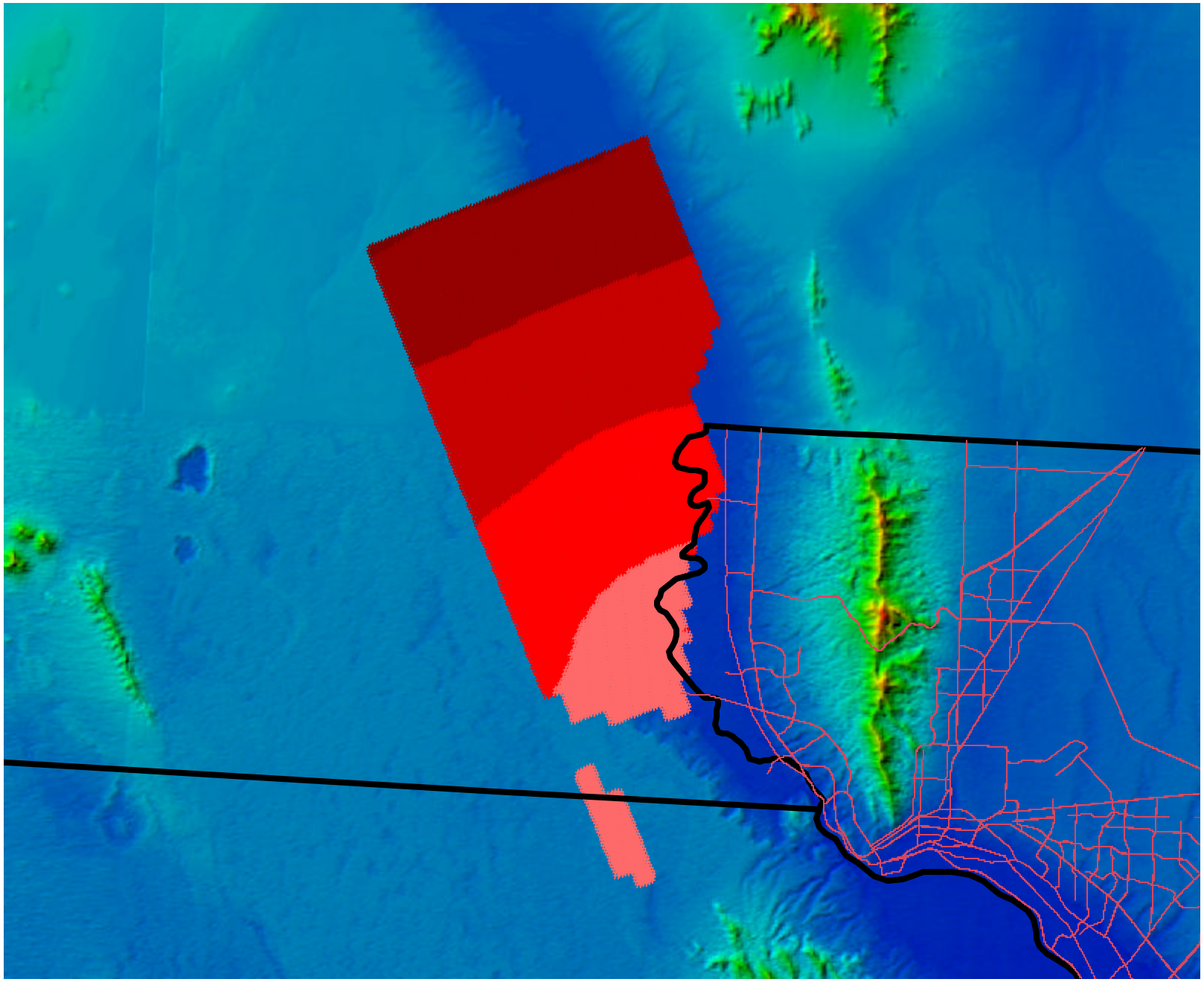


Figure 3-8
Starting Heads - Layer 4

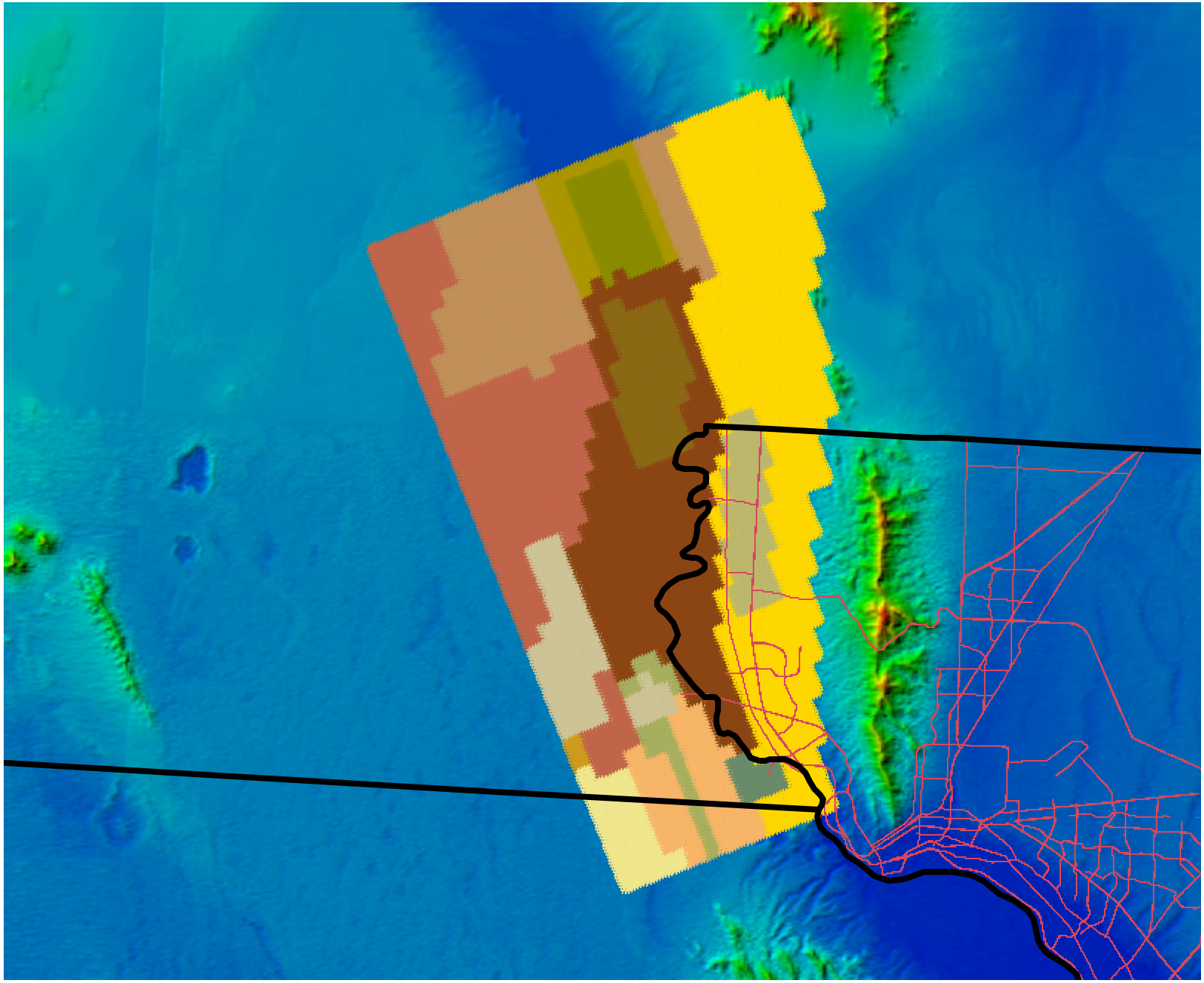


Figure 3-9
Hydraulic Conductivity - Layer 1

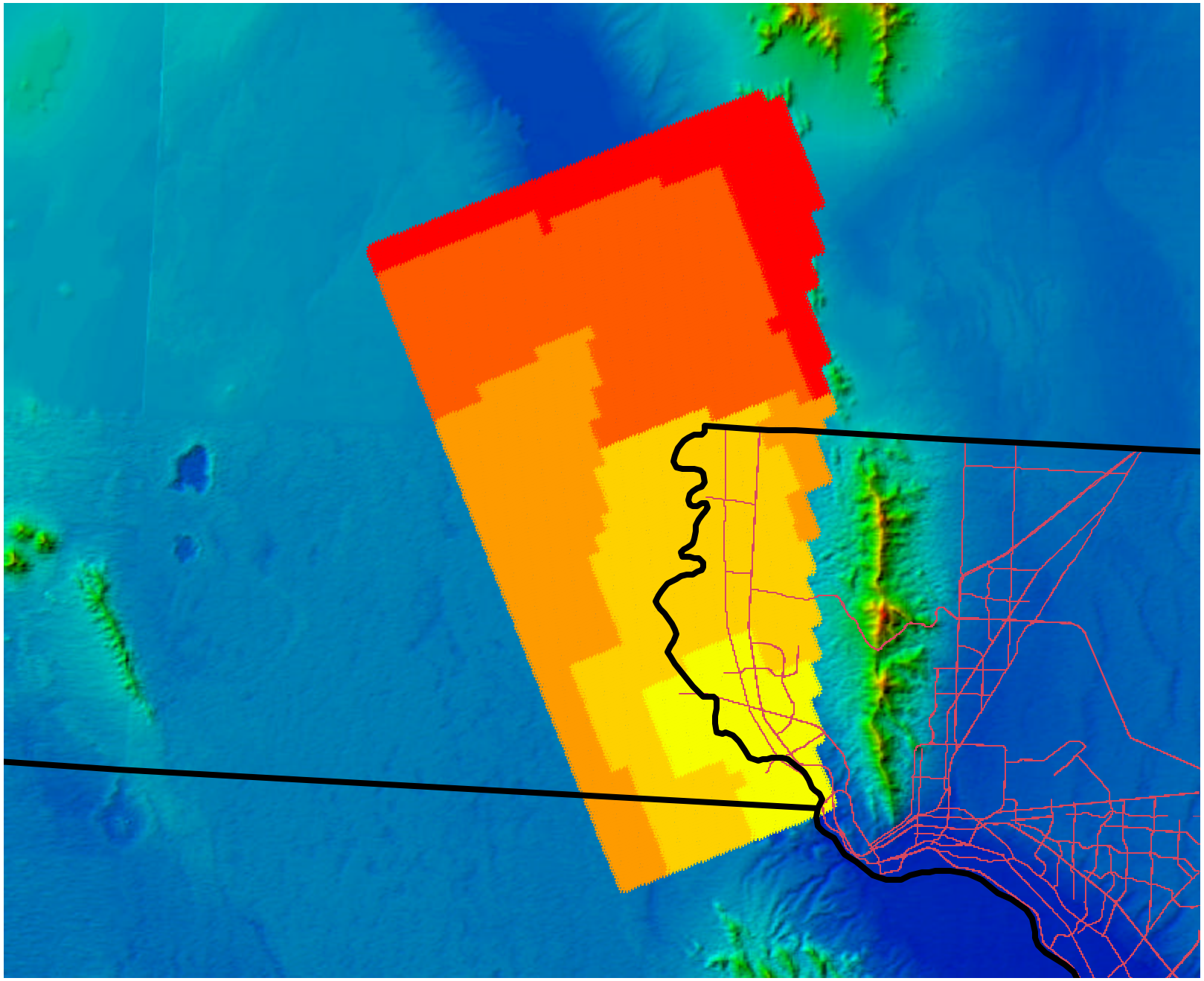


Figure 3-10
Bottom Elevation - Layer 1

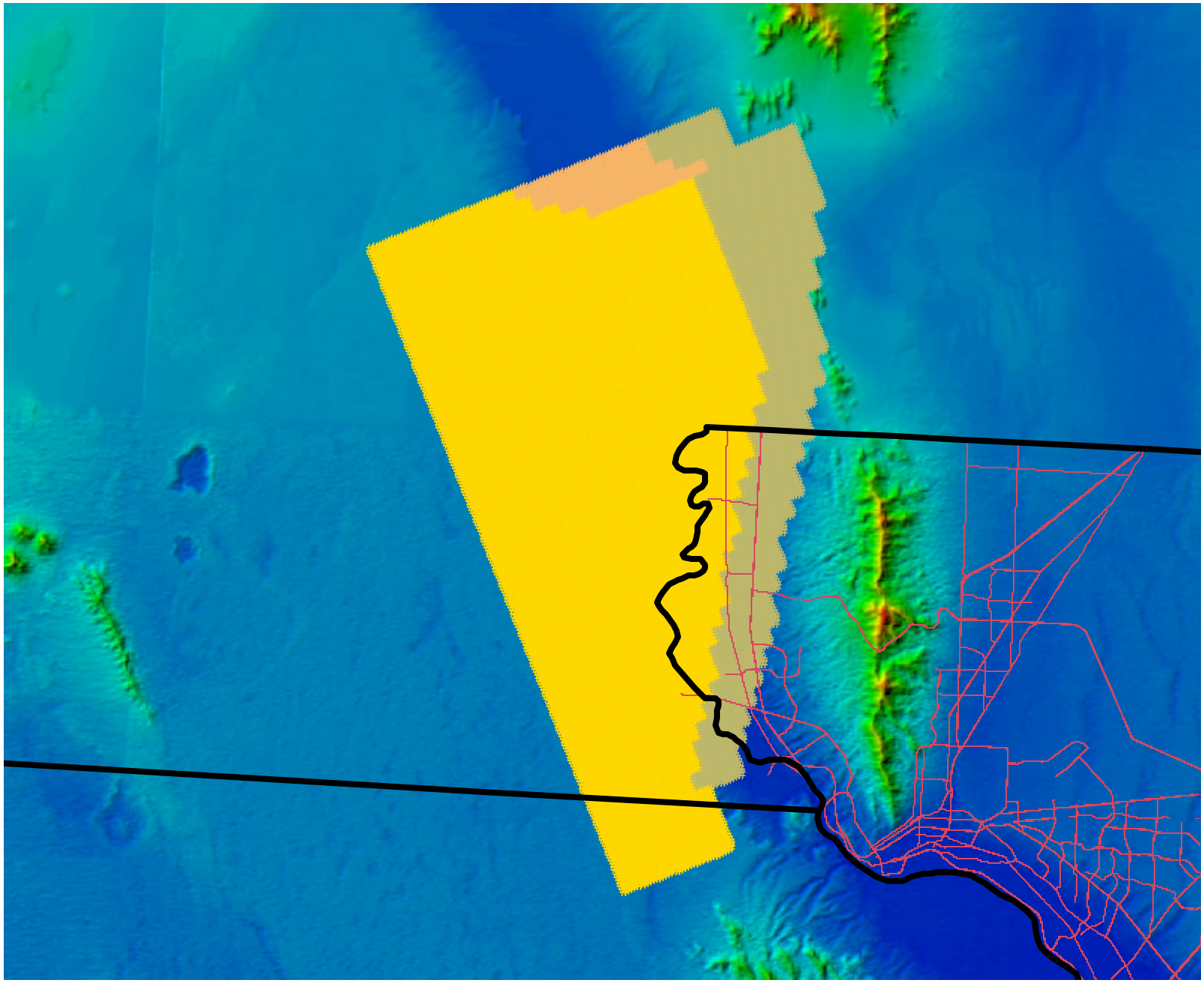


Figure 3-11
Leakance - Layer 1

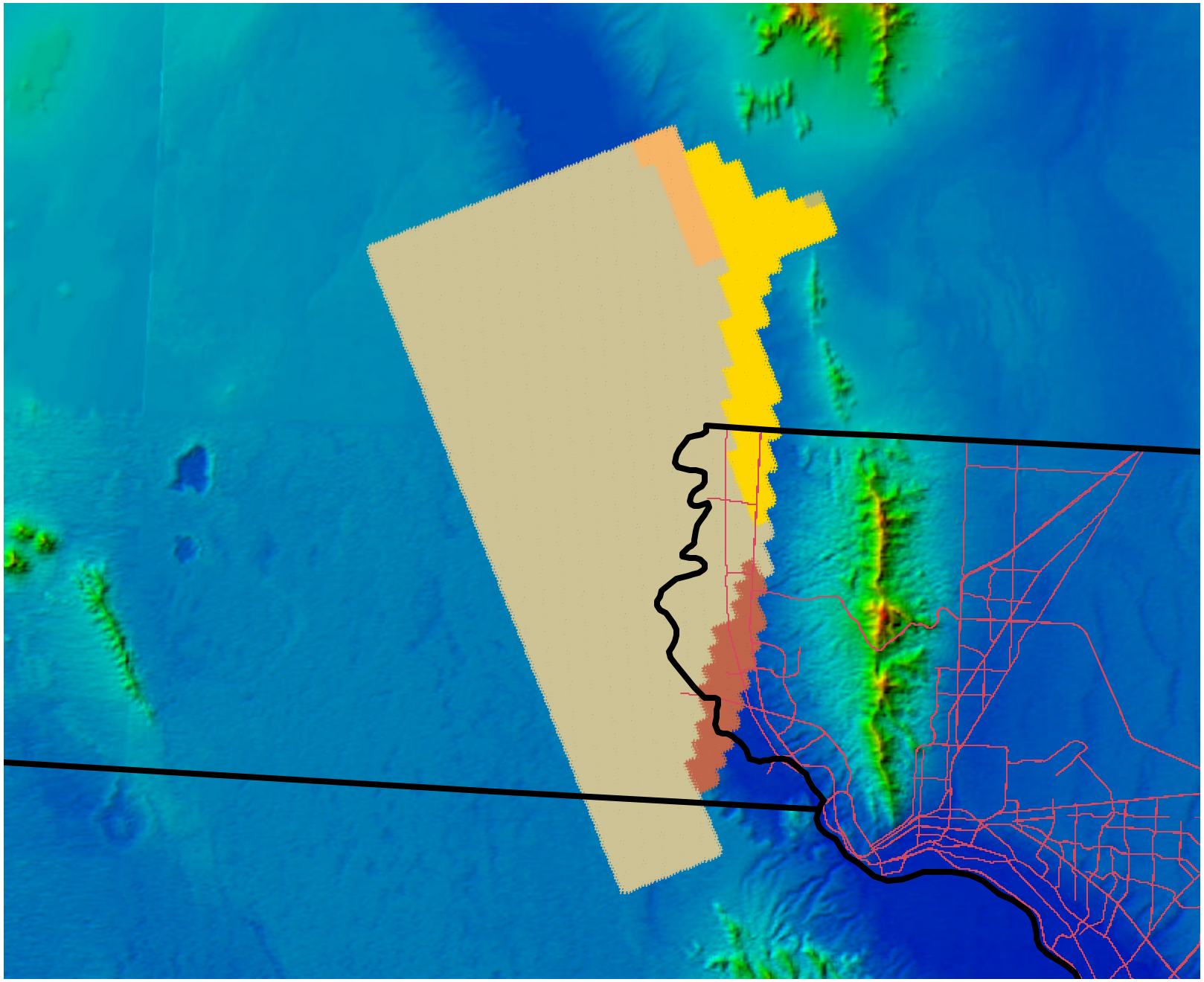


Figure 3-12
Storativity - Layer 2

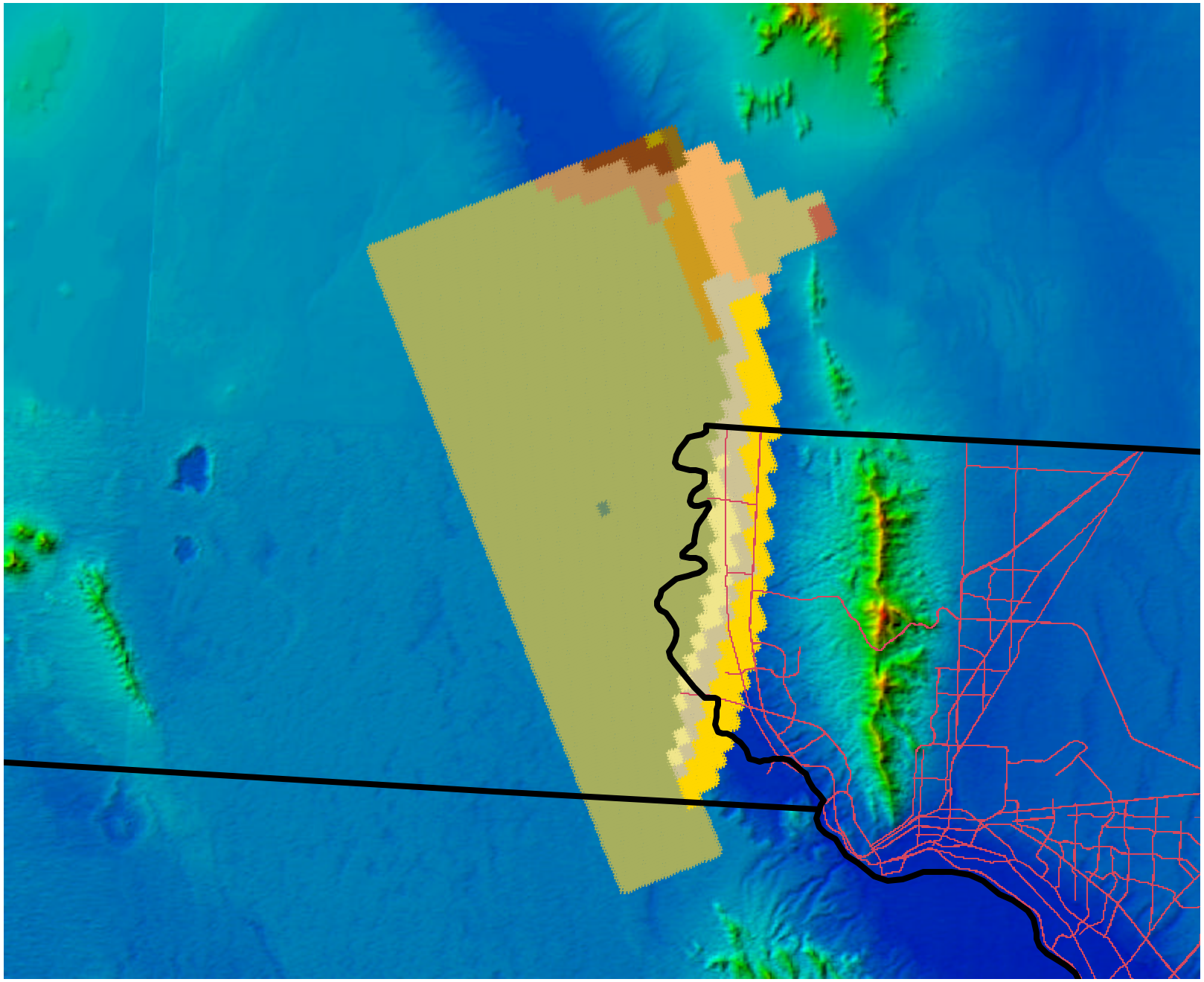


Figure 3-13
Transmissivity - Layer 2

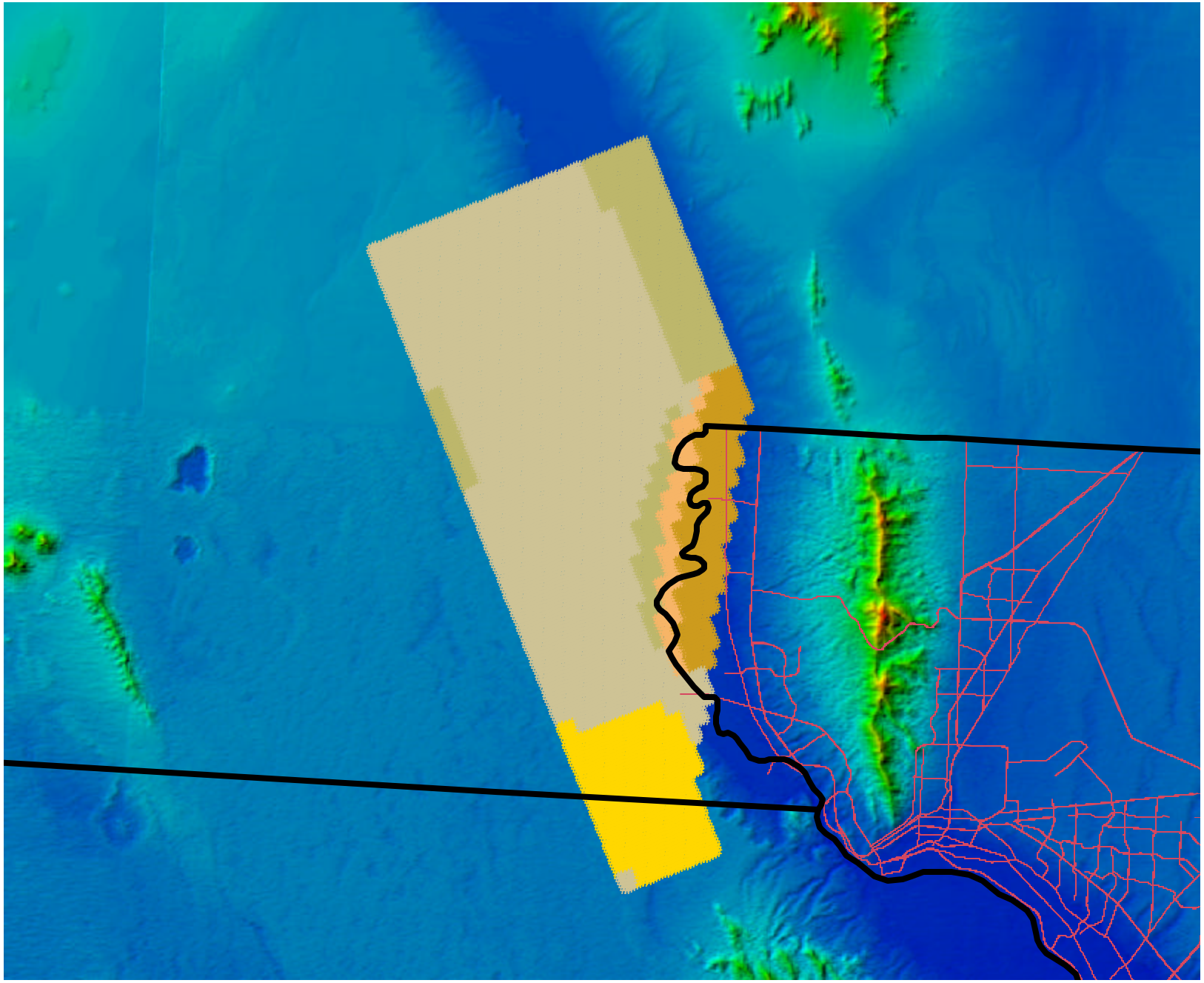


Figure 3-14
Leakance - Layer 2

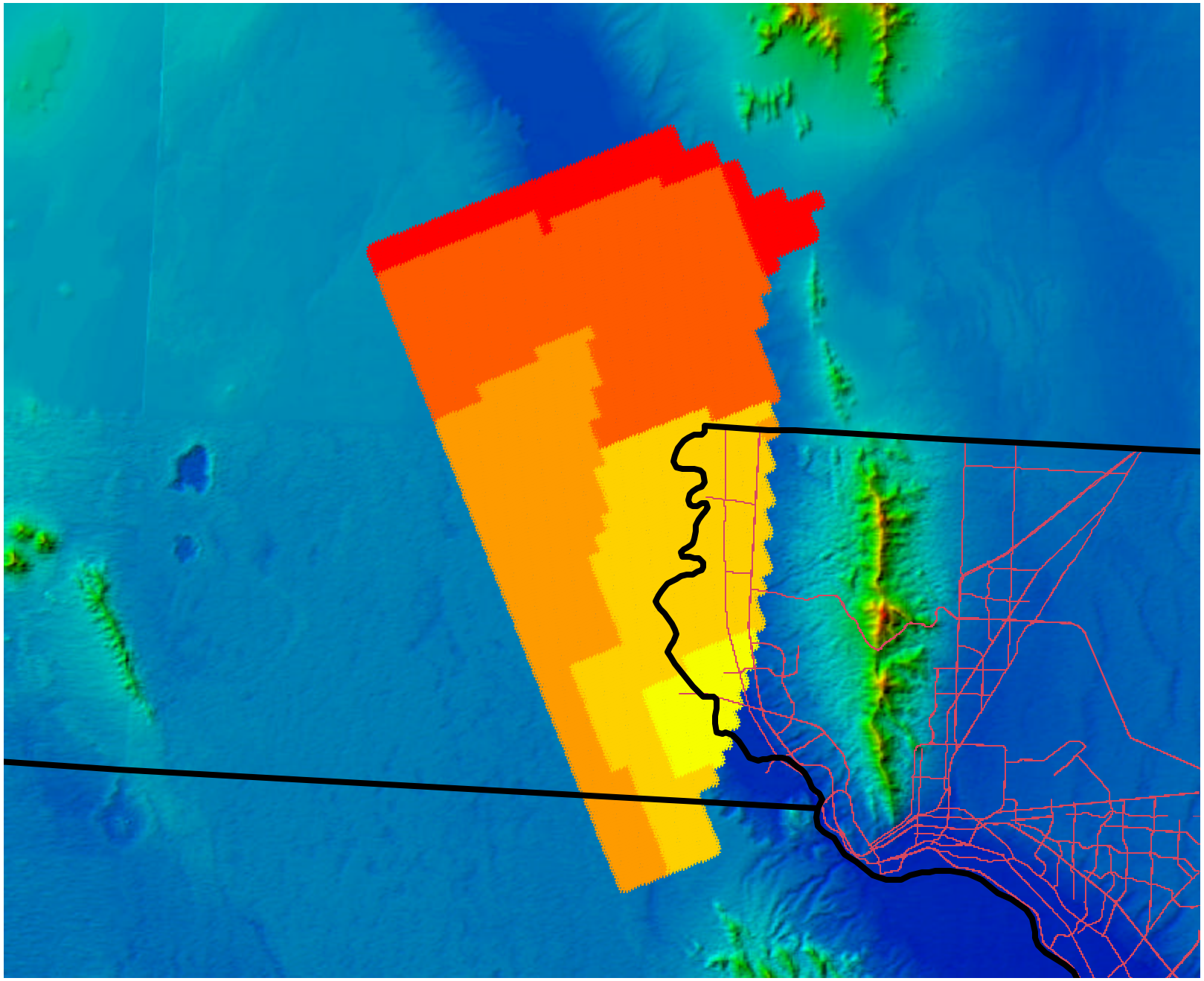


Figure 3-15
Top Elevation - Layer 2

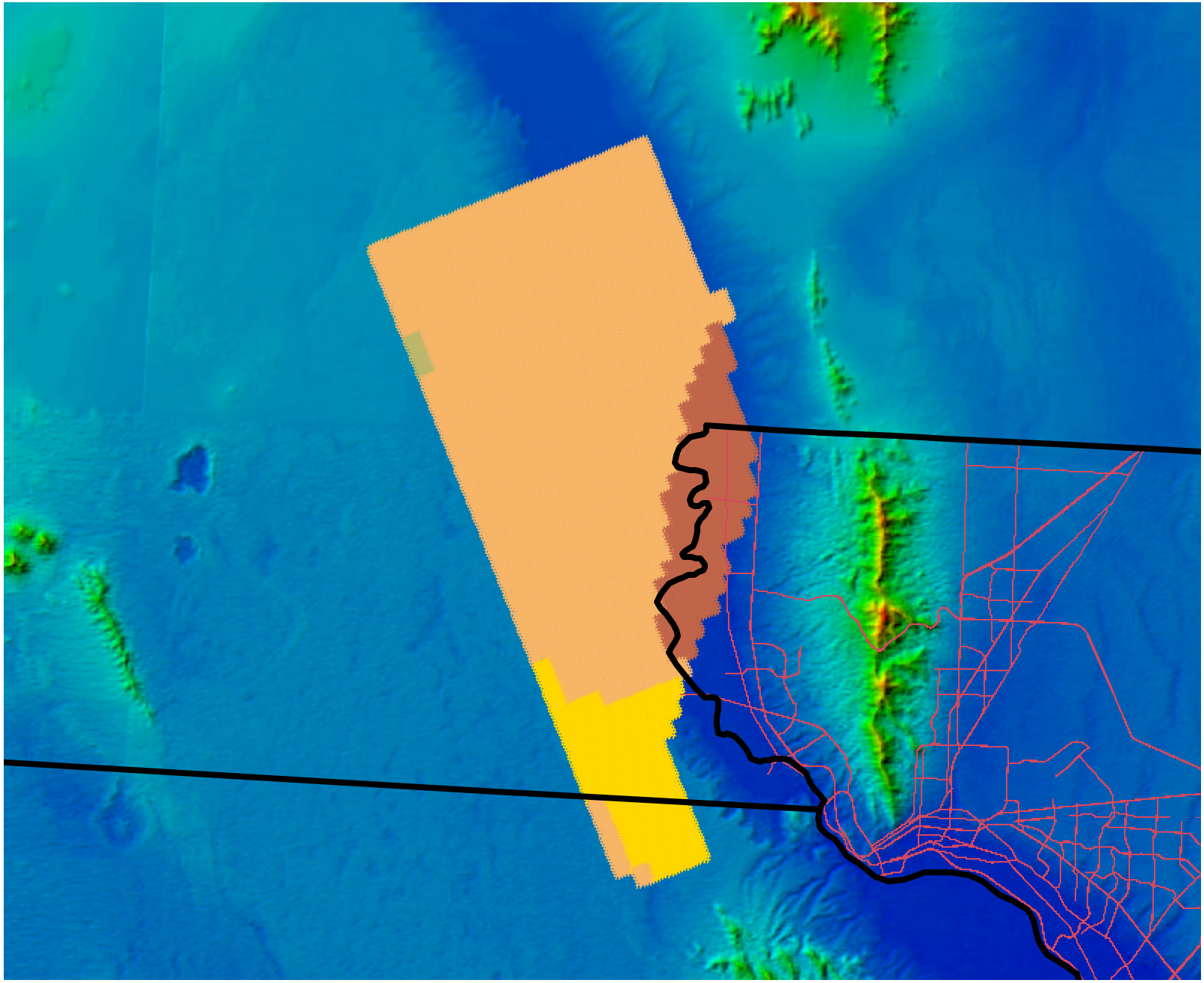


Figure 3-16
Storativity - Layer 3

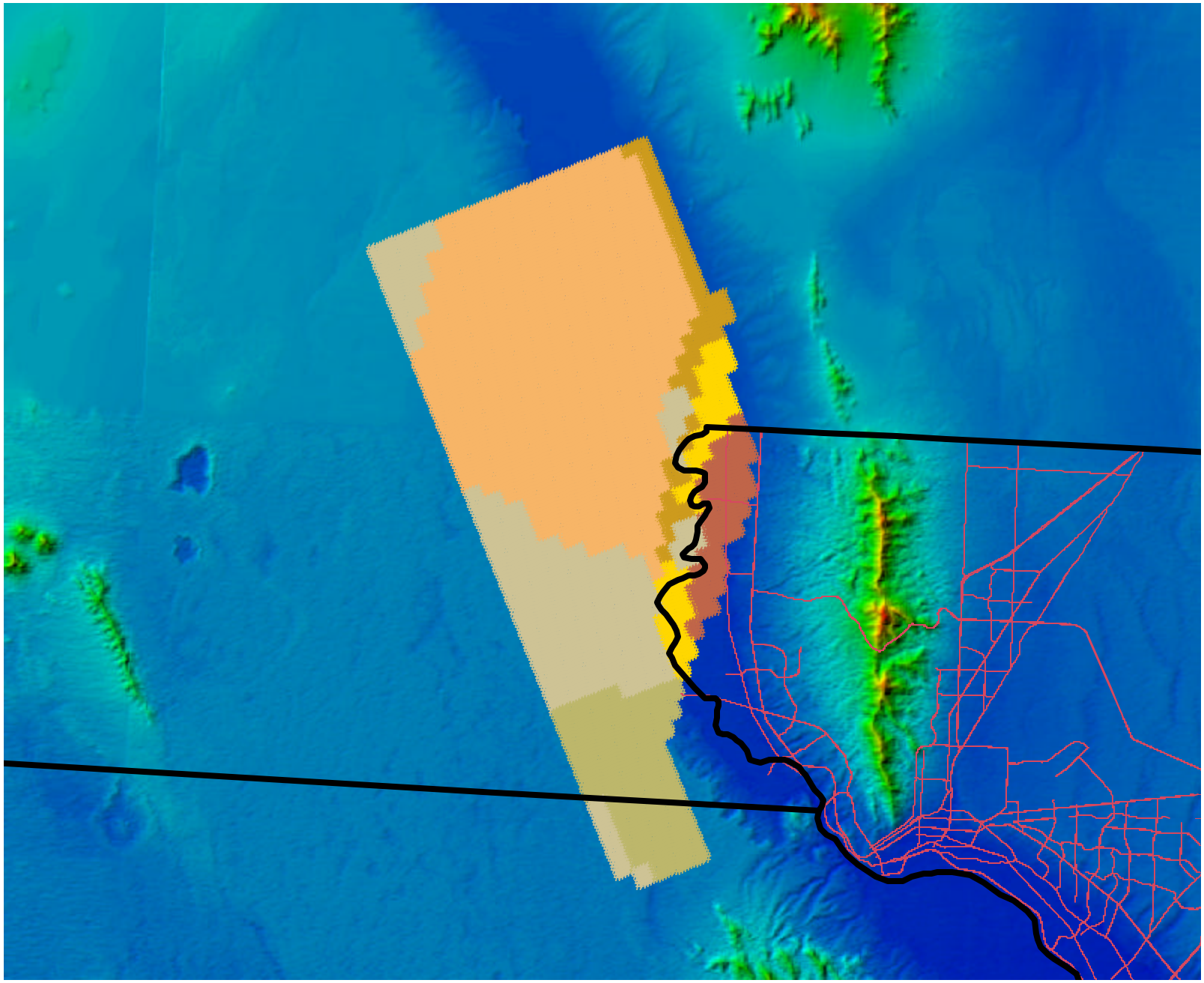


Figure 3-17
Transmissivity - Layer 3

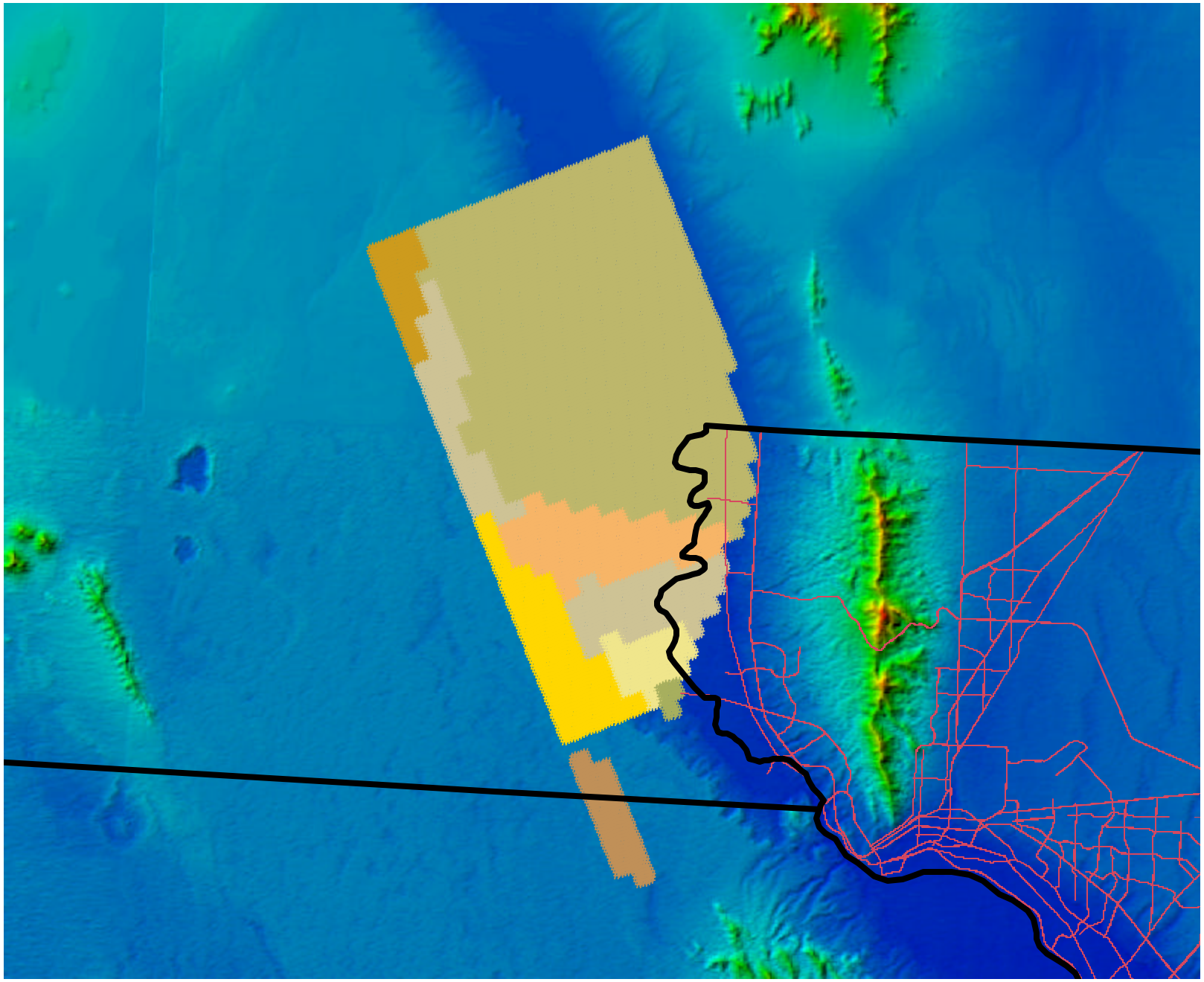


Figure 3-18
Leakance - Layer 3

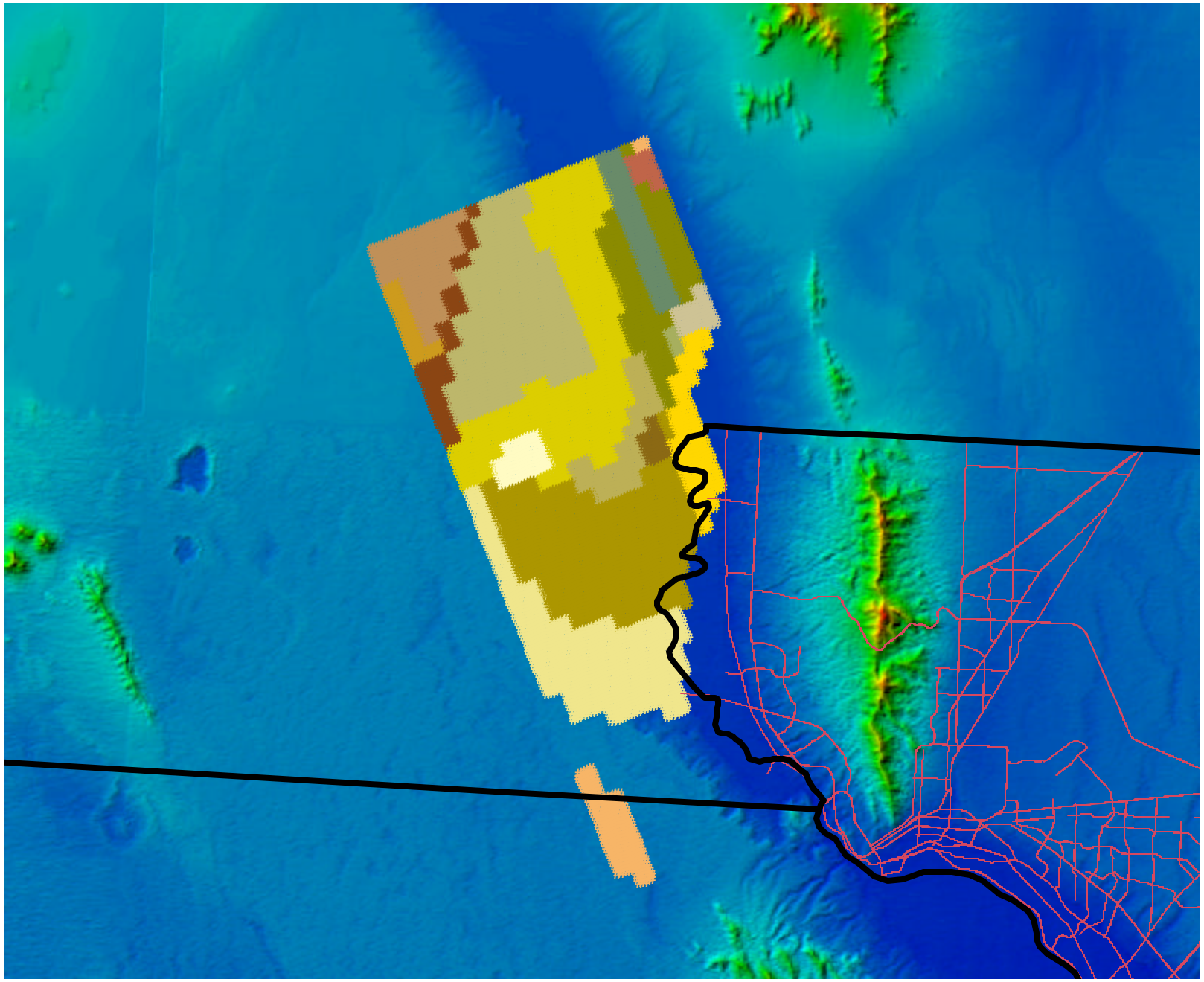


Figure 3-19
Storativity - Layer 4

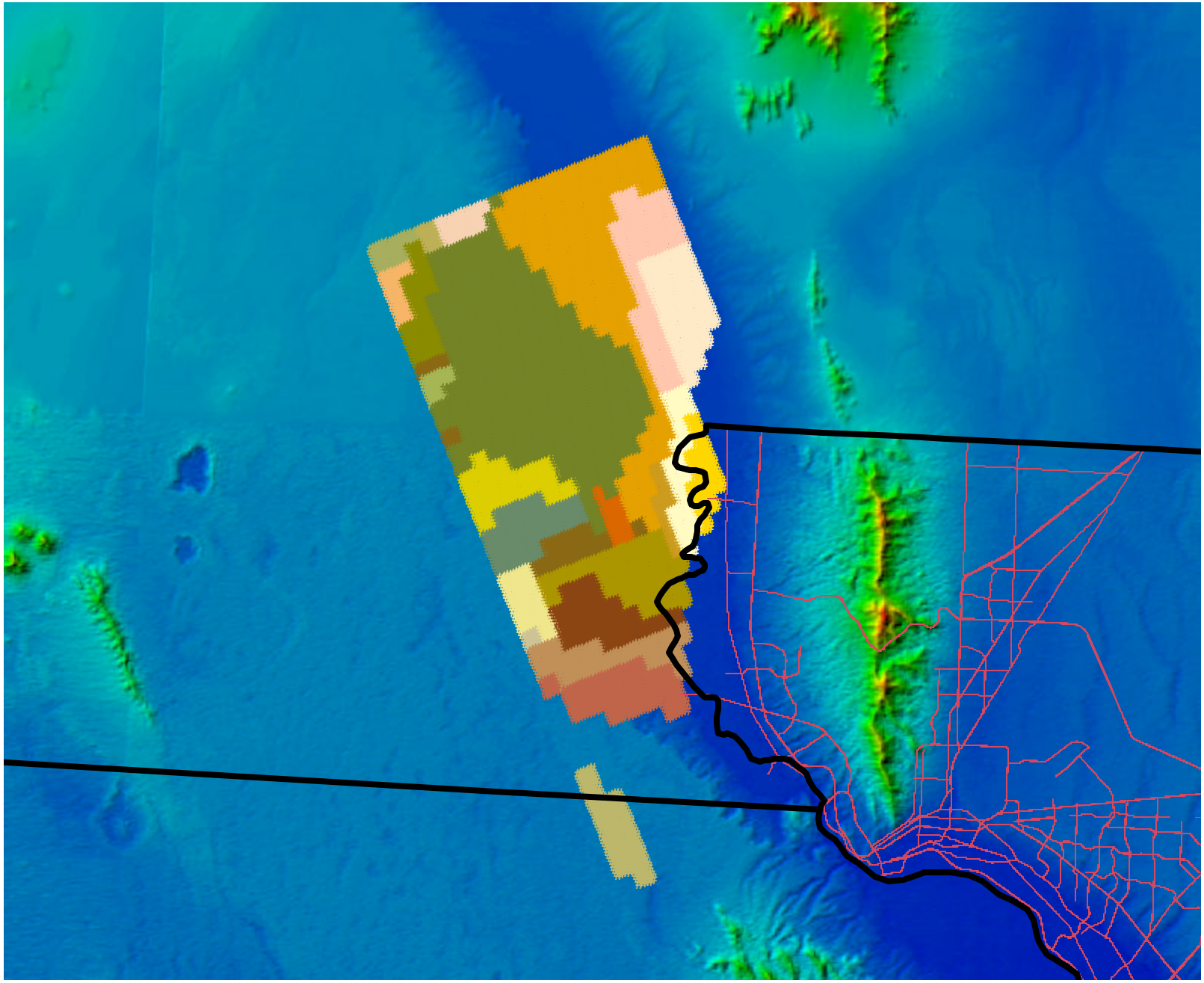


Figure 3-20
Transmissivity - Layer 4

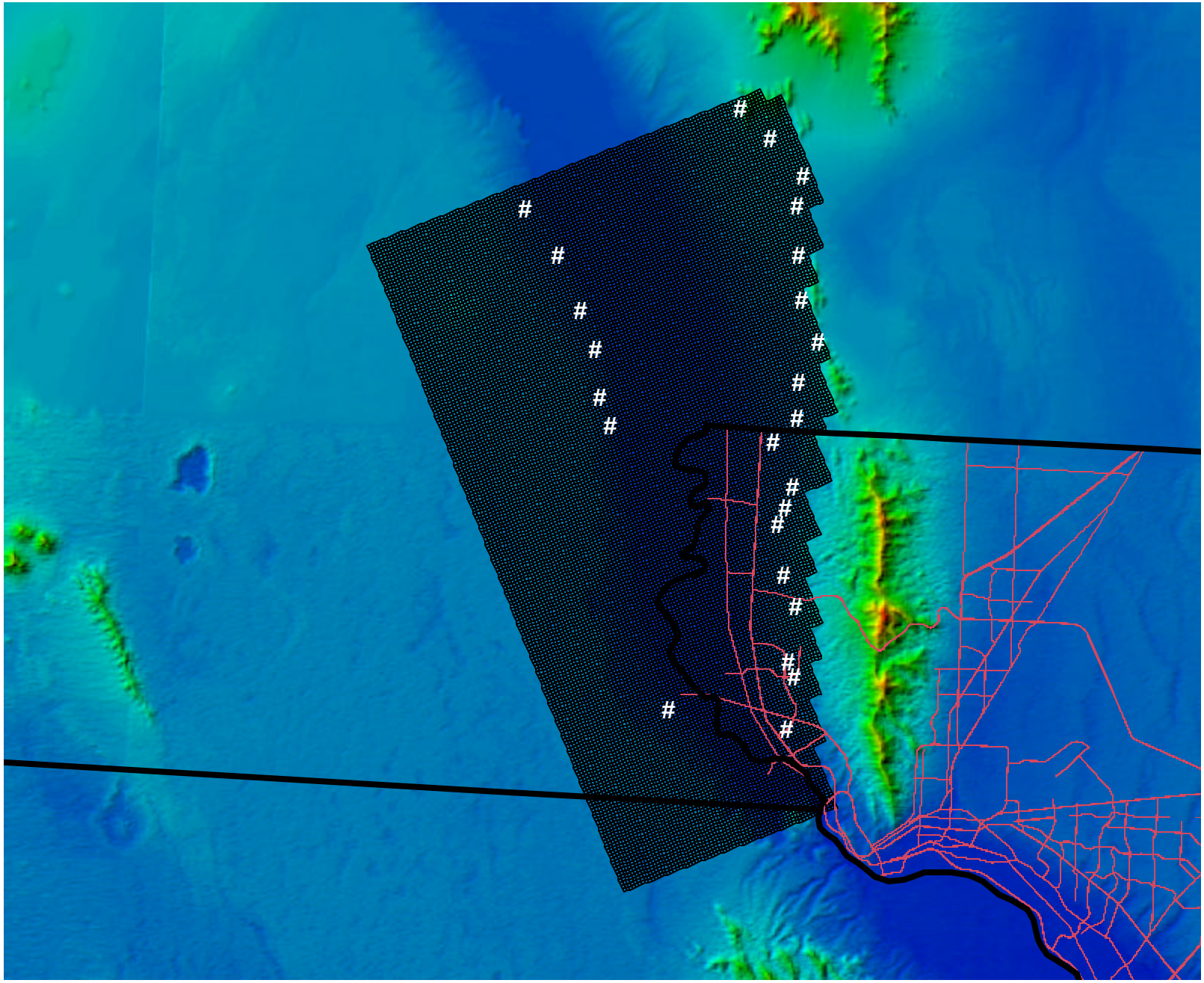
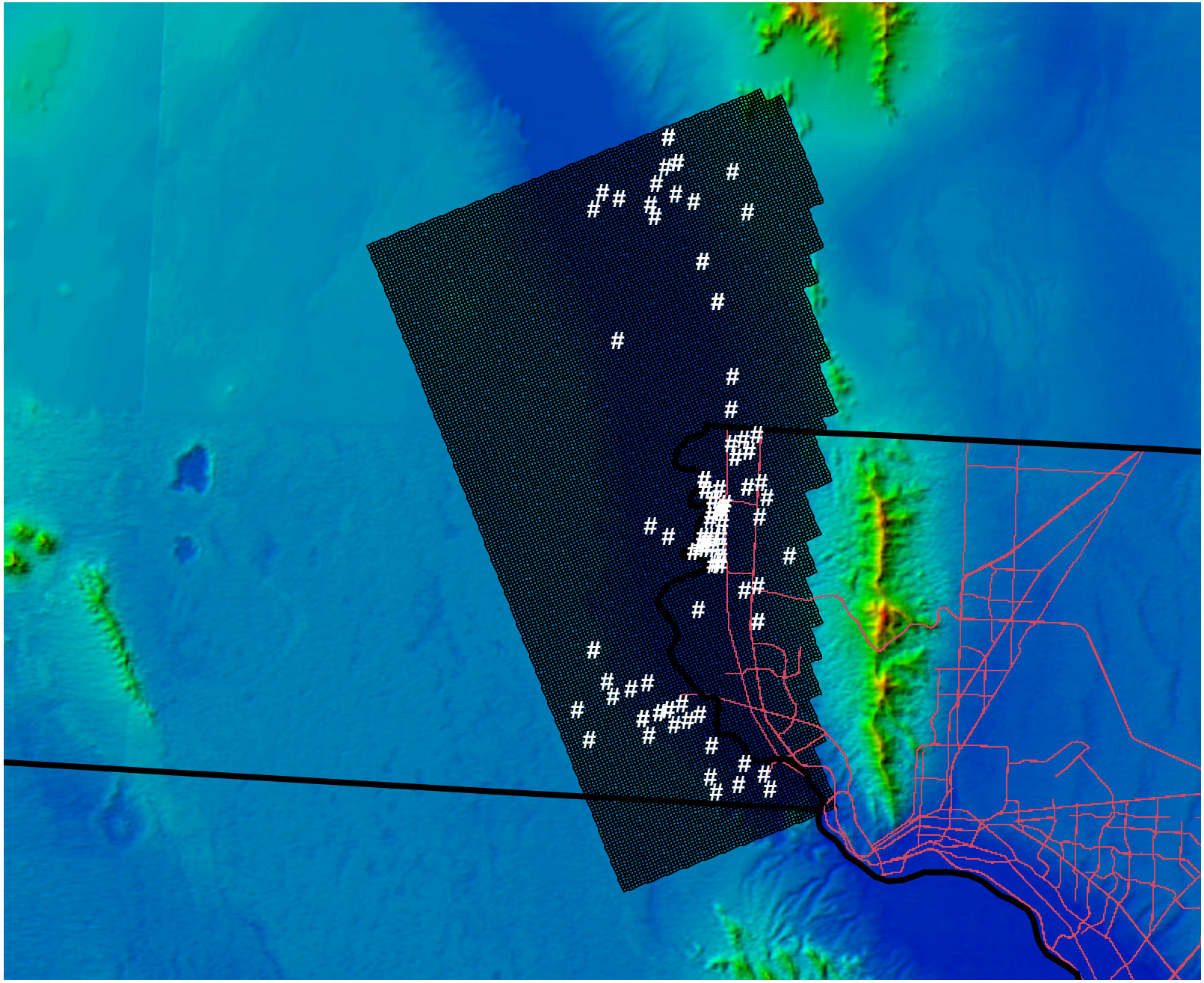


Figure 3-21
Well Package - Recharge Cells



N

0 5 10 15 20 Miles

Figure 3-22
Well Package - Pumping Wells

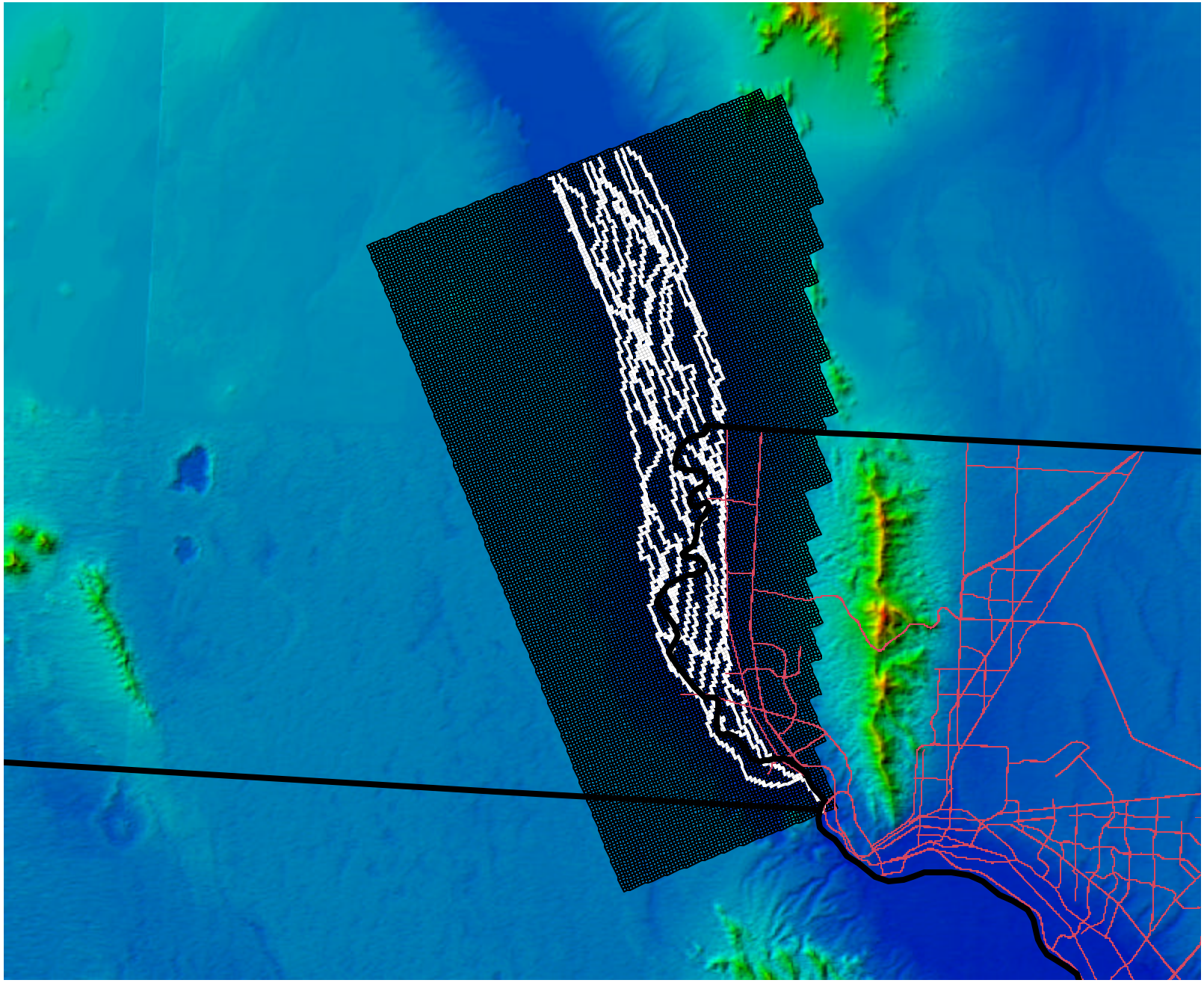


Figure 3-23
STR Features

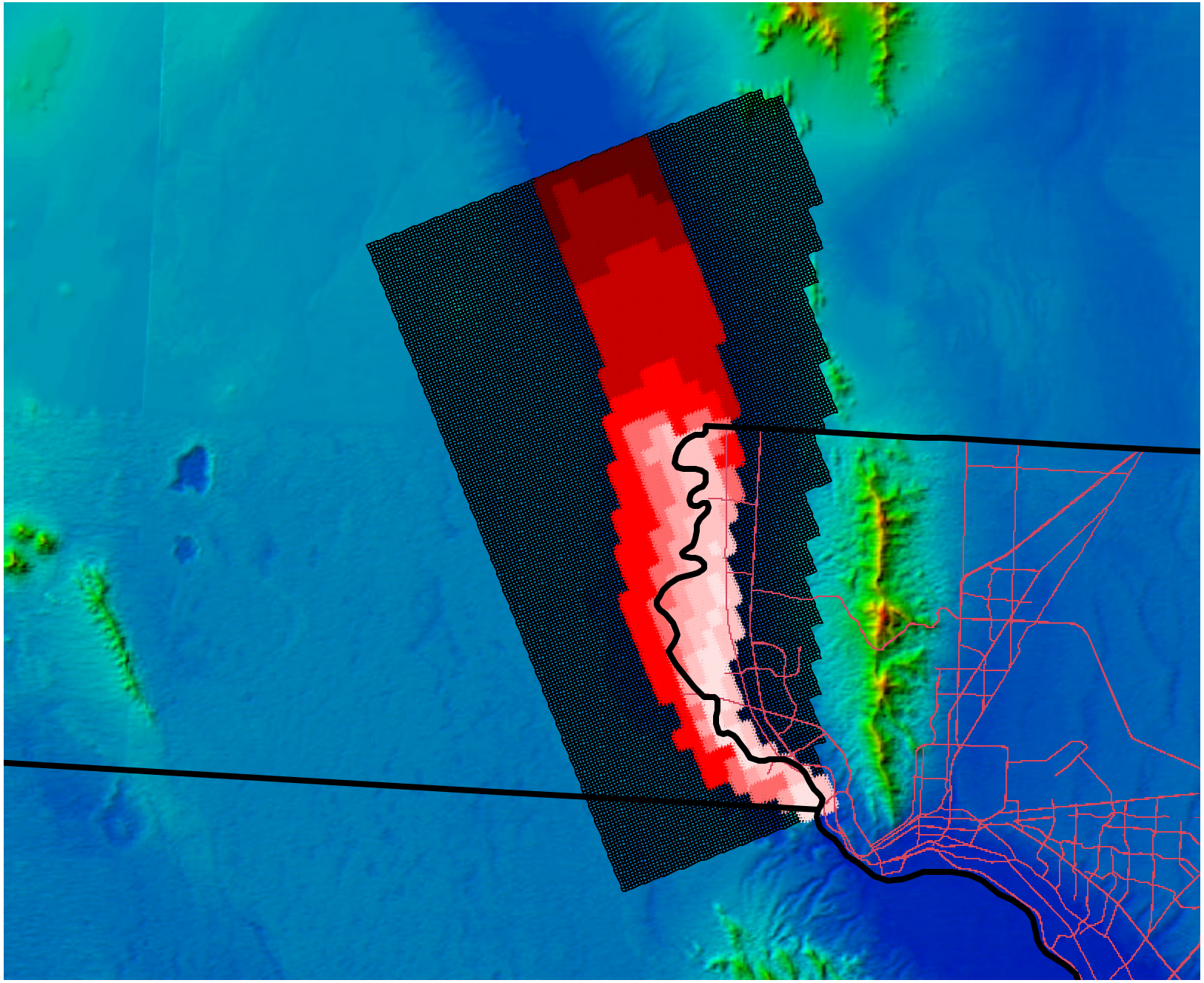


Figure 3-24
Evapotranspiration Surface Elevation

Figure 3-25
Evapotranspiration Rate

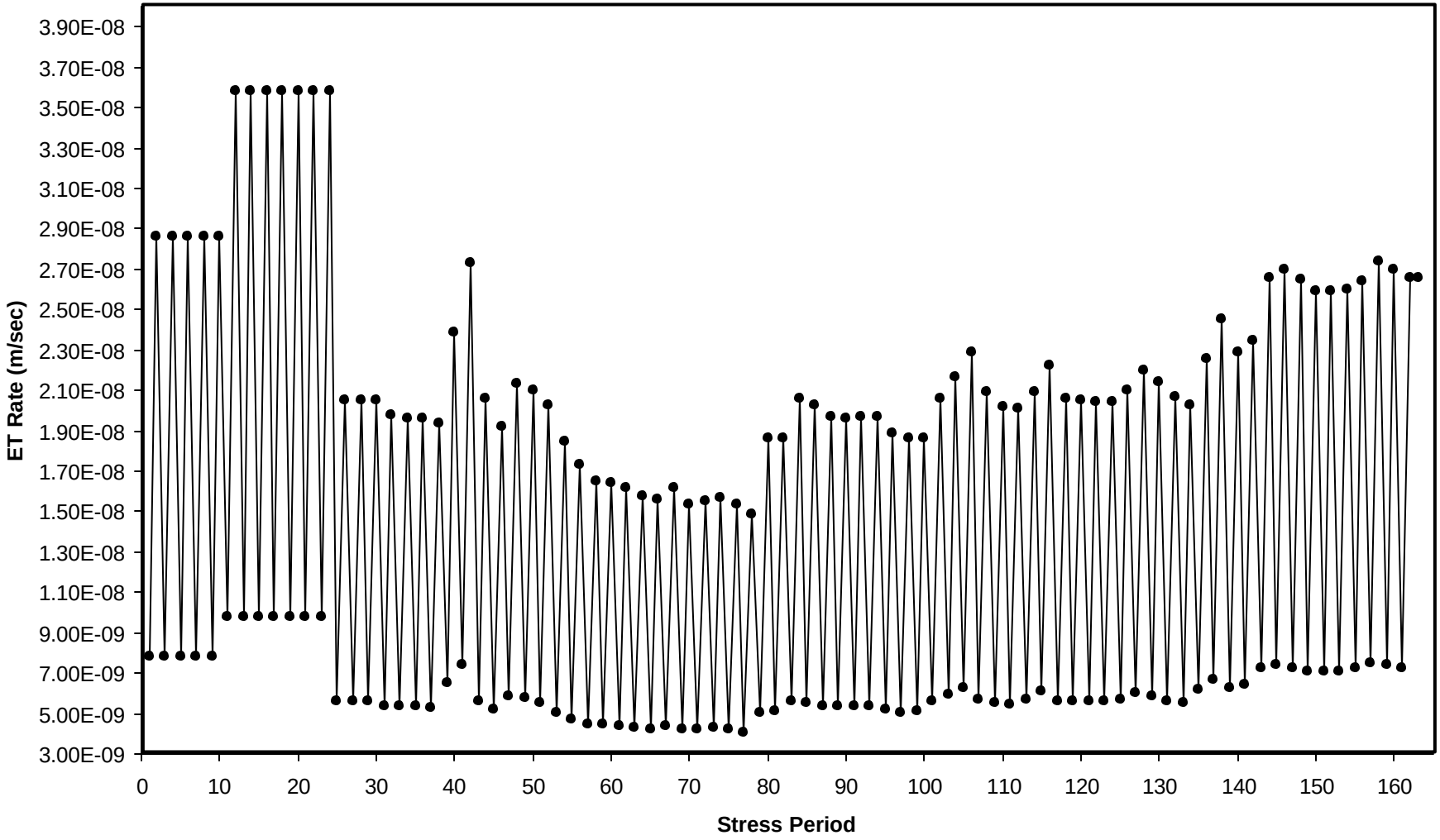


Figure 3-26
Recharge Package (Positive NIF)

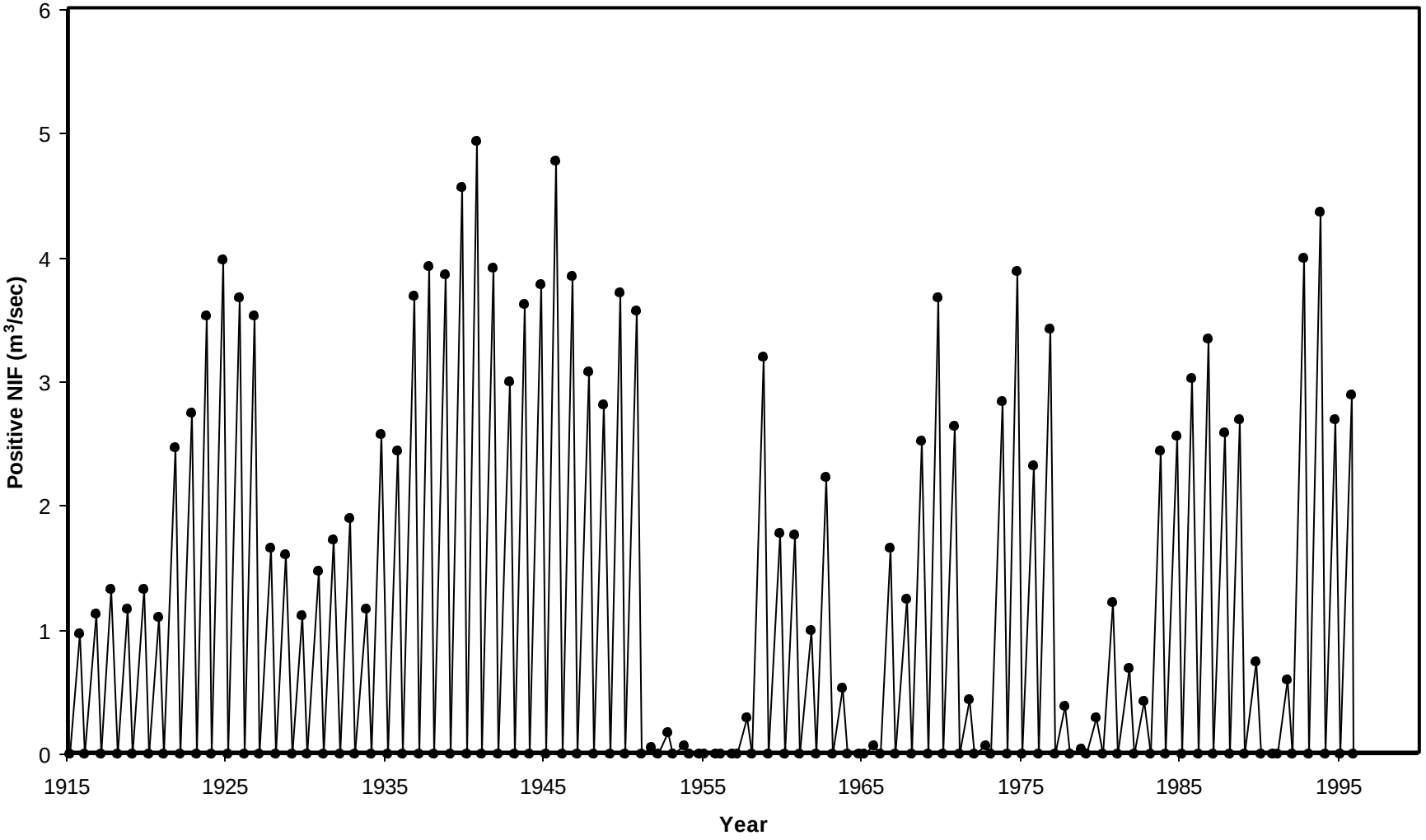
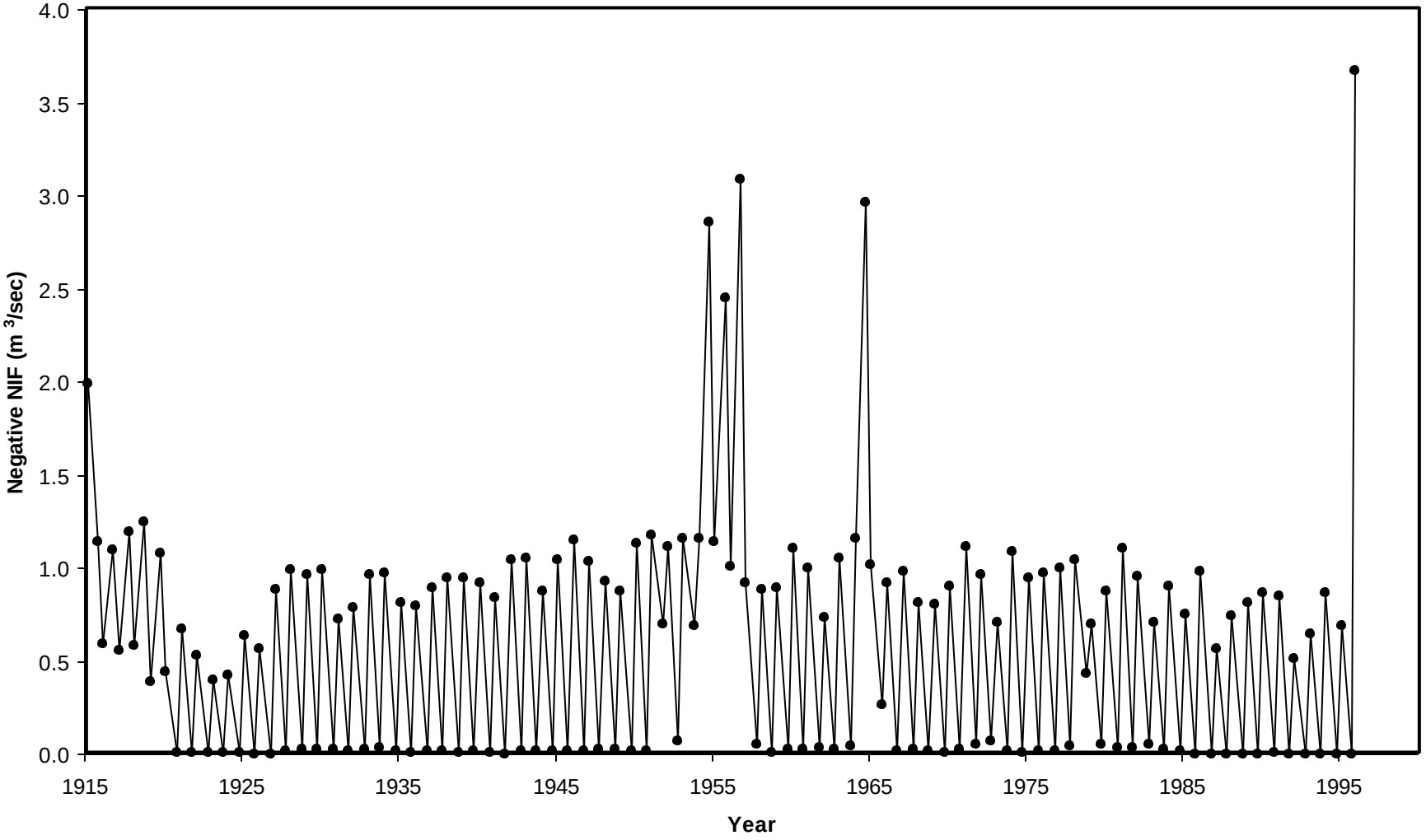


Figure 3-27
Recharge Package (Negative NIF)



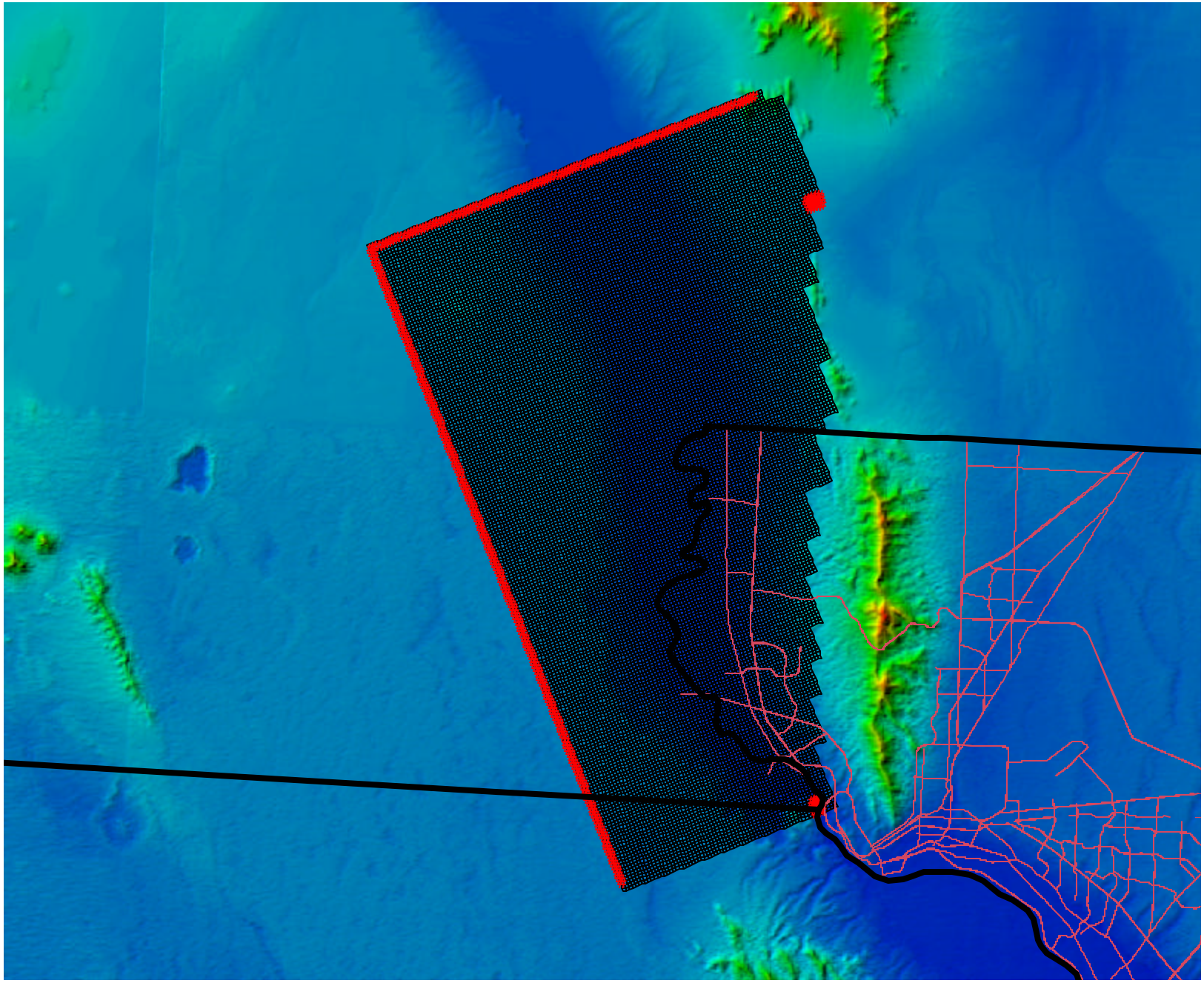


Figure 3-28
Time Variant Specified Heads
Layer 1

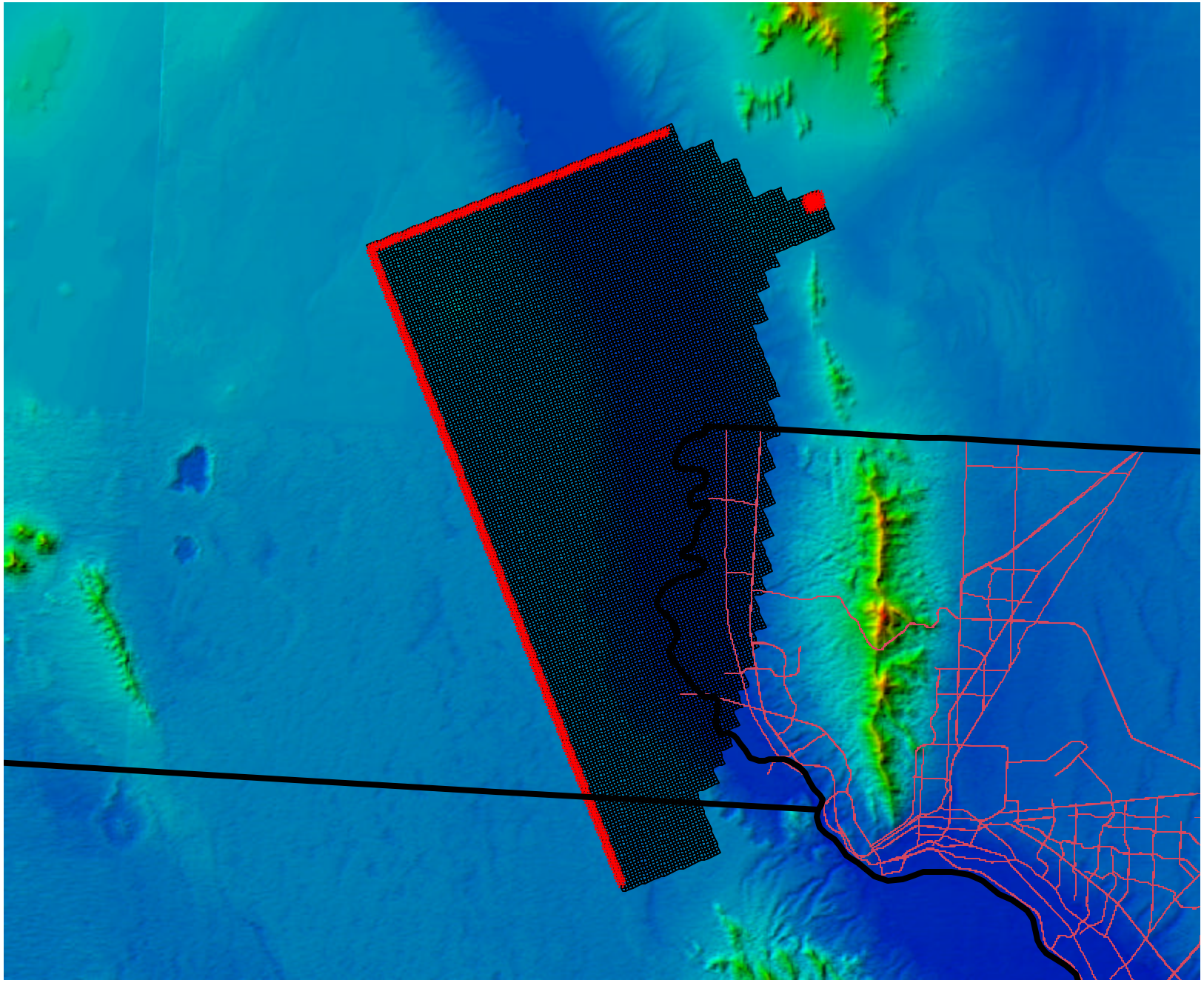


Figure 3-29
Time Variant Specified Heads
Layer 2

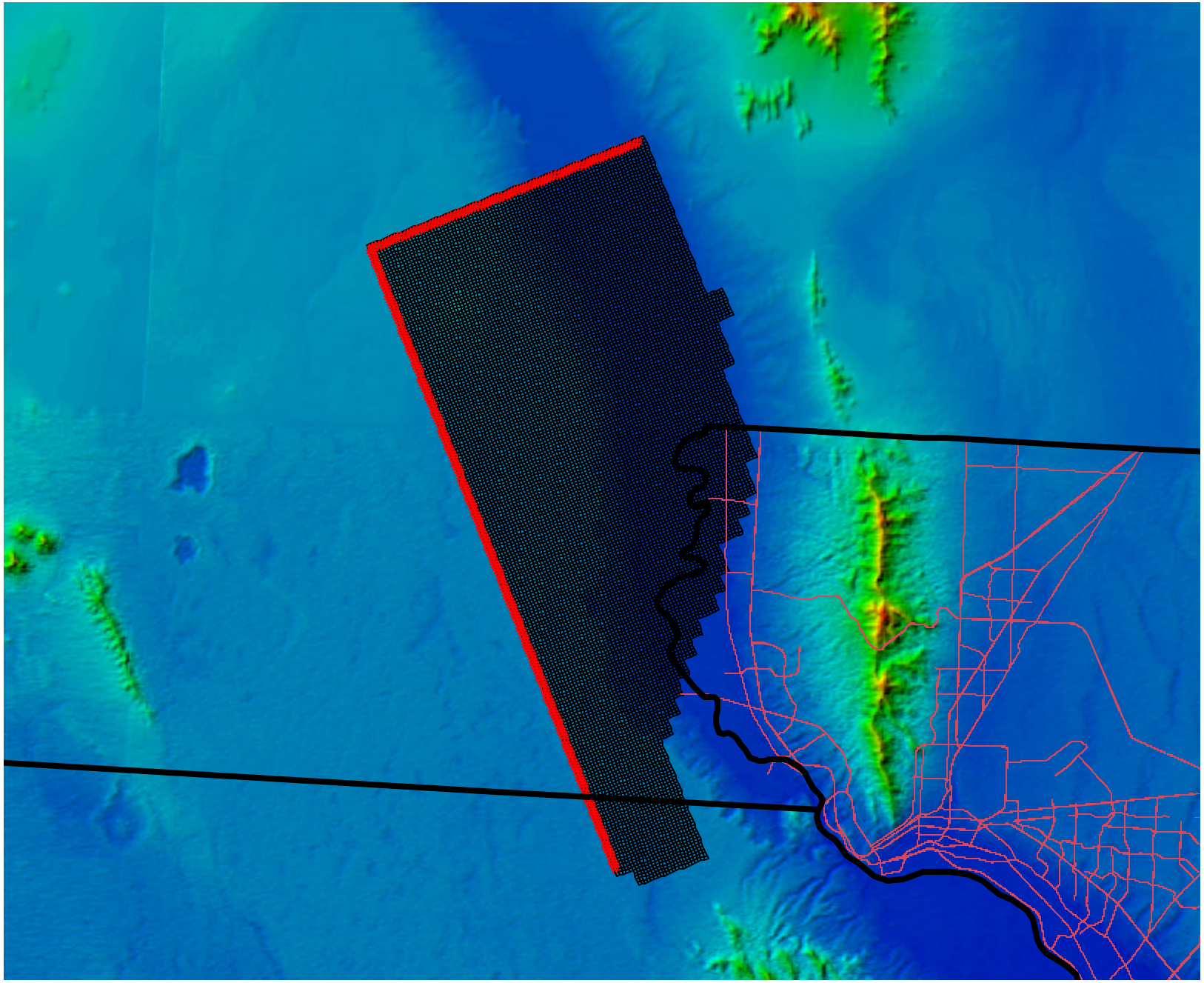


Figure 3-30
Time Variant Specified Heads
Layer 3

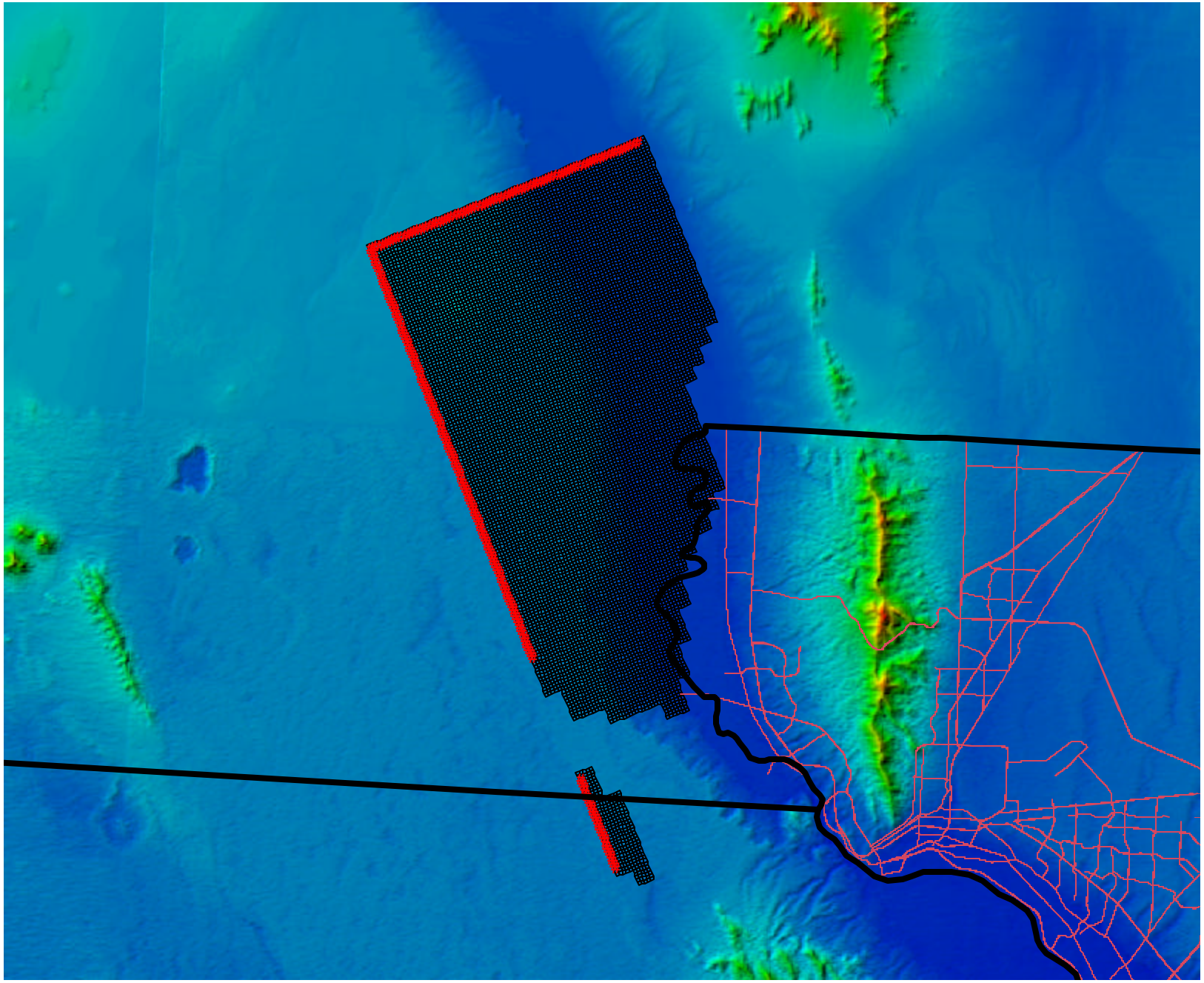


Figure 3-31
Time Variant Specified Heads
Layer 4

Table 3-1
Summary of BCF Input Parameters

Layer	LAYCON	LAYCON Description	Transmissivity	Storativity	Input Parameter [1]	Value or Figure Number	Input units	Figure Units
Layer 1	1	Unconfined	Varies	Constant	Storativity	0.2	dimensionless	N/A
					Hydraulic Conductivity	Figure 3-9	m/sec	m/day
					Bottom Elevation	Figure 3-10	m	m
					Leakance	Figure 3-11	sec^{-1}	$day^{-1}*10^{4}$
Layer 2	2	Confined/ Unconfined	Constant	Alternates	Primary Storativity	Figure 3-12	dimensionless	dimensionless
					Transmissivity	Figure 3-13	m^2/sec	m^2/sec
					Leakance	Figure 3-14	sec^{-1}	$day^{-1}*10^{5}$
					Secondary Storativity	0.2	dimensionless	N/A
					Top Elevation	Figure 3-15	m	m
Layer 3	0	Confined	Constant	Constant	Storativity	Figure 3-16	dimensionless	dimensionless
					Transmissivity	Figure 3-17	m^2/sec	m^2/sec
					Leakance	Figure 3-18	sec^{-1}	$day^{-1}*10^{5}$
Layer 4	0	Confined	Constant	Constant	Storativity	Figure 3-19	dimensionless	dimensionless
					Transmissivity	Figure 3-20	m^2/sec	m^2/sec

[1] Parameters listed in same as order in BCF file

Table 3-3
Summary of Overall Model Water Budget
All values in m3/sec

		Inflow							Outflow								
Stress Period	Date at End of Stress Period	Storage	Specified Heads	Well	ET	Recharge	Stream	Total	Storage	Specified Heads	Well	ET	Recharge	Stream	Total	Inflow - Outflow	Model Error (%)
1	1915.17	2.5931	1.1072	0.1895	0.0000	0.0000	3.6411	7.5309	2.3401	0.0521	0.0035	1.3793	1.9870	1.7721	7.5341	-0.0032	-0.04
2	1915.83	0.1500	1.1029	0.1895	0.0000	0.9709	7.8146	10.2279	0.9733	0.0574	0.0035	5.5609	1.1421	2.4914	10.2286	-0.0007	-0.01
3	1916.17	0.5352	1.0980	0.1895	0.0000	0.0000	2.7532	4.5759	0.7104	0.0560	0.0035	1.4865	0.5941	1.7271	4.5776	-0.0017	-0.04
4	1916.83	0.0588	1.1079	0.1895	0.0000	1.1246	7.6056	10.0864	0.5392	0.0569	0.0035	5.6776	1.0967	2.7127	10.0866	-0.0002	0.00
5	1917.17	0.2743	1.1086	0.1895	0.0000	0.0000	3.9646	5.5370	0.7599	0.0633	0.0035	1.5420	0.5600	2.6130	5.5417	-0.0047	-0.08
6	1917.83	0.0951	1.1126	0.1895	0.0000	1.3253	7.5239	10.2464	0.3616	0.0584	0.0035	5.7510	1.1917	2.8802	10.2464	0.0000	0.00
7	1918.17	0.1784	1.0982	0.1895	0.0000	0.0000	4.5292	5.9953	0.9715	0.0578	0.0035	1.5668	0.5875	2.8097	5.9969	-0.0016	-0.03
8	1918.83	0.2603	1.1072	0.1895	0.0000	1.1729	7.1885	9.9184	0.2337	0.0529	0.0035	5.7452	1.2493	2.6353	9.9199	-0.0015	-0.02
9	1919.17	0.5049	1.0997	0.1895	0.0000	0.0000	2.5340	4.3281	0.4557	0.0527	0.0035	1.5308	0.3904	1.8964	4.3295	-0.0014	-0.03
10	1919.83	0.1180	1.1065	0.1895	0.0000	1.3236	7.1519	9.8895	0.2843	0.0530	0.0035	5.7553	1.0798	2.7114	9.8873	0.0022	0.02
11	1920.17	0.8500	1.1011	0.1895	0.0000	0.0000	2.0540	4.1946	0.3392	0.0527	0.0050	1.8745	0.4409	1.4843	4.1965	-0.0019	-0.05
12	1920.83	0.1227	1.0809	0.1895	0.0000	1.1010	7.1815	9.6756	0.3703	0.0560	0.0066	6.9765	0.0122	2.2537	9.6754	0.0002	0.00
13	1921.17	0.1416	1.0828	0.1895	0.0000	0.0000	4.7208	6.1347	0.8802	0.0548	0.0066	1.9403	0.6683	2.5841	6.1343	0.0004	0.01
14	1921.83	0.0214	1.0803	0.1895	0.0000	2.4709	7.3240	11.0861	0.4234	0.0586	0.0066	7.2049	0.0066	3.3845	11.0846	0.0015	0.01
15	1922.17	0.1538	1.0825	0.1895	0.0000	0.0000	5.2056	6.6314	0.6071	0.0583	0.0066	1.9874	0.5322	3.4385	6.6301	0.0013	0.02
16	1922.83	0.0573	1.0752	0.1895	0.0000	2.7433	7.2280	11.2933	0.3262	0.0594	0.0066	7.2757	0.0079	3.6188	11.2946	-0.0013	-0.01
17	1923.17	0.1797	1.0758	0.1895	0.0000	0.0000	5.2656	6.7106	0.5482	0.0579	0.0066	1.9984	0.3985	3.7000	6.7096	0.0010	0.02
18	1923.83	0.0376	1.0728	0.1895	0.0000	3.5339	6.9926	11.8264	0.3498	0.0594	0.0066	7.3731	0.0045	4.0321	11.8255	0.0009	0.01
19	1924.17	0.2732	1.0693	0.1895	0.0000	0.0000	5.0584	6.5904	0.4161	0.0577	0.0066	2.0081	0.4209	3.6839	6.5933	-0.0029	-0.04
20	1924.83	0.0204	1.0690	0.1895	0.0000	3.9799	7.0360	12.2948	0.3742	0.0620	0.0066	7.4468	0.0049	4.3988	12.2933	0.0015	0.01
21	1925.17	0.3413	1.0612	0.1895	0.0000	0.0000	5.2904	6.8824	0.3454	0.0589	0.0066	2.0160	0.6338	3.8252	6.8859	-0.0035	-0.05
22	1925.83	0.0601	1.0614	0.1895	0.0000	3.6821	6.9200	11.9131	0.2855	0.0599	0.0066	7.4134	0.0041	4.1441	11.9136	-0.0005	0.00
23	1926.17	0.6924	1.0390	0.1895	0.0000	0.0000	3.7143	5.6352	0.2755	0.0570	0.0066	1.9647	0.5702	2.7629	5.6369	-0.0017	-0.03
24	1926.83	0.0583	1.0542	0.1895	0.0000	3.5312	6.8751	11.7083	0.2955	0.0593	0.0066	7.3771	0.0024	3.9663	11.7073	0.0011	0.01
25	1927.17	0.3110	1.0502	0.1912	0.0000	0.0000	4.8106	6.3630	0.4481	0.0596	0.0077	1.1556	0.8832	3.8086	6.3628	0.0002	0.00
26	1927.83	0.0001	1.0489	0.1933	0.0000	1.6582	6.6728	9.5733	0.3539	0.0677	0.0092	4.3103	0.0203	4.8098	9.5712	0.0022	0.02
27	1928.17	0.3937	1.0447	0.1933	0.0000	0.0000	4.8156	6.4473	0.2627	0.0639	0.0092	1.1669	0.9925	3.9541	6.4493	-0.0020	-0.03
28	1928.83	0.0027	1.0449	0.1933	0.0000	1.6086	6.6304	9.4799	0.2739	0.0687	0.0092	4.3189	0.0229	4.7850	9.4786	0.0013	0.01
29	1929.17	1.1229	1.0774	0.1933	0.0000	0.0000	2.5044	4.8980	0.1526	0.0641	0.0092	1.1345	0.9667	2.5731	4.9001	-0.0021	-0.04
30	1929.83	0.0177	1.0464	0.1933	0.0000	1.1159	6.5326	8.9059	0.2984	0.0661	0.0092	4.2660	0.0266	4.2358	8.9020	0.0039	0.04
31	1930.17	0.9993	1.0693	0.1933	0.0000	0.0000	2.4300	4.6919	0.1220	0.0629	0.0092	1.0856	0.9872	2.4277	4.6945	-0.0026	-0.06
32	1930.83	0.0022	1.0461	0.1933	0.0000	1.4746	6.5169	9.2331	0.4202	0.0689	0.0092	4.1441	0.0294	4.5591	9.2309	0.0022	0.02
33	1931.17	0.6585	1.0414	0.1933	0.0000	0.0000	3.1403	5.0335	0.1782	0.0647	0.0092	1.0933	0.7292	2.9614	5.0359	-0.0024	-0.05
34	1931.83	0.0013	1.0402	0.1933	0.0000	1.7318	6.4794	9.4460	0.3592	0.0699	0.0092	4.1332	0.0200	4.8514	9.4429	0.0031	0.03
35	1932.17	0.5807	1.0376	0.1933	0.0000	0.0000	3.6270	5.4386	0.1623	0.0656	0.0092	1.1048	0.7904	3.3091	5.4413	-0.0027	-0.05
36	1932.83	0.0019	1.0382	0.1933	0.0000	1.8996	6.4491	9.5821	0.3236	0.0717	0.0092	4.1516	0.0225	5.0021	9.5807	0.0013	0.01
37	1933.17	0.5940	1.0359	0.1933	0.0000	0.0000	3.9421	5.7653	0.1450	0.0669	0.0092	1.1011	0.9623	3.4887	5.7732	-0.0079	-0.14
38	1933.83	0.0261	1.0350	0.1933	0.0000	1.1680	6.5311	8.9535	0.2033	0.0703	0.0092	4.0771	0.0351	4.5560	8.9510	0.0026	0.03
39	1934.17	0.3003	1.0333	0.1933	0.0000	0.0000	4.9681	6.4950	0.1484	0.0664	0.0092	1.3609	0.9709	3.9423	6.4981	-0.0031	-0.05
40	1934.83	0.0260	1.0333	0.1933	0.0000	2.5746	6.2660	10.0932	0.2373	0.0695	0.0092	5.0417	0.0192	4.7143	10.0912	0.0020	0.02
41	1935.17	1.5039	1.0439	0.1933	0.0000	0.0000	1.4959	4.2370	0.0723	0.0630	0.0092	1.4779	0.8118	1.8060	4.2401	-0.0031	-0.07
42	1935.83	0.0590	1.0343	0.1933	0.0000	2.4465	6.1002	9.8333	0.2944	0.0638	0.0092	5.6399	0.0085	3.8166	9.8324	0.0009	0.01
43	1936.17	0.7085	1.0319	0.1933	0.0000	0.0000	2.6402	4.5739	0.1606	0.0627	0.0092	1.1309	0.7967	2.4160	4.5761	-0.0022	-0.05
44	1936.83	0.0000	1.0334	0.1933	0.0000	3.6903	5.7483	10.6653	0.5842	0.0742	0.0092	4.4088	0.0138	5.5732	10.6634	0.0019	0.02

Table 3-3
Summary of Overall Model Water Budget
All values in m3/sec

		Inflow							Outflow								
Stress Period	Date at End of Stress Period	Storage	Specified Heads	Well	ET	Recharge	Stream	Total	Storage	Specified Heads	Well	ET	Recharge	Stream	Total	Inflow - Outflow	Model Error (%)
45	1937.17	1.5034	1.0547	0.1933	0.0000	0.0000	1.4549	4.2063	0.0969	0.0668	0.0092	1.0514	0.8951	2.0911	4.2104	-0.0041	-0.10
46	1937.83	0.0000	1.0342	0.1933	0.0000	3.9310	5.5880	10.7465	0.6015	0.0779	0.0092	4.1375	0.0145	5.9049	10.7455	0.0010	0.01
47	1938.17	1.1554	1.0298	0.1933	0.0000	0.0000	2.8679	5.2464	0.1117	0.0698	0.0092	1.1985	0.9477	2.9128	5.2497	-0.0033	-0.06
48	1938.83	0.0015	1.0312	0.1933	0.0000	3.8620	5.7794	10.8674	0.4266	0.0770	0.0092	4.5858	0.0111	5.7551	10.8647	0.0027	0.02
49	1939.17	0.9936	1.0268	0.1933	0.0000	0.0000	3.2795	5.4932	0.1037	0.0692	0.0092	1.1900	0.9492	3.1746	5.4959	-0.0027	-0.05
50	1939.83	0.0005	1.0303	0.1933	0.0000	4.5647	5.6530	11.4418	0.4778	0.0796	0.0092	4.5580	0.0135	6.3012	11.4393	0.0025	0.02
51	1940.17	1.3374	1.0278	0.1933	0.0000	0.0000	2.4918	5.0503	0.0969	0.0705	0.0092	1.1452	0.9243	2.8084	5.0545	-0.0042	-0.08
52	1940.83	0.0001	1.0295	0.1933	0.0000	4.9366	5.4427	11.6022	0.5253	0.0812	0.0092	4.4242	0.0089	6.5510	11.5998	0.0024	0.02
53	1941.17	1.6195	1.0168	0.1964	0.0000	0.0000	1.5404	4.3731	0.0901	0.0715	0.0113	1.0316	0.8425	2.3312	4.3782	-0.0051	-0.12
54	1941.83	0.0005	1.0249	0.2009	0.0000	3.9116	5.5656	10.7035	0.4569	0.0803	0.0145	4.0066	0.0037	6.1382	10.7003	0.0033	0.03
55	1942.17	0.8821	1.0196	0.2009	0.0000	0.0000	3.7905	5.8931	0.1010	0.0740	0.0145	0.9881	1.0425	3.6760	5.8961	-0.0030	-0.05
56	1942.83	0.0001	1.0276	0.2009	0.0000	2.9966	6.6061	10.8313	0.4142	0.0915	0.0145	3.7629	0.0169	6.5270	10.8270	0.0042	0.04
57	1943.17	0.8837	1.0186	0.2009	0.0000	0.0000	4.2720	6.3752	0.0996	0.0752	0.0145	0.9527	1.0559	4.1805	6.3784	-0.0032	-0.05
58	1943.83	0.0019	1.0239	0.2009	0.0000	3.6291	5.7410	10.5968	0.3644	0.0854	0.0145	3.5963	0.0187	6.5147	10.5940	0.0028	0.03
59	1944.17	1.2163	1.0211	0.2009	0.0000	0.0000	2.8214	5.2597	0.0749	0.0748	0.0145	0.9333	0.8749	3.2898	5.2621	-0.0024	-0.05
60	1944.83	0.0002	1.0237	0.2009	0.0000	3.7841	5.6838	10.6927	0.4229	0.0859	0.0145	3.5776	0.0161	6.5709	10.6879	0.0048	0.04
61	1945.17	1.3952	1.0217	0.2009	0.0000	0.0000	2.3007	4.9185	0.0638	0.0747	0.0145	0.9102	1.0464	2.8112	4.9208	-0.0023	-0.05
62	1945.83	0.0000	1.0241	0.2009	0.0000	4.7769	5.4381	11.4400	0.5568	0.0889	0.0145	3.5629	0.0147	7.1988	11.4366	0.0034	0.03
63	1946.17	1.3090	1.0190	0.2009	0.0000	0.0000	3.2317	5.7606	0.0744	0.0768	0.0145	0.9074	1.1484	3.5427	5.7643	-0.0037	-0.06
64	1946.83	0.0006	1.0211	0.2009	0.0000	3.8500	5.4740	10.5466	0.3782	0.0862	0.0145	3.4515	0.0182	6.5962	10.5448	0.0018	0.02
65	1947.17	1.4587	1.0206	0.2009	0.0000	0.0000	2.0652	4.7454	0.0551	0.0755	0.0145	0.8770	1.0373	2.6890	4.7485	-0.0031	-0.06
66	1947.83	0.0023	1.0181	0.2009	0.0000	3.0811	5.6136	9.9160	0.3434	0.0839	0.0145	3.3824	0.0246	6.0651	9.9140	0.0020	0.02
67	1948.17	1.6921	1.0182	0.1709	0.0000	0.0000	1.1709	4.0521	0.0255	0.0730	0.0146	0.8962	0.9314	2.1146	4.0553	-0.0032	-0.08
68	1948.83	0.0325	1.0161	0.1478	0.0000	2.8115	5.7346	9.7425	0.3605	0.0806	0.0147	3.4936	0.0282	5.7599	9.7374	0.0050	0.05
69	1949.17	1.4101	1.0051	0.1478	0.0000	0.0000	1.5979	4.1609	0.0148	0.0713	0.0147	0.8604	0.8756	2.3289	4.1657	-0.0048	-0.11
70	1949.83	0.0187	1.0167	0.1478	0.0000	3.7117	5.4958	10.3907	0.4492	0.0822	0.0147	3.3534	0.0181	6.4700	10.3876	0.0031	0.03
71	1950.17	1.5094	1.0201	0.1478	0.0000	0.0000	2.0196	4.6969	0.0126	0.0715	0.0147	0.8718	1.1348	2.5960	4.7014	-0.0045	-0.10
72	1950.83	0.0164	1.0180	0.1478	0.0000	3.5767	5.4928	10.2517	0.3971	0.0818	0.0147	3.3728	0.0208	6.3620	10.2492	0.0026	0.02
73	1951.17	1.8175	1.0132	0.1470	0.0000	0.0000	1.2584	4.2361	0.0072	0.0704	0.0240	0.8677	1.1752	2.0967	4.2412	-0.0051	-0.12
74	1951.83	0.3259	1.0097	0.1326	0.0000	0.0564	5.9862	7.5108	0.0656	0.0655	0.1923	3.2292	0.6998	3.2541	7.5065	0.0043	0.06
75	1952.17	1.2623	1.0184	0.1326	0.0000	0.0000	1.3976	3.8109	0.0095	0.0627	0.1923	0.8238	1.1146	1.6120	3.8149	-0.0040	-0.11
76	1952.83	0.1445	1.0128	0.1326	0.0000	0.1725	5.9433	7.4057	0.2497	0.0659	0.1923	3.1813	0.0667	3.6477	7.4035	0.0022	0.03
77	1953.17	1.3158	1.0190	0.1326	0.0000	0.0000	1.3884	3.8558	0.0102	0.0616	0.1923	0.7996	1.1633	1.6308	3.8578	-0.0020	-0.05
78	1953.83	0.1556	1.0136	0.1326	0.0000	0.0623	6.1615	7.5256	0.1886	0.0632	0.1923	3.0484	0.6865	3.3449	7.5239	0.0017	0.02
79	1954.17	1.4557	1.0200	0.1503	0.0000	0.0000	1.4042	4.0302	0.0087	0.0596	0.3302	0.9842	1.1560	1.4940	4.0327	-0.0025	-0.06
80	1954.83	0.8900	0.9972	0.1686	0.0000	0.0051	6.3757	8.4366	0.0138	0.0478	0.4731	3.5459	2.8593	1.4987	8.4386	-0.0020	-0.02
81	1955.17	1.4870	1.0034	0.1686	0.0000	0.0000	0.7608	3.4198	0.0341	0.0537	0.4732	0.9368	1.1443	0.7815	3.4236	-0.0038	-0.11
82	1955.83	0.7603	0.9967	0.1686	0.0000	0.0061	5.6233	7.5550	0.0608	0.0465	0.4732	3.3729	2.4473	1.1544	7.5551	-0.0001	0.00
83	1956.17	1.4464	0.9920	0.1686	0.0000	0.0000	0.6485	3.2555	0.0884	0.0517	0.4732	0.9921	1.0098	0.6439	3.2591	-0.0036	-0.11
84	1956.83	0.7518	0.9939	0.1686	0.0000	0.0048	6.3809	8.3000	0.0592	0.0448	0.4732	3.5814	3.0926	1.0481	8.2994	0.0007	0.01
85	1957.17	1.3633	0.9810	0.1686	0.0000	0.0000	0.5738	3.0867	0.1299	0.0494	0.4732	0.9396	0.9175	0.5810	3.0906	-0.0039	-0.13
86	1957.83	0.1671	1.0136	0.1686	0.0000	0.2866	6.5069	8.1428	1.3284	0.0521	0.4732	3.9649	0.0506	2.2732	8.1424	0.0004	0.01
87	1958.17	1.4100	1.0221	0.1729	0.0000	0.0000	0.9512	3.5562	0.1427	0.0534	0.5007	1.0007	0.8890	0.9728	3.5593	-0.0031	-0.09
88	1958.83	0.0945	1.0528	0.2028	0.0000	3.1992	6.2909	10.8402	1.1495	0.0682	0.6948	4.1207	0.0124	4.7928	10.8383	0.0019	0.02

Table 3-3
Summary of Overall Model Water Budget
All values in m3/sec

		Inflow							Outflow								
Stress Period	Date at End of Stress Period	Storage	Specified Heads	Well	ET	Recharge	Stream	Total	Storage	Specified Heads	Well	ET	Recharge	Stream	Total	Inflow - Outflow	Model Error (%)
89	1959.17	1.6682	1.0520	0.2028	0.0000	0.0000	1.5105	4.4335	0.1156	0.0606	0.6948	1.0459	0.8961	1.6228	4.4358	-0.0023	-0.05
90	1959.83	0.0602	1.0525	0.2028	0.0000	1.7833	6.3783	9.4771	0.4758	0.0671	0.6948	4.0646	0.0279	4.1460	9.4762	0.0009	0.01
91	1960.17	1.6239	1.0478	0.2028	0.0000	0.0000	1.6458	4.5203	0.0558	0.0608	0.6948	1.0470	1.1082	1.5562	4.5228	-0.0025	-0.05
92	1960.83	0.0439	1.0538	0.2028	0.0000	1.7650	6.4304	9.4959	0.4613	0.0679	0.6948	4.0852	0.0300	4.1537	9.4929	0.0030	0.03
93	1961.17	1.6003	1.0522	0.1911	0.0000	0.0000	1.6298	4.4734	0.0330	0.0614	0.7502	1.0470	1.0006	1.5836	4.4758	-0.0024	-0.05
94	1961.83	0.0960	1.0549	0.1819	0.0000	0.9898	6.4465	8.7691	0.2818	0.0632	0.7931	4.0307	0.0351	3.5635	8.7674	0.0017	0.02
95	1962.17	1.5226	1.0630	0.1577	0.0000	0.0000	1.5440	4.2873	0.0164	0.0595	0.9420	1.0020	0.7326	1.5371	4.2896	-0.0023	-0.05
96	1962.83	0.1166	1.0605	0.1478	0.0000	2.2320	6.3149	9.8718	0.5052	0.0667	1.0033	3.9361	0.0246	4.3343	9.8702	0.0016	0.02
97	1963.17	1.8755	1.0639	0.1478	0.0000	0.0000	1.5636	4.6508	0.0171	0.0599	1.0032	0.9870	1.0537	1.5321	4.6529	-0.0021	-0.05
98	1963.83	0.1410	1.0596	0.1478	0.0000	0.5315	6.6896	8.5695	0.2833	0.0603	1.0032	3.7874	0.0485	3.3848	8.5675	0.0020	0.02
99	1964.17	1.9571	1.0659	0.1459	0.0000	0.0000	1.3561	4.5250	0.0085	0.0570	1.0071	0.9753	1.1589	1.3220	4.5288	-0.0038	-0.08
100	1964.83	2.9890	1.0668	0.1099	0.0000	0.0058	3.7120	7.8835	0.0000	0.0443	1.0806	2.9942	2.9633	0.8031	7.8855	-0.0020	-0.03
101	1965.17	1.9464	1.0431	0.1254	0.0000	0.0000	0.4144	3.5293	0.0883	0.0489	1.0613	0.8790	1.0162	0.4381	3.5318	-0.0025	-0.07
102	1965.83	0.2955	1.0607	0.1895	0.0000	0.0704	6.6455	8.2616	1.4446	0.0529	0.9814	3.8377	0.2689	1.6769	8.2624	-0.0008	-0.01
103	1966.17	1.6273	1.0672	0.1895	0.0000	0.0000	0.9497	3.8337	0.0691	0.0525	0.9814	1.0536	0.9229	0.7557	3.8352	-0.0015	-0.04
104	1966.83	0.1254	1.0723	0.1895	0.0000	1.6659	6.7397	9.7928	1.3259	0.0592	0.9815	4.3298	0.0205	3.0762	9.7931	-0.0003	0.00
105	1967.17	1.7439	1.0701	0.1968	0.0000	0.0000	1.5555	4.5663	0.1055	0.0555	1.0056	1.1742	0.9799	1.2494	4.5701	-0.0038	-0.08
106	1967.83	0.0745	1.0692	0.2046	0.0000	1.2493	6.5889	9.1865	0.6043	0.0562	1.0309	4.5702	0.0237	2.9012	9.1866	-0.0001	0.00
107	1968.17	1.3110	1.0693	0.2046	0.0000	0.0000	1.9601	4.5450	0.0840	0.0564	1.0310	1.0832	0.8157	1.4779	4.5482	-0.0032	-0.07
108	1968.83	0.0419	1.0737	0.2046	0.0000	2.5209	6.5474	10.3885	0.9443	0.0625	1.0310	4.2980	0.0135	4.0423	10.3915	-0.0030	-0.03
109	1969.17	1.5705	1.0732	0.1677	0.0000	0.0000	1.8585	4.6699	0.0850	0.0588	1.0136	1.0705	0.8016	1.6424	4.6718	-0.0019	-0.04
110	1969.83	0.0567	1.0754	0.1573	0.0000	3.6765	6.2874	11.2533	0.7754	0.0686	1.0088	4.2566	0.0097	5.1342	11.2533	0.0000	0.00
111	1970.17	1.8539	1.0712	0.1573	0.0000	0.0000	1.8264	4.9088	0.0822	0.0611	1.0088	1.0777	0.9041	1.7761	4.9100	-0.0012	-0.02
112	1970.83	0.0545	1.0681	0.1573	0.0000	2.6429	6.3713	10.2941	0.4876	0.0667	1.0088	4.1958	0.0239	4.5099	10.2928	0.0014	0.01
113	1971.17	1.9067	1.0661	0.1573	0.0000	0.0000	1.8491	4.9792	0.0435	0.0599	1.0088	1.1142	1.1158	1.6388	4.9810	-0.0018	-0.04
114	1971.83	0.1304	1.0651	0.1573	0.0000	0.4392	6.7787	8.5707	0.1983	0.0574	1.0088	4.2097	0.0487	3.0488	8.5717	-0.0010	-0.01
115	1972.17	1.8234	1.0739	0.1942	0.0000	0.0000	1.4336	4.5251	0.0282	0.0564	1.0541	1.1561	0.9653	1.2694	4.5294	-0.0043	-0.10
116	1972.83	0.3153	1.0565	0.2955	0.0000	0.0669	6.1304	7.8646	0.1883	0.0534	1.1779	4.3306	0.0699	2.0451	7.8652	-0.0006	-0.01
117	1973.17	1.4590	1.0710	0.2588	0.0000	0.0000	1.2877	4.0765	0.0852	0.0579	1.1361	1.0541	0.7068	1.0397	4.0798	-0.0033	-0.08
118	1973.83	0.0629	1.0784	0.2066	0.0000	2.8436	6.5160	10.7075	1.0665	0.0666	1.0767	4.2587	0.0145	4.2238	10.7068	0.0007	0.01
119	1974.17	1.7982	1.0741	0.2066	0.0000	0.0000	1.7804	4.8593	0.0557	0.0605	1.0767	1.0806	1.0870	1.5009	4.8614	-0.0021	-0.04
120	1974.83	0.0345	1.0781	0.2066	0.0000	3.8903	6.1558	11.3653	0.7565	0.0712	1.0766	4.3235	0.0072	5.1288	11.3638	0.0015	0.01
121	1975.17	1.8735	1.0757	0.2066	0.0000	0.0000	1.8439	4.9997	0.0656	0.0639	1.0766	1.0975	0.9509	1.7470	5.0015	-0.0018	-0.04
122	1975.83	0.0303	1.0747	0.2066	0.0000	2.3217	6.3305	9.9638	0.3879	0.0675	1.0766	4.2332	0.0212	4.1755	9.9619	0.0018	0.02
123	1976.17	0.6564	1.0728	0.2066	0.0000	0.0000	4.2611	6.1969	0.0833	0.0638	1.0767	1.1337	0.9713	2.8761	6.2049	-0.0080	-0.13
124	1976.83	0.0791	1.0776	0.2181	0.0000	3.4191	6.0374	10.8313	0.4199	0.0712	1.0271	4.3051	0.0149	4.9932	10.8314	-0.0001	0.00
125	1977.17	1.9549	1.0756	0.2204	0.0000	0.0000	1.7129	4.9638	0.0260	0.0638	1.0431	1.1283	1.0001	1.7047	4.9660	-0.0021	-0.04
126	1977.83	0.4346	1.0792	0.2542	0.0000	0.3870	6.0406	8.1956	0.0713	0.0600	1.4263	4.1810	0.0409	2.4163	8.1958	-0.0002	0.00
127	1978.17	2.0611	1.0899	0.2542	0.0000	0.0000	1.3338	4.7390	0.0220	0.0591	1.4263	1.1300	1.0400	1.0654	4.7427	-0.0037	-0.08
128	1978.83	0.8902	1.0778	0.2542	0.0000	0.0367	5.2640	7.5229	0.0505	0.0556	1.4263	4.1136	0.4316	1.4461	7.5237	-0.0008	-0.01
129	1979.17	1.5594	1.0896	0.2459	0.0000	0.0000	1.0995	3.9944	0.0426	0.0566	1.3630	1.0542	0.7003	0.7801	3.9969	-0.0025	-0.06
130	1979.83	0.2115	1.0884	0.2297	0.0000	0.2904	7.0728	8.8928	0.7961	0.0585	1.2392	4.1992	0.0498	2.5499	8.8926	0.0002	0.00
131	1980.17	1.2577	1.0962	0.2297	0.0000	0.0000	2.1370	4.7206	0.0937	0.0577	1.2392	1.0668	0.8754	1.3907	4.7234	-0.0028	-0.06
132	1980.83	0.1230	1.1018	0.2297	0.0000	1.2188	6.8809	9.5542	0.6843	0.0629	1.2392	4.1729	0.0330	3.3614	9.5536	0.0006	0.01

Table 3-3
Summary of Overall Model Water Budget
All values in m3/sec

		Inflow							Outflow								
Stress Period	**Date at End of Stress Period**	**Storage**	**Specified Heads**	**Well**	**ET**	**Recharge**	**Stream**	**Total**	**Storage**	**Specified Heads**	**Well**	**ET**	**Recharge**	**Stream**	**Total**	**Inflow - Outflow**	**Model Error (%)**
133	1981.17	1.6082	1.1029	0.2197	0.0000	0.0000	1.9621	4.8929	0.0477	0.0596	1.1647	1.0579	1.1063	1.4603	4.8966	-0.0037	-0.07
134	1981.83	0.1195	1.1053	0.2139	0.0000	0.6927	6.8685	8.9999	0.4826	0.0612	1.1212	4.0765	0.0356	3.2232	9.0003	-0.0004	0.00
135	1982.17	1.5360	1.1044	0.2139	0.0000	0.0000	1.9593	4.8136	0.0328	0.0588	1.1212	1.1760	0.9592	1.4688	4.8168	-0.0032	-0.07
136	1982.83	0.1289	1.1030	0.2139	0.0000	0.4220	7.1195	8.9873	0.3101	0.0587	1.1212	4.4948	0.0489	2.9531	8.9868	0.0005	0.01
137	1983.17	1.3840	1.1050	0.2139	0.0000	0.0000	1.9441	4.6470	0.0299	0.0573	1.1212	1.2680	0.7039	1.4699	4.6502	-0.0032	-0.07
138	1983.83	0.0790	1.1142	0.2495	0.0000	2.4396	6.6315	10.5138	0.6891	0.0628	1.0645	4.9820	0.0222	3.6925	10.5131	0.0007	0.01
139	1984.17	1.5639	1.1128	0.2500	0.0000	0.0000	1.9255	4.8522	0.0746	0.0605	1.0637	1.2017	0.9005	1.5538	4.8548	-0.0026	-0.05
140	1984.83	0.0526	1.1152	0.2500	0.0000	2.5586	6.3995	10.3759	0.5522	0.0655	1.0637	4.7007	0.0138	3.9789	10.3748	0.0011	0.01
141	1985.17	1.5971	1.1124	0.2516	0.0000	0.0000	1.8103	4.7714	0.0589	0.0610	1.0553	1.2429	0.7546	1.6013	4.7740	-0.0026	-0.05
142	1985.83	0.0354	1.0925	0.2557	0.0000	3.0249	6.3717	10.7802	0.5520	0.0687	1.0316	4.8584	0.0000	4.2677	10.7784	0.0017	0.02
143	1986.17	0.6040	1.1046	0.2347	0.0000	0.0000	4.5785	6.5218	0.1542	0.0662	0.9308	1.4706	0.9857	2.9171	6.5246	-0.0028	-0.04
144	1986.83	0.0169	1.0918	0.2078	0.0000	3.3395	6.7572	11.4132	0.4467	0.0726	0.7892	5.5431	0.0000	4.5591	11.4107	0.0025	0.02
145	1987.17	0.5092	1.1054	0.2078	0.0000	0.0000	4.8752	6.6976	0.2480	0.0770	0.8163	1.5151	0.5648	3.4795	6.7007	-0.0031	-0.05
146	1987.83	0.0433	1.1191	0.2078	0.0000	2.5829	7.0883	11.0414	0.2552	0.0714	0.8377	5.5985	0.0000	4.2771	11.0399	0.0015	0.01
147	1988.17	1.5127	1.1010	0.2078	0.0000	0.0000	2.1458	4.9673	0.0986	0.0642	0.8502	1.4250	0.7473	1.7842	4.9694	-0.0021	-0.04
148	1988.83	0.0208	1.1239	0.2078	0.0000	2.6987	6.7452	10.7964	0.3972	0.0670	0.8555	5.4652	0.0000	4.0098	10.7947	0.0017	0.02
149	1989.17	1.6033	1.1020	0.2078	0.0000	0.0000	1.8889	4.8020	0.0696	0.0624	0.8554	1.3776	0.8155	1.6236	4.8040	-0.0020	-0.04
150	1989.83	0.1139	1.1191	0.2078	0.0000	0.7444	7.3072	9.4924	0.2128	0.0611	0.9433	5.1937	0.0000	3.0829	9.4938	-0.0014	-0.01
151	1990.17	1.4663	1.1069	0.2078	0.0000	0.0000	1.9674	4.7484	0.0511	0.0593	0.9417	1.3493	0.8712	1.4784	4.7510	-0.0026	-0.05
152	1990.83	0.1184	1.1010	0.2078	0.0000	0.0000	7.4117	8.8389	0.2126	0.0585	0.8032	5.0970	0.0063	2.6616	8.8391	-0.0002	0.00
153	1991.17	1.2104	1.0981	0.2078	0.0000	0.0000	1.9627	4.4790	0.0727	0.0564	0.7652	1.3408	0.8454	1.4013	4.4818	-0.0028	-0.06
154	1991.83	0.0464	1.1405	0.2078	0.0000	0.5914	7.0978	9.0839	0.3934	0.0582	0.7281	5.1410	0.0000	2.7630	9.0837	0.0001	0.00
155	1992.17	0.6620	1.0901	0.2078	0.0000	0.0000	2.7143	4.6742	0.2201	0.0580	0.6876	1.3951	0.5147	1.8011	4.6766	-0.0024	-0.05
156	1992.83	0.0018	1.0788	0.2078	0.0000	3.9932	6.2794	11.5610	0.7386	0.0676	0.6472	5.4916	0.0000	4.6139	11.5589	0.0021	0.02
157	1993.17	1.3144	1.0698	0.2078	0.0000	0.0000	2.3474	4.9394	0.1290	0.0636	0.6965	1.4758	0.6435	1.9332	4.9416	-0.0022	-0.04
158	1993.83	0.0031	1.0737	0.2078	0.0000	4.3695	6.3319	11.9860	0.5700	0.0712	0.7459	5.7468	0.0000	4.8509	11.9848	0.0012	0.01
159	1994.17	1.2970	1.0834	0.2078	0.0000	0.0000	2.9319	5.5201	0.0940	0.0647	0.8445	1.4680	0.8693	2.1813	5.5218	-0.0017	-0.03
160	1994.83	0.0415	1.1229	0.2078	0.0000	2.6993	6.9538	11.0253	0.2831	0.0673	0.9433	5.5824	0.0000	4.1487	11.0248	0.0005	0.00
161	1995.17	1.4333	1.0867	0.2078	0.0000	0.0000	2.3614	5.0892	0.0562	0.0633	1.0035	1.4327	0.6939	1.8416	5.0913	-0.0021	-0.04
162	1995.83	0.0157	1.1159	0.2078	0.0000	2.8999	7.1875	11.4268	0.3992	0.0708	1.0637	5.5199	0.0000	4.3715	11.4251	0.0017	0.02
163	1996.00	7.3946	1.0963	0.2078	0.0000	0.0000	1.9017	10.6004	0.0238	0.0517	1.0637	4.9092	3.6730	0.8828	10.6042	-0.0038	-0.04