

## 6. Results

**Figure 6-1** shows the major drainage basins for Texas (arcbasns). The basins are used mainly as a visual aid for identifying major rivers and to provide the user with an indication of the extent of a window that is required to reduce the amount of data.

Using the 1:2 M scale data set (tx) a watershed area of 832 km<sup>2</sup> and path length of 61.4 km were determined compared with an area of 826.7 km<sup>2</sup> and length of 60.91 km using the 1:250 K scale data set. The differences are less than one percent. The scale-factored length, compensating for the curvature of the Earth, was calculated to be 61.6 km. Calculated average watershed slopes were 1 m/km using the 1:2 M scale data and 1.3 m/km for the 1:250 K scale data.

**Figure 6-2** shows delineated subareas for the North Sulphur River watershed at SH 24, south of Paris, Texas. These subareas are based on 1:250 K data. This would constitute a typical drainage area map for hydraulic analysis and documentation purposes. Using HDDS such results can be obtained in less than half an hour from start to finish!

**Table 6-1** shows the polygon attribute tables of the watershed (gtmpa) and subareas (gsuba) that were created automatically during the analysis. Note that this includes frequency versus discharge data that were calculated using THYSYS. (usgs.aml sends the input data to THYSYS then reads the THYSYS output file and adds the results as attributes of the watershed PAT).

**Figure 6-3** shows the names of soil types contained within the North Sulphur River watershed. **Figure 6-4** shows the percentages of each hydrologic soil group in the watershed. The presence of soil group A is negligible. These percentages were used to determine weighted runoff curve numbers along with the land use data. **Figure 6-5** shows a screen image of the existing land use data with the watershed boundary and streams superimposed.

**Table 6-1: Polygon Attribute Tables for watershed (gtmpa) and subareas (gsuba)**

*gtmpa.pat*

Area	826659328
Perimeter	203453.328
Gtmpa#	2
Gtmpa-id	1
Calc_area(sq.km)	826.659
Calc_pthl(km)	60.906
T_of_c(mins)	802
Shape_fac	0.2230000
Region#	2
Q2(cms)	214.38
Q5(cms)	467.10
Q10(cms)	694.76
Q25(cms)	1026.18
Q50(cms)	1308.01
Q100(cms)	1620.24

*gsuba.pat*

GSUB A_ID	SUBA _SQ_ KM	WSHED A_ SQ_KM	Design Rainfall (mm)						Time SUB TC_ MIN_ _24	WT_ RCN
			R2_ 24	R5_ 24	R10_ 24	R25_ 24	R50_ 24	R100 _24		
1	61.5	826.67	106	141	172	198	223	248	379	92
2	46.26	826.67	106	142	172	198	223	248	368	92
3	35.13	826.67	106	141	172	198	223	248	323	92
4	78.68	826.67	105	140	170	196	221	246	455	92
5	53.34	826.67	106	142	172	198	223	248	378	92
6	33.18	826.67	106	142	172	198	223	248	254	93
7	68.92	826.67	104	139	167	194	220	245	413	92
8	25.76	826.67	102	138	165	193	218	243	248	92
9	50.57	826.67	102	138	165	193	218	243	373	92
10	91.23	826.67	102	138	165	193	218	243	534	92
11	41.06	826.67	102	138	165	193	218	243	357	92
12	64.82	826.67	103	139	167	194	219	245	391	92
13	33.18	826.67	105	140	172	198	222	247	297	92
14	10.96	826.67	106	141	172	198	222	248	143	93
15	12.11	826.67	105	140	172	198	222	247	169	92
16	12.14	826.67	105	140	172	198	222	247	200	93
17	85.83	826.67	102	138	165	193	218	243	500	92
18	3.27	826.67	106	141	172	198	222	248	33	93
19	10.98	826.67	105	140	172	198	222	247	159	92
20	7.69	826.67	105	140	172	198	222	247	102	91

**Figure 6-6** shows the gauge locations in the upper Trinity River Watershed that were moved to coincide with their appropriate streams. This includes a table of calculated subareas and recorded areas as determined by the USGS for existing stream gauge stations. The assumption may be that the stream gauge areas are correct, however, it is fair to note that these may be subject to error.

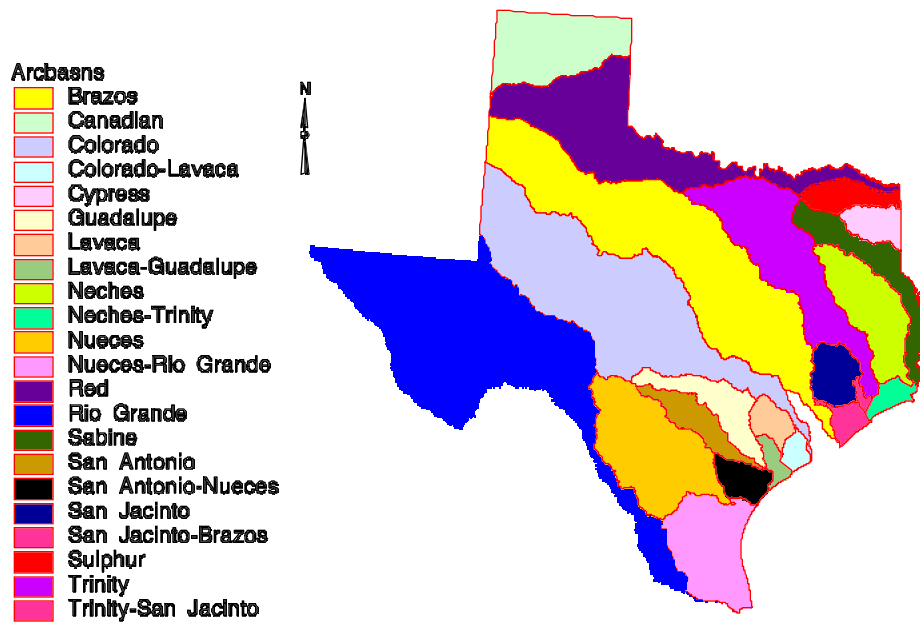


Figure 6-1: Major drainage basins of Texas

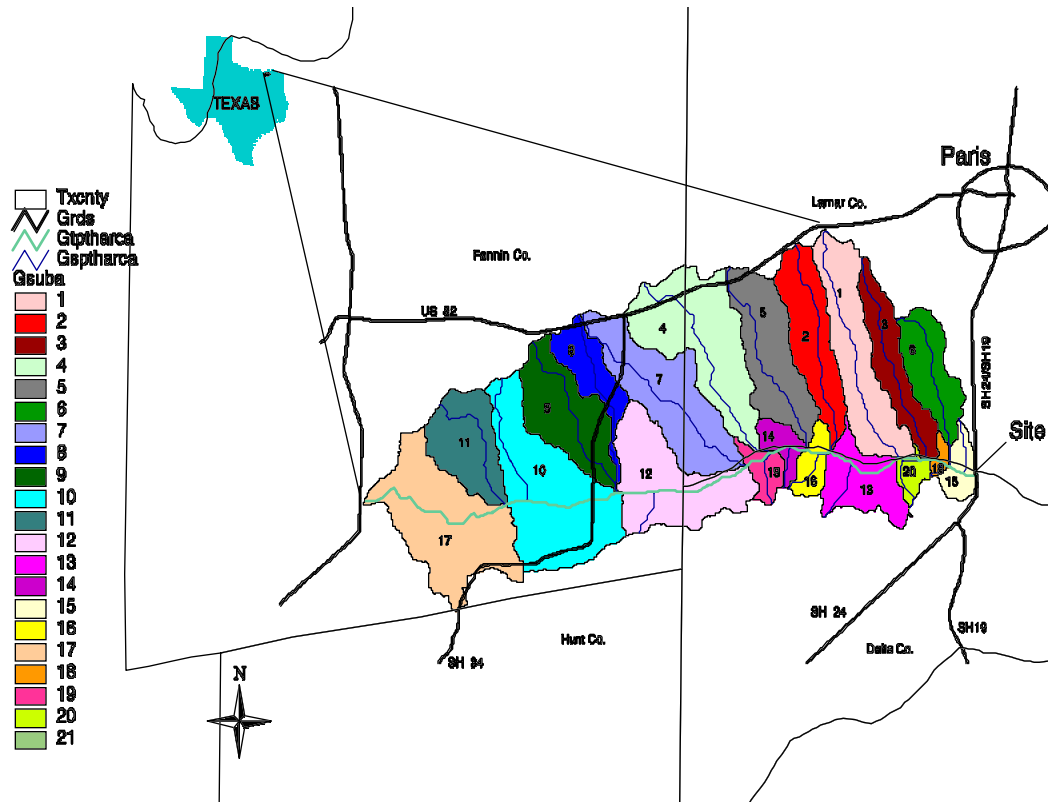


Figure 6-2: Subareas of the North Sulphur River above State Highway 24

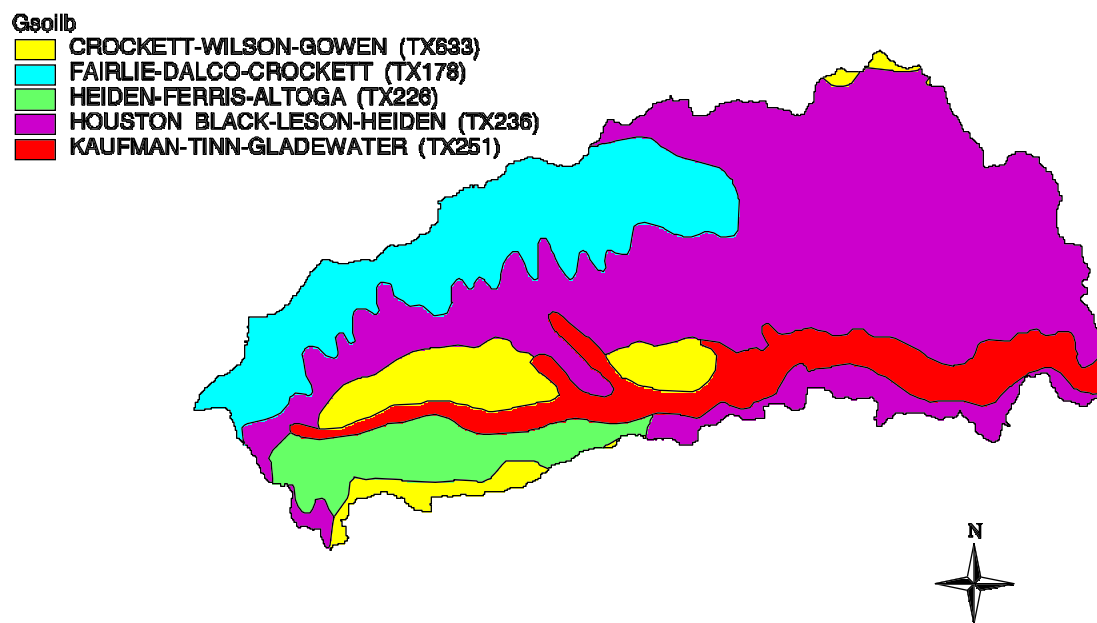
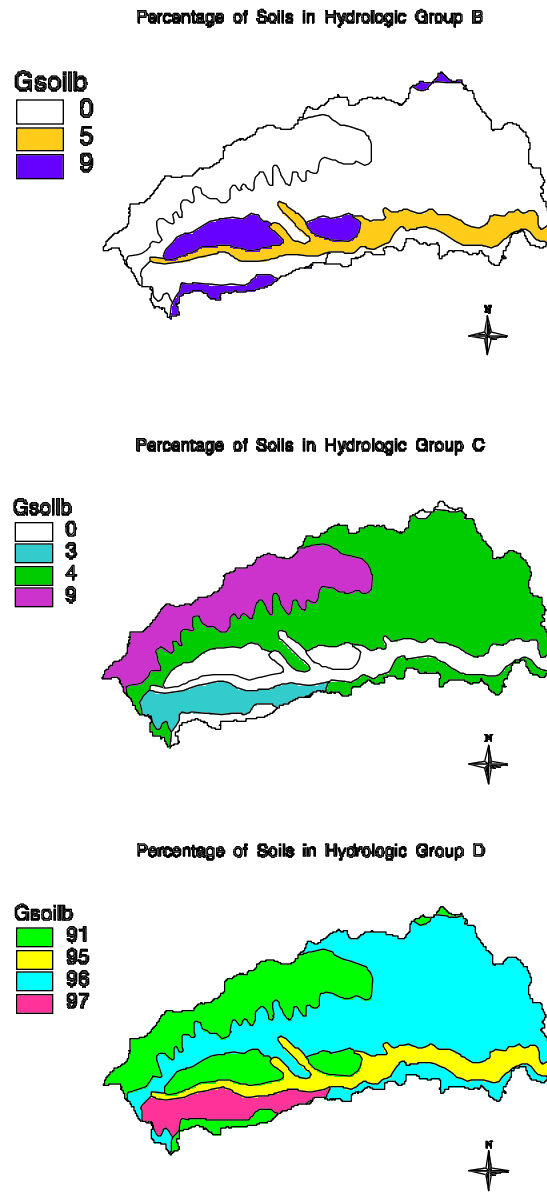
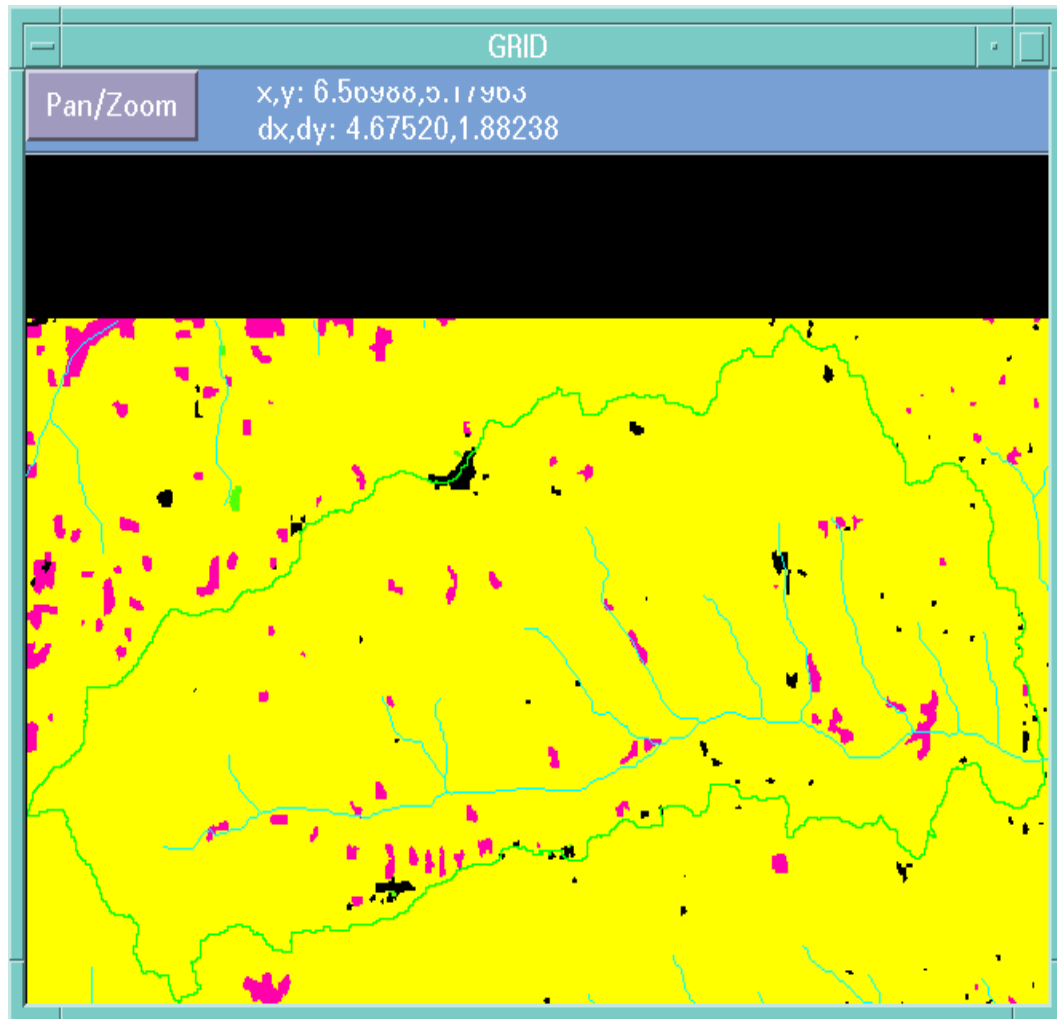


Figure 6-3: Soils in the North Sulphur River watershed

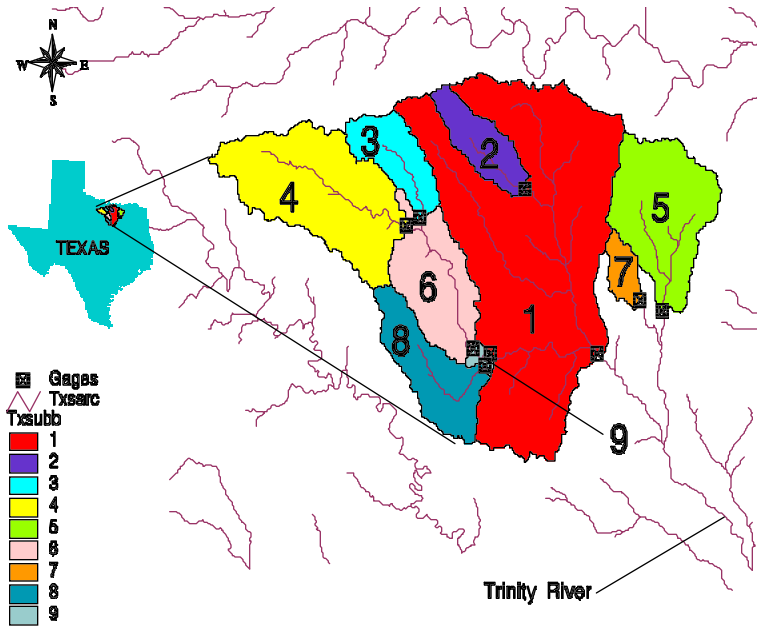


**Figure 6-4: Hydrologic soil groups in the North Sulphur River watershed**



**Figure 6-5: Image of land use grid for the North Sulphur River watershed**





All areas in km<sup>2</sup>

TXSUB B_ID	SUBA_S Q_KM	STATION	NAME	USGS_AR EA_	TOTAL_AR EA	% DIFF
1	8250.25	8057000	Trinity River at Dallas	15631.36	15830.00	1.27
2	778.75	8051500	Clear Creek near Sanger	755.20	778.75	3.12
3	885.00	8044000	Big Sandy Creek near Bridgeport	852.48	885.00	3.81
4	2954.25	8043500	West Fork Trinity River at Bridgeport	2936.32	2954.25	0.61
5	2185.00	8061500	East Fork Trinity River near Rockwall	2150.40	2185.00	1.61
6	1557.50	8045500	West Fork Trinity River at Lake Worth Dam above Fort Worth	5296.64	5396.25	1.88
7	313.00	8061540	Rowlett Creek near Sachse	307.20	313.00	1.88
8	1316.00	8047500	Clear Fork Trinity River at Fort Worth	1326.08	1316.00	-0.76
9	88.25	8048000	West Fork Trinity River at Fort Worth	6694.40	6801.00	1.59

Figure 6-6: Stream gages in the Upper Trinity River watershed