

# **Modeling Atrazine in Seven Texas Watersheds**

## **Lavon Lake Watershed**

**Prepared in Cooperation with the  
Texas State Soil and Water Conservation Board**

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## **EXECUTIVE SUMMARY**

The purpose of this study was to simulate atrazine and sediment loadings in the Lavon Lake watershed using the Soil and Water Assessment Tool (SWAT) hydrologic/water quality model. Three scenarios were modeled: (I.) baseline – pre-1999 condition; (II.) 319(h) best management practice (BMP) applications, and (III.) application of BMPs on all cropland. Part one of this report discusses model calibration and validation. Part two discusses the evaluation of the BMPs with the model.

Since 1999, the Texas State Soil and Water Conservation Board has been working through the Environmental Protection Agency (EPA) 319(h) grants program to reduce nonpoint source pollution from agricultural activities in this watershed. Technical and financial assistance was provided through the local Soil and Water Conservation Districts for development and implementation of water quality management plans.

SWAT was calibrated/validated to measured stream flow at two USGS stream gages. Adequate stream pesticide monitoring data was not available for the Lavon Lake watershed. Model input parameters were based on a recent atrazine calibration developed for the Richland-Chambers Reservoir watershed. Time series plots and statistical measures were used to verify model predictions.

The validated model was applied to evaluate the effects of various best management practices on three levels: farm level; subbasin level; and watershed level. The analysis was performed for the time period from 1974 through 2003. The major BMPs simulated with SWAT were terracing, contour farming, conservation tillage, conservation crop rotation, grassed waterways, conservation buffers, herbicide incorporation, pasture planting (conversion from cropland to pastureland) and farm-scale sediment basins.

Scenario II showed that BMPs at the farm level where they were implemented reduced atrazine loadings from 69 to 100 percent, and reduced sediment loadings from 18 to 100 percent.

Scenario II showed that BMPs at the subbasin level reduced atrazine loadings from 0 to 13 percent, and reduced sediment loadings from less than 0 to 11 percent.

Scenario II showed that BMPs at the watershed level reduced atrazine loadings into Lavon Lake by 1.5 percent and reduced sediment loadings by 1.5 percent.

Scenario III showed that BMPs at the subbasin level reduced atrazine loadings by 69 to 75 percent, and reduced sediment loadings from 69 to 89 percent.

Scenario III showed that BMPs at the watershed level reduced atrazine loadings into Lavon Lake by 71 percent, and reduced sediment loadings by 80 percent.

All simulations assume the effectiveness of BMPs remains constant for the entire modeling period, and do not account for loss of capacity in BMPs due to sediment accumulation.

Given these results, the 319(h) project has been effective in reducing nonpoint source pollution at all levels, but the greatest benefit is at the farm level. There exists good potential for further reducing atrazine and sediment concerns through continued water quality management planning and application.

**MODELING ATRAZINE IN SEVEN TEXAS WATERSHEDS**  
**Lavon Lake Reservoir Watershed**  
**Hydrologic Simulation**

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**Watershed Data**

***Physical Data***

The Lavon Lake watershed is located in north central Texas (Figure 1). It is located in parts of Collin, Grayson, Fannin and Hunt counties. The reservoir controls runoff from 198,981 hectares (768 square miles), and deliberate impoundment began in September 14, 1953. A search of USGS records indicate storage extremes: maximum contents, 97,570 hectare-meters (791,000 acre-ft), May 3, 1990; minimum observed, 9,887 hectare-meters (80,150 acre-ft), April 17, 1976.

The climate is sub-humid with an average annual precipitation of about 1,019 mm (40.1 inches). The area is subject to high intensity, short duration thunderstorms during the spring and summer months. Typically, summers are hot and winters are mild with intervals of freezing temperatures as cold fronts pass through the region.

The watershed is within the Texas Blackland Prairie Major Land Resource Area. Most of the soils range from heavy clays to clay loams. Soil depths vary from deep to shallow. Upland topography ranges from nearly level to strongly sloping.

In 1998 Lavon Lake was one of nine Texas water bodies found to be in violation of the finished drinking water criterion for Atrazine. One lake, Aquilla, was listed as impaired on the 1998 303(d) list. The remaining eight lakes were found to be threatened with a strong potential for violation.

Partners in this project include the Texas State Soil and Water Conservation Board, the Upper Sabine SWCD, the Fannin County SWCD, the Upper-Red SWCD, the Collin County SWCD, USDA-NRCS, and USDA-NRCS Water Resources Assessment Team, Blackland Research Center, Temple, TX.

## ***Project Objectives***

The main objectives of this study were to:

- Collect GIS, landuse, management, and measured data for the Lavon Lake watershed.
- Calibrate the watershed model to measured flow, sediment, and atrazine.
- Simulate atrazine load for three scenarios: (I) Baseline - pre-1999 condition, (II) 319 BMP applications, (III) Application of BMPs on all cropland (all programs).

This report is organized into two parts. Part 1 describes the calibration of the SWAT model for flow, sediment, and atrazine. Part 2 describes the application of the model to evaluate the impact of best management practices (BMPs) on water quality at various locations in the watershed.

## **PART 1 CALIBRATION**

### **INTRODUCTION**

The purpose of this part of the report is to describe the calibration of the SWAT model for flow, sediment and atrazine loading. The SWAT model contains many input parameters that describe the physical, chemical, and biological processes. During the calibration phase, the model is run and the results are compared to observed data. The values of the input parameters are refined within the range of acceptability until the model reproduces the observed data.

### **METHODOLOGY**

#### **Model Inputs**

##### ***Landuse / Cover***

The landuse/land cover map was derived from the USGS National Land Cover Dataset (NLCD). The landuse map for the watershed is shown in Figure 2. The area and percentages of each landuse is indicated in Table 1.

##### ***Soils***

The Soil Survey Geographic (SSURGO) databases for Hunt, Fannin, Grayson, and Collin counties were downloaded and joined together to create the soils database for the Lavon Lake watershed (Figure 3). This database provides a much finer resolution of soils than the previously used CBMS or STATSGO data.

The dominant soil series in the Lavon Lake watershed are Houston (33%), Austin (13%), Fairlie (11%), Trinity (8%), Ferris (5%), Altoga (4%), Lewisville (3%), Eddy (3%), Stephen (2%), and Whitewright (2%). These ten soils, together with water (5%), comprise 89% of the watershed area. A short description of each follows.

Houston. - The Houston series consists of very deep, moderately well drained, very slowly permeable soils that formed from weakly consolidated calcareous clays and marls of Cretaceous Age. These soils are on nearly level to moderately sloping uplands. Slopes are mainly 1 to 3 percent, but range from 0 to 8 percent.

Austin. - The Austin series consists of moderately deep, well drained, moderately slowly permeable soils that formed in chalk and interbedded marl. These soils are on nearly level to sloping erosional uplands. Slopes range from 0 to 8 percent.

Fairlie. - The Fairlie series consists of deep, moderately well drained, very slowly permeable soils. These soils are on nearly level to gently sloping uplands. The slope is typically 1 to 3 percent but ranges from 0 to 5 percent.

Trinity. - The Trinity series consists of very deep, moderately well drained, very slowly permeable soils on flood plains. They formed in alkaline clayey alluvium. Slopes are typically less than 1 percent, but range from 0 to 3 percent.

Ferris. - The Ferris series consists of soils that are deep to weathered shale. They are well drained, very slowly permeable soils that formed from weakly consolidated calcareous dense clays and shales. These soils are on sloping or moderately steep uplands. Slopes range from 1 to 20 percent.

Altoga. - The Altoga series consists of very deep, well drained, moderately permeable soils that formed in calcareous clayey sediments. These soils are on gently sloping to strongly sloping erosional uplands. Surfaces are convex and slopes range from 1 to 12 percent.

Lewisville. - The Lewisville series consists of very deep, well drained, moderately permeable soils that formed in ancient loamy and calcareous sediments. These upland soils have slopes of 0 to 10 percent.

Eddy. - The Eddy series consists of shallow to very shallow, well drained, moderately permeable soils that formed in chalky limestone. These soils are on gently sloping to moderately steep uplands. Slopes range from 1 to 20 percent.

Stephen. - The Stephen series consists of shallow, well drained, moderately slowly permeable soils formed in interbedded marl and chalky limestone. These soils are on gently sloping to sloping uplands. Slopes are mainly 1 to 5 percent but range from 1 to 8 percent.

Whitewright. - The Whitewright series consists of shallow, well drained, moderately permeable soils that formed in weakly cemented chalk and marl of Upper Cretaceous Age. These gently sloping to moderately steep soils are on convex upland ridges. Slopes are dominantly 4 to 10 percent but range from 1 to 15 percent.

### ***Topography***

Elevations range from about 151 meters on the flood plain above Lavon Lake to over 270 meters above mean sea level on parts of the escarpment.

Subbasins in the Lavon Lake watershed (**Figure 1**) were delineated using the 30 meter, 1:24,000 scale DEM. The result was 46 subbasins with an average size of 43.26 square kilometers.

### ***Climate***

Daily precipitation totals and maximum and minimum temperatures were obtained for National Weather Service stations within and adjacent to the watersheds (Figure 4) for input to SWAT. The model uses rainfall and temperature data from the climate station nearest each subbasin. Climate stations outside the watershed, yet close enough to influence input data to the model, were included in the GIS database. Missing precipitation data was patched from neighboring climate stations, while missing temperature data was generated with the SWAT model. Table 2 lists precipitation stations located in or near the Lavon Lake watershed and the time periods for which data is available for each station.

### ***Land Management***

Information on typical crops and management practices (e.g. crop rotations, tillage, atrazine application rate and timing) was obtained from the cooperating Soil and Water Conservation District (SWCD) offices and the USDA – Natural Resources Conservation Service (NRCS) offices. In addition, detailed information on the WQMPs implemented under the 319(h) program was provided. Subbasins containing 319(h) farms are shown in Figure 5.

Typical crops grown in the watershed are corn, cotton, grain sorghum, soybeans, wheat and hay. About fifty percent of the cropland is effectively terraced. The remainder is either not terraced, or has worn down, ineffective terraces. Contour farming is not prevalent in the area, although most landowners with terraced cropland periodically re-build terraces to maintain the effective height.

A three-year rotation of grain sorghum-wheat-corn was assumed for the cropland. Appropriate plant growth parameters for each crop were input for all model simulations.

### **Model Calibration**

Significant input variables for the SWAT model for the watershed are shown in Table 4. Input variables were adjusted as needed to calibrate for flow. Since a reservoir volumetric survey was not available for Lavon Lake, the sediment calibration settings for nearby Lake Tawakoni watershed were used. Additionally, measured atrazine samples were not available for Lavon Lake watershed. Atrazine model calibration settings developed for the Richland-Chambers watershed were used.

Subbasins were delineated using the 30-meter DEM and the ArcView interface for SWAT 2000. The subbasin threshold area was set to 2,000 hectares. Site locations for reservoirs and stream gages were used to define additional subbasin outlets, resulting in 46 subbasins.

Required inputs for each subbasin (e.g. soils, land use/land cover, topography, and climate) were extracted and formatted using the AVSWAT 2000 interface. The input interface divided each subbasin into virtual subbasins or hydrologic response units (HRU). A single

land use and soil were selected for each HRU. The number of HRU's within a subbasin was determined by: (1) creating an HRU for each land use that equaled or exceeded 2 percent of the area of a subbasin; and (2) creating an HRU for each soil type that equaled or exceeded 5 percent of any of the land uses selected in (1). The total number of HRU's (1,181) was dependent on the number of subbasins and the variability of the land use and soils within each subbasin. The properties for each of the selected land uses and soils were automatically extracted from model-supported databases.

### ***Flow Calibration***

Stream gages 08059400 and 08058900 were available (Figure 4) for model stream flow calibration/validation. Table 3 lists the stream gages used for flow calibration/validation and the time period available. A base flow filter (Arnold et al., 1995) was used to determine the portioning of groundwater and surface flow.

Stream Gage 08059400 – This gage is located on Sister Grove Creek near Blue Ridge, Texas at the outlet of subbasin 40. The calibration period was from 1/1/1976 through 12/31/1988 (Figure 7), while the validation period was from 1/1/1989 through 12/31/1999 (Figure 8).

Stream Gage 08058900 – This gage is located on the East Fork of the Trinity River at McKinney, Texas at the outlet of subbasins 18 and 19. The calibration period was from 1/1/1976 through 12/31/1989 (Figure 9), while the validation period was from 1/1/1990 through 12/31/1999 (Figure 10).

Adjustments were made to soil evaporation compensation factor, shallow aquifer storage, shallow aquifer re-evaporation, bank coefficient (fraction of transmission losses returned as base flow), Manning's "n" values for channel roughness and channel transmission loss until the simulated total flow and fraction of base flow were approximately equal to the measured total flow and base flow, respectively.

To measure the accuracy of the SWAT predictions to observed values, the Nash-Sutcliffe coefficient of efficiency ( $E_{NS}$ ) and root mean square error (RMSE) were used. Significant input variables for the SWAT model are shown in Table 4.

### ***Sediment Calibration***

Since a reservoir volumetric survey was not available for Lavon Lake the sediment calibration settings for nearby Lake Tawakoni watershed were used.

The Texas Water Development Board (TWDB) Hydrographic Survey Unit completed a hydrographic survey of Lake Tawakoni in 1997. The purpose of the survey was to determine the capacity of the lake at the normal pool elevation and to establish baseline information for future surveys. Originally, small reservoir surveys were conducted with a cable stretched across the reservoir along pre-determined range lines. A boat would manually measure the depth or use electronic depth sounders at selected intervals along the control cable. Larger water bodies prevented the use of the cable but the same procedure would be used with surveying instruments employed to keep the path of the boat on the range line and to

measure the incremental survey points. One advantage of this method was that surveys extended above the normal pool elevation, which allowed measurement of aerated sediment deposited during flood stages of the reservoir.

The new procedure utilizes Global Positioning System (GPS) technology to locate the horizontal position, and depth sounders to collect vertical measurements. All data is collected by an on-board computer, which later is used to calculate the lake volume. A disadvantage of this method is that aerated sediment is not measured, resulting in possibly incomplete measurements in flood control reservoirs.

According to the TWDB survey, the storage capacity of Lake Tawakoni was reduced by 47,860 acre-feet between October 7, 1960 (beginning of impoundment) and April 1997. Assuming the reduction in storage is due to sediment and that the unit weight of submerged sediment is 55 pounds per cubic foot, the amount of sediment deposited in the Lake Tawakoni during this period was 52,119,540 metric tons.

In order to adjust sediment prediction, several factors are adjusted:

Channel Erodibility Factor – Range is 0.0 to 1.0. A value of 0.0 indicates a non-erosive channel. A value of 1.0 indicates no resistance to erosion.

Channel Cover Factor – Range is 0.0 to 1.0. A value of 0.0 indicates that the channel is completely protected from degradation by cover, and a value of 1.0 indicates there is no vegetative cover on the channel.

Residue Decomposition Coefficient – Range is 0.01 to 0.09. The fraction of residue which will decompose in a day, assuming optimal moisture, temperature, C:N ratio and C:P ratio.

Sediment Concentration Factor (SPCON) – Range is 0.0001 to 0.01. SPCON is the linear parameter for calculating the maximum amount of sediment that can be re-entrained during channel sediment routing.

Sediment Exponent Parameter (SPEXP) – Range is 1.0 to 1.5. SPEXP is the exponential factor for calculating sediment re-entrained in channel sediment routing.

Peak Rate Function (PRF) – Range is 0.5 to 2.0. PRF is the peak rate adjustment for sediment routing in the channel. Sediment routing is a function of peak flow rate and mean daily flow. Because SWAT cannot directly calculate the sub-daily hydrograph, this variable was incorporated to allow adjustment for the effect of the peak flow rate on sediment routing. This variable influences channel degradation.

## ***Atrazine Calibration***

In-stream atrazine sampling data was not available for the Lavon Lake watershed. For SWAT model calibration purposes the atrazine calibration settings developed for a neighboring watershed, Richland-Chambers reservoir, was used.

For the Richland-Chambers watershed, the model calibration for atrazine was performed using in-stream atrazine concentrations sampled by the Tarrant Regional Water District. Daily in-stream pesticide concentrations simulated by SWAT were compared to grab samples collected at eleven sampling locations (Figure 6). The measured concentrations were obtained from one grab sample collected on a given day. Multiple applications of atrazine were simulated in the HRU's to capture the temporal distribution of the pesticide in the watershed.

Atrazine was calibrated so that the mean of the predicted values was within two standard deviations of the mean of the measured values (Table 6).

SWAT uses a pesticide database that contains parameters that govern pesticide fate and transport. Table 5 contains the atrazine values and descriptions from the SWAT pesticide database used for the project. In addition, the input variable, PERCOP, in the BSN input file was set to 0.3. The value of PERCOP can range from 0.01 to 1.0. PERCOP controls the amount of pesticide removed from the surface layer and lateral flow relative to the amount removed via percolation.

## ***Evaluation of Model Performance***

Model prediction performance was evaluated by the mean, standard deviation, root mean square error (RMSE), and Nash-Sutcliffe simulation efficiency ( $E_{NS}$ ). Nash-Sutcliffe simulation efficiency indicates how well the plot of observed versus simulated values fits the 1:1 line. If the  $E_{NS}$  value is less than or close to zero, the model prediction is considered unacceptable or poor. If the  $E_{NS}$  value is one, then the model is perfect. Generally, an  $E_{NS}$  of 0.6 or higher is considered good.

RMSE is the calculated difference between measured and predicted values expressed as a residual of the means squared. One way to gauge the accuracy of the calibration is to compare the mean measured monthly flow volume with the RMSE. The lower the RMSE compared to the measured values the more precise the comparison.

## **Results and Discussion**

### **Flow Calibration/Validation:**

Stream Gage 08059400 Calibration – Flow calibration results are shown in Figure 7. The low RMSE (1.04) and high  $E_{NS}$  (0.83) values indicate that predicted total flow compares well with measured flow. The base flow filter (Arnold et al., 1995) estimated from stream flow records that the groundwater contribution to stream flow was 23 percent. The SWAT predicted base flow was 22 percent.

Stream Gage 08059400 Validation – Flow validation results are shown in Figure 8. Again, low RMSE (1.61) and high  $E_{NS}$  (0.71) values indicate that predicted total flow compares reasonably well with the measured flow. Estimated base flow was 23 percent. The SWAT predicted base flow was 24 percent.

The monthly time series shown reveals that SWAT slightly over-predicts flow during the calibration period and slightly under-predicts flow during the validation period. This is most likely due to missing precipitation data in the station records or rainfall variability that is not reflected in the measured data. Rainfall variability is caused by localized thunderstorms occurring over climate stations or between stations, and spatial distribution of storms not accurately represented in the precipitation data input in SWAT.

**Sediment Calibration:** Since a reservoir volumetric survey was not available for Lavon Lake, the sediment calibration settings for nearby Lake Tawakoni watershed were used.

**Atrazine Calibration:** Table 6 compares measured and predicted daily in-stream atrazine concentrations for the eleven sampling stations in the neighboring Richland-Chambers watershed. Most sampling sites were represented by only two or three samples. However, RC17 in subbasin 74 had five samples, and RC22 in subbasin 66 had seven samples. Stream flow data was not collected at these stations. Again, due to the lack of in-stream atrazine sampling data for the Lavon Lake watershed, calibration settings that were developed for the Richland-Chambers watershed were used.

The predicted atrazine concentrations fell within two standard deviations of the measured mean concentrations indicating that the model is doing a reasonably good job in simulating the movement and transport of the pesticide in the watershed. Measured atrazine concentrations were assumed to be accurate.

One should keep in mind that comparing an instantaneous grab sample with the average daily concentration calculated by the SWAT model is a difficult comparison at best.

## Conclusions

Part 1 of this report describes the calibration of the SWAT model for flow and sediment for the Lavon Lake watershed. Monthly simulated flow was compared to measured values from two stream gages.

Since a reservoir volumetric survey was not available for Lavon Lake, the sediment calibration settings for nearby Lake Tawakoni watershed were used.

Finally, the atrazine model calibration settings developed recently for the Richland-Chambers watershed were applied due to the lack of in-stream atrazine sampling data for the Lavon Lake catchment. The results indicate that the model is calibrated properly and performing well.

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**Table 1. Land use/cover in Lavon Lake watershed.**

<i>Description</i>	<i>Hectares</i>	<i>Acres</i>	<i>Cover (%)</i>
Cropland	40,701	100,574	20.45%
Pastureland	89,829	221,971	45.14%
Brushy Rangeland	435	83,957	17.08%
Open Rangeland	14,987	37,035	7.53%
Urban	5,212	12,880	2.62%
Water	12,549	31,009	6.31%
Forest - Deciduous	21,790	53,845	10.95%
Forest - Evergreen	8,357	20,651	4.20%
Forest - Mixed	3,394	8,387	1.71%
Wetland	1,727	4,267	0.87%
Total	198,982	491,692	100.00%

**Table 2. Climate stations used in Lavon Lake watershed simulations.**

<i>Station Number</i>	<i>Station Name</i>	<i>Data Type</i>	<i>Start Date</i>	<i>End Date</i>
489125	Trenton	Precip	1946	2005
483370	Frisco	Precip	1966	2005
485094	Lavon Dam	Temp & Precip	1949	2005
483180	Farmersville	Precip	1946	2005
480262	Anna	Precip	1898	1995
485766	McKinney 3 S	Temp & Precip	1903	2005
483822	Gunter 5 S	Precip	1948	2000
481573	Celina	Precip	1946	1983

**Table 3. Stream gages used in Lavon Lake watershed simulations.**

<i>Station Number</i>	<i>Station Name</i>	<i>Calibration Period</i>		<i>Validation Period</i>	
		<i>Start Date</i>	<i>End Date</i>	<i>Start Date</i>	<i>End Date</i>
8058900	E. Fork Trinity River at McKinney, Tx.	1/1/1976	12/31/1989	1/1/1990	12/31/2003
8059400	Sister Grove Ck. Near Blue Ridge, Tx.	1/1/1976	12/31/1988	1/1/1989	12/31/1999

**Table 4. SWAT Input Variables For Flow and Sediment Calibration.**

<i>Variable</i>	<i>Adjustment Or Value</i>
Runoff Curve Number Adjustment	None
Soil Available Water Capacity Adjustment (mm H <sup>2</sup> O/mm soil)	None
Soil Crack Volume Factor	None
Soil Saturated Conductivity (mm/hour)	None
Soil Evaporation Compensation Factor	0.70
Minimum Shallow Aquifer Storage for Groundwater Flow (mm)	0.50
Minimum Shallow Aquifer Storage for Revap (mm)	2.00
Shallow Aquifer Re-Evaporation (Revap) Coefficient	0.10
Channel Erodibility Factor	0.25
Channel Cover Factor	0.50
Channel Transmission Loss (mm/hour)	4.00
Subbasin Transmission Loss (mm/hour)	1.00
Bank Coefficient	0.50
Reservoir Seepage Rate (mm/hour)	0.08
Initial Residue (kg/ha)	4000
Residue Decomposition Coefficient	0.02
Re-entrainment of Channel Sediment – Exponent	1.00
Re-entrainment of Channel Sediment – Linear	0.005
Peak Rate Function	1.00
Manning’s “N” Value for the Main Channel	0.06
Manning’s “N” Value for the Tributary Channels	0.06

**Table 5. SWAT input variables for atrazine fate and transport.**

<i>Input Parameter</i>	<i>Description</i>	<i>Value</i>
SKOC	Soil adsorption coefficient (mg/kg)/(mg/l)	100
WOF	Wash off fraction (fraction)	0.45
HLIFE_F	Degradation half-life of the chemical on foliage (days)	5.0
HLIFE_S	Degradation half-life of the chemical on the soil (days)	60
AP_EF	Application efficiency (fraction)	0.75
WSOL	Solubility of the chemical in water (mg/l)	33.00
PERCOP	Pesticide percolation coefficient	0.50

**Table 6. Measured and predicted atrazine concentrations – Richland-Chambers watershed.**

Sampling Station		Average	Median	SD	Plus 2 SD	Minus 2 SD
RC01 (Sub 83)	<i>Meas</i>	3.41	3.41	2.96	9.32	-2.50
	<i>Pred</i>	1.18				
RC03 (Sub 55)	<i>Meas</i>	18.00	18.00	8.49	34.97	1.03
	<i>Pred</i>	32.18				
RC04 (Sub 76)	<i>Meas</i>	8.58	8.58	10.35	29.28	-12.12
	<i>Pred</i>	2.33				
RC07 (Sub 36)	<i>Meas</i>	9.56	9.56	13.35	36.26	-17.14
	<i>Pred</i>	2.49				
RC08 (Sub 73)	<i>Meas</i>	6.00	6.00	8.35	22.70	-10.71
	<i>Pred</i>	19.87				
RC10 (Sub 81)	<i>Meas</i>	16.20	16.20	3.96	24.12	8.28
	<i>Pred</i>	7.58				
RC12 (Sub 80)	<i>Meas</i>	17.44	17.44	13.52	44.48	-9.60
	<i>Pred</i>	6.22				
RC16 (Sub 37)	<i>Meas</i>	0.36	0.36	0.16	0.68	0.03
	<i>Pred</i>	0.93				
RC17 (Sub 74)	<i>Meas</i>	4.81	4.74	2.20	9.21	0.42
	<i>Pred</i>	5.65				
RC19 (Sub 69)	<i>Meas</i>	135.02	35.00	199.73	534.48	-264.43
	<i>Pred</i>	3.20				
RC21 (Sub 65)	<i>Meas</i>	7.96	5.76	9.14	26.24	-10.31
	<i>Pred</i>	4.31				
RC 22 (Sub 66)	<i>Meas</i>	4.88	3.26	2.47	9.82	-0.05
	<i>Pred</i>	5.38				

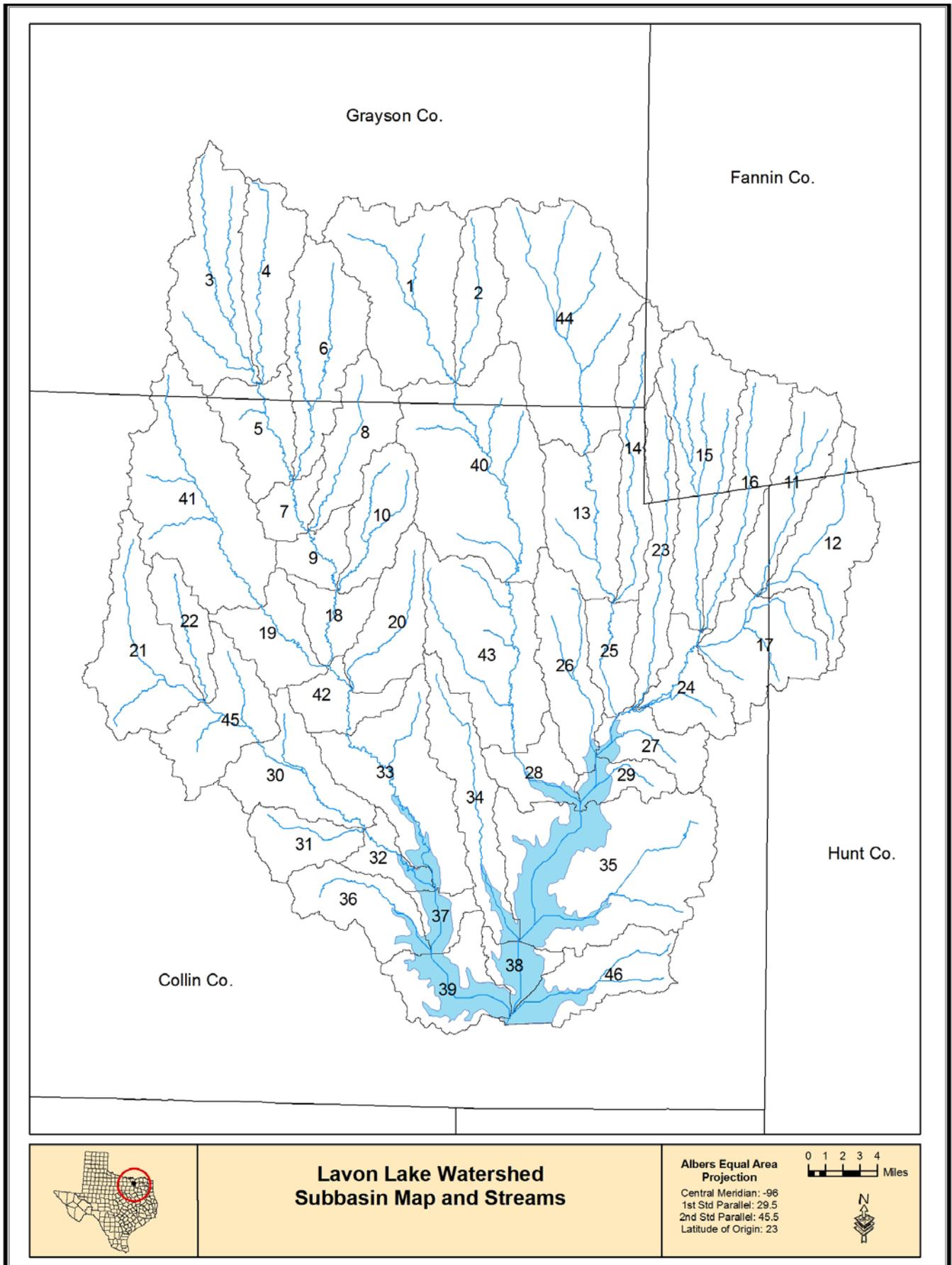


Figure 1. Lavon Lake watershed subbasin map with major streams and reservoir.

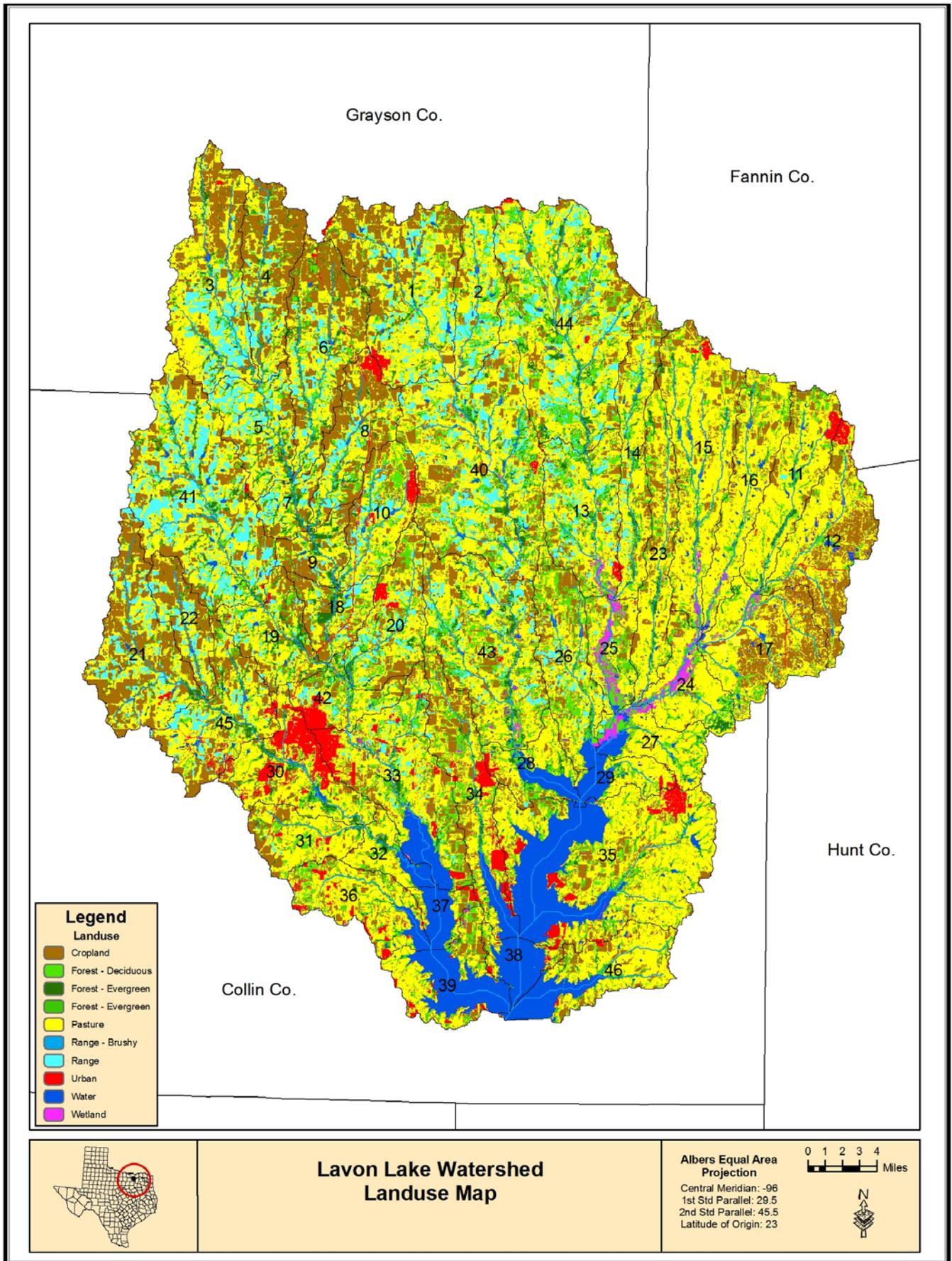


Figure 2. Lavon Lake watershed land use/cover map.

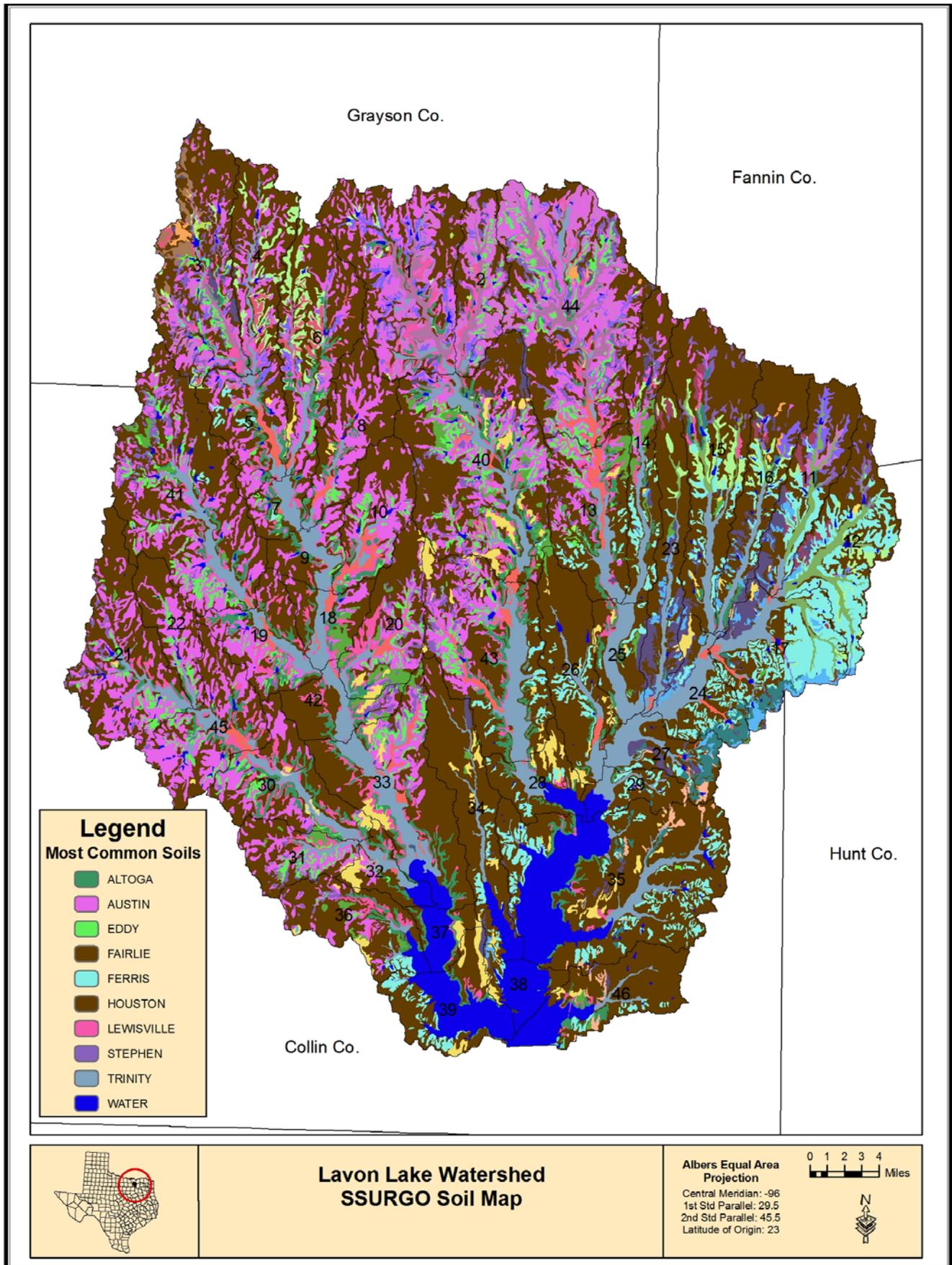


Figure 3. Lavon Lake watershed SSURGO soil map. Map legend shows the ten most common soils.

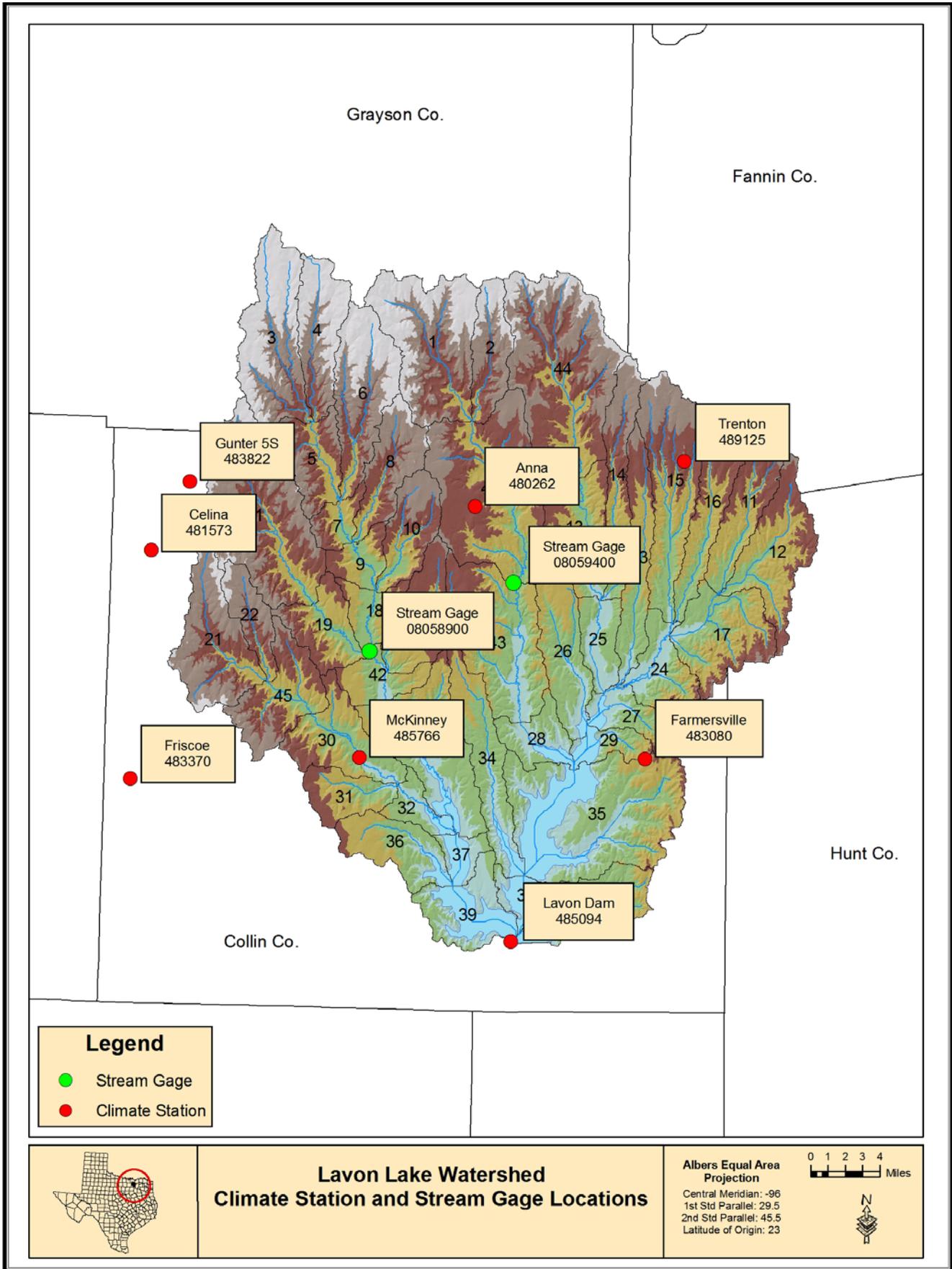


Figure 4. Lavon Lake watershed climate stations and stream gage locations.

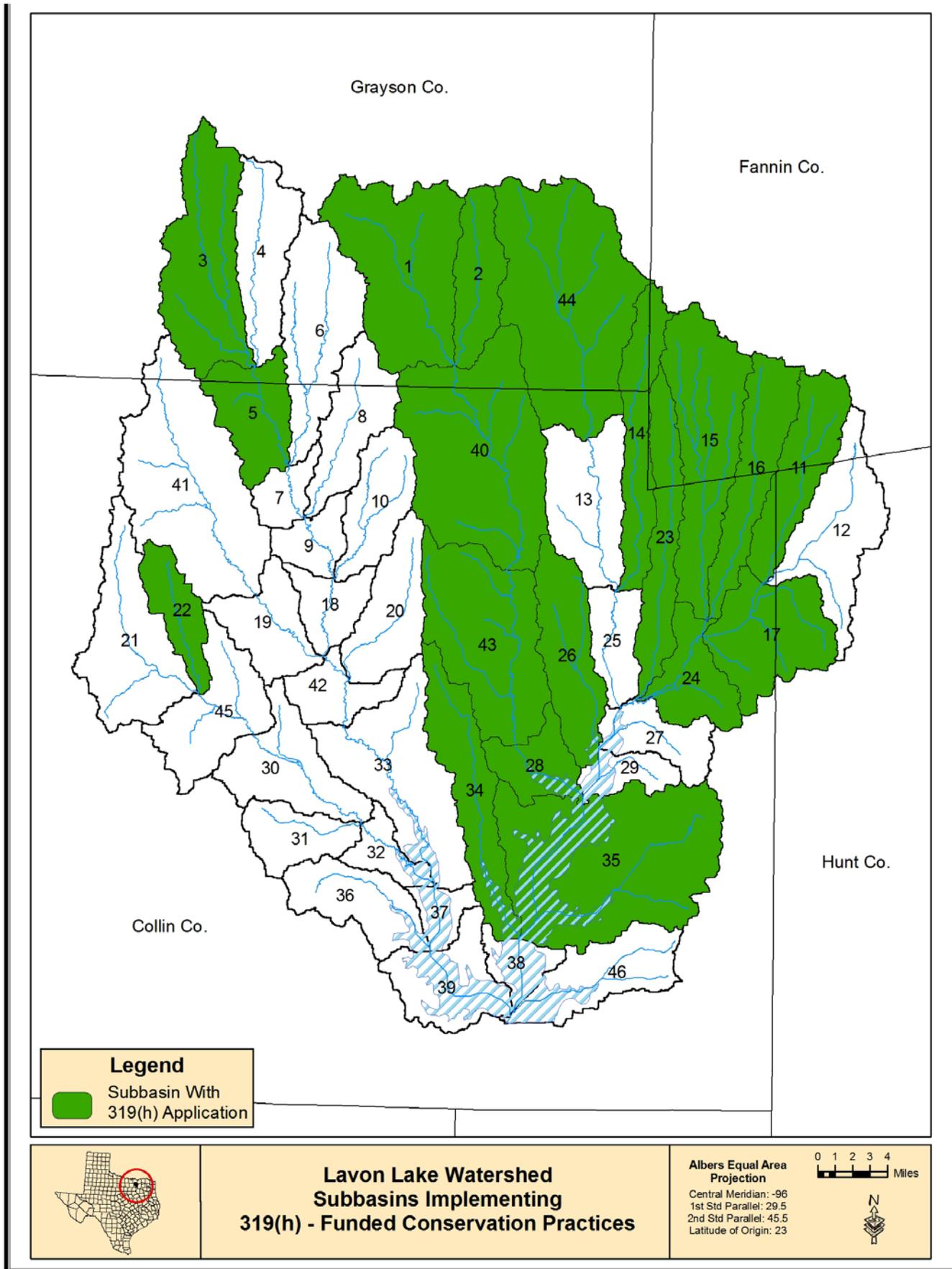


Figure 5. Subbasins implementing 319(h) water quality management plans.

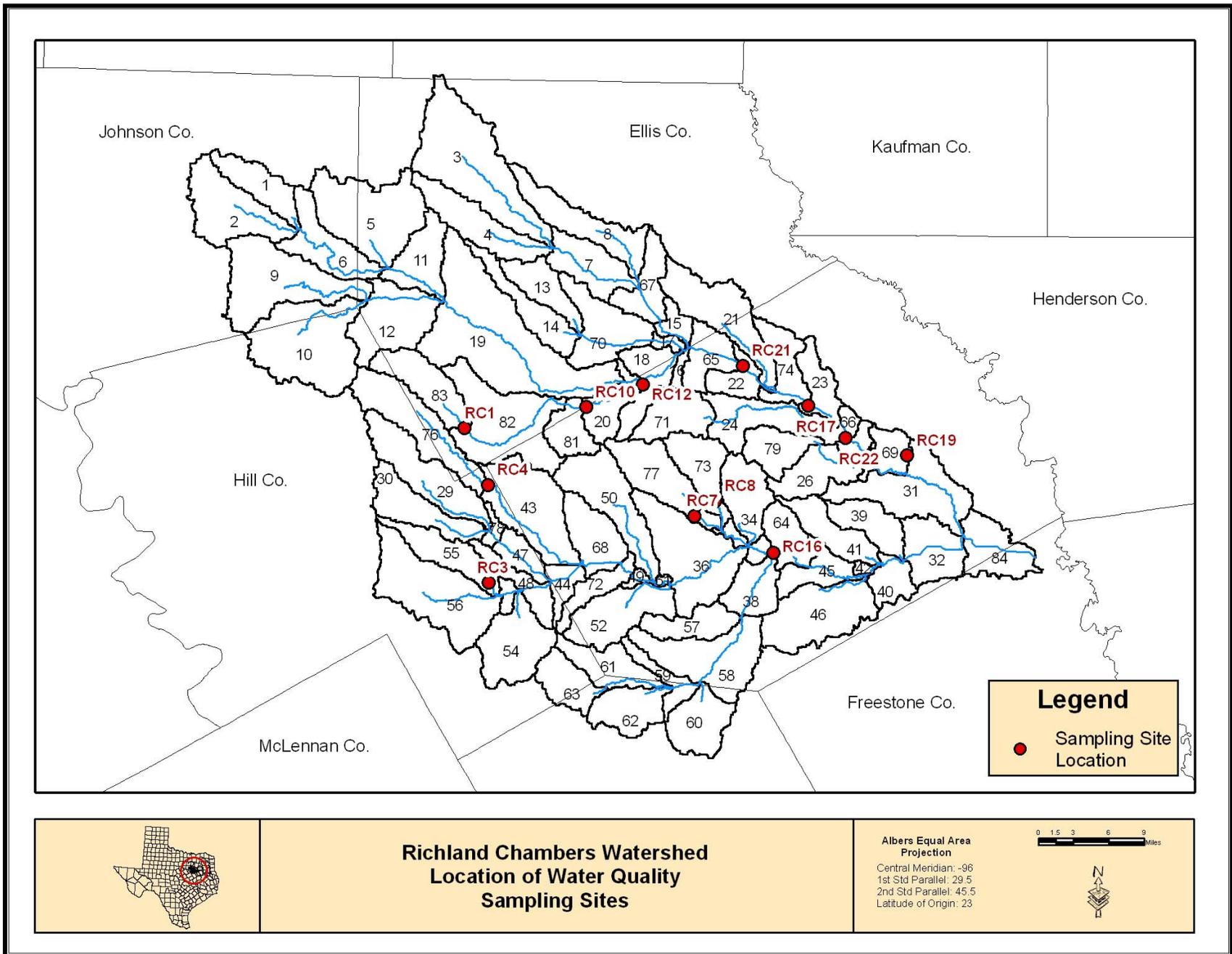


Figure 6. Richland-Chambers watershed locations of water quality sampling stations.

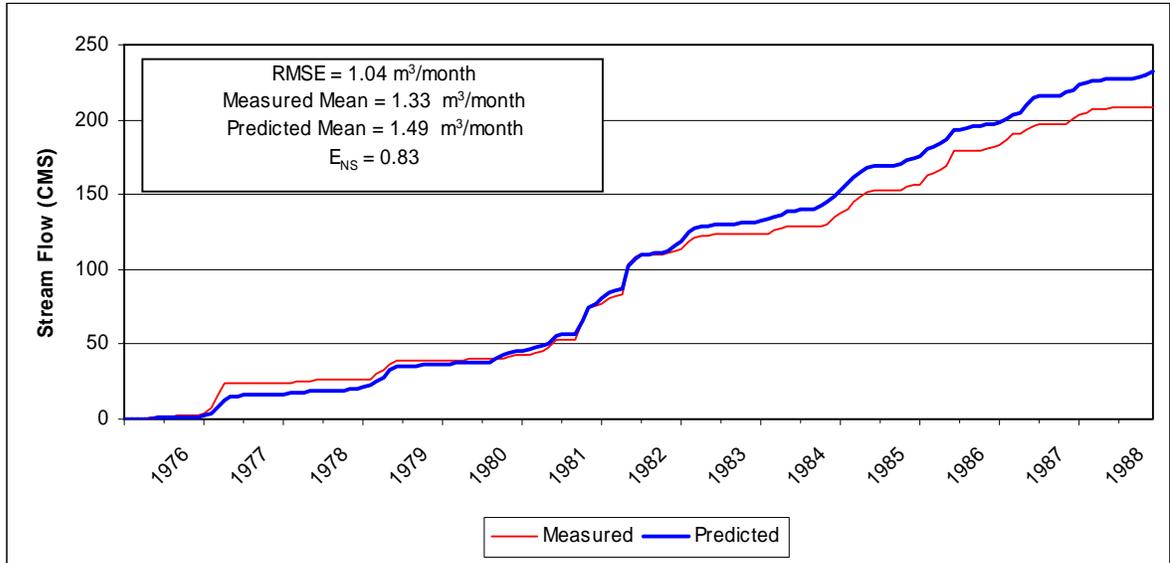


Figure 7. Cumulative monthly measured and predicted stream flow at gage 08059400 (Sister Grove creek near Blue Ridge, Tx.), 1/1/1976 through 12/31/1988. This period was used for flow calibration. Monthly statistics are shown in the box.

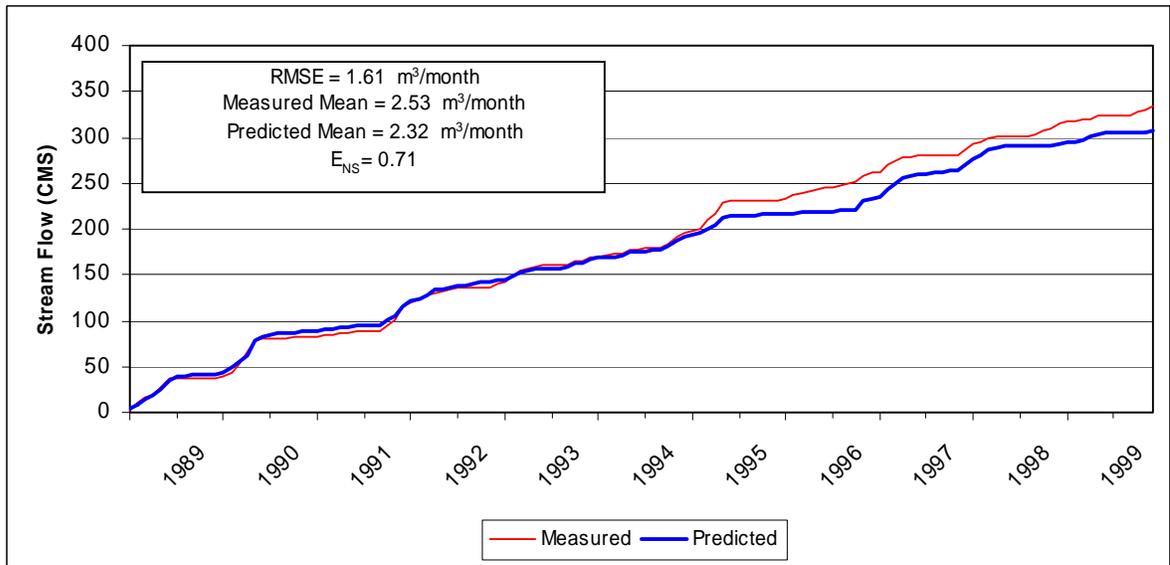


Figure 8. Cumulative monthly measured and predicted stream flow at gage 08059400 (Sister Grove creek near Blue Ridge, Tx.), 1/1/1989 through 12/31/1999. This period was used for flow validation. Monthly statistics are shown in the box.

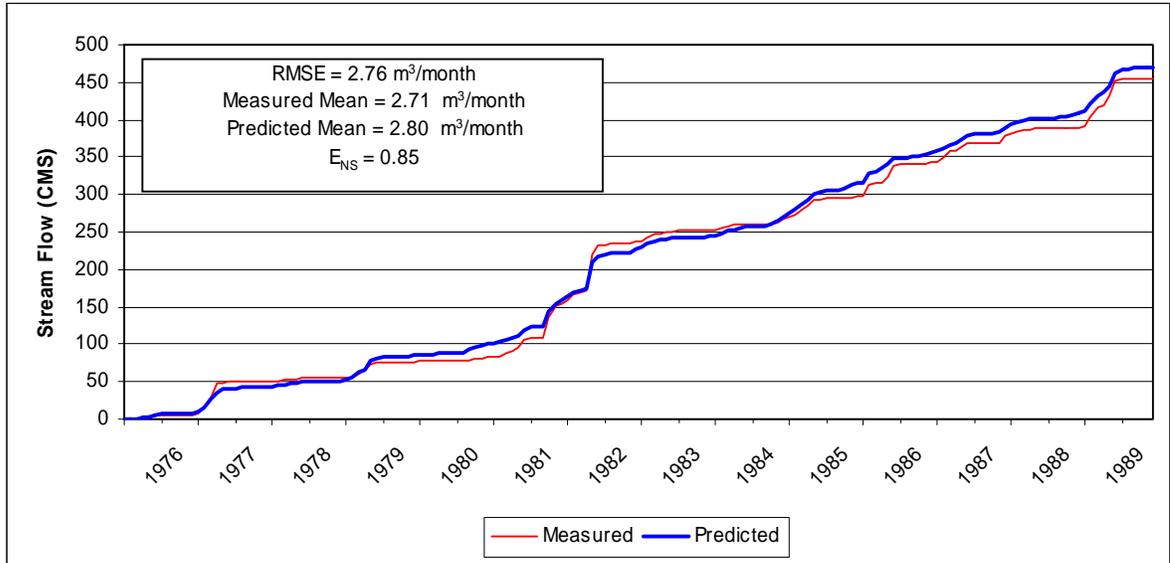


Figure 9. Cumulative monthly measured and predicted stream flow at gage 08058900 (East fork of Trinity River at McKinney, Tx.), 1/1/1976 through 12/31/1989. This period was used for flow calibration. Monthly statistics are shown in the box.

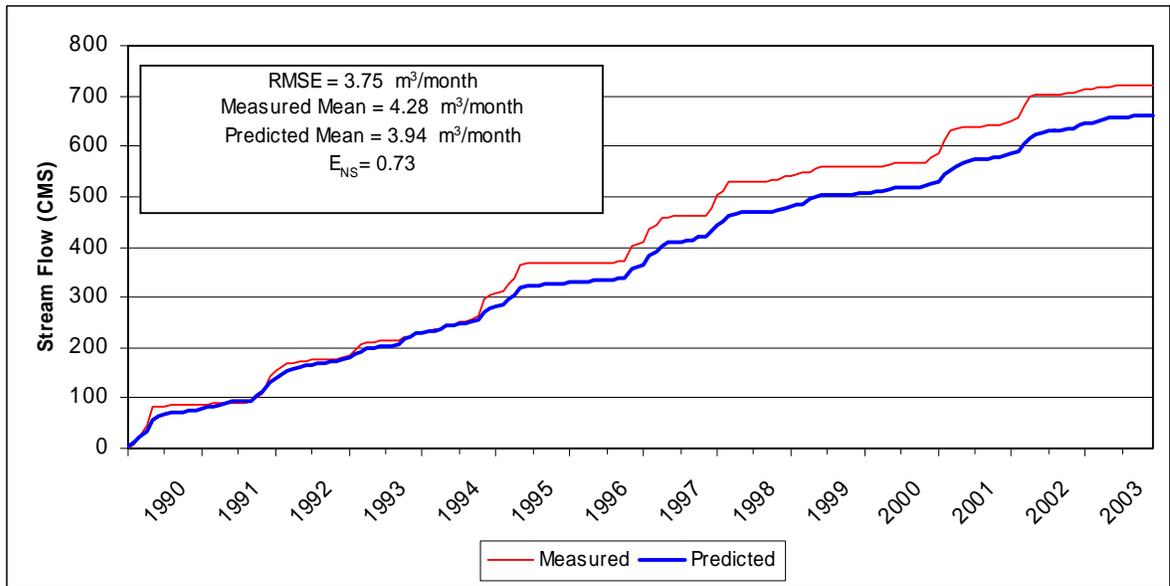


Figure 10. Cumulative monthly measured and predicted stream flow at gage 08058900 (East fork of Trinity River at McKinney, Tx.), 1/1/1990 through 12/31/2003. This period was used for flow validation. Monthly statistics are shown in the box.

## **PART 2: BEST MANAGEMENT PRACTICES**

### **Introduction**

The objective of this section of the report is to describe the application of the SWAT model for estimating atrazine loading and sediment yield under the existing conditions of the watershed and analyze the effectiveness of BMPs applied under the 319(h) program.

### **Methodology**

#### ***BMP Scenarios***

Three scenarios were constructed in order to estimate the reductions in atrazine and sediment due to implementation of WQMP plans under the 319(h) program. Each scenario was run for the 30-year period, 1974 through 2003.

- Scenario I – Current conditions scenario representing the conditions in the watershed prior to the implementation of WQMPs under the 319(h) program.
- Scenario II – Post BMP scenario representing the conditions in the watershed after the implementation of funded WQMPs under the 319(h) program.
- Scenario III – All cropland treated scenario representing the ideal condition in which BMPs have been applied to all cropland acres.

Changes in sediment and atrazine loadings between the pre-BMP and the post-BMP scenarios provide the percentage of reduction in the watershed.

#### ***Scenario I - Existing Conditions***

This scenario was modeled with only fifty percent of the cropland effectively terraced with no contouring. Existing ponds and dams were included as well as typical management techniques including tillage, fertilization, and conservation practices. A three-year crop rotation of corn-wheat-sorghum was used for cropland management.

#### ***Scenario II - Post BMP Condition***

Table 7 shows the various conservation practices (BMPs) by county that were implemented under the 319(h) project.

Major BMPs simulated with SWAT were:

- Terracing
- Grassed waterways
- Contour farming
- Conservation tillage

- Filter strips and field borders
- Conservation crop rotation
- Pasture and hayland planting
- Range Planting
- Prescribed grazing
- Installation of planned ponds and grade stabilization structures (GSS)
- Nutrient and pest management
- Fence
- Farm pond
- Critical Area Planting
- Brush Management

These practices were applied only to the farms in the watershed that had implemented WQMPs under the 319(h) program. As a percentage of the total land area in the watershed, these farms constituted a relatively small part - about 0.8 percent (1,564 hectares).

### ***Scenario III - All Cropland Treated***

All the BMPs listed above for scenario II were applied to all cropland acres for scenario III. Cropland conversion to pasture/hayland was simulated at 25 percent. This value was chosen since it is similar to the landuse conversion rate implemented in the 319(h) WQMPs and modeled in scenario II.

### ***BMP Analysis***

Results are presented as a percentage reduction in atrazine and sediment loadings at three levels:

- Farm level – This included only the areas in each subbasin where BMPs were applied.
- Subbasin level – Included both the BMP areas and the non-BMP areas within the subbasin.
- Watershed level –Four locations were selected along the main channels: (1) The watershed outlet in subbasin 46 on the East Fork of the Trinity river, (2) the outlet of subbasin 42 on the East Fork of the Trinity, (3) the outlet of subbasin 40 on Sister Grove Creek, and (4), the outlet of subbasin 27 on the East Fork of the Trinity River. The effects of reservoir impoundment were ignored for this analysis.

## **Results and Discussion**

The simulation of the watershed hydrology can be separated into two major divisions. The first part is the land phase of the hydrologic cycle that controls the amount of water, sediment, nutrient and pesticide loadings to the main channel in each subbasin. The second part is the routing phase, or water phase, of the hydrologic cycle where water, sediment, nutrients and pesticides move through the channel network of the watershed to the outlet.

The following results described under the farm and subbasin levels are from the land phase, while the watershed results are from the routing phase of the simulation.

### ***Reductions at farm level – scenario II***

The subbasins where 319(h) water quality plans were implemented are shown in Figure 5. In some cases, fields receiving conservation treatment extend across subbasin lines. The types of installed practices and extents are listed in Table 7, while the reductions in atrazine and sediment loadings are shown in Figure 9. This includes only the areas where 319(h) BMPs were implemented.

Atrazine reductions varied from 69 to 100 percent at the farm level across the subbasins, where atrazine was applied. The high percentage atrazine reductions in subbasins 11, 14, 16, 17, 22, 24, 28, 34, 35, and 43 were mostly due to landuse conversion from cropland to permanent pasture. Where the landuse remained as cropland the combination of applied conservation practices reduced atrazine loadings by 69 to 97 percent.

Sediment reductions varied from 18 to 100 percent at the farm level. The highest reductions were again associated with the landuse conversion of cropland to pastureland. Typically, the treated cropland sediment reductions were about 88 to 100 percent across the subbasins.

### ***Reductions at the subbasin level - atrazine***

Reductions in subbasin atrazine loadings are shown in Figure 10. Here all the land in the subbasin is considered.

Scenario II - The percentage reductions varied from none to over 13 percent. Comparing this to the reductions at the farm level the percentage reductions are less. This is to be expected, as the BMP-treated land comprises a relatively small part of the total subbasin area.

Scenario III – In this scenario all cropland is treated and the percentage reductions varied from 69 to 75 percent.

### ***Reductions at the subbasin level – sediment***

Reductions in subbasin sediment loadings are shown in Figure 11.

Scenario II – The percentage reductions varied from none to over 11 percent. Subbasins that show little reduction in sediment have BMP practices, such as farm ponds, which affect limited areas.

Scenario III – The percentage sediment reductions when all cropland was treated varied from 69 to 89 percent.

### ***Reductions at the watershed level – atrazine***

Figure 12 shows the percentage atrazine loading reductions at four locations on the main channels: (1) The watershed outlet in subbasin 46 on the East Fork of the Trinity river, (2) the outlet of subbasin 42 on the East Fork of the Trinity, (3) the outlet of subbasin 40 on Sister Grove Creek, and (4), the outlet of subbasin 27 on the East Fork of the Trinity River. Refer to the subbasin map in Figure 1 for locations.

Scenario II – The percentage reductions varied from 0.29 to 6.5. The percentage reduction at the outlet of subbasin 46 was 0.29.

Scenario III – The percentage reductions varied from 71.2 to 74.5. The percentage reduction at the outlet of subbasin 46 was 71.2.

### ***Reductions at the watershed level – sediment***

Figure 13 shows the percentage sediment loading reductions at the same four locations.

Scenario II – The percentage reductions varied from 0.19 at the outlet of subbasin 46 to 7.39 at the outlet of subbasin 40.

Scenario III – The rounded percentage reductions were 80, 82, 81 and 80 at the outlets of subbasins 27, 40, 42, and 46, respectively.

### ***Spatial view of atrazine and sediment loadings***

Symbolized subbasin maps in Figures 14, 15, and 16 present the predicted average annual atrazine loadings by subbasin for the current condition, scenario II and scenario III, 1974 through 2003.

Similar maps in Figures 17, 18, and 19 present the predicted average annual sediment loadings by subbasin for the current conditions, scenario II and scenario III, 1974 through 2003.

## **Conclusions**

The purpose of this study was to simulate the atrazine and sediment loadings for three scenarios: (I) baseline conditions (pre 1999), (II) 319(h) BMP applications through WQMPs, and (III) all cropland treated. The study was performed using the SWAT basin scale model.

Scenario II showed that BMPs at the farm level where they were implemented reduced atrazine loadings from 69 to 100 percent, and reduced sediment loadings from 18 to 100 percent.

Scenario II showed that BMPs at the subbasin level reduced atrazine loadings from 0 to 13 percent, and reduced sediment loadings from 0 to 12 percent.

Scenario II showed that BMPs at the watershed level reduced atrazine loadings into Lavon Lake by 1.5 percent and reduced sediment loadings by 1.5 percent.

Scenario III showed that BMPs at the subbasin level reduced atrazine loadings by 71 to 74 percent, and reduced sediment loadings from 80 to 82 percent.

Scenario III showed that BMPs at the watershed level reduced atrazine loadings into Lavon Lake by 71 percent, and reduced sediment loadings by 80 percent.

Predicted sediment volume to Lavon Lake for the 1974 through 2003 modeling period was 28,839,000 metric tons for the baseline condition (scenario I), 28,389,000 metric tons for the 319(h) BMP condition (scenario II), and 5,868,000 metric tons for the all cropland treated condition (scenario III).

BMPs simulated with SWAT were terracing, contour farming, conservation tillage, conservation crop rotation, grassed waterways, conservation buffers, herbicide incorporation, pasture planting (conversion from cropland to pastureland), critical area planting, fencing, brush management, range planting and farm-scale sediment basins.

Table 7. Locations and types of conservation practices (BMPs) implemented under the 319(h) project, Lake Lavon Watershed.

<i>Conservation Practice</i>	<i>Collin Co.</i>	<i>Grayson Co.</i>	<i>Fannin Co.</i>	<i>Sum</i>
314 - Brush Management (ac)	0	0	4	4
327 - Conservation Cover (ac)	0	10	0	10
328 - Conservation Crop Rotation (ac)	170	462	78	710
329 - Residue Management, Conservation Tillage (ac)	0	298	0	298
330 - Contour Farming (ac)	83	371	35	489
342 - Critical Area Planting (ac)	4	1	0	5
344 - Residue Management (ac)	170	360	78	608
378 - Farm Pond (no)	0	5	2	7
382 - Fence (ft)	3,350	3,192	7,860	14,402
386 - Field Border (ft)	0	11,326	4,680	16,006
393 - Filter Strip (ac)	3	0	0	3
410 - Grade Stabilization Structure (no)	2	0	0	2
412 - Grassed Waterway (ac)	12	3	1	16
511 - Forage Harvest Management (ac)	307	306	170	783
512 - Pasture & Hayland Planting (ac)	347	492	251	1,090
512 - Pasture & Hayland Planting (no)	7	13	8	28
528A - Prescribed Grazing (ac)	898	1,061	382	2,341
550 - Range Planting (ac)	0	0	4	4
561 - Heavy Use Area Protection (ac)	9	5	48	62
590 - Nutrient Management (ac)	1,376	1,762	475	3,613
595 - Pest Management (ac)	1,418	1,815	559	3,792
600 - Terraces (no)	0	0	1	1
600 - Terraces (ft)	0	0	6,405	6,405
645 - Wildlife Upland Habitat Management (ac)	30	19	13	62

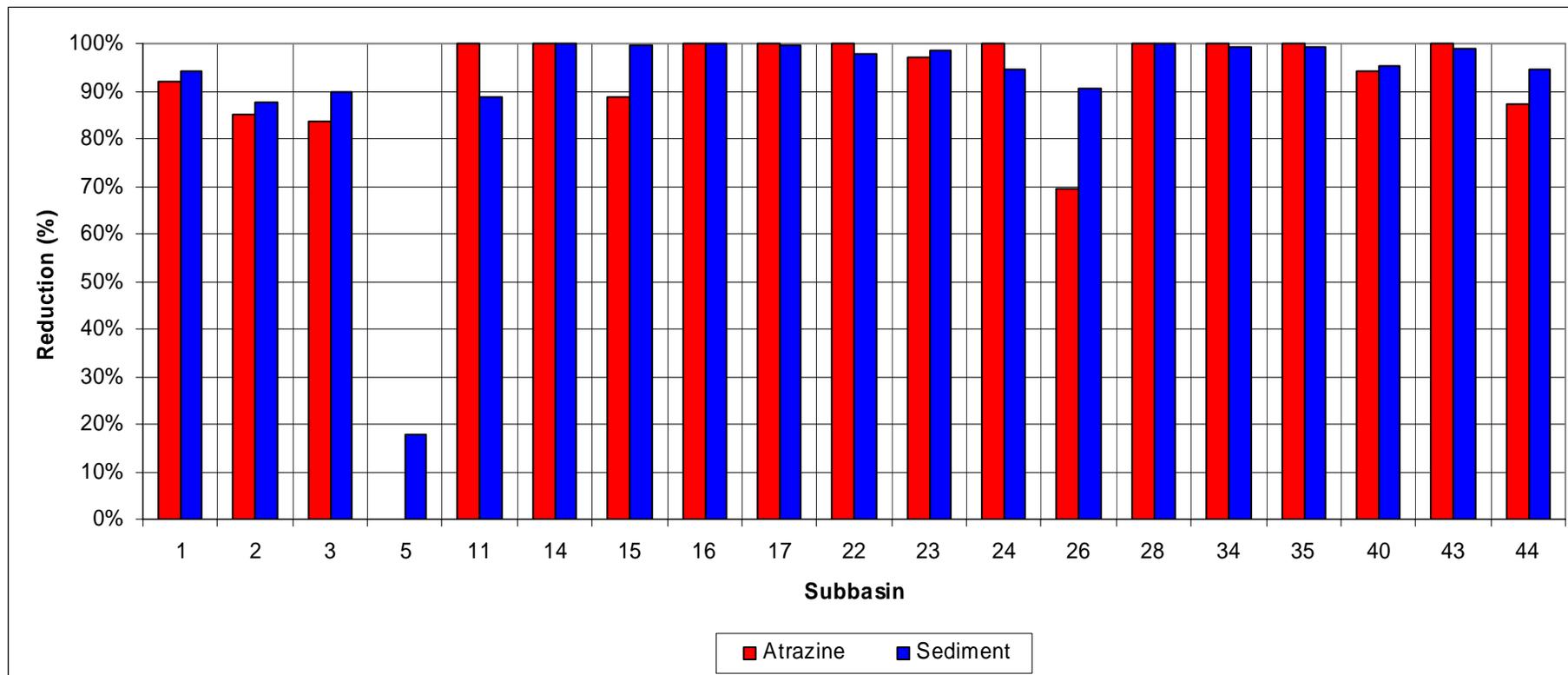


Figure 9. Percentage reductions in atrazine and sediment loading at the farm level where conservation practices were implemented. The subbasins shown in this figure are those that contained conservation practices implemented under the 319(h) project. Note that a value of 0 is shown for atrazine reduction in subbasin 5. All conservation practices in subbasin 5 were applied to pastureland.

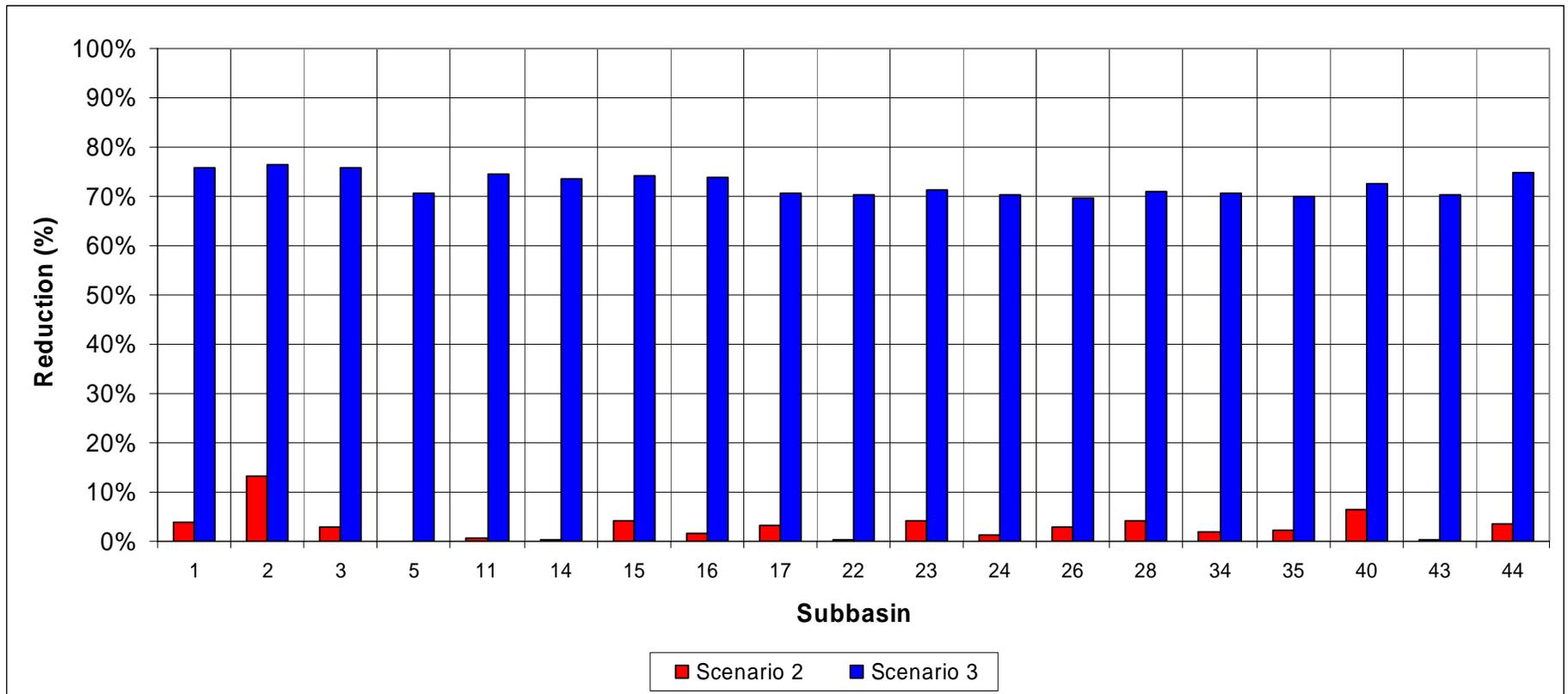


Figure 10. Percentage reductions in atrazine loading at the subbasin level. The subbasins shown in this figure are those that contained conservation practices implemented under the 319(h) project.

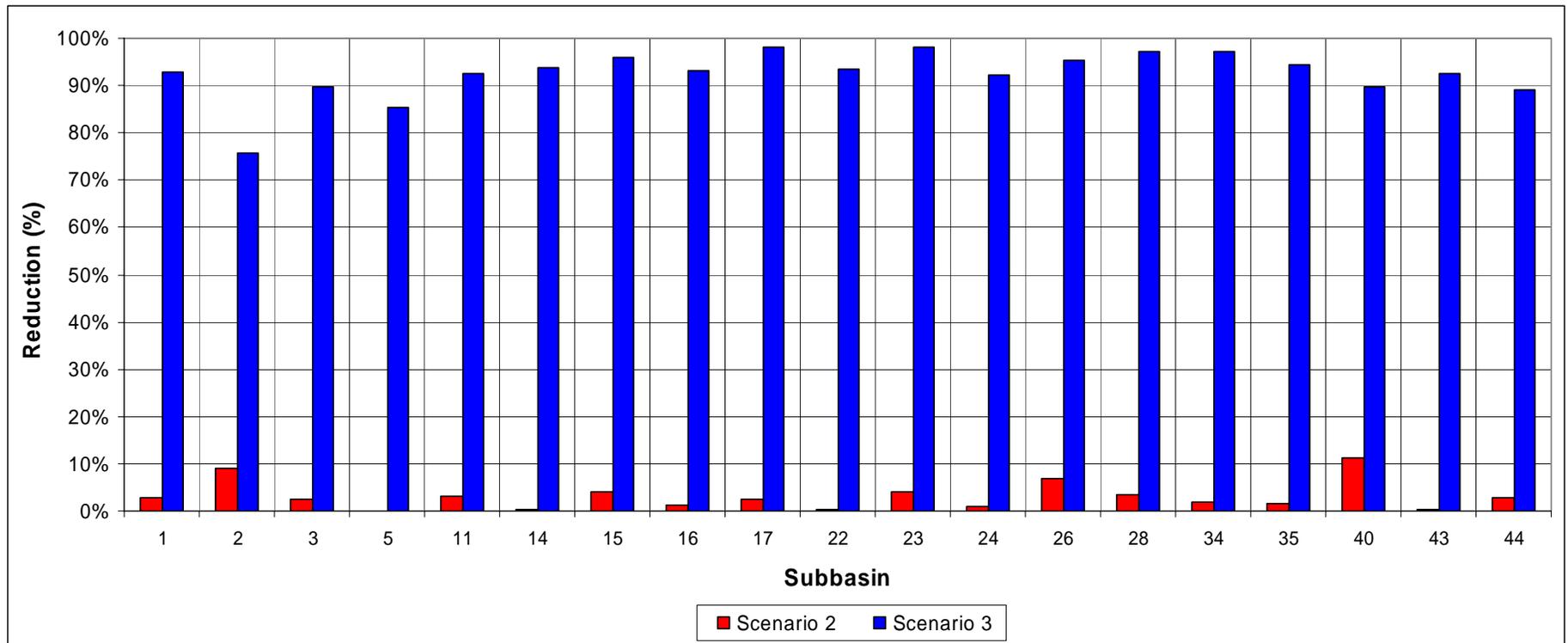


Figure 11. Percentage reductions in the sediment loadings at the subbasin level. The subbasins shown in this figure are those that contained conservation practices implemented under the 319(h) project.

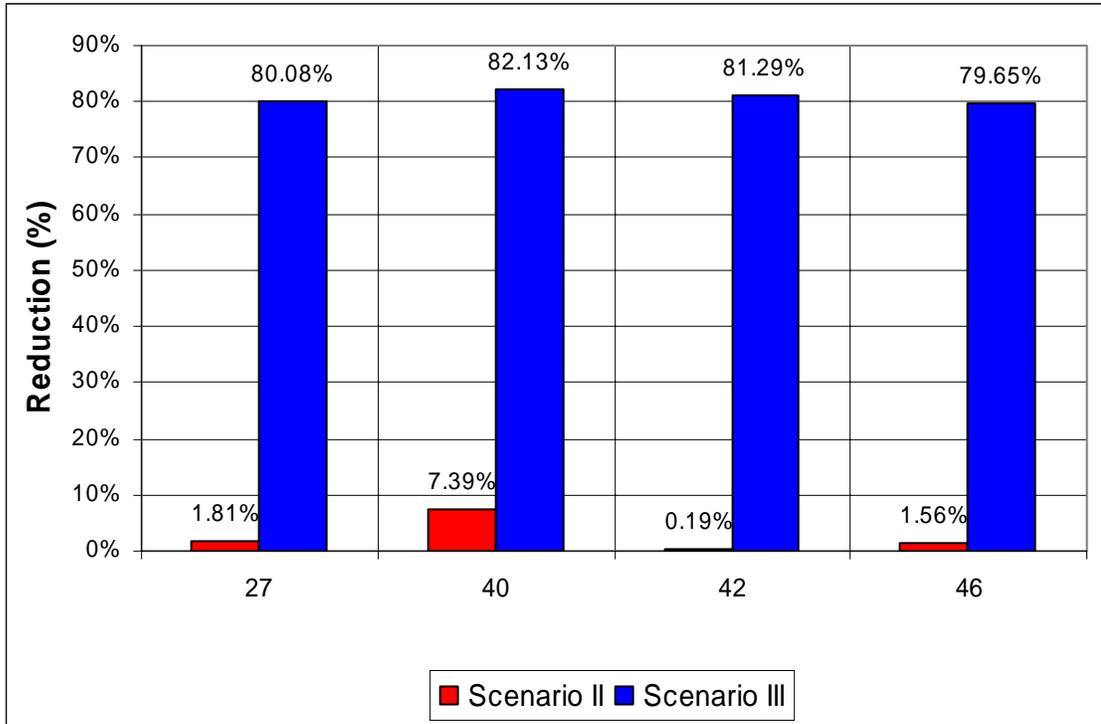


Figure 12. Percentage reductions in sediment loadings at four locations. Subbasin 46 is the outlet for the watershed.

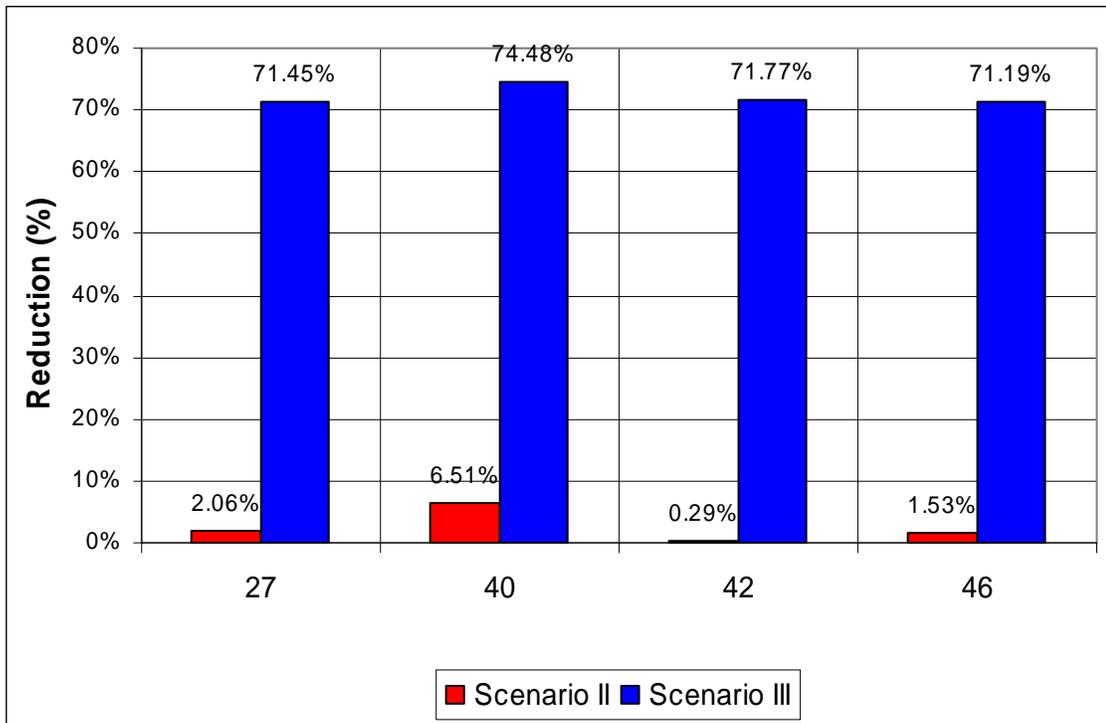


Figure 13. Percentage reductions in atrazine loadings at four locations. Subbasin 46 is the outlet for the watershed.

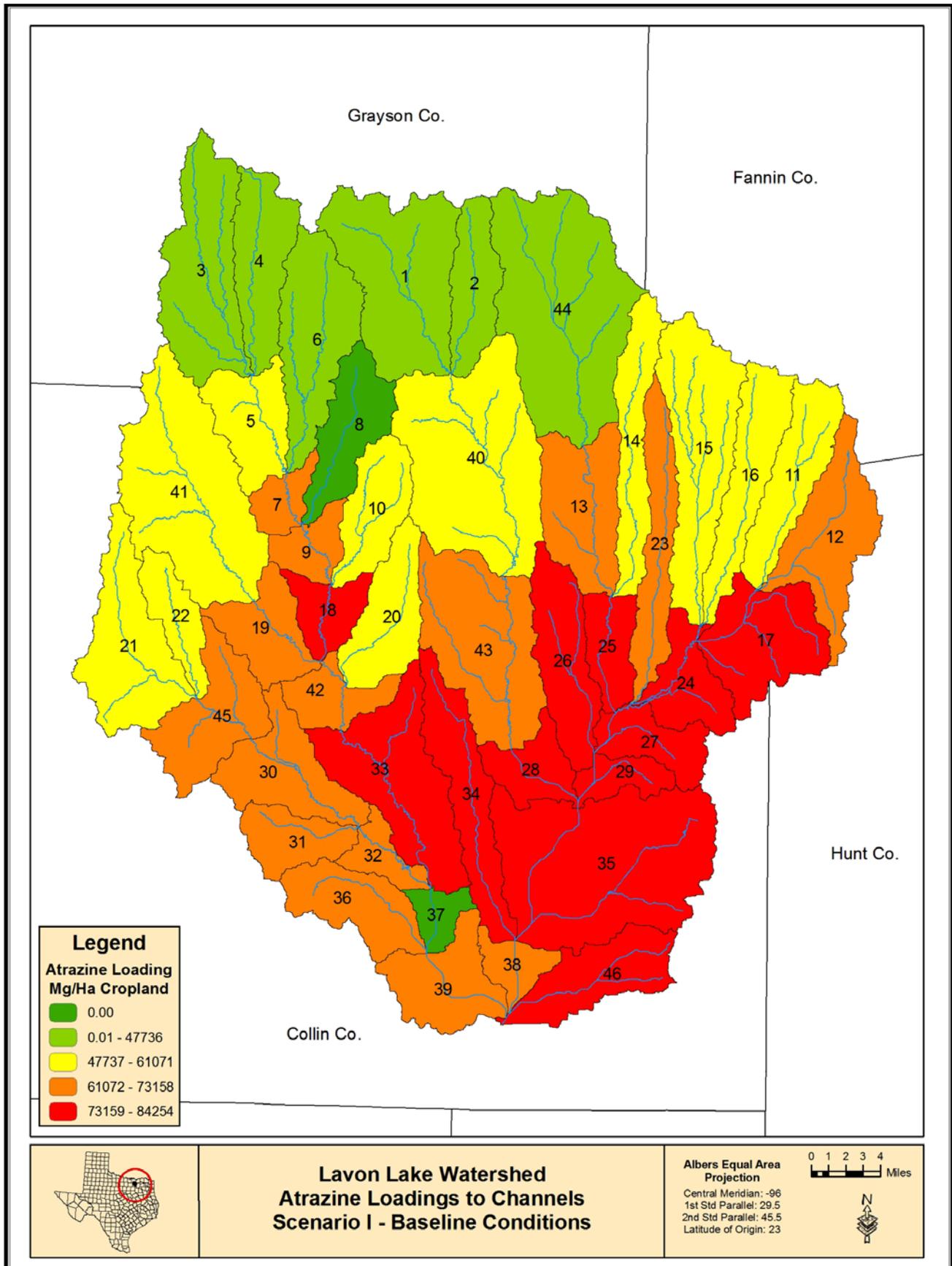


Figure 14. Predicted average annual atrazine yield by subbasin for baseline condition, Lavon Lake watershed, 1974 through 2003.

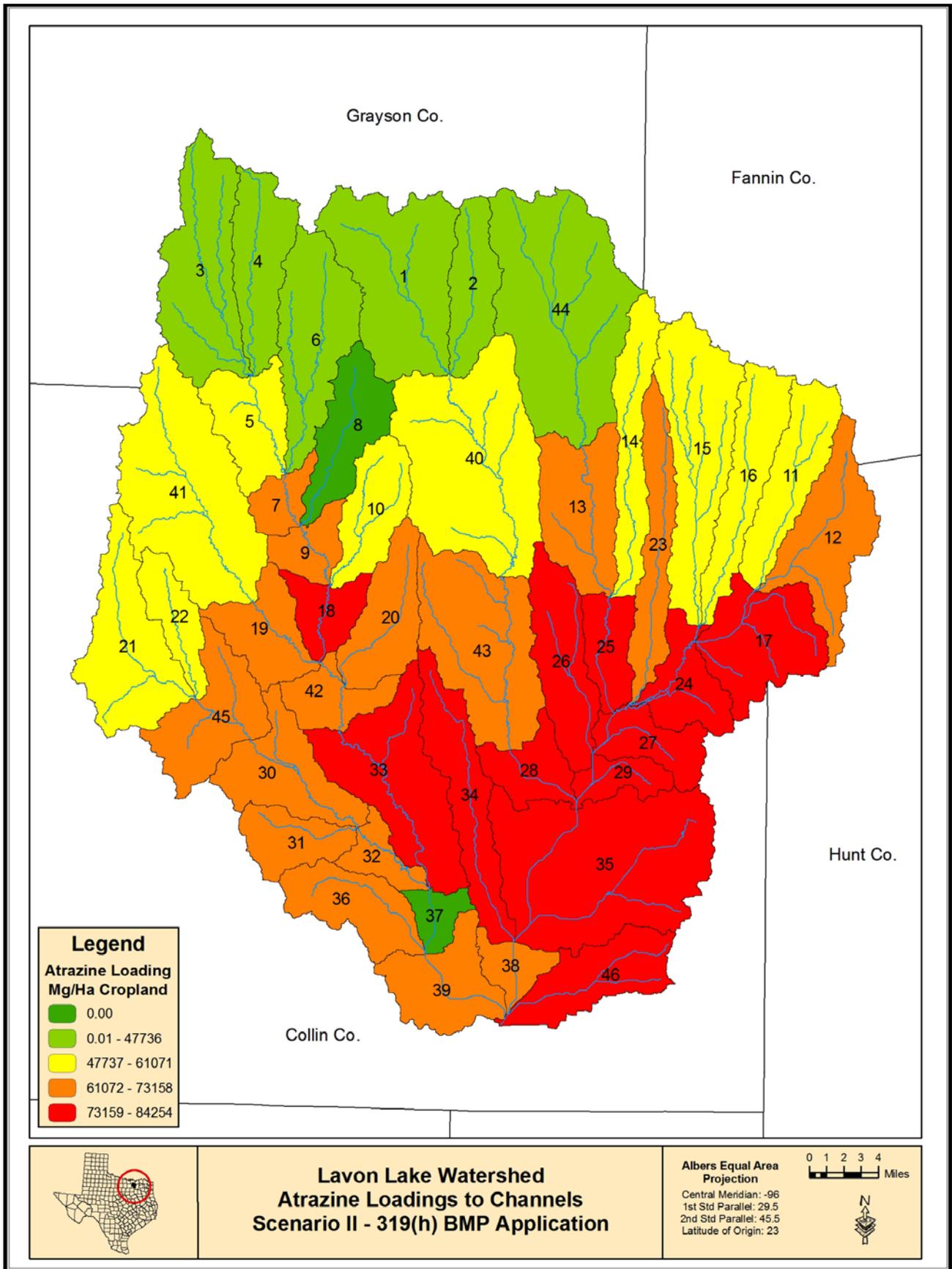


Figure 15. Predicted average annual atrazine yield by subbasin after 319(h) conservation practice implementation (scenario II), Lavon Lake watershed, 1974 through 2003.

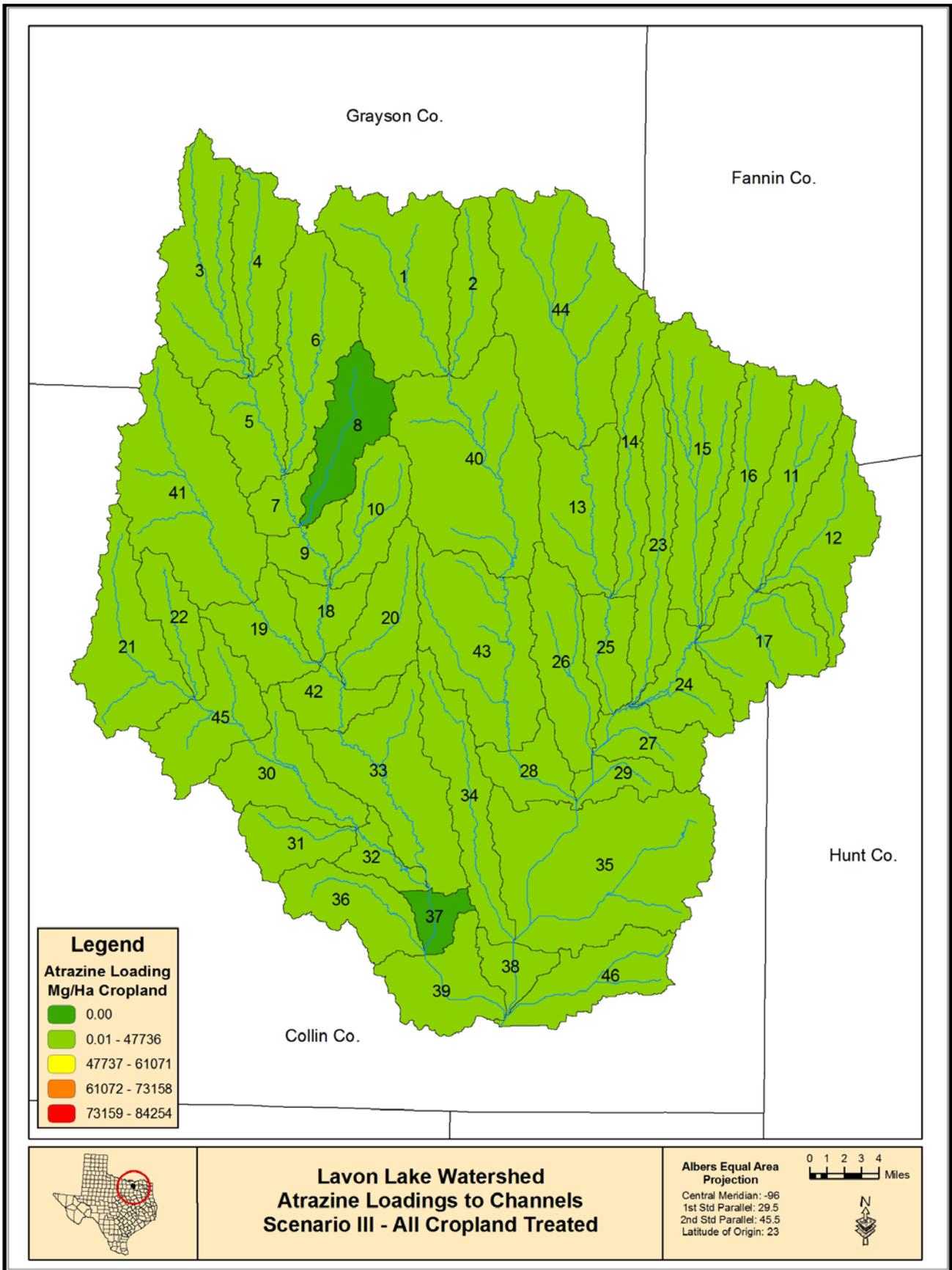


Figure 16. Predicted average annual atrazine yield by subbasin after conservation practice on all cropland (scenario III), Lavon Lake watershed, 1974 through 2003.

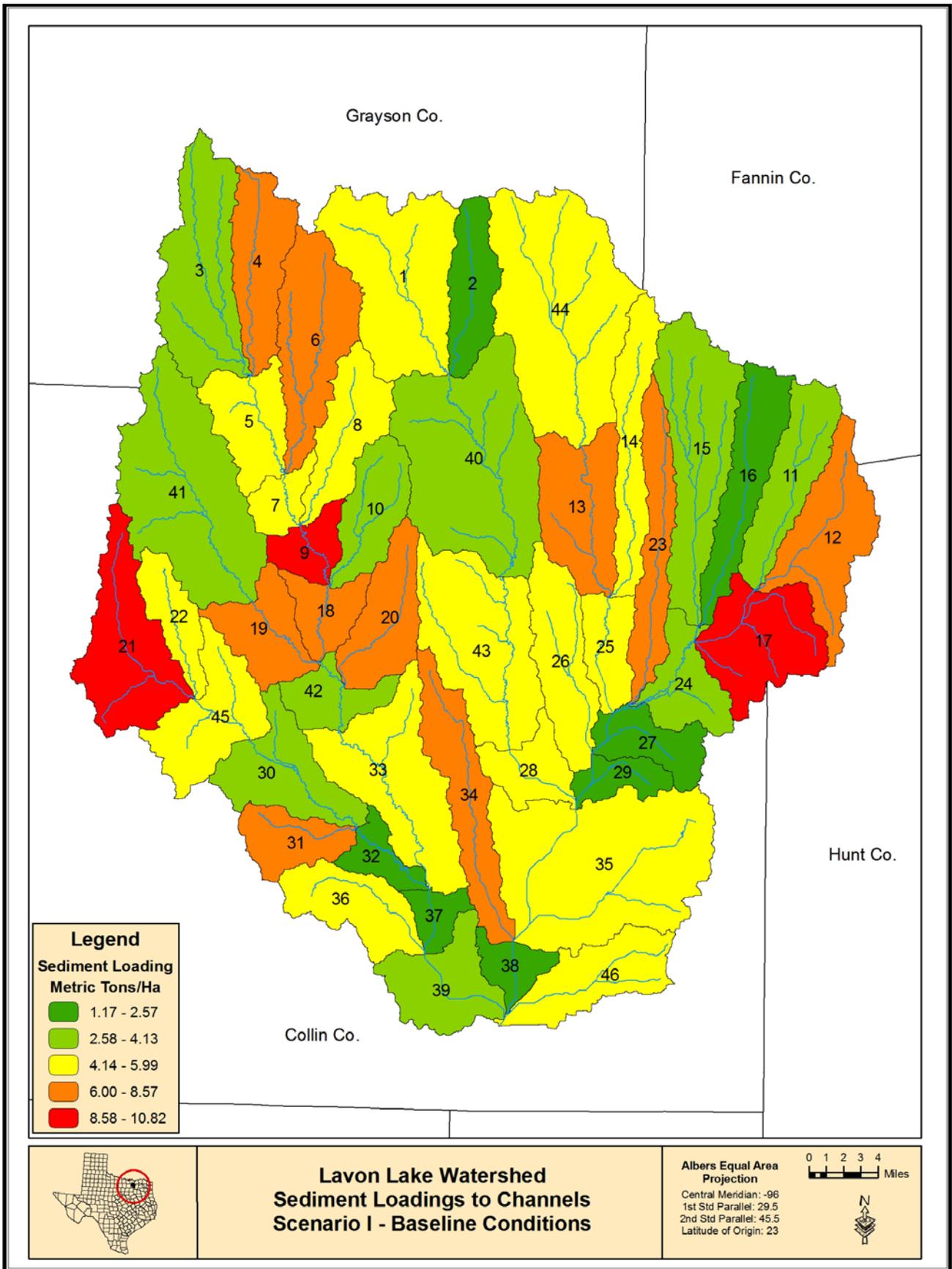


Figure 17. Predicted average annual sediment yield by subbasin for baseline condition, Lavon Lake watershed, 1974 through 2003.

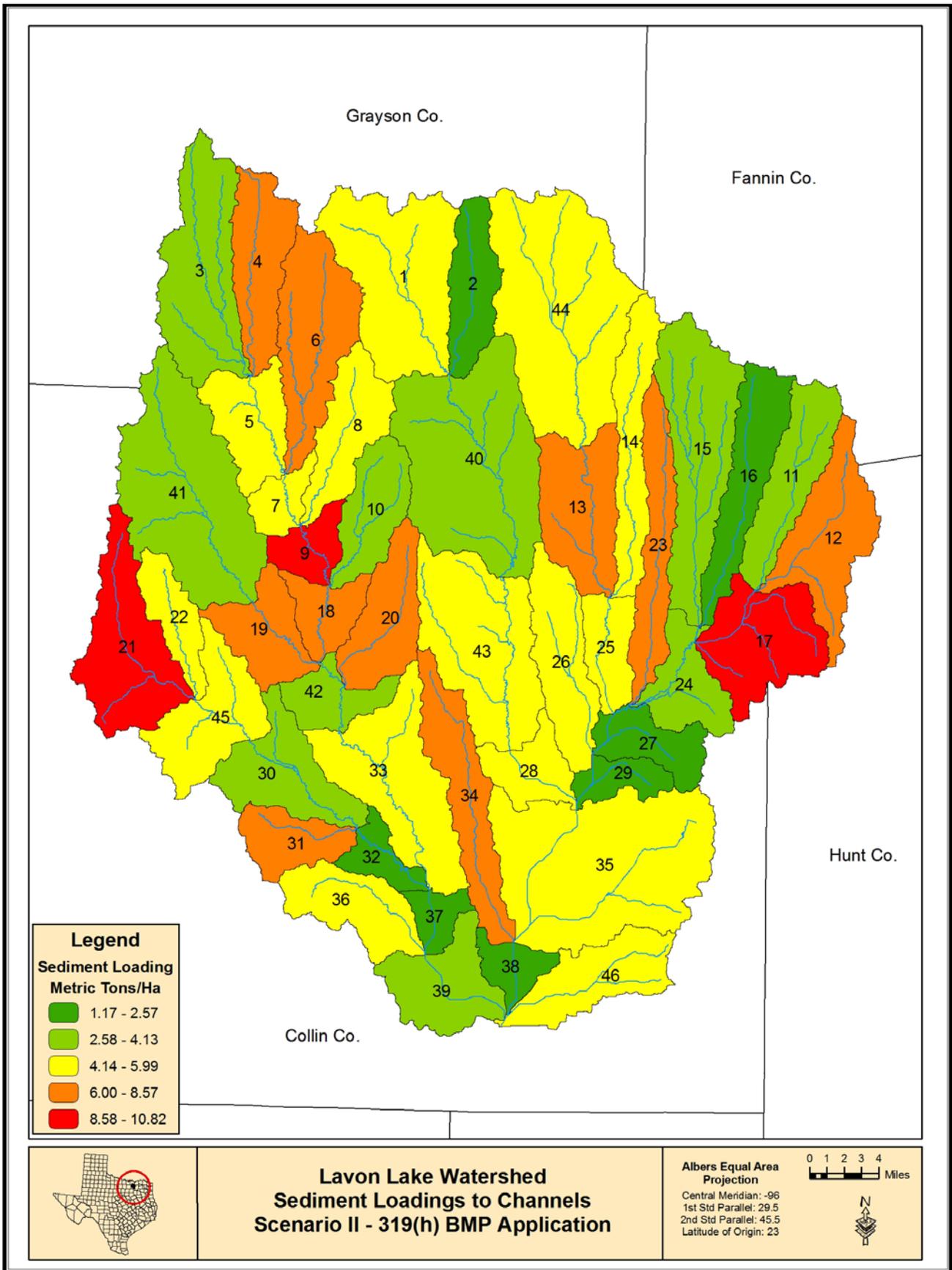


Figure 18. Predicted average annual sediment yield by subbasin after 319(h) conservation practice implementation (scenario II), Lavon Lake watershed, 1974 through 2003.

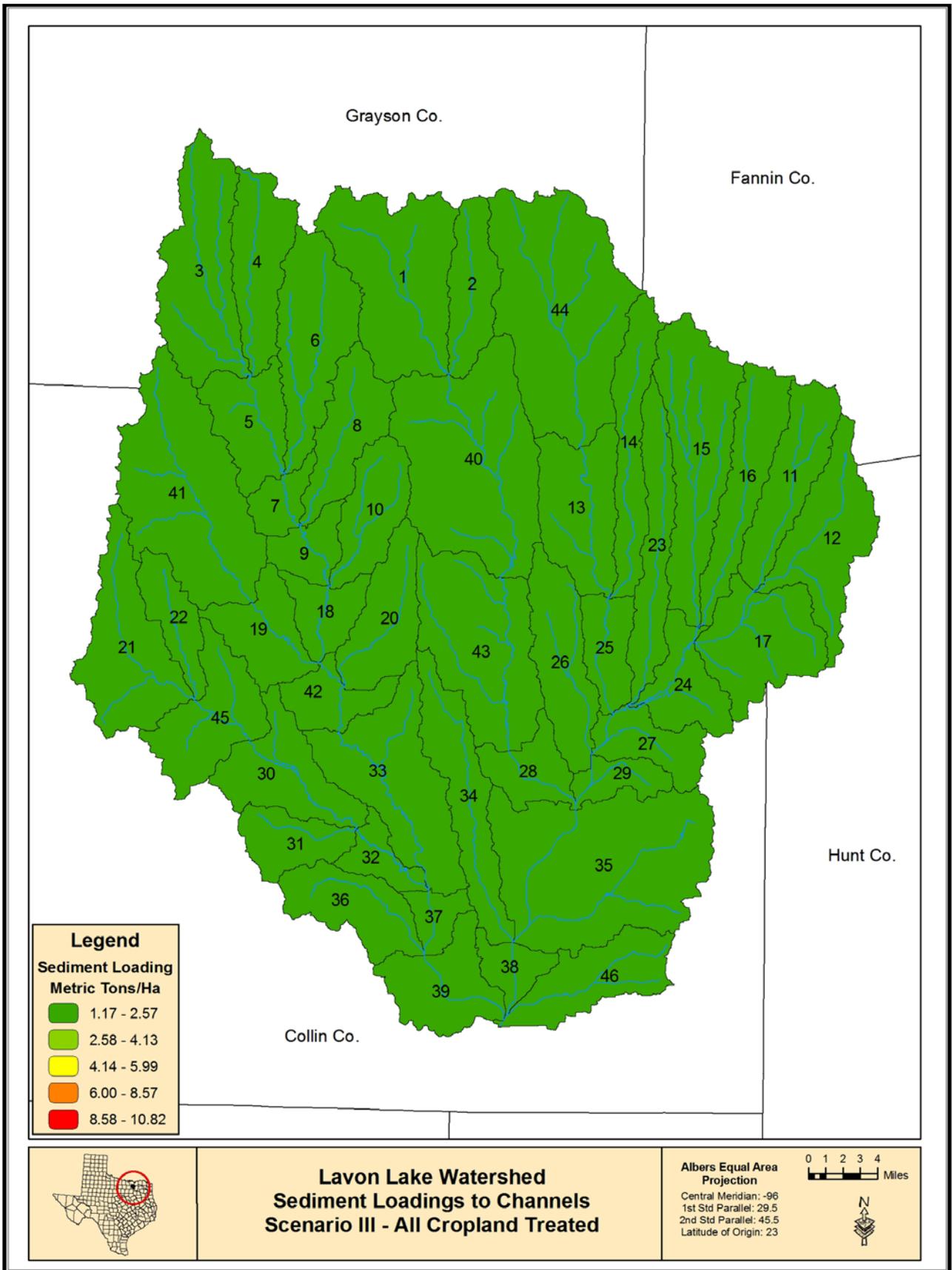


Figure 19. Predicted average annual sediment yield by subbasin after conservation practice implementation on all cropland (scenario III), Lavon Lake watershed, 1974 through 2003.

# APPENDIX

## Notes for Table 8 – Appendix

In Table 8, the fraction of landuse in each subbasin is based on actual input into SWAT and will not agree exactly with landuse percentages in Table 1. We set the landuse filter in SWAT at 2 percent, which means that any landuse comprising less than 2 percent of a subbasin was ignored in the model input. In addition, SWAT re-allocates areas to the other landuses when a landuse of less than 2 percent is ignored and dropped out of the model. The result is usually a small adjustment in area for each category of landuse in SWAT input.

Table 8. Landuse/Cover by Subbasin, Lavon Lake Watershed

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Detailed LANDUSE/SOIL distribution      SWAT model class      Thu Oct 20 14:06:13 2005
-----
                                     Area [ha]      Area [acres]
Watershed                          198981.6739      491693.6653
-----
                                     Area [ha]      Area [acres] %Wat.Area
LANDUSE
  Residential-High Density --> URHD      593.7239      1467.1214      0.30
    Range-Brush --> RNGB      434.8125      1074.4433      0.22
      Pasture --> PAST      89048.5834      220043.5019      44.75
        Range-Grasses --> RNGE      14974.8057      37003.4937      7.53
          Water --> WATR      12549.0395      31009.3042      6.31
    Lavon 319 Cropland --> LVAG      245.4422      606.5001      0.12
      Wetlands-Forested --> WETF      741.4795      1832.2330      0.37
        Wetlands-Mixed --> WETL      985.1489      2434.3521      0.50
    Lavon 319 Ag2Past --> LVAP      456.1733      1127.2270      0.23
      Commercial --> UCOM      874.3018      2160.4434      0.44
    Lavon 319 Pasture --> LVPA      780.2723      1928.0919      0.39
      Forest-Deciduous --> FRSD      21790.4933      53845.3986      10.95
        Forest-Evergreen --> FRSE      8357.0996      20650.8110      4.20
          Forest-Mixed --> FRST      3393.9765      8386.6857      1.71
    Residential-Low Density --> URLD      3744.3086      9252.3737      1.88
      Lavon 319 Range --> LVRA      12.6903      31.3583      0.01
    Agricultural Land-Row Crops --> AGRR      39999.3225      98840.3259      20.10

SOIL
      FRIO      2273.4314      5617.7626      1.14
      ENGLE      452.7037      1118.6534      0.23
      LINDY      82.3533      203.4990      0.04
      ALTOGA      7686.2829      18993.1894      3.86
      VERTEL      558.6919      1380.5556      0.28
      LESON      549.7614      1358.4880      0.28
      WILSON      3327.4424      8222.2766      1.67
    CROCKETT      1268.2116      3133.8143      0.64
      EDDY      5768.9752      14255.4261      2.90

```

Table 8 - 1

STEPHEN	4442.2805	10977.0973	2.23
WHITEWRIGHT	3937.8055	9730.5143	1.98
HEIDEN	2584.1229	6385.4968	1.30
MISCELLANEOUS	55.7275	137.7054	0.03
BAZETTE	16.3800	40.4758	0.01
AUSTIN	25500.7534	63013.6367	12.82
DAMS	93.0755	229.9942	0.05
WATER	9476.8022	23417.6520	4.76
PITS	119.1659	294.4649	0.06
LAMAR	1321.1785	3264.6982	0.66
BURLESON	3275.7165	8094.4592	1.65
HUNT	2272.9977	5616.6910	1.14
HOUSTON	65718.2353	162393.0455	33.03
HOWE	2100.2788	5189.8940	1.06
FERRIS	8891.6554	21971.7251	4.47
HOPCO	47.0699	116.3122	0.02
LEWISVILLE	5975.8306	14766.5761	3.00
TINN	1538.8665	3802.6160	0.77
FAIRLIE	21929.6331	54189.2199	11.02
NORMANGEE	225.4626	557.1294	0.11
ELBON	1929.0584	4766.7998	0.97
TRINITY	15037.1785	37157.6198	7.56
SPECK	490.7830	1212.7494	0.25
GRAVEL	33.7618	83.4272	0.02

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	1	7803.6208	19283.1372	3.92	
LANDUSE:					
Residential-High Density -->	URHD	4.0508	10.0098	0.00	0.05
Range-Brush -->	RNGB	5.1311	12.6791	0.00	0.07
Pasture -->	PAST	3311.4235	8182.6931	1.66	42.43
Range-Grasses -->	RNGE	976.7016	2413.4785	0.49	12.52
Water -->	WATR	100.8208	249.1333	0.05	1.29
Lavon 319 Cropland -->	LVAG	28.6259	70.7361	0.01	0.37
Wetlands-Mixed -->	WETL	8.0117	19.7972	0.00	0.10
Lavon 319 Ag2Past -->	LVAP	57.4319	141.9170	0.03	0.74
Commercial -->	UCOM	7.3815	18.2401	0.00	0.09
Lavon 319 Pasture -->	LVPA	123.5055	305.1883	0.06	1.58
Forest-Deciduous -->	FRSD	462.0654	1141.7867	0.23	5.92

Table 8 - 2

Forest-Evergreen --> FRSE	327.5776	809.4607	0.16	4.20
Forest-Mixed --> FRST	153.6617	379.7058	0.08	1.97
Residential-Low Density --> URLD	124.1356	306.7453	0.06	1.59
Agricultural Land-Row Crops --> AGRR	2113.0962	5221.5663	1.06	27.08

SOIL:

TRINITY	213.5241	527.6287	0.11	2.74
ELBON	505.8144	1249.8927	0.25	6.48
DAMS	2.7006	6.6732	0.00	0.03
WHITEWRIGHT	730.0507	1803.9918	0.37	9.36
HOWE	674.3292	1666.3012	0.34	8.64
ALTOGA	256.3729	633.5103	0.13	3.29
HEIDEN	101.7210	251.3577	0.05	1.30
STEPHEN	24.3950	60.2814	0.01	0.31
AUSTIN	1839.7097	4546.0148	0.92	23.58
PITS	2.8806	7.1181	0.00	0.04
WATER	82.6371	204.2003	0.04	1.06
WILSON	22.1446	54.7203	0.01	0.28
VERTEL	21.4244	52.9408	0.01	0.27
LINDY	5.9412	14.6811	0.00	0.08
LEWISVILLE	451.0831	1114.6489	0.23	5.78
FAIRLIE	2868.8922	7089.1760	1.44	36.76

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	2	2958.2066	7309.8764	1.49	

LANDUSE:

Range-Brush --> RNGB	14.4000	35.5831	0.01	0.49
Pasture --> PAST	1369.6184	3384.3956	0.69	46.30
Range-Grasses --> RNGE	517.2294	1278.0997	0.26	17.48
Water --> WATR	35.2800	87.1785	0.02	1.19
Lavon 319 Cropland --> LVAG	38.6100	95.4071	0.02	1.31
Wetlands-Mixed --> WETL	5.0400	12.4541	0.00	0.17
Lavon 319 Ag2Past --> LVAP	15.1200	37.3622	0.01	0.51
Commercial --> UCOM	0.1800	0.4448	0.00	0.01
Lavon 319 Pasture --> LVPA	73.3499	181.2513	0.04	2.48
Forest-Deciduous --> FRSD	437.7595	1081.7256	0.22	14.80
Forest-Evergreen --> FRSE	54.8999	135.6605	0.03	1.86
Forest-Mixed --> FRST	64.3499	159.0119	0.03	2.18
Agricultural Land-Row Crops --> AGRR	332.3696	821.3019	0.17	11.24

Table 8 - 3

## SOIL:

TRINITY	29.7900	73.6125	0.01	1.01
SPECK	2.8800	7.1166	0.00	0.10
ELBON	239.3997	591.5687	0.12	8.09
WHITEWRIGHT	727.3792	1797.3903	0.37	24.59
DAMS	1.3500	3.3359	0.00	0.05
ALTOGA	49.2299	121.6497	0.02	1.66
HOWE	88.2899	218.1688	0.04	2.98
STEPHEN	154.7098	382.2957	0.08	5.23
AUSTIN	520.1094	1285.2163	0.26	17.58
PITS	13.9500	34.4711	0.01	0.47
WATER	19.3500	47.8148	0.01	0.65
WILSON	30.9600	76.5036	0.02	1.05
LINDY	12.4200	30.6904	0.01	0.42
LEWISVILLE	160.9198	397.6409	0.08	5.44
EDDY	196.5598	485.7090	0.10	6.64
FAIRLIE	710.9092	1756.6921	0.36	24.03

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	3	6466.2228	15978.3598	3.25	

## LANDUSE:

Residential-High Density --> URHD	0.0900	0.2224	0.00	0.00
Range-Brush --> RNGB	31.0508	76.7282	0.02	0.48
Pasture --> PAST	2899.9675	7165.9647	1.46	44.85
Range-Grasses --> RNGE	942.8652	2329.8670	0.47	14.58
Water --> WATR	59.3116	146.5619	0.03	0.92
Lavon 319 Cropland --> LVAG	41.2211	101.8594	0.02	0.64
Lavon 319 Ag2Past --> LVAP	19.3505	47.8161	0.01	0.30
Commercial --> UCOM	0.5400	1.3344	0.00	0.01
Lavon 319 Pasture --> LVPA	13.8604	34.2497	0.01	0.21
Forest-Deciduous --> FRSD	305.5582	755.0495	0.15	4.73
Forest-Evergreen --> FRSE	324.3687	801.5312	0.16	5.02
Forest-Mixed --> FRST	142.1138	351.1703	0.07	2.20
Residential-Low Density --> URLD	13.0503	32.2481	0.01	0.20
Agricultural Land-Row Crops --> AGRR	1672.8747	4133.7570	0.84	25.87

## SOIL:

NORMANGEE	122.2233	302.0198	0.06	1.89
TRINITY	80.4622	198.8260	0.04	1.24
SPECK	487.9030	1205.6328	0.25	7.55

Table 8 - 4

ELBON	189.5451	468.3753	0.10	2.93
DAMS	2.1601	5.3376	0.00	0.03
WHITEWRIGHT	443.7119	1096.4342	0.22	6.86
HOWE	106.3828	262.8773	0.05	1.65
ALTOGA	67.2318	166.1331	0.03	1.04
HEIDEN	105.4828	260.6533	0.05	1.63
STEPHEN	515.5338	1273.9097	0.26	7.97
AUSTIN	741.8898	1833.2469	0.37	11.47
PITS	26.3707	65.1633	0.01	0.41
WATER	71.5519	176.8084	0.04	1.11
WILSON	183.0649	452.3625	0.09	2.83
VERTEL	60.4816	149.4531	0.03	0.94
LINDY	56.3415	139.2227	0.03	0.87
LEWISVILLE	206.9155	511.2986	0.10	3.20
EDDY	288.9977	714.1278	0.15	4.47
FAIRLIE	2709.9724	6696.4773	1.36	41.91

		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	4	3927.7756	9705.7299	1.97	
LANDUSE:					
	Range-Brush --> RNGB	3.6011	8.8984	0.00	0.09
	Pasture --> PAST	1096.0753	2708.4568	0.55	27.91
	Range-Grasses --> RNGE	362.8977	896.7383	0.18	9.24
	Water --> WATR	34.9304	86.3147	0.02	0.89
	Commercial --> UCOM	1.3504	3.3369	0.00	0.03
	Forest-Deciduous --> FRSD	203.9105	503.8731	0.10	5.19
	Forest-Evergreen --> FRSE	239.9212	592.8573	0.12	6.11
	Forest-Mixed --> FRST	83.2747	205.7760	0.04	2.12
	Agricultural Land-Row Crops --> AGRR	1901.8144	4699.4784	0.96	48.42
SOIL:					
	ELBON	18.1854	44.9370	0.01	0.46
	TRINITY	205.9811	508.9897	0.10	5.24
	WHITEWRIGHT	81.2041	200.6594	0.04	2.07
	ALTOGA	26.5579	65.6259	0.01	0.68
	HOWE	73.3718	181.3053	0.04	1.87
	HEIDEN	527.9167	1304.5085	0.27	13.44
	STEPHEN	24.6673	60.9542	0.01	0.63
	AUSTIN	612.0016	1512.2866	0.31	15.58
	WATER	27.5482	68.0729	0.01	0.70

Table 8 - 5

	WILSON	12.0636	29.8097	0.01	0.31
	VERTEL	189.3262	467.8345	0.10	4.82
	LEWISVILLE	61.5783	152.1630	0.03	1.57
	FAIRLIE	2067.3735	5108.5833	1.04	52.63
-----					
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	5	3230.1864	7981.9521	1.62	
LANDUSE:					
	Residential-High Density --> URHD	0.4500	1.1120	0.00	0.01
	Range-Brush --> RNGB	14.1300	34.9159	0.01	0.44
	Pasture --> PAST	1386.5385	3426.2058	0.70	42.92
	Range-Grasses --> RNGE	645.4793	1595.0116	0.32	19.98
	Water --> WATR	38.2500	94.5176	0.02	1.18
	Commercial --> UCOM	0.2700	0.6672	0.00	0.01
	Lavon 319 Pasture --> LVPA	24.2100	59.8241	0.01	0.75
	Forest-Deciduous --> FRSD	259.1097	640.2731	0.13	8.02
	Forest-Evergreen --> FRSE	262.7997	649.3912	0.13	8.14
	Forest-Mixed --> FRST	87.7499	216.8344	0.04	2.72
	Residential-Low Density --> URLD	10.4400	25.7977	0.01	0.32
	Agricultural Land-Row Crops --> AGRR	500.7594	1237.4016	0.25	15.50
SOIL:					
	BURLESON	30.1500	74.5021	0.02	0.93
	ELBON	10.8000	26.6873	0.01	0.33
	TRINITY	210.0598	519.0682	0.11	6.50
	DAMS	5.2200	12.8989	0.00	0.16
	WHITEWRIGHT	52.4699	129.6558	0.03	1.62
	HOWE	100.2599	247.7472	0.05	3.10
	ALTOGA	264.4197	653.3943	0.13	8.19
	HEIDEN	14.3100	35.3607	0.01	0.44
	HOUSTON	1070.1888	2644.4901	0.54	33.13
	STEPHEN	6.6600	16.4572	0.00	0.21
	AUSTIN	692.5492	1711.3238	0.35	21.44
	WATER	31.1400	76.9484	0.02	0.96
	WILSON	2.2500	5.5599	0.00	0.07
	FERRIS	111.3299	275.1017	0.06	3.45
	VERTEL	12.3300	30.4680	0.01	0.38
	LEWISVILLE	149.6698	369.8416	0.08	4.63
	FRIO	185.6698	458.7993	0.09	5.75
	EDDY	50.5799	124.9856	0.03	1.57

Table 8 - 6

FAIRLIE		230.1297	568.6621	0.12	7.12
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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	6	5535.8036	13679.2475	2.78	
LANDUSE:					
	Residential-High Density --> URHD	0.1800	0.4448	0.00	0.00
	Range-Brush --> RNGB	5.3100	13.1213	0.00	0.10
	Pasture --> PAST	1957.6777	4837.5196	0.98	35.36
	Range-Grasses --> RNGE	496.7994	1227.6162	0.25	8.97
	Water --> WATR	30.1500	74.5021	0.02	0.54
	Commercial --> UCOM	37.1700	91.8488	0.02	0.67
	Forest-Deciduous --> FRSD	474.4795	1172.4624	0.24	8.57
	Forest-Evergreen --> FRSE	416.8795	1030.1301	0.21	7.53
	Forest-Mixed --> FRST	110.0699	271.9882	0.06	1.99
	Residential-Low Density --> URLD	8.5500	21.1275	0.00	0.15
	Agricultural Land-Row Crops --> AGRR	1998.5377	4938.4866	1.00	36.10
SOIL:					
	BURLESON	62.7299	155.0088	0.03	1.13
	TRINITY	201.0598	496.8287	0.10	3.63
	ELBON	75.9599	187.7007	0.04	1.37
	DAMS	2.4300	6.0046	0.00	0.04
	WHITEWRIGHT	96.0299	237.2947	0.05	1.73
	HOWE	158.4898	391.6363	0.08	2.86
	ALTOGA	329.5796	814.4077	0.17	5.95
	HOUSTON	331.9196	820.1900	0.17	6.00
	HEIDEN	615.7793	1521.6214	0.31	11.12
	STEPHEN	5.6700	14.0108	0.00	0.10
	HUNT	4.0500	10.0077	0.00	0.07
	AUSTIN	868.4090	2145.8820	0.44	15.69
	PITS	3.1500	7.7838	0.00	0.06
	WATER	18.3600	45.3684	0.01	0.33
	VERTEL	275.1297	679.8592	0.14	4.97
	LEWISVILLE	49.7699	122.9840	0.03	0.90
	FRIO	24.5700	60.7136	0.01	0.44
	EDDY	63.4499	156.7879	0.03	1.15
	FAIRLIE	2349.2673	5805.1569	1.18	42.44
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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area

Table 8 - 7

SUBBASIN #	7	1346.1285	3326.3508	0.68	
LANDUSE:					
	Range-Brush --> RNGB	1.3500	3.3359	0.00	0.10
	Pasture --> PAST	493.9194	1220.4997	0.25	36.69
	Range-Grasses --> RNGE	233.0997	576.0011	0.12	17.32
	Water --> WATR	17.2800	42.6997	0.01	1.28
	Commercial --> UCOM	0.1800	0.4448	0.00	0.01
	Forest-Deciduous --> FRSD	126.7199	313.1311	0.06	9.41
	Forest-Evergreen --> FRSE	179.6398	443.8989	0.09	13.34
	Forest-Mixed --> FRST	30.9600	76.5036	0.02	2.30
	Agricultural Land-Row Crops --> AGRR	262.9797	649.8360	0.13	19.54
SOIL:					
	TRINITY	314.9996	778.3799	0.16	23.40
	DAMS	1.8000	4.4479	0.00	0.13
	ALTOGA	192.2398	475.0341	0.10	14.28
	HOUSTON	420.5695	1039.2483	0.21	31.24
	HUNT	11.1600	27.5769	0.01	0.83
	AUSTIN	241.9197	597.7957	0.12	17.97
	WATER	10.1700	25.1306	0.01	0.76
	FERRIS	25.7400	63.6048	0.01	1.91
	LEWISVILLE	79.0199	195.2622	0.04	5.87
	FRIO	9.0000	22.2394	0.00	0.67
	EDDY	39.5100	97.6311	0.02	2.94

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	8	3473.3660	8582.8611	1.75	
LANDUSE:					
	Residential-High Density --> URHD	19.7151	48.7170	0.01	0.57
	Range-Brush --> RNGB	5.7615	14.2369	0.00	0.17
	Pasture --> PAST	1116.7381	2759.5156	0.56	32.15
	Range-Grasses --> RNGE	329.7551	814.8413	0.17	9.49
	Water --> WATR	25.6566	63.3988	0.01	0.74
	Wetlands-Mixed --> WETL	1.8005	4.4490	0.00	0.05
	Commercial --> UCOM	31.7782	78.5255	0.02	0.91
	Forest-Deciduous --> FRSD	281.0525	694.4948	0.14	8.09
	Forest-Evergreen --> FRSE	222.1773	549.0113	0.11	6.40
	Forest-Mixed --> FRST	57.3448	141.7019	0.03	1.65

Table 8 - 8

	Residential-Low Density --> URLD	106.0474	262.0483	0.05	3.05
	Agricultural Land-Row Crops --> AGRR	1275.5390	3151.9207	0.64	36.72
SOIL:					
	BURLESON	22.1457	54.7232	0.01	0.64
	TRINITY	103.7068	256.2646	0.05	2.99
	WHITEWRIGHT	2.1606	5.3388	0.00	0.06
	DAMS	2.9708	7.3409	0.00	0.09
	HOWE	7.3819	18.2411	0.00	0.21
	ALTOGA	161.9518	400.1909	0.08	4.66
	HOUSTON	1176.4235	2907.0012	0.59	33.87
	HUNT	7.7420	19.1309	0.00	0.22
	AUSTIN	1114.3075	2753.5094	0.56	32.08
	WATER	19.8051	48.9394	0.01	0.57
	FERRIS	2.5207	6.2287	0.00	0.07
	LEWISVILLE	97.8552	241.8052	0.05	2.82
	FRIO	70.9383	175.2921	0.04	2.04
	EDDY	55.4543	137.0304	0.03	1.60
	FAIRLIE	628.0020	1551.8243	0.32	18.08
-----					
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	9	1648.9781	4074.7073	0.83	
LANDUSE:					
	Range-Brush --> RNGB	4.7812	11.8146	0.00	0.29
	Pasture --> PAST	555.1623	1371.8337	0.28	33.67
	Range-Grasses --> RNGE	118.2674	292.2447	0.06	7.17
	Water --> WATR	13.3513	32.9918	0.01	0.81
	Commercial --> UCOM	0.0902	0.2229	0.00	0.01
	Forest-Deciduous --> FRSD	93.0082	229.8278	0.05	5.64
	Forest-Evergreen --> FRSE	212.8092	525.8622	0.11	12.91
	Forest-Mixed --> FRST	39.4225	97.4149	0.02	2.39
	Agricultural Land-Row Crops --> AGRR	612.0858	1512.4946	0.31	37.12
SOIL:					
	TRINITY	424.6261	1049.2722	0.21	25.75
	ALTOGA	120.5227	297.8177	0.06	7.31
	HOUSTON	698.3281	1725.6037	0.35	42.35
	AUSTIN	266.7557	659.1668	0.13	16.18
	WATER	7.7582	19.1709	0.00	0.47
	LEWISVILLE	76.3190	188.5881	0.04	4.63

Table 8 - 9

		FRIO	4.8714	12.0375	0.00	0.30
		EDDY	49.7968	123.0504	0.03	3.02
-----						
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area	
SUBBASIN #	10	3130.7364	7736.2062	1.57		
LANDUSE:						
	Residential-High Density --> URHD	2.3433	5.7904	0.00	0.07	
	Range-Brush --> RNGB	3.1544	7.7948	0.00	0.10	
	Pasture --> PAST	1264.8402	3125.4834	0.64	40.40	
	Range-Grasses --> RNGE	361.0482	892.1681	0.18	11.53	
	Water --> WATR	29.1110	71.9347	0.01	0.93	
	Wetlands-Mixed --> WETL	12.6178	31.1791	0.01	0.40	
	Commercial --> UCOM	22.6218	55.8997	0.01	0.72	
	Forest-Deciduous --> FRSD	488.4875	1207.0771	0.25	15.60	
	Forest-Evergreen --> FRSE	82.9167	204.8913	0.04	2.65	
	Forest-Mixed --> FRST	38.1237	94.2055	0.02	1.22	
	Residential-Low Density --> URLD	176.3782	435.8395	0.09	5.63	
	Agricultural Land-Row Crops --> AGRF	649.0936	1603.9427	0.33	20.73	
SOIL:						
	TRINITY	118.3366	292.4155	0.06	3.78	
	DAMS	2.7038	6.6812	0.00	0.09	
	ALTOGA	168.6273	416.6866	0.08	5.39	
	HOUSTON	1295.9340	3202.3177	0.65	41.39	
	STEPHEN	38.8447	95.9871	0.02	1.24	
	AUSTIN	903.1612	2231.7564	0.45	28.85	
	WATER	23.1626	57.2359	0.01	0.74	
	LEWISVILLE	152.2243	376.1537	0.08	4.86	
	FRIO	211.4376	522.4729	0.11	6.75	
	EDDY	214.4118	529.8222	0.11	6.85	
	MISCELLANEOUS	1.8927	4.6769	0.00	0.06	
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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area	
SUBBASIN #	11	3862.7956	9545.1611	1.94		
LANDUSE:						
	Residential-High Density --> URHD	6.4801	16.0128	0.00	0.17	
	Range-Brush --> RNGB	7.2002	17.7920	0.00	0.19	

Table 8 - 10

Pasture --> PAST	2546.0664	6291.4574	1.28	65.91
Water --> WATR	45.0910	111.4221	0.02	1.17
Wetlands-Forested --> WETF	2.6101	6.4496	0.00	0.07
Wetlands-Mixed --> WETL	14.4003	35.5839	0.01	0.37
Lavon 319 Ag2Past --> LVAP	4.4101	10.8976	0.00	0.11
Commercial --> UCOM	2.8801	7.1168	0.00	0.07
Forest-Deciduous --> FRSD	441.6398	1091.3140	0.22	11.43
Forest-Evergreen --> FRSE	142.4732	352.0583	0.07	3.69
Forest-Mixed --> FRST	53.3712	131.8829	0.03	1.38
Residential-Low Density --> URLD	109.1724	269.7705	0.05	2.83
Lavon 319 Range --> LVRA	12.6903	31.3583	0.01	0.33
Agricultural Land-Row Crops --> AGRR	474.3105	1172.0450	0.24	12.28

SOIL:

BURLESON	5.1301	12.6768	0.00	0.13
NORMANGEE	4.0501	10.0080	0.00	0.10
TRINITY	85.9519	212.3915	0.04	2.23
DAMS	0.9900	2.4464	0.00	0.03
WHITEWRIGHT	150.3933	371.6294	0.08	3.89
HOWE	307.0868	758.8268	0.15	7.95
HEIDEN	26.1006	64.4958	0.01	0.68
HOUSTON	525.0716	1297.4783	0.26	13.59
STEPHEN	89.1920	220.3978	0.04	2.31
AUSTIN	0.2700	0.6672	0.00	0.01
CROCKETT	127.3528	314.6952	0.06	3.30
LAMAR	21.1505	52.2639	0.01	0.55
WATER	27.2706	67.3870	0.01	0.71
WILSON	338.6775	836.8890	0.17	8.77
FERRIS	473.8605	1170.9330	0.24	12.27
LESON	177.3039	438.1269	0.09	4.59
FRIO	12.4203	30.6911	0.01	0.32
TINN	360.9080	891.8217	0.18	9.34
FAIRLIE	1129.6150	2791.3352	0.57	29.24

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SUBBASIN #		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
12		5010.0244	12380.0208	2.52	

LANDUSE:

Residential-High Density --> URHD	11.9700	29.5784	0.01	0.24
Range-Brush --> RNGB	0.8100	2.0015	0.00	0.02
Pasture --> PAST	2435.8473	6019.1004	1.22	48.62

Table 8 - 11

Water --> WATR	100.3499	247.9696	0.05	2.00
Wetlands-Forested --> WETF	2.7000	6.6718	0.00	0.05
Wetlands-Mixed --> WETL	54.3599	134.3261	0.03	1.09
Commercial --> UCOM	52.0199	128.5439	0.03	1.04
Forest-Deciduous --> FRSD	383.3996	947.3995	0.19	7.65
Forest-Evergreen --> FRSE	51.7499	127.8767	0.03	1.03
Forest-Mixed --> FRST	36.5400	90.2921	0.02	0.73
Residential-Low Density --> URLD	90.5399	223.7286	0.05	1.81
Agricultural Land-Row Crops --> AGRR	1789.7380	4422.5321	0.90	35.72

SOIL:

BURLESON	21.6900	53.5970	0.01	0.43
TRINITY	32.8500	81.1739	0.02	0.66
DAMS	5.3100	13.1213	0.00	0.11
HOWE	10.1700	25.1306	0.01	0.20
HOUSTON	1134.7187	2803.9467	0.57	22.65
HEIDEN	281.8797	696.5388	0.14	5.63
STEPHEN	159.1198	393.1930	0.08	3.18
PITS	2.5200	6.2270	0.00	0.05
CROCKETT	84.5099	208.8282	0.04	1.69
LAMAR	0.1800	0.4448	0.00	0.00
WATER	71.2799	176.1362	0.04	1.42
WILSON	48.4199	119.6481	0.02	0.97
HOPCO	25.4700	62.9376	0.01	0.51
FERRIS	1722.5981	4256.6260	0.87	34.38
LESON	146.2498	361.3907	0.07	2.92
FRIO	4.7700	11.7869	0.00	0.10
TINN	609.5693	1506.2763	0.31	12.17
FAIRLIE	648.7193	1603.0178	0.33	12.95

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	13	4677.8348	11559.1637	2.35	

LANDUSE:

Residential-High Density --> URHD	1.7105	4.2266	0.00	0.04
Range-Brush --> RNGB	14.8540	36.7049	0.01	0.32
Pasture --> PAST	2215.2242	5473.9298	1.11	47.36
Range-Grasses --> RNGE	599.5608	1481.5448	0.30	12.82
Water --> WATR	38.0802	94.0981	0.02	0.81
Wetlands-Forested --> WETF	73.3697	181.3002	0.04	1.57
Wetlands-Mixed --> WETL	33.9391	83.8652	0.02	0.73

Table 8 - 12

Commercial --> UCOM	2.9708	7.3410	0.00	0.06
Forest-Deciduous --> FRSD	748.1907	1848.8166	0.38	15.99
Forest-Evergreen --> FRSE	183.7393	454.0290	0.09	3.93
Forest-Mixed --> FRST	111.1798	274.7309	0.06	2.38
Residential-Low Density --> URLD	49.5133	122.3498	0.02	1.06
Agricultural Land-Row Crops --> AGRR	605.5024	1496.2268	0.30	12.94

SOIL:

BURLESON	30.0681	74.2997	0.02	0.64
TRINITY	485.4102	1199.4729	0.24	10.38
ALTOGA	305.9921	756.1217	0.15	6.54
HOUSTON	2019.1516	4989.4246	1.01	43.16
STEPHEN	111.5399	275.6207	0.06	2.38
HUNT	202.2843	499.8545	0.10	4.32
AUSTIN	640.7019	1583.2063	0.32	13.70
WATER	2.9708	7.3410	0.00	0.06
WILSON	12.7834	31.5885	0.01	0.27
FERRIS	168.0751	415.3219	0.08	3.59
LEWISVILLE	177.3476	438.2347	0.09	3.79
FRIO	263.5907	651.3458	0.13	5.63
EDDY	257.9192	637.3312	0.13	5.51

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SUBBASIN #		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
14		3765.6856	9305.1974	1.89	

LANDUSE:

Residential-High Density --> URHD	0.2702	0.6677	0.00	0.01
Range-Brush --> RNGB	6.3950	15.8025	0.00	0.17
Pasture --> PAST	2008.9421	4964.1964	1.01	53.35
Range-Grasses --> RNGB	203.3802	502.5626	0.10	5.40
Water --> WATR	32.6957	80.7928	0.02	0.87
Wetlands-Forested --> WETF	5.5844	13.7993	0.00	0.15
Wetlands-Mixed --> WETL	9.0071	22.2570	0.00	0.24
Lavon 319 Ag2Past --> LVAP	3.0624	7.5674	0.00	0.08
Commercial --> UCOM	5.3142	13.1316	0.00	0.14
Lavon 319 Pasture --> LVPA	28.9128	71.4449	0.01	0.77
Forest-Deciduous --> FRSD	520.1596	1285.3405	0.26	13.81
Forest-Evergreen --> FRSE	176.0887	435.1239	0.09	4.68
Forest-Mixed --> FRST	62.5092	154.4634	0.03	1.66
Residential-Low Density --> URLD	15.6723	38.7271	0.01	0.42
Agricultural Land-Row Crops --> AGRR	687.6916	1699.3203	0.35	18.26

Table 8 - 13

## SOIL:

BURLESON	6.3050	15.5799	0.00	0.17
TRINITY	410.9937	1015.5859	0.21	10.91
ALTOGA	53.4121	131.9839	0.03	1.42
HEIDEN	41.6128	102.8272	0.02	1.11
HOUSTON	1062.2065	2624.7654	0.53	28.21
STEPHEN	131.5036	324.9519	0.07	3.49
AUSTIN	310.6547	767.6432	0.16	8.25
HUNT	204.2809	504.7883	0.10	5.42
CROCKETT	12.9702	32.0500	0.01	0.34
PITS	1.6213	4.0063	0.00	0.04
WATER	18.1943	44.9591	0.01	0.48
WILSON	84.7567	209.4382	0.04	2.25
FERRIS	271.4738	670.8253	0.14	7.21
LESON	5.0440	12.4639	0.00	0.13
LEWISVILLE	67.4631	166.7048	0.03	1.79
FRIO	17.0234	42.0657	0.01	0.45
EDDY	44.9454	111.0623	0.02	1.19
FAIRLIE	1021.2242	2523.4962	0.51	27.12

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	15	6753.5024	16688.2421	3.39	
LANDUSE:					
Residential-High Density -->	URHD	2.6102	6.4499	0.00	0.04
Range-Brush -->	RNGB	5.6704	14.0120	0.00	0.08
Pasture -->	PAST	4296.3987	10616.6160	2.16	63.62
Range-Grasses -->	RNGE	5.4904	13.5671	0.00	0.08
Water -->	WATR	93.7874	231.7533	0.05	1.39
Lavon 319 Cropland -->	LVAG	31.3225	77.3994	0.02	0.46
Wetlands-Forested -->	WETF	51.5741	127.4421	0.03	0.76
Wetlands-Mixed -->	WETL	52.2041	128.9990	0.03	0.77
Lavon 319 Ag2Past -->	LVAP	32.7626	80.9580	0.02	0.49
Commercial -->	UCOM	2.8802	7.1172	0.00	0.04
Lavon 319 Pasture -->	LVPA	52.2041	128.9990	0.03	0.77
Forest-Deciduous -->	FRSD	780.0915	1927.6451	0.39	11.55
Forest-Evergreen -->	FRSE	163.4529	403.9003	0.08	2.42
Forest-Mixed -->	FRST	72.9057	180.1537	0.04	1.08
Residential-Low Density -->	URLD	68.1354	168.3659	0.03	1.01
Agricultural Land-Row Crops -->	AGRR	1042.0121	2574.8641	0.52	15.43

Table 8 - 14

## SOIL:

BURLESON	33.2126	82.0700	0.02	0.49
TRINITY	433.8342	1072.0260	0.22	6.42
DAMS	2.8802	7.1172	0.00	0.04
ALTOGA	33.8427	83.6269	0.02	0.50
HOUSTON	1890.2390	4670.8751	0.95	27.99
HEIDEN	493.7789	1220.1524	0.25	7.31
STEPHEN	275.6017	681.0256	0.14	4.08
HUNT	29.9724	74.0632	0.02	0.44
AUSTIN	84.5167	208.8449	0.04	1.25
CROCKETT	37.9830	93.8579	0.02	0.56
LAMAR	126.4600	312.4889	0.06	1.87
WATER	52.3841	129.4438	0.03	0.78
WILSON	92.9773	229.7516	0.05	1.38
FERRIS	413.8526	1022.6505	0.21	6.13
LESON	80.6464	199.2812	0.04	1.19
LEWISVILLE	115.5691	285.5771	0.06	1.71
TINN	255.6202	631.6502	0.13	3.79
FAIRLIE	2300.1313	5683.7395	1.16	34.06

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	16	4103.2752	10139.3982	2.06	
LANDUSE:					
	Range-Brush --> RNGB	2.0703	5.1157	0.00	0.05
	Pasture --> PAST	2739.8674	6770.3493	1.38	66.77
	Water --> WATR	82.8108	204.6296	0.04	2.02
	Wetlands-Forested --> WETF	41.2254	101.8700	0.02	1.00
	Wetlands-Mixed --> WETL	27.4536	67.8392	0.01	0.67
	Lavon 319 Ag2Past --> LVAP	11.1615	27.5805	0.01	0.27
	Forest-Deciduous --> FRSD	512.2568	1265.8122	0.26	12.48
	Forest-Evergreen --> FRSE	66.0686	163.2589	0.03	1.61
	Forest-Mixed --> FRST	46.8961	115.8826	0.02	1.14
	Agricultural Land-Row Crops --> AGRR	573.4648	1417.0602	0.29	13.98

## SOIL:

BURLESON	29.2538	72.2876	0.01	0.71
NORMANGEE	38.7951	95.8645	0.02	0.95
TRINITY	309.8204	765.5817	0.16	7.55
DAMS	0.9901	2.4467	0.00	0.02

Table 8 - 15

ALTOGA	84.1610	207.9660	0.04	2.05
HOVE	161.7511	399.6950	0.08	3.94
HOUSTON	1134.0579	2802.3138	0.57	27.64
HEIDEN	197.9358	489.1093	0.10	4.82
STEPHEN	11.6115	28.6926	0.01	0.28
HUNT	6.3908	15.7921	0.00	0.16
AUSTIN	5.6707	14.0127	0.00	0.14
CROCKETT	113.4148	280.2536	0.06	2.76
LAMAR	25.7434	63.6131	0.01	0.63
WATER	46.9861	116.1051	0.02	1.15
WILSON	310.9906	768.4732	0.16	7.58
FERRIS	264.7245	654.1475	0.13	6.45
LESON	44.5558	110.0996	0.02	1.09
LEWISVILLE	15.6620	38.7017	0.01	0.38
TINN	65.7986	162.5916	0.03	1.60
FAIRLIE	1234.9611	3051.6506	0.62	30.10

		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	17	4900.7644	12110.0339	2.46	
LANDUSE:					
	Range-Brush --> RNGB	9.2700	22.9066	0.00	0.19
	Pasture --> PAST	2291.9374	5663.4919	1.15	46.77
	Water --> WATR	89.9099	222.1719	0.05	1.83
	Wetlands-Forested --> WETF	61.7399	152.5625	0.03	1.26
	Wetlands-Mixed --> WETL	52.1999	128.9887	0.03	1.07
	Lavon 319 Ag2Past --> LVAP	45.9899	113.6435	0.02	0.94
	Commercial --> UCOM	33.4800	82.7307	0.02	0.68
	Lavon 319 Pasture --> LVPA	201.9598	499.0527	0.10	4.12
	Forest-Deciduous --> FRSD	469.2595	1159.5636	0.24	9.58
	Forest-Evergreen --> FRSE	41.1300	101.6342	0.02	0.84
	Forest-Mixed --> FRST	50.3999	124.5408	0.03	1.03
	Agricultural Land-Row Crops --> AGRR	1553.4882	3838.7471	0.78	31.70
SOIL:					
	BAZETTE	16.3800	40.4758	0.01	0.33
	BURLESON	46.3499	114.5330	0.02	0.95
	TRINITY	486.4494	1202.0409	0.24	9.93
	DAMS	1.6200	4.0031	0.00	0.03
	HEIDEN	25.7400	63.6048	0.01	0.53
	HOUSTON	967.0489	2389.6262	0.49	19.73

Table 8 - 16

	HUNT	18.4500	45.5908	0.01	0.38
	CROCKETT	400.6795	990.0992	0.20	8.18
	LAMAR	268.9197	664.5140	0.14	5.49
	WATER	55.4399	136.9949	0.03	1.13
	HOPCO	21.6000	53.3746	0.01	0.44
	WILSON	427.5895	1056.5951	0.21	8.72
	FERRIS	1845.8079	4561.0836	0.93	37.66
	LESON	6.6600	16.4572	0.00	0.14
	FRIO	109.2599	269.9866	0.05	2.23
	TINN	202.7698	501.0542	0.10	4.14
-----					
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	18	1956.1478	4833.7390	0.98	
LANDUSE:					
	Range-Brush --> RNGB	2.7000	6.6718	0.00	0.14
	Pasture --> PAST	680.5792	1681.7453	0.34	34.79
	Range-Grasses --> RNGE	188.7298	466.3607	0.09	9.65
	Water --> WATR	8.5500	21.1275	0.00	0.44
	Wetlands-Mixed --> WETL	2.2500	5.5599	0.00	0.12
	Commercial --> UCOM	19.2600	47.5924	0.01	0.98
	Forest-Deciduous --> FRSD	193.5898	478.3700	0.10	9.90
	Forest-Evergreen --> FRSE	179.0098	442.3422	0.09	9.15
	Forest-Mixed --> FRST	52.7399	130.3230	0.03	2.70
	Residential-Low Density --> URLD	29.5200	72.9453	0.01	1.51
	Agricultural Land-Row Crops --> AGRR	599.2193	1480.7009	0.30	30.63
SOIL:					
	TRINITY	403.7395	997.6606	0.20	20.64
	DAMS	0.9000	2.2239	0.00	0.05
	ALTOGA	153.4498	379.1822	0.08	7.84
	HOUSTON	734.5792	1815.1819	0.37	37.55
	HUNT	204.2098	504.6126	0.10	10.44
	AUSTIN	239.7597	592.4583	0.12	12.26
	WATER	4.6800	11.5645	0.00	0.24
	LEWISVILLE	137.0698	338.7064	0.07	7.01
	FRIO	73.6199	181.9185	0.04	3.76
	EDDY	4.1400	10.2301	0.00	0.21
-----					
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area

Table 8 - 17

SUBBASIN #	19	3031.7366	7491.5727	1.52	
LANDUSE:					
	Range-Brush --> RNGB	8.0100	19.7931	0.00	0.26
	Pasture --> PAST	1307.7885	3231.6109	0.66	43.14
	Range-Grasses --> RNGE	222.5698	549.9810	0.11	7.34
	Water --> WATR	39.5100	97.6311	0.02	1.30
	Commercial --> UCOM	8.4600	20.9051	0.00	0.28
	Forest-Deciduous --> FRSD	301.4997	745.0207	0.15	9.94
	Forest-Evergreen --> FRSE	331.1996	818.4108	0.17	10.92
	Forest-Mixed --> FRST	97.6499	241.2978	0.05	3.22
	Residential-Low Density --> URLD	20.9700	51.8179	0.01	0.69
	Agricultural Land-Row Crops --> AGRR	694.0792	1715.1045	0.35	22.89
SOIL:					
	TRINITY	352.1696	870.2287	0.18	11.62
	DAMS	1.5300	3.7807	0.00	0.05
	ALTOGA	356.5796	881.1260	0.18	11.76
	HOUSTON	1032.2988	2550.8621	0.52	34.05
	STEPHEN	15.3900	38.0294	0.01	0.51
	AUSTIN	755.9992	1868.1117	0.38	24.94
	WATER	27.9900	69.1646	0.01	0.92
	LEWISVILLE	296.3697	732.3443	0.15	9.78
	FRIO	61.1099	151.0057	0.03	2.02
	EDDY	132.2999	326.9195	0.07	4.36

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	20	3589.5560	8869.9724	1.80	
LANDUSE:					
	Residential-High Density --> URHD	1.8944	4.6811	0.00	0.05
	Range-Brush --> RNGB	8.6600	21.3992	0.00	0.24
	Pasture --> PAST	1475.6222	3646.3361	0.74	41.11
	Range-Grasses --> RNGE	391.2320	966.7539	0.20	10.90
	Water --> WATR	18.3122	45.2504	0.01	0.51
	Wetlands-Mixed --> WETL	11.0054	27.1948	0.01	0.31
	Commercial --> UCOM	7.9383	19.6159	0.00	0.22
	Forest-Deciduous --> FRSD	508.6828	1256.9807	0.26	14.17
	Forest-Evergreen --> FRSE	131.8841	325.8921	0.07	3.67
	Forest-Mixed --> FRST	69.0091	170.5250	0.03	1.92

Table 8 - 18

Residential-Low Density --> URLD	120.3374	297.3598	0.06	3.35
Agricultural Land-Row Crops --> AGRR	844.9782	2087.9833	0.42	23.54
SOIL:				
BURLESON	140.8147	347.9601	0.07	3.92
TRINITY	131.9743	326.1150	0.07	3.68
ALTOGA	135.4924	334.8085	0.07	3.77
HOUSTON	1371.7928	3389.7685	0.69	38.22
STEPHEN	193.4961	478.1386	0.10	5.39
HUNT	291.1914	719.5484	0.15	8.11
AUSTIN	692.0756	1710.1535	0.35	19.28
WATER	4.5104	11.1454	0.00	0.13
LEWISVILLE	307.2484	759.2261	0.15	8.56
FRIO	103.1077	254.7843	0.05	2.87
EDDY	217.8523	538.3239	0.11	6.07

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SUBBASIN #		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
21		5648.2136	13957.0182	2.84	

LANDUSE:				
Residential-High Density --> URHD	0.3600	0.8896	0.00	0.01
Range-Brush --> RNGB	5.7600	14.2332	0.00	0.10
Pasture --> PAST	1831.4979	4525.7229	0.92	32.43
Range-Grasses --> RNGB	722.6092	1785.6034	0.36	12.79
Water --> WATR	39.8700	98.5207	0.02	0.71
Commercial --> UCOM	8.7300	21.5722	0.00	0.15
Forest-Deciduous --> FRSD	118.9799	294.0052	0.06	2.11
Forest-Evergreen --> FRSE	211.5898	522.8489	0.11	3.75
Forest-Mixed --> FRST	96.3899	238.1842	0.05	1.71
Residential-Low Density --> URLD	34.2900	84.7322	0.02	0.61
Agricultural Land-Row Crops --> AGRR	2578.1371	6370.7056	1.30	45.65

SOIL:				
BURLESON	10.9800	27.1321	0.01	0.19
TRINITY	261.3597	645.8329	0.13	4.63
DAMS	4.4100	10.8973	0.00	0.08
ALTOGA	117.0899	289.3349	0.06	2.07
HOUSTON	2924.2767	7226.0339	1.47	51.77
STEPHEN	206.2798	509.7276	0.10	3.65
HUNT	14.8500	36.6951	0.01	0.26
AUSTIN	1663.6481	4110.9577	0.84	29.45

Table 8 - 19

		WATER	45.7199	112.9763	0.02	0.81
		LEWISVILLE	146.0698	360.9459	0.07	2.59
		EDDY	253.5297	626.4846	0.13	4.49
-----						
			Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	22		2105.9976	5204.0254	1.06	
LANDUSE:						
		Range-Brush --> RNGB	1.4420	3.5633	0.00	0.07
		Pasture --> PAST	614.7563	1519.0935	0.31	29.19
		Range-Grasses --> RNGE	313.0111	773.4660	0.16	14.86
		Water --> WATR	18.4760	45.6552	0.01	0.88
		Wetlands-Mixed --> WETL	0.1803	0.4454	0.00	0.01
		Lavon 319 Ag2Past --> LVAP	4.2360	10.4673	0.00	0.20
		Commercial --> UCOM	0.0901	0.2227	0.00	0.00
		Forest-Deciduous --> FRSD	55.5182	137.1883	0.03	2.64
		Forest-Evergreen --> FRSE	84.6293	209.1231	0.04	4.02
		Forest-Mixed --> FRST	32.3556	79.9523	0.02	1.54
		Agricultural Land-Row Crops --> AGRF	981.3028	2424.8482	0.49	46.60
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SOIL:						
		TRINITY	64.8013	160.1273	0.03	3.08
		DAMS	1.8025	4.4542	0.00	0.09
		ALTOGA	34.6989	85.7427	0.02	1.65
		HOUSTON	1097.8370	2712.8101	0.55	52.13
		STEPHEN	2.4334	6.0131	0.00	0.12
		AUSTIN	719.0332	1776.7670	0.36	34.14
		WATER	20.3687	50.3321	0.01	0.97
		LEWISVILLE	12.6178	31.1792	0.01	0.60
		EDDY	152.4048	376.5998	0.08	7.24
-----						
			Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	23		3711.5056	9171.3159	1.87	
LANDUSE:						
		Range-Brush --> RNGB	2.7007	6.6734	0.00	0.07
		Pasture --> PAST	2159.6211	5336.5318	1.09	58.19
		Range-Grasses --> RNGE	2.2505	5.5612	0.00	0.06
		Water --> WATR	24.3959	60.2835	0.01	0.66

Table 8 - 20

Lavon 319 Cropland --> LVAG	3.6909	9.1204	0.00	0.10
Wetlands-Forested --> WETF	1.1703	2.8918	0.00	0.03
Wetlands-Mixed --> WETL	17.0141	42.0427	0.01	0.46
Lavon 319 Ag2Past --> LVAP	43.5705	107.6649	0.02	1.17
Commercial --> UCOM	0.5401	1.3347	0.00	0.01
Lavon 319 Pasture --> LVPA	9.8124	24.2469	0.00	0.26
Forest-Deciduous --> FRSD	483.2366	1194.1018	0.24	13.02
Forest-Evergreen --> FRSE	151.5966	374.6027	0.08	4.08
Forest-Mixed --> FRST	47.1714	116.5628	0.02	1.27
Agricultural Land-Row Crops --> AGRR	764.7345	1889.6973	0.38	20.60

SOIL:

BURLESON	13.6833	33.8121	0.01	0.37
TRINITY	325.0684	803.2604	0.16	8.76
ALTOGA	12.0629	29.8081	0.01	0.33
HEIDEN	127.6508	315.4315	0.06	3.44
HOUSTON	1909.4508	4718.3483	0.96	51.45
STEPHEN	11.6128	28.6958	0.01	0.31
HUNT	29.2571	72.2957	0.01	0.79
CROCKETT	202.0988	499.3962	0.10	5.45
WATER	6.3015	15.5714	0.00	0.17
WILSON	644.7356	1593.1738	0.32	17.37
FERRIS	38.3493	94.7629	0.02	1.03
LESON	89.3015	220.6686	0.04	2.41
FRIO	19.9848	49.3835	0.01	0.54
TINN	44.2007	109.2221	0.02	1.19
FAIRLIE	237.7474	587.4856	0.12	6.41

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SUBBASIN #		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
24		2788.4668	6890.4409	1.40	

LANDUSE:

Range-Brush --> RNGB	24.0300	59.3793	0.01	0.86
Pasture --> PAST	1662.1181	4107.1769	0.84	59.61
Range-Grasses --> RNGE	0.3600	0.8896	0.00	0.01
Water --> WATR	39.7800	98.2983	0.02	1.43
Wetlands-Forested --> WETF	205.5598	507.9485	0.10	7.37
Wetlands-Mixed --> WETL	46.7099	115.4226	0.02	1.68
Lavon 319 Ag2Past --> LVAP	3.7800	9.3406	0.00	0.14
Commercial --> UCOM	1.8900	4.6703	0.00	0.07
Lavon 319 Pasture --> LVPA	19.2600	47.5924	0.01	0.69

Table 8 - 21

Forest-Deciduous --> FRSD	434.1595	1072.8298	0.22	15.57
Forest-Evergreen --> FRSE	106.5599	263.3148	0.05	3.82
Forest-Mixed --> FRST	49.6799	122.7616	0.02	1.78
Agricultural Land-Row Crops --> AGRR	194.5798	480.8164	0.10	6.98

SOIL:

BURLESON	99.4499	245.7456	0.05	3.57
TRINITY	649.3493	1604.5745	0.33	23.29
DAMS	3.0600	7.5614	0.00	0.11
HOUSTON	838.5290	2072.0472	0.42	30.07
HUNT	6.5700	16.2348	0.00	0.24
CROCKETT	161.0998	398.0857	0.08	5.78
LAMAR	295.1997	729.4531	0.15	10.59
WATER	13.6800	33.8039	0.01	0.49
WILSON	213.8398	528.4087	0.11	7.67
FERRIS	429.5695	1061.4877	0.22	15.41
FRIO	78.1199	193.0382	0.04	2.80

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SUBBASIN #	Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
25	2145.8676	5302.5461	1.08	

LANDUSE:

Range-Brush --> RNGB	0.4508	1.1139	0.00	0.02
Pasture --> PAST	872.9702	2157.1529	0.44	40.68
Range-Grasses --> RNGE	44.8070	110.7203	0.02	2.09
Water --> WATR	43.9956	108.7153	0.02	2.05
Wetlands-Forested --> WETF	239.9924	593.0333	0.12	11.18
Wetlands-Mixed --> WETL	62.9281	155.4986	0.03	2.93
Commercial --> UCOM	2.8850	7.1289	0.00	0.13
Forest-Deciduous --> FRSD	528.3079	1305.4752	0.27	24.62
Forest-Evergreen --> FRSE	40.9303	101.1409	0.02	1.91
Forest-Mixed --> FRST	37.7749	93.3437	0.02	1.76
Agricultural Land-Row Crops --> AGRR	270.8254	669.2231	0.14	12.62

SOIL:

BURLESON	84.9259	209.8562	0.04	3.96
TRINITY	744.6797	1840.1408	0.37	34.70
ALTOGA	151.7307	374.9343	0.08	7.07
HOUSTON	859.0863	2122.8452	0.43	40.03
HUNT	47.9624	118.5175	0.02	2.24
CROCKETT	14.1543	34.9760	0.01	0.66

Table 8 - 22

WATER	0.0902	0.2228	0.00	0.00
WILSON	85.4669	211.1929	0.04	3.98
FERRIS	88.4420	218.5446	0.04	4.12
LEWISVILLE	69.3291	171.3158	0.03	3.23

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	26	4166.2752	10295.0743	2.09	

LANDUSE:

Range-Brush --> RNGB	1.6200	4.0031	0.00	0.04
Pasture --> PAST	1756.6180	4340.6909	0.88	42.16
Range-Grasses --> RNGE	256.3197	633.3788	0.13	6.15
Water --> WATR	204.5698	505.5021	0.10	4.91
Lavon 319 Cropland --> LVAG	38.1600	94.2952	0.02	0.92
Wetlands-Mixed --> WETL	42.2100	104.3029	0.02	1.01
Commercial --> UCOM	2.0700	5.1151	0.00	0.05
Forest-Deciduous --> FRSD	871.7390	2154.1106	0.44	20.92
Forest-Evergreen --> FRSE	98.0999	242.4097	0.05	2.35
Forest-Mixed --> FRST	40.4100	99.8550	0.02	0.97
Agricultural Land-Row Crops --> AGRR	854.4590	2111.4110	0.43	20.51

SOIL:

BURLESON	105.0299	259.5341	0.05	2.52
TRINITY	383.9396	948.7338	0.19	9.22
DAMS	2.7900	6.8942	0.00	0.07
ALTOGA	79.5599	196.5965	0.04	1.91
HOUSTON	3119.7564	7709.0741	1.57	74.88
HUNT	59.3999	146.7802	0.03	1.43
CROCKETT	4.2300	10.4525	0.00	0.10
WATER	37.3500	92.2936	0.02	0.90
FERRIS	310.2296	766.5930	0.16	7.45
LEWISVILLE	1.4400	3.5583	0.00	0.03
FRIO	62.4599	154.3416	0.03	1.50
EDDY	0.0900	0.2224	0.00	0.00

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	27	2366.7274	5848.3017	1.19	

LANDUSE:

Residential-High Density --> URHD	0.0901	0.2226	0.00	0.00
Range-Brush --> RNGB	10.7222	26.4951	0.01	0.45
Pasture --> PAST	1269.8172	3137.7819	0.64	53.65
Range-Grasses --> RNGE	17.6601	43.6391	0.01	0.75
Water --> WATR	263.5504	651.2461	0.13	11.14
Wetlands-Forested --> WETF	55.7736	137.8193	0.03	2.36
Wetlands-Mixed --> WETL	110.6461	273.4121	0.06	4.68
Commercial --> UCOM	1.4416	3.5624	0.00	0.06
Forest-Deciduous --> FRSD	408.2553	1008.8192	0.21	17.25
Forest-Evergreen --> FRSE	91.8146	226.8786	0.05	3.88
Forest-Mixed --> FRST	52.6200	130.0266	0.03	2.22
Residential-Low Density --> URLD	8.5598	21.1516	0.00	0.36
Agricultural Land-Row Crops --> AGRR	75.7764	187.2472	0.04	3.20

SOIL:

BURLESON	8.6499	21.3742	0.00	0.37
TRINITY	588.0102	1453.0025	0.30	24.84
DAMS	1.0812	2.6718	0.00	0.05
ALTOGA	20.6335	50.9865	0.01	0.87
HOUSTON	818.3126	2022.0915	0.41	34.58
CROCKETT	60.8193	150.2876	0.03	2.57
LAMAR	407.8949	1007.9287	0.20	17.23
WATER	24.5980	60.7830	0.01	1.04
WILSON	195.7030	483.5920	0.10	8.27
FERRIS	104.5191	258.2720	0.05	4.42
ENGLE	109.0243	269.4044	0.05	4.61
LEWISVILLE	5.2260	12.9136	0.00	0.22
FRIO	22.2554	54.9941	0.01	0.94

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SUBBASIN #		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
28		2187.2676	5404.8476	1.10	

LANDUSE:

Residential-High Density --> URHD	14.2200	35.1383	0.01	0.65
Range-Brush --> RNGB	7.0200	17.3468	0.00	0.32
Pasture --> PAST	889.0190	2196.8105	0.45	40.65
Range-Grasses --> RNGE	8.1900	20.2379	0.00	0.37
Water --> WATR	513.1794	1268.0920	0.26	23.46
Wetlands-Mixed --> WETL	11.2500	27.7993	0.01	0.51
Lavon 319 Ag2Past --> LVAP	9.0900	22.4618	0.00	0.42
Commercial --> UCOM	8.1000	20.0155	0.00	0.37

Table 8 - 24

Forest-Deciduous --> FRSD	373.2296	922.2690	0.19	17.06
Forest-Evergreen --> FRSE	78.7499	194.5950	0.04	3.60
Forest-Mixed --> FRST	27.6300	68.2750	0.01	1.26
Residential-Low Density --> URLD	36.0900	89.1801	0.02	1.65
Agricultural Land-Row Crops --> AGRR	211.4998	522.6265	0.11	9.67

SOIL:

BURLESON	233.2797	576.4459	0.12	10.67
TRINITY	243.1797	600.9093	0.12	11.12
ALTOGA	118.0799	291.7813	0.06	5.40
HOUSTON	1111.9488	2747.6810	0.56	50.84
WATER	312.3897	771.9305	0.16	14.28
FERRIS	130.8599	323.3612	0.07	5.98
LEWISVILLE	33.8400	83.6202	0.02	1.55
FRIO	3.6900	9.1182	0.00	0.17

		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	29	1432.0784	3538.7373	0.72	

LANDUSE:

Residential-High Density --> URHD	0.6304	1.5578	0.00	0.04
Range-Brush --> RNGB	5.4938	13.5754	0.00	0.38
Pasture --> PAST	672.4941	1661.7667	0.34	46.96
Water --> WATR	467.3325	1154.8021	0.23	32.63
Wetlands-Mixed --> WETL	5.3137	13.1303	0.00	0.37
Commercial --> UCOM	2.0714	5.1186	0.00	0.14
Forest-Deciduous --> FRSD	136.1740	336.4927	0.07	9.51
Forest-Evergreen --> FRSE	40.8882	101.0368	0.02	2.86
Forest-Mixed --> FRST	22.9659	56.7498	0.01	1.60
Residential-Low Density --> URLD	44.4907	109.9388	0.02	3.11
Agricultural Land-Row Crops --> AGRR	34.2236	84.5683	0.02	2.39

SOIL:

BURLESON	1.7112	4.2284	0.00	0.12
TRINITY	254.4256	628.6984	0.13	17.77
ALTOGA	13.7795	34.0499	0.01	0.96
HOUSTON	729.7737	1803.3073	0.37	50.96
LAMAR	18.5528	45.8449	0.01	1.30
WATER	191.1119	472.2471	0.10	13.35
WILSON	6.7547	16.6911	0.00	0.47
FERRIS	170.2175	420.6159	0.09	11.89

Table 8 - 25

	ENGLE	38.2764	94.5829	0.02	2.67
	GRAVEL	7.4752	18.4715	0.00	0.52
-----					
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	30	4136.9352	10222.5737	2.08	
LANDUSE:					
	Residential-High Density --> URHD	229.3946	566.8455	0.12	5.55
	Range-Brush --> RNGB	12.8742	31.8128	0.01	0.31
	Pasture --> PAST	1945.1725	4806.6185	0.98	47.02
	Range-Grasses --> RNGE	27.2789	67.4075	0.01	0.66
	Water --> WATR	57.3486	141.7114	0.03	1.39
	Wetlands-Mixed --> WETL	8.3727	20.6894	0.00	0.20
	Commercial --> UCOM	183.1195	452.4976	0.09	4.43
	Forest-Deciduous --> FRSD	274.1391	677.4115	0.14	6.63
	Forest-Evergreen --> FRSE	284.7626	703.6626	0.14	6.88
	Forest-Mixed --> FRST	120.0991	296.7708	0.06	2.90
	Residential-Low Density --> URLD	559.6220	1382.8539	0.28	13.53
	Agricultural Land-Row Crops --> AGRR	434.7514	1074.2924	0.22	10.51
SOIL:					
	BURLESON	72.7437	179.7532	0.04	1.76
	TRINITY	439.6129	1086.3056	0.22	10.63
	DAMS	2.7909	6.8965	0.00	0.07
	ALTOGA	543.9569	1344.1446	0.27	13.15
	HOUSTON	1622.6876	4009.7423	0.82	39.22
	STEPHEN	38.4425	94.9933	0.02	0.93
	HUNT	28.3592	70.0771	0.01	0.69
	AUSTIN	733.7386	1813.1047	0.37	17.74
	WATER	11.9739	29.5881	0.01	0.29
	LEWISVILLE	372.1810	919.6779	0.19	9.00
	FRIO	23.8578	58.9537	0.01	0.58
	EDDY	201.0354	496.7685	0.10	4.86
	MISCELLANEOUS	45.5548	112.5682	0.02	1.10
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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	31	2364.8374	5843.6315	1.19	
LANDUSE:					

Table 8 - 26

Residential-High Density --> URHD	0.0900	0.2224	0.00	0.00
Range-Brush --> RNGB	7.2000	17.7915	0.00	0.30
Pasture --> PAST	1378.2585	3405.7456	0.69	58.28
Range-Grasses --> RNGE	29.6100	73.1677	0.01	1.25
Water --> WATR	7.5600	18.6811	0.00	0.32
Wetlands-Mixed --> WETL	1.3500	3.3359	0.00	0.06
Commercial --> UCOM	22.3200	55.1538	0.01	0.94
Forest-Deciduous --> FRSD	265.8597	656.9526	0.13	11.24
Forest-Evergreen --> FRSE	91.5299	226.1750	0.05	3.87
Forest-Mixed --> FRST	52.2899	129.2111	0.03	2.21
Residential-Low Density --> URLD	67.0499	165.6837	0.03	2.84
Agricultural Land-Row Crops --> AGRR	441.7195	1091.5110	0.22	18.68

SOIL:

BURLESON	19.9800	49.3715	0.01	0.84
TRINITY	136.4399	337.1497	0.07	5.77
ALTOGA	26.1900	64.7167	0.01	1.11
HOUSTON	1021.9489	2525.2868	0.51	43.21
STEPHEN	129.6899	320.4701	0.07	5.48
HUNT	93.5999	231.2900	0.05	3.96
AUSTIN	612.2693	1512.9481	0.31	25.89
LEWISVILLE	112.4099	277.7704	0.06	4.75
EDDY	212.3098	524.6280	0.11	8.98

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	32	1419.3884	3507.3797	0.71	

LANDUSE:

Range-Brush --> RNGB	2.9895	7.3873	0.00	0.21
Pasture --> PAST	725.8195	1793.5363	0.36	51.14
Range-Grasses --> RNGE	0.0906	0.2239	0.00	0.01
Water --> WATR	299.3145	739.6210	0.15	21.09
Wetlands-Mixed --> WETL	8.5156	21.0425	0.00	0.60
Commercial --> UCOM	0.9059	2.2386	0.00	0.06
Forest-Deciduous --> FRSD	159.8941	395.1063	0.08	11.26
Forest-Evergreen --> FRSE	78.2711	193.4118	0.04	5.51
Forest-Mixed --> FRST	27.2681	67.3807	0.01	1.92
Agricultural Land-Row Crops --> AGRR	116.3195	287.4314	0.06	8.20

SOIL:

BURLESON	183.2667	452.8612	0.09	12.91
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Table 8 - 27

	TRINITY	229.7402	567.6994	0.12	16.19
	ALTOGA	120.4868	297.7288	0.06	8.49
	HOUSTON	483.8495	1195.6162	0.24	34.09
	AUSTIN	119.7620	295.9380	0.06	8.44
	WATER	191.0576	472.1128	0.10	13.46
	LEWISVILLE	48.3759	119.5392	0.02	3.41
	FRIO	12.5922	31.1160	0.01	0.89
	EDDY	30.2576	74.7680	0.02	2.13
-----					
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	33	6735.5920	16643.9846	3.39	
LANDUSE:					
	Residential-High Density --> URHD	83.9935	207.5521	0.04	1.25
	Range-Brush --> RNGB	13.3237	32.9236	0.01	0.20
	Pasture --> PAST	2697.1536	6664.8014	1.36	40.04
	Range-Grasses --> RNGB	305.9055	755.9077	0.15	4.54
	Water --> WATR	767.0143	1895.3307	0.39	11.39
	Wetlands-Mixed --> WETL	58.0662	143.4845	0.03	0.86
	Commercial --> UCOM	81.2927	200.8784	0.04	1.21
	Forest-Deciduous --> FRSD	918.1665	2268.8354	0.46	13.63
	Forest-Evergreen --> FRSE	239.1068	590.8449	0.12	3.55
	Forest-Mixed --> FRST	137.9185	340.8036	0.07	2.05
	Residential-Low Density --> URLD	429.5100	1061.3407	0.22	6.38
	Agricultural Land-Row Crops --> AGRR	1004.1406	2481.2816	0.50	14.91
SOIL:					
	BURLESON	215.3402	532.1163	0.11	3.20
	TRINITY	1070.8492	2646.1219	0.54	15.90
	ALTOGA	480.1041	1186.3614	0.24	7.13
	HOUSTON	2815.0866	6956.2197	1.41	41.79
	STEPHEN	133.7774	330.5706	0.07	1.99
	HUNT	69.0493	170.6243	0.03	1.03
	AUSTIN	726.5030	1795.2252	0.37	10.79
	WATER	331.6527	819.5303	0.17	4.92
	LEWISVILLE	378.8258	936.0976	0.19	5.62
	FRIO	183.9214	454.4789	0.09	2.73
	GRAVEL	22.2362	54.9468	0.01	0.33
	EDDY	308.2461	761.6916	0.15	4.58
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Table 8 - 28

		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	34	4584.5948	11328.7630	2.30	
LANDUSE:					
	Residential-High Density --> URHD	42.5000	105.0196	0.02	0.93
	Range-Brush --> RNGB	0.9905	2.4475	0.00	0.02
	Pasture --> PAST	1569.0775	3877.2689	0.79	34.22
	Range-Grasses --> RNGE	33.4057	82.5472	0.02	0.73
	Water --> WATR	522.0654	1290.0496	0.26	11.39
	Wetlands-Mixed --> WETL	22.5106	55.6248	0.01	0.49
	Lavon 319 Ag2Past --> LVAP	21.2500	52.5098	0.01	0.46
	Commercial --> UCOM	41.8697	103.4621	0.02	0.91
	Forest-Deciduous --> FRSD	712.8651	1761.5252	0.36	15.55
	Forest-Evergreen --> FRSE	103.3686	255.4289	0.05	2.25
	Forest-Mixed --> FRST	27.3729	67.6397	0.01	0.60
	Residential-Low Density --> URLD	323.6121	799.6617	0.16	7.06
	Agricultural Land-Row Crops --> AGRR	1163.7070	2875.5781	0.58	25.38
SOIL:					
	BURLESON	200.7944	496.1729	0.10	4.38
	TRINITY	226.7266	560.2527	0.11	4.95
	ALTOGA	1.3506	3.3375	0.00	0.03
	HOUSTON	3341.6506	8257.3857	1.68	72.89
	HUNT	30.5243	75.4272	0.02	0.67
	AUSTIN	35.5667	87.8871	0.02	0.78
	CROCKETT	11.1652	27.5899	0.01	0.24
	WATER	444.2688	1097.8104	0.22	9.69
	WILSON	111.8326	276.3439	0.06	2.44
	FERRIS	179.3643	443.2182	0.09	3.91
	LEWISVILLE	0.4502	1.1125	0.00	0.01
	EDDY	0.9004	2.2250	0.00	0.02
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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	35	12400.2760	30641.7020	6.23	
LANDUSE:					
	Residential-High Density --> URHD	41.3175	102.0975	0.02	0.33
	Range-Brush --> RNGB	13.3224	32.9203	0.01	0.11
	Pasture --> PAST	5632.4056	13917.9559	2.83	45.42
	Range-Grasses --> RNGE	6.6612	16.4602	0.00	0.05

Table 8 - 29

Water --> WATR	3266.7791	8072.3744	1.64	26.34
Wetlands-Mixed --> WETL	58.8706	145.4722	0.03	0.47
Lavon 319 Ag2Past --> LVAP	28.0851	69.3996	0.01	0.23
Commercial --> UCOM	29.7054	73.4034	0.01	0.24
Forest-Deciduous --> FRSD	1226.8312	3031.5613	0.62	9.89
Forest-Evergreen --> FRSE	161.7592	399.7150	0.08	1.30
Forest-Mixed --> FRST	103.2486	255.1325	0.05	0.83
Residential-Low Density --> URLD	565.2119	1396.6669	0.28	4.56
Agricultural Land-Row Crops --> AGRR	1266.0783	3128.5428	0.64	10.21

SOIL:

BURLESON	225.5807	557.4211	0.11	1.82
TRINITY	667.2903	1648.9078	0.34	5.38
DAMS	2.3404	5.7833	0.00	0.02
ALTOGA	299.7541	740.7072	0.15	2.42
HOUSTON	6654.1799	16442.8112	3.34	53.66
LAMAR	153.6577	379.6959	0.08	1.24
WATER	2802.4753	6925.0567	1.41	22.60
WILSON	104.5088	258.2466	0.05	0.84
FERRIS	1212.8787	2997.0839	0.61	9.78
ENGLE	182.4629	450.8750	0.09	1.47
LEWISVILLE	81.7347	201.9706	0.04	0.66
EDDY	13.4124	33.1428	0.01	0.11

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	36	3467.6060	8568.6278	1.74	

LANDUSE:

Residential-High Density --> URHD	18.3652	45.3814	0.01	0.53
Range-Brush --> RNGB	1.0803	2.6695	0.00	0.03
Pasture --> PAST	1864.5202	4607.3226	0.94	53.77
Range-Grasses --> RNGE	11.9734	29.5869	0.01	0.35
Water --> WATR	260.2640	643.1254	0.13	7.51
Wetlands-Mixed --> WETL	18.2752	45.1589	0.01	0.53
Commercial --> UCOM	25.1171	62.0657	0.01	0.72
Forest-Deciduous --> FRSD	467.2329	1154.5557	0.23	13.47
Forest-Evergreen --> FRSE	82.6435	204.2162	0.04	2.38
Forest-Mixed --> FRST	49.6941	122.7967	0.02	1.43
Residential-Low Density --> URLD	213.0906	526.5575	0.11	6.15
Agricultural Land-Row Crops --> AGRR	455.3495	1125.1913	0.23	13.13

Table 8 - 30

## SOIL:

BURLESON	113.2522	279.8519	0.06	3.27
TRINITY	96.6875	238.9196	0.05	2.79
ALTOGA	175.8200	434.4600	0.09	5.07
HOUSTON	1975.2517	4880.9456	0.99	56.96
STEPHEN	95.7872	236.6951	0.05	2.76
HUNT	106.8604	264.0574	0.05	3.08
AUSTIN	367.4845	908.0726	0.18	10.60
CROCKETT	5.9417	14.6822	0.00	0.17
WATER	201.3873	497.6380	0.10	5.81
FERRIS	114.2425	282.2989	0.06	3.29
LEWISVILLE	185.9929	459.5977	0.09	5.36
EDDY	28.8982	71.4089	0.01	0.83

## SUBBASIN #

37

Area [ha]

Area [acres]

%Wat.Area

%Sub.Area

1160.9987

2868.8858

0.58

## LANDUSE:

Residential-High Density --> URHD	0.2714	0.6706	0.00	0.02
Range-Brush --> RNGB	0.1809	0.4471	0.00	0.02
Pasture --> PAST	186.0818	459.8175	0.09	16.03
Range-Grasses --> RNGE	0.7237	1.7883	0.00	0.06
Water --> WATR	682.6318	1686.8172	0.34	58.80
Wetlands-Mixed --> WETL	7.3275	18.1066	0.00	0.63
Commercial --> UCOM	0.7237	1.7883	0.00	0.06
Forest-Deciduous --> FRSD	96.3428	238.0679	0.05	8.30
Forest-Evergreen --> FRSE	12.5743	31.0718	0.01	1.08
Forest-Mixed --> FRST	5.1564	12.7417	0.00	0.44
Residential-Low Density --> URLD	43.6030	107.7453	0.02	3.76
Agricultural Land-Row Crops --> AGRR	125.3813	309.8236	0.06	10.80

## SOIL:

BURLESON	73.6367	181.9599	0.04	6.34
TRINITY	0.1809	0.4471	0.00	0.02
ALTOGA	132.7088	327.9301	0.07	11.43
HOUSTON	294.6371	728.0630	0.15	25.38
WATER	635.7721	1571.0246	0.32	54.76
WILSON	0.8142	2.0118	0.00	0.07
LEWISVILLE	23.2489	57.4492	0.01	2.00

		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	38	1416.7784	3500.9303	0.71	
LANDUSE:					
	Residential-High Density --> URHD	1.8913	4.6735	0.00	0.13
	Range-Brush --> RNGB	0.7205	1.7804	0.00	0.05
	Pasture --> PAST	182.9176	451.9986	0.09	12.91
	Water --> WATR	986.2781	2437.1424	0.50	69.61
	Wetlands-Mixed --> WETL	4.3230	10.6824	0.00	0.31
	Commercial --> UCOM	1.9814	4.8961	0.00	0.14
	Forest-Deciduous --> FRSD	75.2925	186.0516	0.04	5.31
	Forest-Evergreen --> FRSE	9.5467	23.5903	0.00	0.67
	Forest-Mixed --> FRST	3.8727	9.5696	0.00	0.27
	Residential-Low Density --> URLD	42.5997	105.2660	0.02	3.01
	Agricultural Land-Row Crops --> AGRR	107.3549	265.2793	0.05	7.58
SOIL:					
	BURLESON	94.2057	232.7870	0.05	6.65
	ALTOGA	11.2579	27.8187	0.01	0.79
	HOUSTON	277.8438	686.5660	0.14	19.61
	CROCKETT	31.7922	78.5601	0.02	2.24
	WATER	947.5510	2341.4460	0.48	66.88
	WILSON	24.4070	60.3110	0.01	1.72
	FERRIS	29.3605	72.5512	0.01	2.07
	ENGLE	0.3603	0.8902	0.00	0.03
-----					
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	39	3664.7060	9055.6718	1.84	
LANDUSE:					
	Residential-High Density --> URHD	5.7600	14.2332	0.00	0.16
	Range-Brush --> RNGB	2.1600	5.3375	0.00	0.06
	Pasture --> PAST	1107.6288	2737.0061	0.56	30.22
	Range-Grasses --> RNGE	0.4500	1.1120	0.00	0.01
	Water --> WATR	1634.7582	4039.5693	0.82	44.61
	Wetlands-Mixed --> WETL	26.9100	66.4959	0.01	0.73
	Commercial --> UCOM	11.8800	29.3560	0.01	0.32
	Forest-Deciduous --> FRSD	355.5896	878.6797	0.18	9.70
	Forest-Evergreen --> FRSE	28.6200	70.7214	0.01	0.78
	Forest-Mixed --> FRST	12.5100	30.9128	0.01	0.34

Table 8 - 32

	Residential-Low Density --> URLD	82.4399	203.7131	0.04	2.25
	Agricultural Land-Row Crops --> AGRR	395.9996	978.5347	0.20	10.81
SOIL:					
	BURLESON	259.8297	642.0522	0.13	7.09
	TRINITY	13.2300	32.6920	0.01	0.36
	ALTOGA	111.1499	274.6569	0.06	3.03
	HOUSTON	1367.2785	3378.6136	0.69	37.31
	WATER	1463.9384	3617.4650	0.74	39.95
	WILSON	44.6400	110.3076	0.02	1.22
	FERRIS	358.9196	886.9083	0.18	9.79
	LEWISVILLE	45.7200	112.9763	0.02	1.25
-----					
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	40	10755.9776	26578.5584	5.41	
LANDUSE:					
	Residential-High Density --> URHD	1.6200	4.0031	0.00	0.02
	Range-Brush --> RNGB	42.8400	105.8597	0.02	0.40
	Pasture --> PAST	4835.3344	11948.3531	2.43	44.95
	Range-Grasses --> RNGE	1394.9084	3446.8884	0.70	12.97
	Water --> WATR	153.2698	378.7374	0.08	1.42
	Lavon 319 Cropland --> LVAG	35.0100	86.5114	0.02	0.33
	Wetlands-Mixed --> WETL	52.5599	129.8782	0.03	0.49
	Lavon 319 Ag2Past --> LVAP	114.6599	283.3303	0.06	1.07
	Commercial --> UCOM	2.5200	6.2270	0.00	0.02
	Lavon 319 Pasture --> LVPA	176.9398	437.2271	0.09	1.65
	Forest-Deciduous --> FRSD	1383.1184	3417.7547	0.70	12.86
	Forest-Evergreen --> FRSE	442.4395	1093.2901	0.22	4.11
	Forest-Mixed --> FRST	197.5498	488.1554	0.10	1.84
	Residential-Low Density --> URLD	59.2199	146.3354	0.03	0.55
	Agricultural Land-Row Crops --> AGRR	1863.9879	4606.0072	0.94	17.33
SOIL:					
	BURLESON	462.5995	1143.1064	0.23	4.30
	TRINITY	900.9890	2226.3888	0.45	8.38
	WHITEWRIGHT	55.9799	138.3292	0.03	0.52
	DAMS	7.7400	19.1259	0.00	0.07
	HOWE	43.4699	107.4164	0.02	0.40
	ALTOGA	758.5191	1874.3387	0.38	7.05
	HEIDEN	1.0800	2.6687	0.00	0.01

Table 8 - 33

	HOUSTON	3027.5965	7481.3424	1.52	28.15
	STEPHEN	477.3594	1179.5791	0.24	4.44
	HUNT	453.4195	1120.4222	0.23	4.22
	AUSTIN	1897.1978	4688.0707	0.95	17.64
	WATER	109.8899	271.5434	0.06	1.02
	WILSON	147.7798	365.1713	0.07	1.37
	FERRIS	8.3700	20.6827	0.00	0.08
	LEWISVILLE	536.9394	1326.8041	0.27	4.99
	FRIO	121.4999	300.2322	0.06	1.13
	EDDY	806.1291	1991.9852	0.41	7.49
	FAIRLIE	939.4189	2321.3511	0.47	8.73
-----					
		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	41	9842.7488	24321.9244	4.95	
LANDUSE:					
	Range-Brush --> RNGB	23.4960	58.0598	0.01	0.24
	Pasture --> PAST	4093.6134	10115.5234	2.06	41.59
	Range-Grasses --> RNGE	2358.6912	5828.4439	1.19	23.96
	Water --> WATR	151.8687	375.2752	0.08	1.54
	Lavon 319 Ag2Past --> LVAP	2.7907	6.8960	0.00	0.03
	Commercial --> UCOM	1.2603	3.1143	0.00	0.01
	Lavon 319 Pasture --> LVPA	20.8853	51.6087	0.01	0.21
	Forest-Deciduous --> FRSD	576.5970	1424.7999	0.29	5.86
	Forest-Evergreen --> FRSE	548.3298	1354.9503	0.28	5.57
	Forest-Mixed --> FRST	149.9782	370.6037	0.08	1.52
	Residential-Low Density --> URLD	15.7540	38.9290	0.01	0.16
	Agricultural Land-Row Crops --> AGRR	1899.4842	4693.7203	0.95	19.30
SOIL:					
	ELBON	11.0728	27.3615	0.01	0.11
	TRINITY	629.6205	1555.8237	0.32	6.40
	DAMS	17.6445	43.6004	0.01	0.18
	WHITEWRIGHT	26.2867	64.9558	0.01	0.27
	ALTOGA	266.1078	657.5657	0.13	2.70
	HEIDEN	16.0241	39.5963	0.01	0.16
	HOUSTON	4358.1008	10769.0851	2.19	44.28
	STEPHEN	407.0838	1005.9243	0.20	4.14
	HUNT	168.3429	415.9837	0.08	1.71
	AUSTIN	2483.1929	6136.0939	1.25	25.23
	WATER	129.6330	320.3297	0.07	1.32

Table 8 - 34

WILSON	12.4232	30.6983	0.01	0.13
FERRIS	40.7804	100.7704	0.02	0.41
LEWISVILLE	178.4255	440.8983	0.09	1.81
FRIO	18.7248	46.2698	0.01	0.19
GRAVEL	1.8005	4.4490	0.00	0.02
EDDY	694.0769	1715.0988	0.35	7.05
FAIRLIE	383.4077	947.4197	0.19	3.90

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SUBBASIN #		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
42		2075.2176	5127.9665	1.04	

LANDUSE:

Residential-High Density --> URHD	83.6353	206.6670	0.04	4.03
Range-Brush --> RNGB	2.7908	6.8963	0.00	0.13
Pasture --> PAST	794.9404	1964.3375	0.40	38.31
Range-Grasses --> RNGE	183.7456	454.0445	0.09	8.85
Water --> WATR	14.9445	36.9287	0.01	0.72
Wetlands-Mixed --> WETL	14.6744	36.2613	0.01	0.71
Commercial --> UCOM	72.9221	180.1940	0.04	3.51
Forest-Deciduous --> FRSD	296.1896	731.8993	0.15	14.27
Forest-Evergreen --> FRSE	125.1378	309.2219	0.06	6.03
Forest-Mixed --> FRST	36.1909	89.4296	0.02	1.74
Residential-Low Density --> URLD	129.2791	319.4551	0.06	6.23
Agricultural Land-Row Crops --> AGRR	320.7670	792.6313	0.16	15.46

SOIL:

BURLESON	58.9678	145.7125	0.03	2.84
TRINITY	380.2750	939.6786	0.19	18.32
DAMS	1.0803	2.6695	0.00	0.05
ALTOGA	156.1972	385.9712	0.08	7.53
HOUSTON	970.4035	2397.9155	0.49	46.76
STEPHEN	120.0063	296.5416	0.06	5.78
HUNT	95.8790	236.9218	0.05	4.62
AUSTIN	102.8111	254.0514	0.05	4.95
WATER	5.1316	12.6803	0.00	0.25
LEWISVILLE	158.3579	391.3103	0.08	7.63
FRIO	15.2146	37.5960	0.01	0.73
EDDY	10.8933	26.9179	0.01	0.52

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	Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
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Table 8 - 35

SUBBASIN #	43	7656.5616	18919.7465	3.85	
LANDUSE:					
Residential-High Density -->	URHD	0.0900	0.2224	0.00	0.00
Range-Brush -->	RNGB	27.2700	67.3855	0.01	0.36
Pasture -->	PAST	3572.1861	8827.0504	1.80	46.66
Range-Grasses -->	RNGE	622.2593	1537.6339	0.31	8.13
Water -->	WATR	126.4499	312.4639	0.06	1.65
Wetlands-Mixed -->	WETL	84.9599	209.9402	0.04	1.11
Lavon 319 Ag2Past -->	LVAP	5.8500	14.4556	0.00	0.08
Commercial -->	UCOM	12.0600	29.8008	0.01	0.16
Forest-Deciduous -->	FRSD	1226.2487	3030.1217	0.62	16.02
Forest-Evergreen -->	FRSE	436.7695	1079.2793	0.22	5.70
Forest-Mixed -->	FRST	192.9598	476.8133	0.10	2.52
Residential-Low Density -->	URLD	26.7300	66.0511	0.01	0.35
Agricultural Land-Row Crops -->	AGRR	1322.7285	3268.5284	0.66	17.28

SOIL:					
	BURLESON	258.3897	638.4939	0.13	3.37
	TRINITY	1118.0688	2762.8038	0.56	14.60
	ALTOGA	673.3793	1663.9538	0.34	8.79
	HOUSTON	2904.3868	7176.8850	1.46	37.93
	STEPHEN	277.9197	686.7535	0.14	3.63
	HUNT	11.5200	28.4665	0.01	0.15
	AUSTIN	1232.4586	3045.4669	0.62	16.10
	WATER	45.3600	112.0867	0.02	0.59
	WILSON	4.5000	11.1197	0.00	0.06
	FERRIS	258.6597	639.1611	0.13	3.38
	LEWISVILLE	257.3097	635.8252	0.13	3.36
	FRIO	270.3597	668.0723	0.14	3.53
	EDDY	335.9696	830.1978	0.17	4.39
	MISCELLANEOUS	8.2800	20.4603	0.00	0.11

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		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
SUBBASIN #	44	11460.9472	28320.5736	5.76	
LANDUSE:					
Residential-High Density -->	URHD	1.4401	3.5586	0.00	0.01
Range-Brush -->	RNGB	62.6444	154.7973	0.03	0.55
Pasture -->	PAST	5483.9014	13550.9947	2.76	47.85

Table 8 - 36

Range-Grasses --> RNGE	1570.9693	3881.9436	0.79	13.71
Water --> WATR	80.9156	199.9466	0.04	0.71
Lavon 319 Cropland --> LVAG	28.8020	71.1712	0.01	0.25
Wetlands-Mixed --> WETL	24.1217	59.6059	0.01	0.21
Lavon 319 Ag2Past --> LVAP	33.5723	82.9589	0.02	0.29
Commercial --> UCOM	4.1403	10.2309	0.00	0.04
Lavon 319 Pasture --> LVPA	35.3725	87.4071	0.02	0.31
Forest-Deciduous --> FRSD	1816.2363	4488.0108	0.91	15.85
Forest-Evergreen --> FRSE	670.6366	1657.1767	0.34	5.85
Forest-Mixed --> FRST	265.2485	655.4422	0.13	2.31
Residential-Low Density --> URLD	54.8138	135.4477	0.03	0.48
Agricultural Land-Row Crops --> AGRR	1328.1324	3281.8815	0.67	11.59

SOIL:

BURLESON	1.4401	3.5586	0.00	0.01
NORMANGEE	60.3942	149.2371	0.03	0.53
TRINITY	224.0256	553.5784	0.11	1.95
ELBON	878.2811	2170.2765	0.44	7.66
DAMS	0.6300	1.5569	0.00	0.01
WHITEWRIGHT	1572.1394	3884.8350	0.79	13.72
HOWE	369.2957	912.5481	0.19	3.22
ALTOGA	182.0827	449.9354	0.09	1.59
HEIDEN	7.1105	17.5704	0.00	0.06
HOUSTON	404.1281	998.6208	0.20	3.53
STEPHEN	764.1532	1888.2606	0.38	6.67
HUNT	35.1924	86.9623	0.02	0.31
AUSTIN	2700.7279	6673.6336	1.36	23.56
PITS	48.4234	119.6566	0.02	0.42
WATER	37.2626	92.0777	0.02	0.33
WILSON	128.7090	318.0463	0.06	1.12
LINDY	7.6505	18.9048	0.00	0.07
LEWISVILLE	455.7917	1126.2841	0.23	3.98
FRIO	176.5923	436.3684	0.09	1.54
EDDY	937.0552	2315.5102	0.47	8.18
FAIRLIE	2469.8618	6103.1520	1.24	21.55

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SUBBASIN #		Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
45		4280.6652	10577.7377	2.15	
LANDUSE:	Residential-High Density --> URHD	15.9300	39.3638	0.01	0.37

Table 8 - 37

Range-Brush --> RNGB	5.8500	14.4556	0.00	0.14
Pasture --> PAST	1867.9479	4615.7927	0.94	43.64
Range-Grasses --> RNGE	467.7295	1155.7829	0.24	10.93
Water --> WATR	69.2999	171.2436	0.03	1.62
Commercial --> UCOM	109.7999	271.3210	0.06	2.57
Forest-Deciduous --> FRSD	242.0997	598.2405	0.12	5.66
Forest-Evergreen --> FRSE	278.6397	688.5326	0.14	6.51
Forest-Mixed --> FRST	109.0799	269.5418	0.05	2.55
Residential-Low Density --> URLD	34.9200	86.2890	0.02	0.82
Agricultural Land-Row Crops --> AGRR	1079.3688	2667.1742	0.54	25.21

SOIL:

BURLESON	8.3700	20.6827	0.00	0.20
TRINITY	232.8297	575.3339	0.12	5.44
DAMS	5.6700	14.0108	0.00	0.13
ALTOGA	274.3197	677.8577	0.14	6.41
HOUSTON	1597.6782	3947.9427	0.80	37.32
STEPHEN	19.8000	48.9267	0.01	0.46
AUSTIN	1575.8982	3894.1233	0.79	36.81
WATER	65.6999	162.3478	0.03	1.53
LEWISVILLE	217.5298	537.5269	0.11	5.08
FRIO	112.7699	278.6600	0.06	2.63
GRAVEL	2.2500	5.5599	0.00	0.05
EDDY	167.8498	414.7653	0.08	3.92

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SUBBASIN #	Area [ha]	Area [acres]	%Wat.Area	%Sub.Area
46	3833.0956	9471.7709	1.93	

LANDUSE:

Residential-High Density --> URHD	0.3600	0.8896	0.00	0.01
Range-Brush --> RNGB	1.5300	3.7807	0.00	0.04
Pasture --> PAST	1932.4778	4775.2492	0.97	50.42
Range-Grasses --> RNGE	0.0900	0.2224	0.00	0.00
Water --> WATR	919.8889	2273.0916	0.46	24.00
Wetlands-Forested --> WETF	0.1800	0.4448	0.00	0.00
Wetlands-Mixed --> WETL	13.7700	34.0263	0.01	0.36
Commercial --> UCOM	8.1000	20.0155	0.00	0.21
Forest-Deciduous --> FRSD	297.2697	734.5682	0.15	7.76
Forest-Evergreen --> FRSE	67.3199	166.3509	0.03	1.76
Forest-Mixed --> FRST	36.2700	89.6249	0.02	0.95
Residential-Low Density --> URLD	30.9600	76.5036	0.02	0.81

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	Agricultural Land-Row Crops --> AGRR	524.8794	1297.0032	0.26	13.69
SOIL:					
	BURLESON	41.7600	103.1909	0.02	1.09
	TRINITY	120.0599	296.6739	0.06	3.13
	DAMS	6.4800	16.0124	0.00	0.17
	ALTOGA	165.5998	409.2054	0.08	4.32
	HOUSTON	2328.0273	5752.6719	1.17	60.73
	HUNT	42.4800	104.9701	0.02	1.11
	PITS	20.2500	50.0387	0.01	0.53
	LAMAR	3.4200	8.4510	0.00	0.09
	WATER	778.9491	1924.8222	0.39	20.32
	WILSON	34.6500	85.6218	0.02	0.90
	FERRIS	116.9099	288.8901	0.06	3.05
	ENGLE	122.5799	302.9010	0.06	3.20
	LEWISVILLE	51.9299	128.3215	0.03	1.35

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Appendix Table 9. Predicted mean annual atrazine and sediment loading at the farm level where conservation practices were implemented, Lavon Lake watershed, 1974 through 2003. The subbasins in this table are those that contained conservation practices implemented under the 319(h) project. See Figure 9 for a chart of this data.

Subbasin	Atrazine Loading (mg)		AT reduction % I vs. II	Sediment Loading (m. tons)		Sediment reduction % I vs. II
	Scenario I Current Conditions	Scenario II Treated Conditions		Scenario I Current Conditions	Scenario II Treated Conditions	
1	3,840,816	304,415	92%	1,444.23	84.36	94%
2	2,658,453	397,764	85%	600.90	73.74	88%
3	2,403,583	395,802	84%	509.75	52.02	90%
5	0	0	0%	7.35	6.04	18%
11	200,800	0	100%	75.16	8.45	89%
14	140,555	0	100%	17,229.79	6.10	100%
15	2,993,300	342,314	89%	23,584.01	70.99	100%
16	515,740	0	100%	9,828.42	1.69	100%
17	4,264,550	0	100%	51,788.13	105.55	100%
22	219,573	0	100%	27.77	0.63	98%
23	2,546,233	73,603	97%	1,009.95	15.00	99%
24	215,508	0	100%	95.82	5.26	95%
26	3,217,420	982,612	69%	969.08	89.88	91%
28	791,920	0	100%	342.14	0.00	100%
34	1,743,467	0	100%	545.14	3.53	99%
35	2,442,890	0	100%	1,089.94	8.02	99%
40	8,524,824	500,854	94%	2,097.23	102.71	95%
43	240,426	0	100%	80.27	0.94	99%
44	2,646,790	340,392	87%	1,881.49	104.17	94%

Table 9 - 1

Appendix Table 10. Predicted mean annual atrazine loading at the subbasin level for each modeling scenario, Lavon Lake watershed, 1974 through 2003. See Figure 10 for a chart of part of this data.

Subbasin	Area (ha)	Cropland Fraction	Atrazine Loading (mg)			Reduction (%) I vs. II	Reduction (%) I vs. III
			Scenario I Current Cond.	Scenario II 319(h) BMP Treated	Scenario III All Treated		
1	7,803.60	0.30	94,776,816	91,240,415	22,944,402	3.73%	75.79%
2	2,958.20	0.14	17,251,923	14,991,234	4,038,853	13.10%	76.59%
3	6,466.20	0.27	69,073,083	67,065,302	16,815,731	2.91%	75.66%
4	3,927.80	0.49	71,923,000	71,923,000	18,068,400	0.00%	74.88%
5	3,230.20	0.16	26,679,320	26,679,320	7,848,902	0.00%	70.58%
6	5,535.80	0.37	88,906,800	88,906,800	22,906,760	0.00%	74.24%
7	1,346.20	0.20	17,688,240	17,688,240	5,385,584	0.00%	69.55%
8	3,473.40	0.38	69,308,200	69,308,200	19,417,980	0.00%	71.98%
9	1,649.00	0.38	40,069,300	40,069,300	12,105,980	0.00%	69.79%
10	3,130.70	0.21	41,054,600	41,054,600	12,100,070	0.00%	70.53%
11	3,862.80	0.13	25,655,300	25,454,500	6,532,840	0.78%	74.54%
12	5,010.00	0.38	128,462,900	128,462,900	37,637,170	0.00%	70.70%
13	4,677.80	0.14	41,787,080	41,787,080	12,451,191	0.00%	70.20%
14	3,765.70	0.19	40,317,625	40,177,070	10,720,543	0.35%	73.41%
15	6,753.50	0.17	64,174,700	61,523,714	16,516,084	4.13%	74.26%
16	4,103.30	0.15	32,650,830	32,135,090	8,523,523	1.58%	73.89%
17	4,900.80	0.35	137,934,750	133,670,200	40,469,200	3.09%	70.66%
18	1,956.10	0.32	46,770,850	46,770,850	14,360,368	0.00%	69.30%
19	3,031.70	0.23	50,822,820	50,822,820	15,152,817	0.00%	70.19%
20	3,589.60	0.24	53,339,480	53,339,480	15,710,594	0.00%	70.55%
21	5,648.20	0.47	153,483,900	153,483,900	45,861,060	0.00%	70.12%
22	2,106.00	0.48	57,989,873	57,770,300	17,216,430	0.38%	70.31%
23	3,711.50	0.22	60,125,033	57,652,403	17,215,714	4.11%	71.37%
24	2,788.50	0.08	15,724,228	15,508,720	4,683,932	1.37%	70.21%
25	2,145.90	0.13	21,850,740	21,850,740	6,687,248	0.00%	69.40%
26	4,166.30	0.22	75,056,470	72,821,662	22,658,887	2.98%	69.81%
27	2,366.70	0.03	6,001,135	6,001,135	1,817,429	0.00%	69.72%

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Table 10- 1

Appendix Table 10 – cont.

Subbasin	Area (ha)	Cropland Fraction	Atrazine Loading (mg)			Reduction (%) I vs. II	Reduction (%) I vs. III
			Scenario I Current Cond.	Scenario II 319(h) BMP Treated	Scenario III All Treated		
28	2,187.30	0.11	18,199,620	17,407,700	5,264,573	4.35%	71.07%
29	1,432.10	0.02	2,930,213	2,930,213	891,123	0.00%	69.59%
30	4,137.00	0.11	29,939,660	29,939,660	8,843,823	0.00%	70.46%
31	2,364.80	0.19	32,560,800	32,560,800	9,603,360	0.00%	70.51%
32	1,419.40	0.08	8,045,930	8,045,930	2,374,644	0.00%	70.49%
33	6,735.60	0.15	80,187,330	80,187,330	24,213,953	0.00%	69.80%
34	4,584.60	0.27	95,677,467	93,934,000	28,207,400	1.82%	70.52%
35	12,400.00	0.11	112,815,090	110,372,200	33,738,444	2.17%	70.09%
36	3,467.60	0.14	34,552,770	34,552,770	10,259,541	0.00%	70.31%
37	1,161.00	0.11	9,181,036	9,181,036	2,739,394	0.00%	70.16%
38	1,416.80	0.08	7,461,809	7,461,809	2,213,225	0.00%	70.34%
39	3,664.70	0.11	29,039,350	29,039,350	8,615,119	0.00%	70.33%
40	10,756.00	0.20	123,956,104	115,932,134	33,809,904	6.47%	72.72%
41	9,842.70	0.20	110,282,077	110,095,100	32,251,540	0.17%	70.76%
42	2,075.20	0.16	23,838,540	23,838,540	7,155,372	0.00%	69.98%
43	7,656.60	0.18	87,339,426	87,099,000	26,012,830	0.28%	70.22%
44	11,461.00	0.12	67,725,790	65,419,392	16,988,173	3.41%	74.92%
45	4,280.70	0.26	74,675,900	74,675,900	21,687,530	0.00%	70.96%
46	3,833.10	0.14	43,455,000	43,455,000	12,960,300	0.00%	70.18%

Table 10- 2

Appendix Table 11. Predicted mean annual sediment loading at the subbasin level for each modeling scenario, Lavon Lake watershed, 1974 through 2003. See Figure 11 for a chart of part of this data.

Subbasin	Area (ha)	Cropland Fraction	Sediment Loading (m. tons/ha)			Reduction (%) I vs. II	Reduction (%) I vs. III
			Scenario I Current Cond.	Scenario II 319(h) BMP Treated	Scenario III All Treated		
1	7,803.60	0.30	5.99	5.81	0.99	3.01%	83.39%
2	2,958.20	0.14	1.97	1.79	0.61	9.98%	69.12%
3	6,466.20	0.27	2.72	2.65	0.56	2.65%	79.37%
4	3,927.80	0.49	7.30	7.30	0.93	0.00%	87.26%
5	3,230.20	0.16	4.74	4.74	1.14	0.00%	76.03%
6	5,535.80	0.37	7.81	7.81	1.07	0.00%	86.30%
7	1,346.20	0.20	5.27	5.27	1.10	0.00%	79.11%
8	3,473.40	0.38	4.66	4.66	0.93	0.00%	79.94%
9	1,649.00	0.38	10.21	10.21	1.33	0.00%	86.98%
10	3,130.70	0.21	4.13	4.13	0.87	0.00%	79.00%
11	3,862.80	0.13	3.27	3.17	0.52	3.25%	84.22%
12	5,010.00	0.38	8.05	8.05	1.20	0.00%	85.08%
13	4,677.80	0.14	6.49	6.49	1.15	0.00%	82.23%
14	3,765.70	0.19	4.90	4.89	0.76	0.27%	84.59%
15	6,753.50	0.17	3.66	3.51	0.50	4.13%	86.39%
16	4,103.30	0.15	2.57	2.54	0.42	1.26%	83.59%
17	4,900.80	0.35	10.82	10.56	1.44	2.40%	86.70%
18	1,956.10	0.32	8.57	8.57	1.14	0.00%	86.67%
19	3,031.70	0.23	7.90	7.90	1.10	0.00%	86.06%
20	3,589.60	0.24	7.40	7.40	1.08	0.00%	85.41%
21	5,648.20	0.47	10.69	10.69	1.46	0.00%	86.33%
22	2,106.00	0.48	4.57	4.56	0.99	0.29%	78.43%
23	3,711.50	0.22	6.75	6.49	0.73	4.13%	89.27%
24	2,788.50	0.08	3.16	3.12	0.54	1.02%	82.95%
25	2,145.90	0.13	4.37	4.37	0.56	0.00%	87.26%
26	4,166.30	0.22	5.73	5.34	0.75	7.30%	86.91%
27	2,366.70	0.03	1.17	1.17	0.31	0.00%	73.82%

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Appendix Table 11 – cont.

Subbasin	Area (ha)	Cropland Fraction	Sediment Loading (m. tons/ha)			Reduction (%) I vs. II	Reduction (%) I vs. III
			Scenario I Current Cond.	Scenario II 319(h) BMP Treated	Scenario III All Treated		
28	2,187.30	0.11	4.58	4.43	0.50	3.50%	89.13%
29	1,432.10	0.02	1.44	1.44	0.35	0.00%	75.54%
30	4,137.00	0.11	3.95	3.95	0.92	0.00%	76.67%
31	2,364.80	0.19	7.34	7.34	0.87	0.00%	88.16%
32	1,419.40	0.08	2.08	2.08	0.30	0.00%	85.69%
33	6,735.60	0.15	5.14	5.14	0.77	0.00%	84.97%
34	4,584.60	0.27	6.42	6.30	0.80	1.87%	87.51%
35	12,400.00	0.11	5.17	5.08	0.72	1.71%	86.15%
36	3,467.60	0.14	4.41	4.41	0.63	0.00%	85.70%
37	1,161.00	0.11	2.09	2.09	0.28	0.00%	86.68%
38	1,416.80	0.08	1.28	1.28	0.18	0.00%	86.19%
39	3,664.70	0.11	3.38	3.38	0.44	0.00%	86.90%
40	10,756.00	0.20	3.62	3.20	0.70	12.83%	80.58%
41	9,842.70	0.20	3.03	3.03	0.88	0.10%	70.83%
42	2,075.20	0.16	3.53	3.53	0.74	0.00%	78.98%
43	7,656.60	0.18	4.33	4.32	0.80	0.25%	81.53%
44	11,461.00	0.12	5.46	5.31	1.02	2.92%	81.29%
45	4,280.70	0.26	5.82	5.82	1.02	0.00%	82.42%
46	3,833.10	0.14	5.53	5.53	0.64	0.00%	88.36%

Table 11- 2

Appendix Table 12. Predicted mean annual atrazine loading at the watershed level for each modeling scenario, Lavon Lake watershed, 1974 through 2003. See Figure 12 for a chart of part of this data.

Subbasin	Area (ha)	Cropland Fraction	Atrazine Loading (mg)			Reduction (%) I vs. II	Reduction (%) I vs. III
			Scenario I Current Cond.	Scenario II 319(h) BMP Treated	Scenario III All Treated		
1	7,803.60	0.30	79,770,000	76,700,000	19,370,000	4%	75.72%
2	2,958.20	0.14	14,730,000	12,810,000	3,485,000	13%	76.34%
3	6,466.20	0.27	57,180,000	55,480,000	14,110,000	2.97%	75.32%
4	3,927.80	0.49	58,780,000	58,780,000	14,980,000	0.00%	74.52%
5	3,230.20	0.16	125,600,000	124,000,000	32,580,000	1.27%	74.06%
6	5,535.80	0.37	72,110,000	72,110,000	18,790,000	0.00%	73.94%
7	1,346.20	0.20	198,400,000	196,900,000	52,340,000	0.76%	73.62%
8	3,473.40	0.38	55,120,000	55,120,000	15,400,000	0.00%	72.06%
9	1,649.00	0.38	268,700,000	267,300,000	72,450,000	0.52%	73.04%
10	3,130.70	0.21	35,520,000	35,520,000	10,490,000	0.00%	70.47%
11	3,862.80	0.13	21,870,000	21,630,000	5,680,000	1.10%	74.03%
12	5,010.00	0.38	110,200,000	110,200,000	32,840,000	0.00%	70.20%
13	4,677.80	0.14	87,360,000	85,510,000	23,940,000	2.12%	72.60%
14	3,765.70	0.19	31,670,000	31,640,000	8,552,000	0.09%	73.00%
15	6,753.50	0.17	52,050,000	49,840,000	13,460,000	4.25%	74.14%
16	4,103.30	0.15	24,920,000	24,510,000	6,576,000	1.65%	73.61%
17	4,900.80	0.35	241,500,000	237,400,000	70,820,000	1.70%	70.67%
18	1,956.10	0.32	321,800,000	320,500,000	88,780,000	0.40%	72.41%
19	3,031.70	0.23	120,900,000	120,700,000	35,570,000	0.17%	70.58%
20	3,589.60	0.24	47,760,000	47,760,000	14,220,000	0.00%	70.23%
21	5,648.20	0.47	130,600,000	130,600,000	39,270,000	0.00%	69.93%
22	2,106.00	0.48	54,040,000	53,830,000	16,130,000	0.39%	70.15%
23	3,711.50	0.22	47,870,000	45,760,000	14,040,000	4.41%	70.67%
24	2,788.50	0.08	301,100,000	295,000,000	86,460,000	2.03%	71.29%
25	2,145.90	0.13	127,400,000	125,700,000	35,400,000	1.33%	72.21%
26	4,166.30	0.22	64,270,000	62,200,000	19,470,000	3.22%	69.71%
27	2,366.70	0.03	457,100,000	447,700,000	130,500,000	2.06%	71.45%

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Appendix Table 12 – cont.

Subbasin	Area (ha)	Cropland Fraction	Atrazine Loading (mg)			Reduction (%) I vs. II	Reduction (%) I vs. III
			Scenario I Current Cond.	Scenario II 319(h) BMP Treated	Scenario III All Treated		
28	2,187.30	0.11	223,600,000	212,300,000	60,520,000	5.05%	72.93%
29	1,432.10	0.02	499,500,000	488,400,000	143,700,000	2.22%	71.23%
30	4,137.00	0.11	228,400,000	228,300,000	67,800,000	0.04%	70.32%
31	2,364.80	0.19	30,520,000	30,520,000	9,008,000	0.00%	70.48%
32	1,419.40	0.08	241,100,000	240,900,000	71,200,000	0.08%	70.47%
33	6,735.60	0.15	498,800,000	497,600,000	141,600,000	0.24%	71.61%
34	4,584.60	0.27	75,790,000	74,340,000	22,510,000	1.91%	70.30%
35	12,400.00	0.11	767,300,000	744,200,000	219,200,000	3.01%	71.43%
36	3,467.60	0.14	30,900,000	30,900,000	9,237,000	0.00%	70.11%
37	1,161.00	0.11	711,600,000	710,300,000	204,900,000	0.18%	71.21%
38	1,416.80	0.08	807,900,000	784,600,000	231,500,000	2.88%	71.35%
39	3,664.70	0.11	717,800,000	716,600,000	207,800,000	0.17%	71.05%
40	10,756.00	0.20	181,300,000	169,500,000	46,270,000	6.51%	74.48%
41	9,842.70	0.20	88,950,000	88,790,000	26,010,000	0.18%	70.76%
42	2,075.20	0.16	478,500,000	477,100,000	135,100,000	0.29%	71.77%
43	7,656.60	0.18	228,700,000	217,500,000	61,850,000	4.90%	72.96%
44	11,461.00	0.12	59,580,000	57,540,000	15,160,000	3.42%	74.56%
45	4,280.70	0.26	234,300,000	234,100,000	69,690,000	0.09%	70.26%
46	3,833.10	0.14	1,501,000,000	1,478,000,000	432,500,000	1.53%	71.19%

Table 12- 2

Appendix Table 13. Predicted mean annual sediment loading at the watershed level for each modeling scenario, Lavon Lake watershed, 1974 through 2003. See Figure 13 for a chart of part of this data.

Subbasin	Area (ha)	Cropland Fraction	Sediment Loading (m. tons)			Reduction (%) I vs. II	Reduction (%) I vs. III
			Scenario I Current Cond.	Scenario II 319(h) BMP Treated	Scenario III All Treated		
1	7,803.60	0.30	46,460.00	45,100.00	7,646.00	2.93%	83.54%
2	2,958.20	0.14	5,832.00	5,305.00	1,800.00	9.04%	69.14%
3	6,466.20	0.27	17,540.00	17,080.00	3,607.00	2.62%	79.44%
4	3,927.80	0.49	28,650.00	28,650.00	3,640.00	0.00%	87.29%
5	3,230.20	0.16	61,580.00	61,120.00	11,190.00	0.75%	81.83%
6	5,535.80	0.37	43,010.00	43,010.00	5,853.00	0.00%	86.39%
7	1,346.20	0.20	111,900.00	111,400.00	19,010.00	0.45%	83.01%
8	3,473.40	0.38	16,160.00	16,160.00	3,238.00	0.00%	79.96%
9	1,649.00	0.38	144,800.00	144,300.00	24,870.00	0.35%	82.82%
10	3,130.70	0.21	12,940.00	12,940.00	2,717.00	0.00%	79.00%
11	3,862.80	0.13	12,560.00	12,170.00	1,977.00	3.11%	84.26%
12	5,010.00	0.38	40,290.00	40,290.00	6,007.00	0.00%	85.09%
13	4,677.80	0.14	90,550.00	88,800.00	16,760.00	1.93%	81.49%
14	3,765.70	0.19	18,090.00	18,050.00	2,759.00	0.22%	84.75%
15	6,753.50	0.17	23,990.00	23,030.00	3,209.00	4.00%	86.62%
16	4,103.30	0.15	9,953.00	9,821.00	1,572.00	1.33%	84.21%
17	4,900.80	0.35	105,800.00	104,100.00	15,320.00	1.61%	85.52%
18	1,956.10	0.32	174,500.00	174,000.00	30,400.00	0.29%	82.58%
19	3,031.70	0.23	53,160.00	53,130.00	11,920.00	0.06%	77.58%
20	3,589.60	0.24	26,570.00	26,570.00	3,877.00	0.00%	85.41%
21	5,648.20	0.47	60,340.00	60,340.00	8,251.00	0.00%	86.33%
22	2,106.00	0.48	9,626.00	9,599.00	2,077.00	0.28%	78.42%
23	3,711.50	0.22	24,340.00	23,370.00	2,619.00	3.99%	89.24%
24	2,788.50	0.08	148,300.00	145,500.00	22,030.00	1.89%	85.14%
25	2,145.90	0.13	118,000.00	116,300.00	21,290.00	1.44%	81.96%
26	4,166.30	0.22	23,860.00	22,240.00	3,118.00	6.79%	86.93%
27	2,366.70	0.03	309,500.00	303,900.00	61,660.00	1.81%	80.08%

(continued on next page)

Appendix Table 13 – cont.

Subbasin	Area (ha)	Cropland Fraction	Sediment Loading (m. tons)			Reduction (%) I vs. II	Reduction (%) I vs. III
			Scenario I Current Cond.	Scenario II 319(h) BMP Treated	Scenario III All Treated		
28	2,187.30	0.11	119,200.00	113,000.00	21,400.00	5.20%	82.05%
29	1,432.10	0.02	342,400.00	335,200.00	72,280.00	2.10%	78.89%
30	4,137.00	0.11	110,100.00	110,100.00	18,900.00	0.00%	82.83%
31	2,364.80	0.19	17,350.00	17,350.00	2,054.00	0.00%	88.16%
32	1,419.40	0.08	129,800.00	129,800.00	21,430.00	0.00%	83.49%
33	6,735.60	0.15	280,600.00	280,100.00	50,490.00	0.18%	82.01%
34	4,584.60	0.27	27,870.00	27,330.00	3,476.00	1.94%	87.53%
35	12,400.00	0.11	474,000.00	460,100.00	92,760.00	2.93%	80.43%
36	3,467.60	0.14	15,300.00	15,300.00	2,188.00	0.00%	85.70%
37	1,161.00	0.11	415,800.00	415,300.00	76,320.00	0.12%	81.65%
38	1,416.80	0.08	513,500.00	499,000.00	106,300.00	2.82%	79.30%
39	3,664.70	0.11	416,300.00	415,800.00	74,670.00	0.12%	82.06%
40	10,756.00	0.20	81,140.00	75,140.00	14,500.00	7.39%	82.13%
41	9,842.70	0.20	29,230.00	29,200.00	8,386.00	0.10%	71.31%
42	2,075.20	0.16	262,100.00	261,600.00	49,050.00	0.19%	81.29%
43	7,656.60	0.18	108,700.00	102,700.00	19,550.00	5.52%	82.01%
44	11,461.00	0.12	62,450.00	60,670.00	11,650.00	2.85%	81.35%
45	4,280.70	0.26	94,770.00	94,740.00	15,110.00	0.03%	84.06%
46	3,833.10	0.14	961,300.00	946,300.00	195,600.00	1.56%	79.65%

Table 13- 2

