Appendix A : Data Dictionary

Data	Feature	Class	Attribute	Value	Description	Page #
allyn1	15-minute Allyns' Bight Digital Line Graph map #1 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
allynf01	Original Arc/Info coverage converted from 15-minute Allyns' Bight Digital Line Graph map #1. UTM projection.	Arc	none			(37)
aranarea	Grid of subwatershed delineated from the Aransas River USGS gauge (drainpt1) using the clipfdr flow direction grid.	Grid	none	integer	63,291 cells	70
arancov	Equivalent polygon coverage of the aranarea grid. Created using gridpoly	Polygon	none			70
aranlu	Land Use coverage specific to the subwatershed delineated from the Aransas River TNRCC SWQM gauge. Created by clipping the sanlu coverage with the araptcov coverage.	Polygon	lusecat	same as lusecat for sanlu coverage.		126
aranpt	Single cell grid identifying the location of the TNRCC SWQM station # 12948 on the Aransas River. All other cells have values of NODATA.	Grid	none			126
aranrain	Precipitation grid specific to the subwatershed delineated from the Aransas River USGS gauge.	Grid	Precip-depth	varies	Precipitation values in each grid-cell are in units of millimeters/year. 761 - 860 mm/year.	81

* All arc, polygon, and point coverages and all grids are projected in TSMS-Albers coordinates unless otherwise specified.

** The Page # field lists the location within the document where the data layer is first referenced. Page #'s in parentheses ( ) indicate that the data are not explicitly called out on the page, but that the process described on the page has been performed in the creation of the data layer.

Data	Feature	Class	Attribute	Value	Description	Page #
araptcov	Equivalent polygon coverage of the arptarea grid. Created using the gridpoly command.	Polygon	none			126
arlugrid	Equivalent 100-meter cellsize grid of the aranlu coverage. Created using polygrid with the lusecat attribute specified for grid-cell values.	Grid	land use	varies	between the lusecat 12 values specifed for the sanluse coverage.	126
arptarea	Grid of subwatershed delineated from the Aransas River TNRCC SWQM station (aranpt) using the clipfdr flow direction grid.	Grid	none			126
arrunoff	Grid of cumulative runoff from each land use specified in the arlugrid grid. Created using the zonalsum command, summing values from the runoff grid based on zonal regions specified in arlugrid.	Grid	runoff volume	varies	Cumulative runoff values in each grid-cell are in units of cubic meters / year. 6730 - 41,141,650 cub. meters/yr.	126
attrib.dat	Arc/Info file of expected mean concentration data. Created from the emc3a.dat text file. Used to assign EMC attributes to the land use coverage, sanlu.	INFO	lusecat	same as lusecat for sanluse coverage		93
			tn	0 - 4.4	(mg/L) total nitrogen emc	
			tkn	0 - 1.7	(mg/L) total kjeldahl nitrogen emc	
			nn	0 - 1.6	(mg/L) nitrate + nitrite emc	
			tp	0 - 1.3	(mg/L) total phosphorus emc	
			dp	0 - 0.48	(mg/L) dissolved phosphorus emc	
			ss	0 - 107	(mg/L) total suspended solids emc	
			ds	0 - 1225	(mg/L) total dissolved solids emc	
			pb	0 - 15	(ug/L) total lead emc	
			cu	0 - 15	(ug/L) total copper emc	
			zn	0 - 245	(ug/L) total zinc emc	
			cd	0 - 1.05	(ug/L) total cadmium emc	
			cr	0 - 10	(ug/L) total chromium emc	
			ni	0 - 11.8	(ug/L) total nickel emc	
			bod	0 - 25.5	(mg/L) biological oxygen demand emc	
			cod	0 - 116	(mg/L) chemical oxygen demand emc	
			o&g	0 - 9	(mg/L) oil & grease emc	

Data	Feature	Class	Attribute	Value	Description	Page #
			fcol	0 - 53,000	(col/100 mL) fecal coliform emc	
			fstr	0 - 56,000	(col/100 mL) fecal streptococci emc	
attribut.dat	Arc/Info table, built from a text file, including USGS gauge station-id number and name. Used to add attributes to the stations coverage.	INFO	stations-id	integer	1-5	48
			stat-num	08189200 08189300 08189500 08189700 08189800	USGS stream gauge station identification number.	
			stat-nam	Copano Medio Mission Aransas Chiltipin	Stream or Creek that gauge is located on.	
balugrid	Equivalent 100-meter cellsize grid of the bayptlu coverage. Created using polygrid with the lusecat attribute specified for grid-cell values.	Grid	land use	varies	between the lusecat 12 values specifed for the sanluse coverage.	(126)
barriers	Polygon coverage of the barrier islands included in the final digital line graph hydrography coverage. Converted from ArcView shapefile and sanpolys coverage.	Polygon	none			67
barunoff	Grid of cumulative runoff from each land use specified in the balugrid grid. Created using the zonalsum command, summing values from the runoff grid based on zonal regions specified in balugrid.	Grid	runoff volume	varies	Cumulative runoff values in each grid-cell are in units of cubic meters / year. 35,530 - 106,393,580 cub. meters/yr.	(126)
basin	Appended coverage of the covsheds, covtrim, baybuff, and barriers coverages.	Polygon	none			76
bayarea	Grid of subwatershed delineated from the Copano Bay SWQM station # 12945 (baypt) using the clipfdr flow direction grid.	Grid	none			(126)

Data	Feature	Class	Attribute	Value	Description	Page #
baybuff	One cell (100 meter) buffer around the bays coverage. Used to eliminate shorelines from the final stream hydrography coverage.	Polygon	inside	0 1	outside of buffer boundary insider buffer boundary	67
baycov	Combined (unioned) polygon coverage of the sqcov and baybuff coverage. Used to trim out subsequent coverages local to the bay network.	Polygon	none			67
bayfil	A redefined version of the ditfil DEM with zero values for elevation replacing the NODATA values occuring in the bay network. Required to avoid errors in subsequent flow direction computations.	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	69
baygrid	Equivalent 100 meter cell size grid of the baycov coverage. Used to isolate other grid features specific to the bay network.	Grid	none			67
baypt	Single cell grid identifying the location of the TNRCC SWQM station # 12945 in the Copano Bay. All other cells have values of NODATA.	Grid	none			(126)
bayptcov	Equivalent polygon coverage of the bayarea grid. Created using the gridpoly command.	Polygon	none			(126)
bayptlu	Land Use coverage specific to the subwatershed delineated from the Copano Bay SWQM gauge # 12945. Created by clipping the sanlu coverage with the bayptcov coverage.	Polygon	lusecat	same as lusecat for sanlu coverage.		(126)
bays	Polygon coverage of the ICWW bay network included in the final digital line graph hydrography coverage. Converted from ArcView shapefile and sanpolys coverage.	Polygon	none			67

Data	Feature	Class	Attribute	Value	Description	Page #
bcdem	Merged grid of the the 4 Beeville and Corpus Christi Digital Elevation Model mapsheets. Geographic coordinates	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	41
bcdemalb	Reprojected version of the merged Digital Elevation Model .	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	41
bee1	15-minute Beeville Digital Line Graph map #1 w/ meridians and parallels removed. UTM projection.	Arc	none			37
bee2	15-minute Beeville Digital Line Graph map #2 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
bee3	15-minute Beeville Digital Line Graph map #3 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
bee4	15-minute Beeville Digital Line Graph map #4 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
bee5	15-minute Beeville Digital Line Graph map #5 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
bee6	15-minute Beeville Digital Line Graph map #6 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
bee7	15-minute Beeville Digital Line Graph map #7 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
bee8	15-minute Beeville Digital Line Graph map #8 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
beedeme	Initial grid created from Beeville East 3" Digital Elevation Model mapsheet. Projected in Geographic coordinates.	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	41

Data	Feature	Class	Attribute	Value	Description	Page #
beedemw	Initial grid created from Beeville West 3" Digital Elevation Model mapsheet. Projected in Geographic coordinates.	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	41
beef01	Original Arc/Info coverage converted from 15-minute Beeville Digital Line Graph map #1. UTM projection.	Arc	none			37
beef02	Original Arc/Info coverage converted from 15-minute Beeville Digital Line Graph. map #2. UTM projection.	Arc	none			(37)
beef03	Original Arc/Info coverage converted from 15-minute Beeville Digital Line Graph. map #3. UTM projection.	Arc	none			(37)
beef04	Original Arc/Info coverage converted from 15-minute Beeville Digital Line Graph. map #4. UTM projection.	Arc	none			(37)
beef05	Original Arc/Info coverage converted from 15-minute Beeville Digital Line Graph. map #5. UTM projection.	Arc	none			(37)
beef06	Original Arc/Info coverage converted from 15-minute Beeville Digital Line Graph. map #6. UTM projection.	Arc	none			(37)
beef07	Original Arc/Info coverage converted from 15-minute Beeville Digital Line Graph. map #7. UTM projection.	Arc	none			(37)
beef08	Original Arc/Info coverage converted from 15-minute Beeville Digital Line Graph. map #8. UTM projection.	Arc	none			(37)
beeload	Point source phosphorus load grid for the Beeville point source identified in the beepoint grid. All other cells have values of zero.	Grid	Load	32,694	Annual Point source phosphorus load at the Beeville location in units of kg/year.	120

Data	Feature	Class	Attribute	Value	Description	Page #
beelu	Cleaned version of the original Beeville land use coverage. Standard Albers projection.	Polygon	none			44
beenit	Point source nitrogen load grid for the Beeville point source identified in the beepoint grid. All other cells have values of zero.	Grid	Load	71,498	Annual Point source nitrogen load at the Beeville location in units of kg/year.	(120)
beepoint	Single cell grid identifying the presumed location of a Beeville point source along the Aransas River. All other cells have values of NODATA.	Grid	none			120
beernof	Cell-based phosphorus loading grid created by adding the nonpoint source loading grid (phosrnof) and the Beeville point source loading grid (beeload).	Grid	Load	varies	Cell-based load values in each grid cell are in units of mg-mm/L-year. 0 - 3,269,400 mg-mm/L-yr.	121
bord	Border of the digitally delineated San Antonio-Nueces Basin, created from an ArcView shapefile by selecting only those sanbasin polygons corresponding to the basin, i.e. exluding the trimshed polygons.	Arc	none			79
border	Cleaned version of the bord coverage.	Polygon	none			79
bordgrid	Equivalent 100 meter cellsize grid of the sanbord coverage. Created using polygrid.	Grid	none			81
cadconc	Grid of predicted cadmium concentrations due to nonpoint sources. Created by dividing the cumulative cadmium load grid (cadload) by the annual cumulative runoff grid (runoffac).	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of micrograms/Liter. 0 - 2.0 ug/L	(102)
cadgrid	Initial 100-meter cellsize grid of total cadmium EMC values. Created by converting the sanlu coverage (with the cd attribute specified) to a grid using polygrid.	Grid	Cd EMC (ug/L)	0 0.75 0.96 2	Barren/Water/Wetland EMC Urban Residential EMC Urban Commercial EMC Urban Industrial EMC	(95)

Data	Feature	Class	Attribute	Value	Description	Page #
				0.5 1.05 1 0.5	Urban Transportation EMC Mixed/Other Urban EMC Agriculture EMC Range/Forest Land EMC	
cadld	Cummulative annual cadmium load grid created by performing a weighted flow accumulation on the mainfdr grid, using the cadrunof grid as the weight grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of g/year. 0 - 173,535.844 g/yr	(96)
cadline	Equivalent line coverage of the cadload grid. In-stream loads isolated through selection of a load threshold value = 1000 grams. Grid-code integer load values retained in the line coverage through use of the streamline command.	Arc	grid-code	varies	Cumulative load values along each stream are in units of grams per year. 1000 - 173,535 g/yr	(97)
cadload	Equivalent integer grid of the cadld grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of grams/year. 0 - 173,535 g/yr	(97)
cadpts	Polygon coverage of circles associated with each total cadmium TNRCC SWQM location. Radius of each circle is defined as a function of the square root of the number of cd measurements at the location. Created using the generate command with the cadrad.dat data file.	Polygon	Radius	varies	in increments of 400 between 0 and 800 meters.	(113)
cadrad.dat	Arc/Info data file created from the sanwq point attribute table by defining a sanwq Radius field as a function of the cd_cnt field, and then using the ArcView File Export feature to create a text-delimited data file.	INFO	sanwq-id X-coord Y-coord Radius	varies varies varies varies	5-digit water quality station number TSMS Albers x-coordinate of station TSMS Albers y-coordinate of station in increments of 400 between 0 and 800 meters.	(113)

Data	Feature	Class	Attribute	Value	Description	Page #
cadrunof	Cell-based total cadmium loading grid created by taking the product of the runoff and cadgrid grids.	Grid	Load	varies	Cell-based load values in each grid cell are in units of ug-mm/L-year. 0 - 392.97 ug-mm/L-yr.	(95)
cc2	15-minute Corpus Christi Digital Line Graph map #2 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
cc3	15-minute Corpus Christi Digital Line Graph map #3 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
cc4	15-minute Corpus Christi Digital Line Graph map #4 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
ccf02	Original Arc/Info coverage converted from 15-minute Corpus Christi Digital Line Graph map #2. UTM projection.	Arc	none			(37)
ccf03	Original Arc/Info coverage converted from 15-minute Corpus Christi Digital Line Graph map #3. UTM projection.	Arc	none			(37)
ccf04	Original Arc/Info coverage converted from 15-minute Corpus Christi Digital Line Graph map #4. UTM projection.	Arc	none			(37)
cclu	Cleaned version of the original Corpus Christi land use coverage. Standard Albers projection.	Polygon	none			(44)
cd.dat	Arc/Info data file of total cadmium water quality measurements. Created from cd.dbf using the dbaseinfo command.	INFO	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 4 (# of measurements) between 1 - 5 ug/L	(104)
cd.dbf	Database file of total cadmium water quality measurements. Created from the TNRCC SWQM database using ArcView Summary Statistics tools.	DBF	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 4 (# of measurements) between 1 - 5 ug/L	(104)

Data	Feature	Class	Attribute	Value	Description	Page #
cdcon	Final nonpoint cadmium concentration coverage. Created by clipping the cdline arc coverage with the mainland template.	Arc	grid-code	varies	Concentration values along each stream are in units of ug/L x 1000. 0 - 1770	(102)
cdconstr	Grid of predicted nonpoint cadmium concentrations occuring in the stream network of the basin. Created using the Con statement with the introfac and cadconc grids.	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of micrograms/Liter. 0 - 1.77 ug/L	(102)
cdline	Equivalent line coverage of the cdconstr grid. Concentrations multiplied by 1000 to retain significant figures. Grid-code integer concentration values retained in the line coverage through use of the streamline command.	Arc	grid-code	varies	Concentration values along each stream are in units of ug/L x 1000. 0 - 1770	(102)
cdload	Final total cadmium cumulative load coverage. Created by clipping the cadline arc coverage with the mainland template.	Arc	grid-code	varies	Cumulative load values along each stream are in units of grams per year. 1000 - 173,535 g/yr	(97)
cdpts	Cleaned version of the cadpts coverage. Joined with data from the cd.dat data file.	Polygon	Radius	varies	in increments of 400 between 0 and 800 meters.	(113)
			station-id	varies	5-digit water quality station number	
			count	varies	between 0 - 4 (# of measurements)	
			ave-value	varies	between 0 - 5 ug/L	
chilarea	Grid of subwatershed delineated from the Chiltipin Creek USGS gauge (drainpt5) using the clipfdr flow direction grid.	Grid	none	integer	32,233 cells	(70)
chilcov	Equivalent polygon coverage of the chilarea grid. Created using the gridpoly command.	Polygon	none			(70)
chilrain	Precipitation grid specific to the subwatershed delineated from the Chiltipin Creek USGS gauge.	Grid	Precip-depth	varies	Precipitation values in each grid-cell are in units of millimeters/year. 811 - 877 mm/year.	(81)

Data	Feature	Class	Attribute	Value	Description	Page #
clipfdr	Flow direction grid with ditfdr values assigned to mainland cells and NODATA values assigned to bays and islands.	Grid	direction	same as for the sanfdr grid.		69
colugrid	Equivalent 100-meter cellsize grid of the copalu coverage. Created using polygrid with the lusecat attribute specified for grid-cell values.	Grid	land use	varies	between the lusecat 12 values specifed for the sanluse coverage.	(126)
copacov	Equivalent polygon coverage of the coparea grid. Created using the gridpoly command.	Polygon	none			(70)
copalu	Land Use coverage specific to the subwatershed delineated from the Copano Creek SWQM gauge # 13660 (USGS flow gauge). Created by clipping the sanlu coverage with copacov.	Polygon	lusecat	same as lusecat for sanlu coverage.		(126)
coparain	Precipitation grid specific to the subwatershed delineated from the Copano Creek USGS gauge.	Grid	Precip-depth	varies	Precipitation values in each grid-cell are in units of millimeters/year. 893 - 938 mm/year.	(81)
coparea	Grid of subwatershed delineated from the Copano Creek USGS gauge (drainpt3) using the clipfdr flow direction grid.	Grid	none	integer	20,782 cells	(70)
corpdeme	Initial grid created from Corpus Christi East 3" Digital Elevation Model mapsheet. Projected in Geographic coordinates.	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	41
corpdemw	Initial grid created from Corpus Christi West 3" Digital Elevation Model mapsheet. Projected in Geographic coordinates.	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	41
corunoff	Grid of cumulative runoff from each land use specified in the colugrid grid. Created using the zonalsum command, summing values from the runoff grid based on zonal regions specified in colugrid.	Grid	runoff volume	varies	Cumulative runoff values in each grid-cell are in units of cubic meters / year. 196,200 - 21,440,430 cub. meters/yr.	(126)

Data	Feature	Class	Attribute	Value	Description	Page #
covsheds	Cleaned version of the subsheds coverage.	Polygon	none			76
covstr	Equivalent line coverage of the str1 grid. Created using the Gridline command.	Arc	none			63
covstr1	Equivalent line coverage of the ditstr1 grid. Created using the Gridline command.	Arc	none			70
covtrim	Cleaned version of the trimshed coverage.	Polygon	none			76
ditacc8	Grid of accumulation zones in the region. Created using the zonlamax command with the ditfac and ditlnk8 grids. Assigns the values of each ditlnk8 reach to all cells in the associated accumulation zones.	Grid	zone #	same as for the ditlnk8 grid		75
ditfac	Flow accumulation grid created from the clipfdr flow direction grid.	Grid	accumu-lation	varies	integer number of cells that fall upstream of each cell.	69
ditfdr	Flow direction grid built from the "burned in" bayfil DEM.	Grid	direction	same as for the sanfdr grid.		69
ditfil	Processed Digital Elevation Model with all "pits" of the ditstrm DEM filled to the level of the lowest elevation neighboring cell.	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	69
ditlnk8	Grid of stream reaches in the San Antonio-Nueces basin region, created using the streamlink command with the clipfdr and ditstr8 grids.	Grid	reach #	varies		75
ditout8	Grid of outlet cells for each accumulation zone in the region. Created using the Con statement with the ditacc8, ditlnk8, and ditfac grids.	Grid	outlet cell #	same as for the ditlnk8 grid		75

Data	Feature	Class	Attribute	Value	Description	Page #
ditshd8	Grid of subwatersheds in the San Antonio-Nueces region. Based on the selection of 8000 cells for the ditstr8 grid, each of these subwatersheds are at least 80 sq km in area. Created using the watershed command with the clipfdr and ditout8 grids.	Grid	water-shed #	same as for the ditlnk8 grid		75
ditstr1	Grid of flow accumulation cells with value greater than a threshold of 1000. Results in strings of cells that represent the larger streams in the basin.	Grid	accumu-lation	varies	from 1000 to the maximum value of the ditfac grid	70
ditstr8	Grid of flow accumulation cells with value greater than a threshold of 8000. Results in strings of cells that represent the largest streams in the basin.	Grid	accumu-lation	varies	from 8000 to the maximum value of the ditfac grid	75
ditstrm	"Burned-In" Digital Elevation Model created by artificially raising the elevations of all off-stream cells in the strmgrid grid by 5 meters and specifying in-stream grid cells with a zero elevation value.	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	69
drainpt1	Single cell grid identifying the location of the USGS Aransas River stream gauge. All other cells have values of NODATA.	Grid	none			70
drainpt2	Single cell grid identifying the location of the USGS Mission River stream gauge. All other cells have values of NODATA.	Grid	none			(70)
drainpt3	Single cell grid identifying the location of the USGS Copano Creek stream gauge. All other cells have values of NODATA.	Grid	none			(70)
drainpt4	Single cell grid identifying the location of the USGS Medio Creek stream gauge. All other cells have values of NODATA.	Grid	none			(70)

Data	Feature	Class	Attribute	Value	Description	Page #
drainpt5	Single cell grid identifying the location of the USGS Chiltipin Creek stream gauge. All other cells have values of NODATA.	Grid	none			(70)
fec_col.dat	Arc/Info data file of fecal coliform water quality measurements. Created from fec_col.dbf using the dbaseinfo command.	INFO	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 17 (# of measurements) between 0 - 462 colonies / 100 mL	(104)
fec_col.dbf	Database file of fecal coliform water quality measurements. Created from the TNRCC SWQM database using ArcView Summary Statistics tools.	DBF	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 17 (# of measurements) between 0 - 462 colonies / 100 mL	(104)
fecalpts	Polygon coverage of circles associated with each fecal coliform TNRCC SWQM location. Radius of each circle is defined as a function of the square root of the number of fec_col measurements at the location. Created using the generate command with the fecrad.dat data file.	Polygon	Radius	varies	in increments of 300 between 0 and 1200 meters.	(113)
feccon	Final nonpoint fecal coliform concentration coverage. Created by clipping the feclin arc coverage with the mainland template.	Arc	grid-code	varies	Concentration values along each stream are in units of colonies per 100 mL. 0 - 8996 colonies / 100 mL	(102)
fecconc	Grid of predicted fecal coliform concentrations due to nonpoint sources. Created by dividing the cumulative fecal coliform load grid (feclload) by the annual cumulative runoff grid (runoffac).	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of colonies per 100 mL. 0 - 8996 colonies/100 mL	(102)
fecld	Cummulative annual fecal coliform load grid created by performing a weighted flow accumulation on the mainfdr grid, using the feclrnof grid as the weight grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of trillion colonies/year. 0 - 1469.786 trillion colonies/year	(96)
feclgrid	Initial 100-meter cellsize grid of fecal coliform EMC values. Created by	Grid	Fecal Coliform	0 20,000	Agricul/Barren/Water/Wetland EMC Urban Residential EMC	(95)

Data	Feature	Class	Attribute	Value	Description	Page #
	converting the sanlu coverage (with the fcol attribute specified) to a grid using polygrid.		EMC (colonies /100 mL)	6,900 9,700 53,000 22,400 200	Urban Commercial EMC Urban Industrial EMC Urban Transportation EMC Mixed/Other Urban EMC Range/Forest Land EMC	
feclin	Equivalent line coverage of the feconstr grid. Grid-code integer concentration values retained in the line coverage through use of the streamline command.	Arc	grid-code	varies	Concentration values along each stream are in units of colonies per 100 mL. 0 - 8996 colonies/100 mL	(102)
fecline	Equivalent line coverage of the feclload grid. In-stream loads isolated through selection of a load threshold value = 100 trillion colonies. Grid-code integer load values retained in the line coverage thru use of the streamline command.	Arc	grid-code	varies	Cumulative load values along each stream are in units of trillion colonies per year. 100 - 1469 trillion colonies/yr.	(97)
feclload	Equivalent integer grid of the fecld grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of trillion colonies/year. 0 - 1469 trillion colonies/yr	(97)
fecload	Final fecal coliform cumulative load coverage. Created by clipping the fecline arc coverage with the mainland template.	Arc	grid-code	varies	Cumulative load values along each stream are in units of trillion colonies per year. 100 - 1469 trillion colonies/yr.	(97)
feclrnof	Cell-based fecal coliform loading grid created by taking the product of the runoff and feclgrid grids.	Grid	Load	varies	Cell-based load values in each grid cell are in units of col-mm/100 mL-year. 0 - 10,413,663 colony-mm/100 mL-yr.	(95)
feconstr	Grid of predicted nonpoint fecal coliform concentrations occuring in the stream network of the basin. Created using the Con statement with the introfac and fecconc grids.	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of colonies per 100 mL. 0 - 8996 colonies/100 mL	(102)
fecpts	Cleaned version of the fecalpts coverage. Joined with data from the fec_col.dat data	Polygon	Radius	varies	in increments of 300 between 0 and 1200 meters.	(113)

Data	Feature	Class	Attribute	Value	Description	Page #
	file.		station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 17 (# of measurements) between 0 - 462 colonies / 100 mL	
fecrad.dat	Arc/Info data file created from the sanwq point attribute table by defining a sanwq Radius field as a function of the fec_cnt field, and then using the ArcView File Export feature to create a text-delimited data file.	INFO	sanwq-id X-coord Y-coord Radius	varies varies varies varies	5-digit water quality station number TSMS Albers x-coordinate of station TSMS Albers y-coordinate of station in increments of 300 between 0 and 1200 meters.	(113)
geobuff	Equivalent of hucbuff coverage reprojected to Geographic coordinates.	Polygon	inside	0 1	outside of buffer boundary insider buffer boundary	53
goli5	15-minute Goliad Digital Line Graph map #5 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
goli6	15-minute Goliad Digital Line Graph map #6 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
goli7	15-minute Goliad Digital Line Graph map #7 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
goli8	15-minute Goliad Digital Line Graph map #8 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
golif05	Original Arc/Info coverage converted from 15-minute Goliad Digital Line Graph map #5. UTM projection.	Arc	none			(37)
golif06	Original Arc/Info coverage converted from 15-minute Goliad Digital Line Graph map #6. UTM projection.	Arc	none			(37)
golif07	Original Arc/Info coverage converted from 15-minute Goliad Digital Line Graph map #7. UTM projection.	Arc	none			(37)

Data	Feature	Class	Attribute	Value	Description	Page #
golif08	Original Arc/Info coverage converted from 15-minute Goliad Digital Line Graph map #8. UTM projection.	Arc	none			(37)
huc250	Original 1:250,000-scale HUC coverage of the U.S. imported from a .e00 file. Standard Albers projection.	Polygon	huc	varies	8-digit Hydrologic Unit Code identifies water resources region, subregion, accounting unit, and cataloging unit.	32
hucbuff	5 kilometer buffer around the sanhucs coverage. Used as a coarse template to clip other coverages or trim grids.	Polygon	inside	0 1	outside of buffer boundary insider buffer boundary	41
hucs	Intermediate coverage of the 5 HUCs representing the San Antonio-Nueces Basin. Standard Albers projection.	Polygon	huc	12100404 12100405 12100406 12100407 12110201	West San Antonio Bay HUC Aransas Bay HUC Mission HUC Aransas HUC North Corpus Christi Bay HUC	32
hucsan	Intermediate reprojected coverage of the 5 San Antonio-Nueces HUCs	Polygon	huc	same as huc for the hucs coverage		32
introfac	Equivalent integer grid of cumulative runoff in units of cubic feet per second.	Grid	Runoff Flow	varies	Cumulative runoff values in each grid-cell are in units of cubic feet/second. 0 - 324 cfs	100
landuse	Appended land use map of the Beeville and Corpus Christi mapsheets. Anderson Land Use Classification is used to distinguish between land use types. Standard Albers projection.	Polygon	landuse-id	0 11 12 13 14 15 16 17 21 22 23 31 32	Unknown Residential Commercial Services Industrial Transportation, Comunications Industrial and Commercial Mixed Urban or Built-Up Land Other Urban or Built-Up Land Cropland and Pasture Orchards, Groves, Vineyards, Nursery Confined Feeding Operations Herbaceous Rangeland Shrub and Brush Rangeland	44

Data	Feature	Class	Attribute	Value	Description	Page #
				33	Mixed Rangeland	
				41	Deciduous Forest Land	
				42	Evergreen Forest Land	
				43	MIxed Forest Land	
				51	Streams and Canals	
				52	Lakes	
				53	Reservoirs	
				54	Bays and Estuaries	
				61	Forested Wetlands	
				62	Nonforested Wetlands	
				71	Dry Salt Flats	
				72	Beaches	
				73	Sandy Areas Other Than Beaches	
				74	Bare Exposed Rock	
				75	Strip Mines, Quarries, Gravel Pits	
				76	Transitional Areas	
				77	Mixed Barren Land	
				200000	Unknown	
lanuse	Reprojected version of the appended land use coverage. Includes the full Beeville and Corpus Christi mapsheets.	Polygon	lanuse-id	same as landuse-id for landuse coverage		44
lbe28096	Initial land use coverage of the Beeville 1:250,000-scale mapsheet imported from uncompressed .e00 file. Standard Albers projection.	Polygon	none			44
lco27096	Initial land use coverage of the Corpus Christi 1:250,000-scale mapsheet imported from uncompressed .e00 file. Standard Albers projection.	Polygon	none			(44)
lonlat.dat	Raw data file of longitude and latitude data, in decimal degrees, used to build the stations coverage.	Text	longitude latitude	varies varies	between -97.1122 and -97.6564 betweeen 28.0467 and 28.4828	47

Data	Feature	Class	Attribute	Value	Description	Page #
luse	Dissolved (no boundary lines) land use coverage with Anderson classification.	Polygon	luse-id	same as landuse-id for landuse coverage		44
m2lugrid	Equivalent 100-meter cellsize grid of the mis2lu coverage. Created using polygrid with the lusecat attribute specified for grid-cell values.	Grid	land use	varies	between the lusecat 12 values specifed for the sanluse coverage.	(126)
m2runoff	Grid of cumulative runoff from each land use specified in the m2lugrid grid. Created using the zonalsum command, summing values from the runoff grid based on zonal regions specified in m2lugrid.	Grid	runoff volume	varies	Cumulative runoff values in each grid-cell are in units of cubic meters / year. 31,260 - 109,195,880 cub. meters/yr.	(126)
main	Polygon coverage of the mainland basin region buffered by one cell width (100 meters). Created by buffering the coverage called mainland	Polygon	none			96
mainfdr	Flow direction grid created by storing ditfdr values into the cells of the maingrid grid and storing values of NODATA elsewhere. This grid was created in order to correct for an anomaly with the use of the streamline command, so that arc coverages converted from string grids would extend for the full intended length.	Grid	direction	same as for the sanfdr grid.		96
maingrid	Equivalent 100-meter cellsize grid of the main coverage, created using the polygrid command.	Grid	none			96
mainland	Polygon coverage of the mainland basin region reselected from the baycov coverage.	Polygon	none			96
mediarea	Grid of subwatershed delineated from the Medio Creek USGS gauge (drainpt4) using the clipfdr flow direction grid.	Grid	none	integer	52,708 cells	(70)

Data	Feature	Class	Attribute	Value	Description	Page #
medicov	Equivalent polygon coverage of the mediarea grid. Created using the gridpoly command.	Polygon	none			(70)
medirain	Precipitation grid specific to the subwatershed delineated from the Medio Creek USGS gauge.	Grid	Precip-depth	varies	Precipitation values in each grid-cell are in units of millimeters/year. 739 - 826 mm/year.	(81)
mi2ptcov	Equivalent polygon coverage of the mis2area grid. Created using the gridpoly command.	Polygon	none			(126)
milugrid	Equivalent 100-meter cellsize grid of the misslu coverage. Created using polygrid with the lusecat attribute specified for grid-cell values.	Grid	land use	varies	between the lusecat 12 values specifed for the sanluse coverage.	(126)
mirunoff	Grid of cumulative runoff from each land use specified in the milugrid grid. Created using the zonalsum command, summing values from the runoff grid based on zonal regions specified in milugrid.	Grid	runoff volume	varies	Cumulative runoff values in each grid-cell are in units of cubic meters / year. 19,330 - 93,565,590 cub. meters/yr.	(126)
mis2area	Grid of subwatershed delineated from the Mission River SWQM station # 12943 (mis2pt) using the clipfdr flow direction grid.	Grid	none			(126)
mis2lu	Land Use coverage specific to the subwatershed delineated from the Mission River SWQM gauge # 12943. Created by clipping the sanlu coverage with the mi2ptcov coverage.	Polygon	lusecat	same as lusecat for sanlu coverage.		(126)
mis2pt	Single cell grid identifying the location of the TNRCC SWQM station # 12943 on the Mission River. All other cells have values of NODATA.	Grid	none			(126)

Data	Feature	Class	Attribute	Value	Description	Page #
missarea	Grid of subwatershed delineated from the Mission Creek USGS gauge (drainpt2) using the clipfdr flow direction grid.	Grid	none	integer	176,619 cells	(70)
misscov	Equivalent polygon coverage of the missarea grid. Created using gridpoly.	Polygon	none			(70)
misslu	Land Use coverage specific to the subwatershed delineated from the Mission River SWQM gauge # 12944 (USGS flow gauge). Created by clipping the sanlu coverage with misscov.	Polygon	lusecat	same as lusecat for sanlu coverage.		(126)
missrain	Precipitation grid specific to the subwatershed delineated from the Mission River USGS gauge.	Grid	Precip-depth	varies	Precipitation values in each grid-cell are in units of millimeters/year. 739 - 945 mm/year.	(81)
niconstr	Grid of predicted nonpoint nitrogen concentrations occuring in the stream network of the basin. Created using the Con statement with the introfac and nitconc grids.	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of milligrams/Liter. 0 - 4.4 mg/L	(102)
nitconc	Grid of predicted nitrogen concentrations due to nonpoint sources. Created by dividing the cumulative nitrogen load grid (nitload) by the annual cumulative runoff grid (runoffac).	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of milligrams/Liter. 0 - 4.4 mg/L	(102)
nitgrid	Initial 100-meter cellsize grid of total nitrogen EMC values. Created by converting the sanlu coverage (with the tn attribute specified) to a grid using polygrid.	Grid	Nitrogen EMC (mg/L)	0 1.82 1.34 1.26 1.86 1.57 4.4 0.7 1.5	Water/Wetland EMC Urban Residential EMC Urban Commercial EMC Urban Industrial EMC Urban Transportation EMC Mixed/Other Urban EMC Agriculture EMC Range/Forest Land EMC Barren Lands EMC	(95)

Data	Feature	Class	Attribute	Value	Description	Page #
nitld	Cummulative annual nitrogen load grid created by performing a weighted flow accumulation on the mainfdr grid, using the nitrunof grid as the weight grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of kg/year. 369,122.406 kg/yr	(96)
nitline	Equivalent line coverage of the nitload grid. In-stream loads isolated through selection of a load threshold value = 1000 kg. Grid-code integer load values retained in the line coverage through use of the streamline command.	Arc	grid-code	varies	Cumulative load values along each stream are in units of kg/year. 1000 - 369,122 kg/yr	(97)
nitload	Equivalent integer grid of the nitld grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of kg/year. 0 - 369,122 kg/yr	(97)
nitpts	Cleaned version of the nitropts coverage. Joined with data from the sanwq.pat data file.	Polygon	Radius	varies	in increments of 200 between 0 and 1000 meters.	(113)
			station-id	same as for sanwq coverage		
			tn_cnt	same as for sanwq coverage		
			tn_avg	same as for sanwq coverage		
nitrad.dat	Arc/Info data file created from the sanwq point attribute table by defining a sanwq Radius field as a function of the tn_cnt field, and then using the ArcView File Export feature to create a text-delimited data file.	INFO	sanwq-id	varies	5-digit water quality station number	(113)
			X-coord	varies	TSMS Albers x-coordinate of station	
			Y-coord	varies	TSMS Albers y-coordinate of station	
			Radius	varies	in increments of 200 between 0 and 1000 meters.	
nitropts	Polygon coverage of circles associated with each total nitrogen TNRCC SWQM location. Radius of each circle is defined as a function of the square root of the number of measurements at the location. Created using the generate command with the nitrad.dat data file.	Polygon	Radius	varies	in increments of 200 between 0 and 1000 meters.	(113)

Data	Feature	Class	Attribute	Value	Description	Page #
nitrunof	Cell-based total nitrogen loading grid created by taking the product of the runoff and nitgrid grids.	Grid	Load	varies	Cell-based load values in each grid cell are in units of mg-mm/L-year. 0 - 1031.3 mg-mm/L-yr.	(95)
no2.dat	Arc/Info data file of nitrite nitrogen water quality measurements. Created from no2.dbf using the dbaseinfo command.	INFO	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 19 (# of measurements) between 0 - 0.92 mg/L	(104)
no2.dbf	Database file of nitrite nitrogen water quality measurements. Created from the TNRCC SWQM database using ArcView Summary Statistics tools.	DBF	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 19 (# of measurements) between 0 - 0.92 mg/L	(104)
no3.dat	Arc/Info data file of nitrate nitrogen water quality measurements. Created from no3.dbf using the dbaseinfo command.	INFO	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 39 (# of measurements) between 0 - 6.57 mg/L	(104)
no3.dbf	Database file of nitrate nitrogen water quality measurements. Created from the TNRCC SWQM database using ArcView Summary Statistics tools.	DBF	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 39 (# of measurements) between 0 - 6.57 mg/L	(104)
p_ann	Original grid of annual precipitation for the U.S. Converted from the ASCII file prism_us.ann. Geographic coordinates.	Grid	Precip-depth	varies	Precipitation values in each grid-cell are in units of millimeters/year.	52
p_ann2	Precipitation grid for the San Antonio-Nueces basin region. Mapextent reduced from p_ann. Geographic coordinates.	Grid	Precip-depth	varies	Precipitation values in each grid-cell are in units of millimeters/year. 733 - 1010 mm/year.	53
phcon	Final nonpoint phosphorus concentration coverage. Created by clipping the phline arc coverage with the mainland template.	Arc	grid-code	varies	Concentration values along each stream are in units of mg/L x 1000. 0 - 1299	102
phconstr	Grid of predicted nonpoint phosphorus concentrations occuring in the stream network of the basin. Created using the Con statement with the introfac and phosconc grids.	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of milligrams/Liter. 0 - 1.3 mg/L	102

Data	Feature	Class	Attribute	Value	Description	Page #
phline	Equivalent line coverage of the phconstr grid. Concentrations multiplied by 1000 to retain significant figures. Grid-code integer concentration values retained in the line coverage through use of the streamline command.	Arc	grid-code	varies	Concentration values along each stream are in units of mg/L x 1000. 0 - 1299	102
phopts	Cleaned version of the phospts coverage. Joined with data from the tp.dat data file.	Polygon	Radius	varies	in increments of 200 between 0 and 1600 meters.	113
			station-id	varies	5-digit water quality station number	
			count	varies	between 0 - 75 (# of measurements)	
			ave-value	varies	between 0 - 7.36 mg/L	
phosconc	Grid of predicted phosphorus concentrations due to nonpoint sources. Created by dividing the cumulative phosphorus load grid (phosload) by the annual cumulative runoff grid (runoffac).	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of milligrams/Liter. 0 - 1.3 mg/L	102
phosgrid	Initial 100-meter cellsize grid of total phosphorus EMC values. Created by converting the sanlu coverage (with the tp attribute specified) to a grid using polygrid.	Grid	Phos EMC (mg/L)	0	Range/Forest/Water/Wetland EMC	95
				0.57	Urban Residential EMC	
				0.32	Urban Commercial EMC	
				0.28	Urban Industrial EMC	
				0.22	Urban Transportation EMC	
				0.35	Mixed/Other Urban EMC	
				1.3	Agriculture EMC	
				0.12	Barren Lands EMC	
phosld	Cummulative annual phosphorus load grid created by performing a weighted flow accumulation on the mainfdr grid, using the phosrnof grid as the weight grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of kg/year. 0 - 60,926.4 kg/yr	96
phosload	Equivalent integer grid of the phosld grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of kg/year. 0 - 60,926 kg/yr	97

Data	Feature	Class	Attribute	Value	Description	Page #
phospts	Polygon coverage of circles associated with each total phosphorus TNRCC SWQM location. Radius of each circle is defined as a function of the square root of the number of measurements at the location. Created using the generate command with the rad.dat data file.	Polygon	Radius	varies	in increments of 200 between 0 and 1600 meters.	113
phosrnof	Cell-based total phosphorus loading grid created by taking the product of the runoff and phosgrid grids.	Grid	Load	varies	Cell-based load values in each grid cell are in units of mg-mm/L-year. 0 - 304.7 mg-mm/L-yr.	95
rad.dat	Arc/Info data file created from the sanwq point attribute table by defining a sanwq Radius field as a function of the tp_cnt field, and then using the ArcView File Export feature to create a text-delimited data file.	INFO	sanwq-id X-coord Y-coord Radius	varies varies varies varies	5-digit water quality station number TSMS Albers x-coordinate of station TSMS Albers y-coordinate of station in increments of 200 between 0 and 1600 meters.	113
rainbfcv	Equivalent coverage of the rainbuff grid. Converted using the Gridpoly command.	Polygon	grid-code	varies	Precipitation values in each polygon are in units of millimeters/year. 733 - 1010 mm/year.	53
rainbuff	Final reprojected precipitaton grid. Converted from the p_ann2 grid.	Grid	Precip-depth	varies	Precipitation values in each grid-cell are in units of millimeters/year. 733 - 1010 mm/year.	53
rofaccfs	Equivalent runoff grid in units of cubic feet per second. Converted from the runoffac grid.	Grid	Runoff Flow	varies	Typical runoff values in each grid-cell are in units of cubic feet/second. 0 - 324.757 cfs	100
rofaccov	Final typical streamflow coverage, created by clipping the rofaclin arc coverage with the mainland template.	Arc	grid-code	varies	Typical flow values along each stream are in units of cubic feet / sec. 1 - 324 cfs.	100
rofaclin	Equivalent line coverage of the introfac grid. In-stream flows isolated through selection of a flow threshold value = 1 cfs. Grid-code integer flow values retained	Arc	grid-code	varies	Typical flow values along each stream are in units of cubic feet / sec. 1 - 324 cfs.	100

Data	Feature	Class	Attribute	Value	Description	Page #
	in the line coverage through use of the streamline command.					
runoff	Final runoff grid created by zero-filling the NODATA grid cells from runoffeq. Created using the isnull command.	Grid	Runoff depth	varies	Runoff values in each grid-cell are in units of millimeters/year. 0 - 248 mm/yr	88
runoffac	Cumulative annual runoff grid. Created by performing a weighted flow accumulation on the mainfdr grid, using runoff as the weight grid.	Grid	Runoff volume	varies	Cumulative runoff values in each grid-cell are in units of cubic meters/year. 0 - 290,430,464 cubic meters/year	100
runoffcv	Equivalent polygon coverage of the runoff grid. Converted using the Gridpoly and int commands.	Polygon	Runoff depth	varies	Runoff values in each polygon are in units of millimeters/year. 0 - 248 mm/yr	88
runoffeq	Original grid of cell-based runoff values created by applying the rainfall/runoff mathematical relationship to the sanpyr precipitation grid.	Grid	Runoff depth	varies	Runoff values in each grid-cell are in units of millimeters/year. 0 - 248 mm/yr	88
sabay1	15-minute San Antonio Bay Digital Line Graph map #1 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
sabay5	15-minute San Antonio Bay Digital Line Graph map #5 w/ meridians and parallels removed. UTM projection.	Arc	none			(37)
sabayf01	Original Arc/Info coverage converted from 15-minute San Antonio Bay Digital Line Graph map #1. UTM projection.	Arc	none			(37)
sabayf05	Original Arc/Info coverage converted from 15-minute San Antonio Bay Digital Line Graph map #5. UTM projection.	Arc	none			(37)
sanbasin	Cleaned version of the basin polygon coverage. Includes all San Antonio-Nueces subwatersheds plus 3 bordering subwatersheds from trimshed.	Polygon	none			79

Data	Feature	Class	Attribute	Value	Description	Page #
sanbord	Final coverage of the San Antonio-Nueces border, created by reselecting only the outside polygon from the border coverage.	Polygon	none			79
sanfac	Initial Flow Accumulation grid for the basin built from the sanfdr grid. Identifies the total number of cells draining to each cell in the grid.	Grid	accumu-lation	varies	integer number of cells that fall upstream of each cell.	63
sanfdr	Initial Flow Direction Grid for the basin built from the sanfil grid identifying the predominant direction of the flow of runoff from each grid cell.	Grid	direction	1 2 4 8 16 32 64 128	East Southeast South Southwest West Northwest North Northeast	63
sanfil	Processed Digital Elevation Model with all "pits" filled to the level of the lowest elevation neighboring grid cell.	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	63
sangages	Final reprojected version of the USGS Stream gauge point coverage.	Point	stat-num stat-nam	same as for the stations coverage same as for the stations coverage		49
sanhucs	Final cleaned and reprojected coverage of the 5 San Antonio-Nueces HUCs	Polygon	huc	same as huc for the hucs coverage		32
sanhyd	Final hydrography digital line graph coverage of the San Antonio-Nueces basin, created by clipping the sanhydro coverage with sanbord.	Arc	none			79
sanhydro	Reprojected coverage of the appended Digital Line Graph hydrography maps in the region.	Arc	none			38
sanlu	Final land use coverage of the San Antonio-Nueces basin, created by clipping the sanluse coverage with sanbord.	Polygon	lusecat tn tkn	same as lusecat for sanluse coverage 0 - 4.4 0 - 1.7	 (mg/L) total nitrogen emc (mg/L) total kjeldahl nitrogen emc	79

Data	Feature	Class	Attribute	Value	Description	Page #
			nn	0 - 1.6	(mg/L) nitrate + nitrite emc	
			tp	0 - 1.3	(mg/L) total phosphorus emc	
			dp	0 - 0.48	(mg/L) dissolved phosphorus emc	
			ss	0 - 107	(mg/L) total suspended solids emc	
			ds	0 - 1225	(mg/L) total dissolved solids emc	
			pb	0 - 15	(ug/L) total lead emc	
			cu	0 - 15	(ug/L) total copper emc	
			zn	0 - 245	(ug/L) total zinc emc	
			cd	0 - 1.05	(ug/L) total cadmium emc	
			cr	0 - 10	(ug/L) total chromium emc	
			ni	0 - 11.8	(ug/L) total nickel emc	
			bod	0 - 25.5	(mg/L) biological oxygen demand emc	
			cod	0 - 116	(mg/L) chemical oxygen demand emc	
			o&g	0 - 9	(mg/L) oil & grease emc	
			fcol	0 - 53,000	(col/100 mL) fecal coliform emc	
			fstr	0 - 56,000	(col/100 mL) fecal streptococci emc	
sanlus	Reselected land use coverage to eliminate the unknown category, which was seen to define the Gulf of Mexico.	Polygon	sanlus-id	same as luse-id for luse coverage except no value 200000 is included		44
sanluse	Redefined land use coverage, created by dissolving boundaries between subcategory polygons for Agriulture, Rangeland, Forestland, Water, Wetland, and Barren land use categories of the sanlus coverage.	Polygon	lusecat	0	Unknown	92
				11	Residential	
				12	Commercial Services	
				13	Industrial	
				14	Transportation, Comunications	
				16	Mixed Urban or Built-Up Land	
				17	Other Urban or Built-Up Land	
				20	Agriculture	
				30	Rangeland	
				40	Forest Land	
				50	Water Bodies	
				60	Wetlands	
				70	Barren Land Uses	

Data	Feature	Class	Attribute	Value	Description	Page #
sanpolys	Cleaned polygon coverage of sanrivs4 arc coverage. Performed to isolate the bay network & barrier islands in the coverage.	Polygon	none			67
sanpyr	Precipitation grid specific to the boundary of the San Antonio-Nueces border. Created using the Con statement with the rainbuff and bordgrid grids.	Grid	Precip-depth	varies	Precipitation values in each grid-cell are in units of millimeters/year. 739 - 985 mm/year.	81
sanrivs4	Final edited digital line graph coverage of hydrography in the San Antonio-Nueces basin. Created by using ArcEdit with the sanhydro coverage to eliminate lakes and disappearing streams.	Arc	none			67
sanutm	Appended coverage of 15-minute Digital Line Graph hydrography maps for the San Antonio-Nueces region. UTM projection.	Arc	none			38
sanwq	Final reprojected point coverage of TNRCC SWQM stations. Appended with average concentration values and # of samples for a number of pollutant constituents	Point	station-id	varies	character representation of sanwq-id	56
			tp_cnt	varies	# of total phosphorus measurements between 0 - 75	
			tp_avg	varies	between 0 - 7.36 mg/L	
			tkn_cnt	varies	# of total kjeldahl nitrogen measmts. between 0 - 46	
			tkn_avg	varies	between 0 - 9.90 mg/L	
			no2_cnt	varies	# of total nitrate measurements between 0 - 19	
			no2_avg	varies	between 0 - 0.92 mg/L	
			no3_cnt	varies	# of total nitrite measurements between 0 - 39	
			no3_avg	varies	between 0 - 6.57 mg/L	
			tn_cnt	varies	"calculated" # of tot nitrogen measmts = (tkn_cnt + no2_cnt + no3_cnt) / 3 between 0 - 31	

Data	Feature	Class	Attribute	Value	Description	Page #
			tn_avg	varies	"calculated" tot nitrogen avg conc = tkn_avg + no2_avg + no3_avg between 0 - 15.51 mg/L	
			cd_cnt	varies	# of cadmium measurements between 0 - 4	
			cd_avg	varies	between 0 - 5 ug/L	
			fec_cnt	varies	# of fecal coliform measurements between 0 - 17	
			fec_avg	varies	between 0 - 462 colonies / 100 mL	
			X-coord	varies	TSMS Albers x-coordinate of station	
			Y-coord	varies	TSMS Albers y-coordinate of station	
shed8cov	Equivalent polygon coverage of the ditshd8 grid. Created using the gridpoly command.	Polygon	none			75
sndemalb	Final Digital Elevation Model of the San Antonio-Nueces basin area.	Grid	elevation	varies	elevation values in each grid-cell are in units of meters above sea level.	41
snrainyr	Final precipitation coverage of the San Antonio-Nueces basin, created by clipping the rainbfcv coverage with sanbord.	Polygon	grid-code	varies	Precipitation values in each polygon are in units of millimeters/year. 739 - 985 mm/year.	79
sqcov	Equivalent coverage of the grid sqgrid. Built in order to combine (union) with the baybuff coverage.	Polygon	none			67
sqgrid	A single value grid spanning the extent of the other study area grids, defined by the sanfil grid.	Grid	integer	1		67
stations	Point coverage of USGS Stream Gauges built using the lonlat.dat data file. Geographic Coordinates.	Point	stat-num	08189200 08189300 08189500 08189700 08189800	USGS stream gauge station identification number.	47
			stat-nam	Copano Medio	Stream or Creek that gauge is located on.	

Data	Feature	Class	Attribute	Value	Description	Page #
				Mission Aransas Chiltipin		
storet.dbf	Database file of TNRCC SWQM pollutant constituent identification codes. Used with the value.dbf and sanwq.pat tables to link water quality measurements to specific locations.	DBF	param-id	varies	identifies the 5-digit numeric code of the pollutant being measured.	56
			long-desc	varies	identifies full ASCII text description of the pollutant being measured.	
			short1-desc	varies	identifies the pollutant element or constituent in one word, typically noun	
			short2-desc	varies	identifies descriptive words regarding the pollutant.	
			short3-desc	varies	identifies units of the pollutant constituent being measured.	
			Group-cd	1.0000		
			Max-val	varies	upper bound on possible values.	
			Min-val	varies	lower bound on possible values.	
str1	Grid of flow accumulation cells with value greater than a threshold of 1000. Results in strings of cells that represent the larger streams in the basin.	Grid	accumu-lation	varies	from 1000 to the maximum value of the sanfac grid	63
strgrid	Equivalent 100 meter cellsize grid of the sanrivs4 hydrography coverage. All off-stream cells have zero value rather than NODATA.	Grid	none			69
strmgrid	Grid of stream hydrography cells particular to the mainland of the region, i.e. excluding cells in the bay network & barrier islands.	Grid	none			69
subsheds	Polygon coverage of the shed8cov subwatersheds that fall within the bounds of the San Antonio-Nueces basin borders. Created from an ArcView shapefile.	Arc	none			76

Data	Feature	Class	Attribute	Value	Description	Page #
tkn.dat	Arc/Info data file of total kjeldahl nitrogen water quality measurements. Created from tkn.dbf using the dbaseinfo command.	INFO	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 46 (# of measurements) between 0 - 9.9 mg/L	(104)
tkn.dbf	Database file of total kjeldahl nitrogen water quality measurements. Created from the TNRCC SWQM database using ArcView Summary Statistics tools.	DBF	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 46 (# of measurements) between 0 - 9.9 mg/L	(104)
tncon	Final nonpoint nitrogen concentration coverage. Created by clipping the tnline arc coverage with the mainland template.	Arc	grid-code	varies	Concentration values along each stream are in units of mg/L x 1000. 0 - 4400	(102)
tnline	Equivalent line coverage of the niconstr grid. Concentrations multiplied by 1000 to retain significant figures. Grid-code integer concentration values retained in the line coverage through use of the streamline command.	Arc	grid-code	varies	Concentration values along each stream are in units of mg/L x 1000. 0 - 4400	(102)
tnload	Final total nitrogen cumulative load coverage. Created by clipping the nitline arc coverage with the mainland template.	Arc	grid-code	varies	Cumulative load values along each stream are in units of kg/year. 1000 - 369,122 kg/yr	(97)
tnrnof	Cell-based nitrogen loading grid created by adding the nonpoint source loading grid (nitrunof) and the Beeville point source loading grid (beenit).	Grid	Load	varies	Cell-based load values in each grid cell are in units of mg-mm/L-year. 0 - 7,149,842.5 mg-mm/L-yr.	(121)
tonitcon	Final point + nonpoint nitrogen concentration coverage. Created by clipping the tonitlin arc coverage with the mainland template.	Arc	grid-code	varies	Concentration values along each stream are in units of mg/L x 1000. 0 - 15,509	(121)
tonitlin	Equivalent line coverage of the tonitstr grid. Concentrations multiplied by 1000 to retain significant figures. Grid-code integer concentration values retained in the line coverage through use streamline.	Arc	grid-code	varies	Concentration values along each stream are in units of mg/L x 1000. 0 - 15,509	(121)

Data	Feature	Class	Attribute	Value	Description	Page #
tonitstr	New grid of predicted nonpoint & point nitrogen concentrations occuring in the stream network of the basin. Created using the Con statement with the introfac and totnconc grids.	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of milligrams/Liter. 0 - 15.51 mg/L	(121)
tophocon	Final point + nonpoint phosphorus concentration coverage. Created by clipping the topholin arc coverage with the mainland template.	Arc	grid-code	varies	Concentration values along each stream are in units of mg/L x 1000. 0 - 6600	121
topholin	Equivalent line coverage of the tophostr grid. Concentrations multiplied by 1000 to retain significant figures. Grid-code integer concentration values retained in the line coverage through use of the streamline command.	Arc	grid-code	varies	Concentration values along each stream are in units of mg/L x 1000. 0 - 6600	121
tophostr	New grid of predicted nonpoint & point phosphorus concentrations occuring in the stream network of the basin. Created using the Con statement with the introfac and totpconc grids.	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of milligrams/Liter. 0 - 6.6 mg/L	121
totnconc	New grid of predicted nitrogen concentrations from both nonpoint and point sources. Created by dividing the new nitrogen load grid (totnload) by the annual cumulative runoff grid (runoffac).	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of milligrams/Liter. 0 - 15.51 mg/L	(121)
totnload	New total nitrogen load grid created by performing a weighted flow accumulation on the mainfdr grid, using tnrnof as the weight grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of kg/year. 0 - 369,122.41 kg/yr	(121)
totpconc	New grid of predicted phosphorus concentrations from both nonpoint and point sources. Created by dividing the new	Grid	Concen-tration	varies	Concentration values in each grid-cell are in units of milligrams/Liter. 0 - 6.6 mg/L	121

Data	Feature	Class	Attribute	Value	Description	Page #
	phosphorus load grid (totpload) by the annual cumulative runoff grid (runoffac).					
totpload	New total phosphorus load grid created by performing a weighted flow accumulation on the mainfdr grid, using beernof as the weight grid.	Grid	Load	varies	Cumulative load values in each grid cell are in units of kg/year. 0 - 90,479.46 kg/yr	121
tp.dat	Arc/Info data file of total phosphorus water quality measurements. Created from tp.dbf using the dbaseinfo command.	INFO	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 75 (# of measurements) between 0 - 7.36 mg/L	104
tp.dbf	Database file of total phosphorus water quality measurements. Created from the TNRCC SWQM database using ArcView Summary Statistics tools.	DBF	station-id count ave-value	varies varies varies	5-digit water quality station number between 0 - 75 (# of measurements) between 0 - 7.36 mg/L	104
tpline	Equivalent line coverage of the phosload grid. In-stream loads isolated through selection of a load threshold value = 1000 kg. Grid-code integer load values retained in the coverage through use of streamline.	Arc	grid-code	varies	Cumulative load values along each stream are in units of kg/year. 1000 - 60,926 kg/yr	97
tpload	Final total phosphorus cumulative load coverage. Created by clipping the tpline arc coverage with the mainland template.	Arc	grid-code	varies	Cumulative load values along each stream are in units of kg/year. 1000 - 60,900 kg/yr	97
trimshed	Polygon coverage of those shed8cov subwatersheds that, along with subsheds and baybuff, completely enclose the undelineated (near shore) portions of the San Antonio-Nueces Coastal Basin. Created from an ArcView shapefile.	Arc	none			76
value.dbf	Database file of TNRCC SWQM pollutant concentration measurement values. Used with the storet.dbf and sanwq.pat tables to link water quality measurements to specific locations.	DBF	station-id on-seg- flg seg-id	varies 0 1 varies	5-digit water quality station number identifies the 4-digit TNRCC segment where the sample was taken.	56

Data	Feature	Class	Attribute	Value	Description	Page #
			enddate	varies	identifies last date of a series of measurements	
			tag	varies	7-character id with one letter and 6 numerals	
			storet-code	varies	identifies the 5-digit numeric code of the pollutant being measured.	
			gtlt	< or >	flag that is set when measurement is below or above a threshold value	
			value	varies	the measured value of the pollutant constituent.	
weighfac	Weighted flow accumulation grid representing potential runoff in the basin. Created with the clipfdr and rainbuff grids.	Grid	potential runoff	varies	from 0 - 2,244,562,432 cubic meters per year	80
wqsites	Original point coverage of TNRCC SWQM stations. Imported from the snwqsites.e00 file. Projected in Albers with measurement units of feet specified.	Point	none			56

Appendix B : Programs/AMLs

Attrib.aml

```
/*    attrib.aml ------ to be run from the Arc prompt, this aml defines items for the
/*    attrib.dat data file and then fills them with raw expected mean concentration
/*    data from the emc3a.dat file.
/*
tables
define attrib.dat
/*
lusecat  /*Item Name: land use category
8        /*Item Width: 8
8        /*Item Output Width: 8
i        /*Item Type: integer
/*
tn       /*Item Name: total nitrogen
5        /*Item Width: 5
5        /*Item Output Width: 5
n        /*Item Type: numeric
2        /*Item Decimal Places: 2
/*
tkn      /*Item Name: total kjeldahl nitrogen
5        /*Item Width: 5
5        /*Item Output Width: 5
n        /*Item Type: numeric
2        /*Item Decimal Places: 2
/*
nn       /*Item Name: nitrate + nitrite (mg/L as N)
5        /*Item Width: 5
5        /*Item Output Width: 5
n        /*Item Type: numeric
2        /*Item Decimal Places: 2
/*
tp       /*Item Name: total phosphorus
5        /*Item Width: 5
5        /*Item Output Width: 5
n        /*Item Type: numeric
2        /*Item Decimal Places: 2
/*
dp       /*Item Name: dissolved phosphorus
5        /*Item Width: 5
5        /*Item Output Width: 5
n        /*Item Type: numeric
2        /*Item Decimal Places: 2
/*
```

```
ss      /*Item Name: suspended solids
5       /*Item Width: 5
5       /*Item Output Width: 5
n       /*Item Type: numeric
1       /*Item Decimal Places: 1
/*
ds      /*Item Name: dissolved solids
4       /*Item Width: 4
4       /*Item Output Width: 4
i       /*Item Type: integer
/*
pb      /*Item Name: total lead
5       /*Item Width: 5
5       /*Item Output Width: 5
n       /*Item Type: numeric
1       /*Item Decimal Places: 1
/*
cu      /*Item Name: total copper
5       /*Item Width: 5
5       /*Item Output Width: 5
n       /*Item Type: numeric
1       /*Item Decimal Places: 1
/*
zn      /*Item Name: total zinc
5       /*Item Width: 5
5       /*Item Output Width: 5
n       /*Item Type: numeric
1       /*Item Decimal Places: 1
/*
cd      /*Item Name: total cadmium
5       /*Item Width: 5
5       /*Item Output Width: 5
n       /*Item Type: numeric
2       /*Item Decimal Places: 2
/*
cr      /*Item Name: total chromium
5       /*Item Width: 5
5       /*Item Output Width: 5
n       /*Item Type: numeric
1       /*Item Decimal Places: 1
/*
ni      /*Item Name: total nickel
5       /*Item Width: 5
5       /*Item Output Width: 5
n       /*Item Type: numeric
```

```
1       /*Item Decimal Places: 1
/*
bod     /*Item Name: biological oxygen demand
5       /*Item Width: 5
5       /*Item Output Width: 5
n       /*Item Type: numeric
1       /*Item Decimal Places: 1
/*
cod     /*Item Name: chemical oxygen demand
5       /*Item Width: 5
5       /*Item Output Width: 5
n       /*Item Type: numeric
1       /*Item Decimal Places: 1
/*
o&g     /*Item Name: oil & grease
4       /*Item Width: 4
4       /*Item Output Width: 4
n       /*Item Type: numeric
1       /*Item Decimal Places: 1
/*
fcol    /*Item Name: fecal coliform
7       /*Item Width: 7
7       /*Item Output Width: 7
i       /*Item Type: integer
/*
fstr    /*Item Name: fecal streptococci
7       /*Item Width: 7
7       /*Item Output Width: 7
i       /*Item Type: integer
/*
~       /*Item Name: <return>
/*
add from emc3a.dat
quit
&return
```

Dlgmerge.aml

```
/*  An ARC AML FOR PREPARING DLG DATA FOR REGIONAL ANALYSIS
/*
/*  prepared by Bill Saunders, University of Texas at Austin
/*                      Center for Research in Water Resources
/*                      GIS in Water Resources Research group
/*
/*  AML NAME:  dlgmerge.aml (run from the "Arc" prompt)
/*  FUNCTION:  Prepares selected DLG data for analysis with respect to a
/*                  particular hydrologic or political region.
/*  INPUTS:
/*     -all compressed ("zipped") DLG files corresponding to the region of
/*          interest.  These zipped files are downloaded from the USGS EROS Data
/*          Center at http://sun1.cr.usgs.gov/eros-home.html.  Alternatively the
/*          DLG files can be accessed from US Geodata 1:100,000-Scale DLG Data
/*          Compact Disc (USGS, 1993).
/*     -a projection file that will allow for conversion from utm map
/*          coordinates to whatever projection is desired.
/*     -a polygon coverage delineating the boundary of the hydrologic or
/*          political region of interest.
/*
/*************************************************************************
/*  BEGIN AML EXECUTION
/*
/*  Assuming that zipped DLG files have been downloaded from CD-ROM (in this
/*  case, 5 hydro files using the following commands):
/*
/*  cp /cdrom/100k_dlg/beeville/be3hydro.zip ./
/*  cp /cdrom/100k_dlg/goliad/be1hydro.zip ./
/*  cp /cdrom/100k_dlg/allyns_b/cc2hydro.zip ./
/*  cp /cdrom/100k_dlg/corpus_c/cc1hydro.zip ./
/*  cp /cdrom/100k_dlg/sananbay/be4hydro.zip ./
/*
/*
/*  The first set of commands below MUST ALWAYS BE CHANGED by the user of the
/*  AML.  Store the number of zipped DLG files into the variable dlgnum.
/*  Then, for each zipped DLG file, define sequential variables called dlg# as
/*  the first 3 characters of each of the zipped files.
/*  Store the name of your projection file (in this case, utmtsms.prj) into
/*  the variable prjfname.
/*  Store the name of your hydrologic or political boundary coverage (in this
/*  case, sanbord) into the variable border.
/*  Finally, specify the type of files that you are using -- the only valid
```

```
/*  entries for this variable (filetype) are hydro, roads, rail, and mtran.
/*
&sv dlgnum = 5
&sv dlg1 = be1
&sv dlg2 = be3
&sv dlg3 = be4
&sv dlg4 = cc1
&sv dlg5 = cc2
&sv prjfname = utmtsms.prj
&sv border = sanbord
&sv filetype = hydro
/*
/*
&if %filetype% eq hydro &then
  &sv abbr = hy
&if %filetype% eq roads &then
  &sv abbr = rd
&if %filetype% eq rail &then
  &sv abbr = rr
&if %filetype% eq mtran &then
  &sv abbr = mt
/*
/*  This part of the AML unzips all of the compressed files to create 15-minute
/*  map files.  Each 15-minute map file is first converted into an Arc/Info
/*  line coverage.  Then, the borders of each of the 15-minute map files are
/*  trimmed away from the coverage so that those 15-minute meridians and
/*  parallels will not appear in the final appended coverage.
/*
&sv count = 1
&do &while %count% le %dlgnum%
  &sv filename = [value dlg%count%]
  &sv count = %count% + 1
  &sys unzip %filename%%filetype%.zip
  &sv count2 = 1
  &do &while %count2% le 8
    &do &while [exists %filename%%abbr%f0%count2% -file]
      dlgarc optional %filename%%abbr%f0%count2% %filename%f0%count2%
      &sv x = [delete %filename%%abbr%f0%count2% -file]
      build %filename%f0%count2% line
      reselect %filename%f0%count2% %filename%0%count2% line # line
      res rpoly# > 1
      ~
      n
      y
      res lpoly# > 1
```

```
      ~
      n
      n
      kill %filename%f0%count2% all
    &end
    &sv count2 = %count2% + 1
  &end
&end
/*
/*  This part of the AML merges, or "appends", all of the 15-minute map file
/*  coverages together and then builds line topology for the resultant coverage,
/*  called "bigmap".
/*
append bigmap
&sv count = 1
&do &while %count% le %dlgnum%
  &sv filename = [value dlg%count%]
  &sv count = %count% + 1
  &sv count2 = 1
  &do &while %count2% le 8
    &do &while [exists %filename%0%count2% -cover]
      %filename%0%count2%
      &sv count2 = %count2% + 1
    &end
  &sv count2 = %count2% + 1
  &end
&end
~
y
y
build bigmap line
/*
/*  Once "bigmap" has been created, each of the coverages that were merged to
/*  build it are no longer necessary.  This part of the AML kills off all of
/*  the intermediate level coverages used to append "bigmap".
/*
&sv count = 1
&do &while %count% le %dlgnum%
  &sv filename = [value dlg%count%]
  &sv count = %count% + 1
  &sv count2 = 1
  &do &while %count2% le 8
    &do &while [exists %filename%0%count2% -cover]
      kill %filename%0%count2% all
      &sv count2 = %count2% + 1
```

```
    &end
  &sv count2 = %count2% + 1
  &end
&end
/*
/*  The "bigmap" coverage is then reprojected to the desired map projection
/*  and coordinates.  The projection file must be located in the same directory
/*  as the coverage being projected.
/*
project cover bigmap bigprj %prjfname%
/*
/*  Finally, a polgyon coverage of the hydrologic or political boundary of
/*  interest is used to "clip" out the hydrologic features specific to that
/*  region.  The final coverage is called "dlgcov".
/*
clip bigprj %border% dlgcov line
kill bigmap all
kill bigprj all
/*
&return
/*******************************end of AML*****************************
```

Montflow.f

```
      program monthflow

      character script*13
      integer month,day,year,mon,yr,yer(50)
      real dayflow,volmo,monthflo(12),yrflo(50),totflo,avganl

      open (unit = 20, file = 'chiltip.dat',status = 'old')

c     ** input data file -- CHANGE NAME for new run

      open (unit = 30, file = 'chilvmon.dat',status = 'unknown')

c     ** output data file -- CHANGE NAME for new run

c     ** the following are initial values for month, monthly volume, and
C     ** counters.  CHANGE VALUE of mon to the first month of your data set

      mon = 7
      volmo = 0.0
      i = 1
      k = 1

10    read (20,15) month,day,year,dayflow

c     ** Had to perform  (awk '{print $1,$2}' aransas.gage > arans.dat)
c     ** because date and flow values were seperated by 1 tab and NOT 6
c     ** SPACES.  My format statement originally had 6x for the spaces
c     ** between the year and dayflow.  Resulted in values of 0.0 being
c     ** read in for dayflow!!

15    format (i2,1x,i2,1x,i4,1x,f7.2)

c     ** check for end-of-file

      if (month .ne. 0) then

c     ** when the month of the input data changes, write out the total cum
c     ** volume for the previous month (volmo) and save the value in a matrix
c     ** variable called monthflo(i)

            if (month .ne. mon) then
                  write (30,16) mon,yr,volmo
```

```
16                      format (i2,2x,i4,2x,f11.1)
                        monthflo(i) = volmo
                        i = i + 1

c       ** when mon=12 (i.e. at the end of a year), reset the i counter to 1.
c       ** Also, if the i counter is in sequence with the mon counter, then a
c       ** full year's worth of data has been accumulated, so sum all of the
c       ** 12 values of monthflo and store them in a matrix variable called
c       ** yrflo(k).

                        if (mon .eq. 12) then
                                if (i .eq. 13) then
                                        yrflo(k) = 0
                                        do 17, j = 1,i-1
                                        yer(k) = yr
                                        yrflo(k) = yrflo(k) + monthflo(j)
17                                      continue
                                        k = k + 1
                                endif
                                i = 1
                        endif

c       ** set mon = the value of month read in from the input table and define
c       ** the first monthly value of volmo as the measured flow value (cfs)
c       ** multiplied by 86400 sec/day and .028317 cub meters/cub ft.  The
c       ** resulting volume has units of cubic meters.

                        mon = month
                        volmo = dayflow*.028317*86400
                        goto 10
                endif

c       ** when mon = the value of month from the input table, incorporate the
c       ** new value of dayflow into the accumulating value of volmo.

                volmo = volmo+dayflow*.028317*86400
                yr = year
                goto 10
        endif
        write (30,*)

c       ** once all monthly values of volume have been calculated, print out the
c       ** cumulative volumes for each FULL year (i.e. yrflo(l))

        do 20, l = 1,k-1
```

```
      write (30,18) yer(l),yrflo(l)
18    format (i4,2x,f12.1)
      totflo = totflo + yrflo(l)
20    continue

c     ** once all yearly values of volume have been calculated, average them
c     ** over the number of FULL years worth of data accumulated and establish
c     ** an averge annual value for stream volume.

      avganl = totflo / (k-1)
      write (30,*)
      script = 'Avg Annual = '
      write (30,21) script,avganl
21    format (a13,f12.1)
      write (*,*) 'Done'
      stop
      end
```

al72tsms.prj

```
/*  This is a projection file to convert coverages from geographic coordinates (specified in
/*  decimal seconds with WGS72 datum) to the TSMS-Albers projection.
/*
input
projection geographic
datum WGS72
units ds
parameters
/*
output
projection albers
datum WGS84
units meters
parameters
27 25 00
34 55 00
-100 00 00
31 10 00
1000000.0
1000000.0
END
```

alb-tsms.prj

```
/*  This is a projection file to convert coverages from the standard Albers projection to the
/*  TSMS-Albers projection.
/*
input
projection albers
units meters
datum NAD27
spheroid CLARKE1866
parameters
29 30 0.000
45 30 0.000
-96 00 0.000
23 00 0.000
0.00000
0.00000
/*
output
projection albers
units meters
datum NAD83
spheroid GRS1980
parameters
27 25 0.000
34 55 0.000
-100 0 0.000
31 10 0.000
1000000.00000
1000000.00000
end
```

geotsms.prj

```
/*  This is a projection file to convert coverages from geographic coordinates (specified in
/*  decimal degrees with NAD83 datum) to the TSMS-Albers projection.
/*
input
projection geographic
units dd
datum NAD83
spheroid GRS1980
parameters
/*
output
projection albers
units meters
datum NAD83
spheroid GRS1980
parameters
27 25 00
34 55 00
-100 00 00
31 10 00
1000000.0
1000000.0
END
```

tsmsgeo.prj

```
/*  This is a projection file to convert coverages from the TSMS-Albers projection to
/*  geographic coordinates (specified in decimal degrees with NAD83 datum).
/*
input
projection albers
units meters
datum NAD83
spheroid GRS1980
parameters
27 25 00
34 55 00
-100 00 00
31 10 00
1000000.0
1000000.0
/*
output
projection geographic
units dd
datum NAD83
spheroid GRS1980
parameters
END
```

utmtsms.prj

```
/*  This is a projection file to convert coverages from the Universal Transverse Mercator
/*  projection (zone 14) to the TSMS-Albers projection.
/*
input
projection utm
units meters
datum NAD27
spheroid Clarke1866
zone 14
parameters
/*
output
projection albers
units meters
datum NAD83
spheroid GRS1980
parameters
27 25 00
34 55 00
-100 00 00
31 10 00
1000000.0
1000000.0
END
```

wqtsms.prj

```
/*  This is a projection file written to convert TNRCC SWQM data from an Albers projection
/*  specified in units of feet and with specific latitude/longitude parameters to theTSMS-
Albers
/*  projection.
/*
input
projection albers
units feet
datum NAD27
spheroid Clarke1866
parameters
25 48 00
37 00 00
-99 00 00
31 24 00
0.0
0.0
/*
output
projection albers
units meters
datum NAD83
spheroid GRS1980
parameters
27 25 00
34 55 00
-100 00 00
31 10 00
1000000.0
1000000.0
END
```

Appendix C : List of Acronyms

AGCHEM	Agrichemical Soil Nutrient Model
AGNPS	Agricultural Nonpoint Source Pollution Model
AML	Arc Macro Language
ANSWERS	Areal Nonpoint Source Watershed Environment Response Simulation
ARMSED	U.S. Army Watershed Sediment Routine
CCBNEP	Corpus Christi Bay National Estuary Program
CD-ROM	Compact Disc-Read Only Memory
CHRIS	Chemical-Hydrologic Resource Information System
CREAMS	Chemicals, Runoff, and Erosion from Agricultural Management Systems
CWA	Clean Water Act
DEM	Digital Elevation Model
DLG	Digital Line Graph
EMC	Expected Mean Concentration
EPA	Environmental Protection Agency
ERDAS	Earth Resources Data Analysis System
EROS	Earth Resources Observation Systems
ESRI	Environmental Systems Research Institute
GBNEP	Galveston Bay National Estuary Program
GIRAS	Geographical Information Retrieval Analysis System
GIS	Geographic Information Systems
GLEAMS	Groundwater Loading Effects of Agricultural Management Systems
GRASS	Geographic Resources Analysis Support System
GRS80	Geodetic Reference System of 1980
HSPF	Hydrological Simulation Program - FORTRAN
HTML	Hyper Text Markup Language
HUC	Hydrologic Unit Code
IRIS	Integrated River Information System
LOADSS	Lake Okeechobee Agricultural Decision Support System
LULC	Land Use/Land Cover
MULTSED	Multiple Watershed Sediment Routine
MUSLE	Modified Universal Soil Loss Equation
NAD27	North American Datum of 1927
NAD83	North American Datum of 1983
NEP	National Estuary Program
NO2	Nitrite Nitrogen
NO3	Nitrate Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PAT	Point (or Polygon) Attribute Table
PRISM	Parameter-elevation Regressions on Independent Slopes Model
QUAL2E	Enhanced Stream Water Quality Model
RUSLE	Revised Universal Soil Loss Equation
SCS	Soil Conservation Service
SIMPLE	Spatially Integrated Model for Phosphorus Loading and Erosion
SLAMM	Source Loading and Management Model

SMoRMod	Soil Moisture-based Runoff Model
SNOTEL	Snowpack Telemetry
STORET	Storage and Retrieval of U.S. Waterways Parametric Data
SWAT	Soil Water and Assessment Tool
SWMM	Stormwater Management Model
SWQM	Surface Water Quality Monitoring
SWRRB	Simulator for Water Resources in Rural Basins
TDWR	Texas Department of Water Resources
TKN	Total Kjeldahl Nitrogen
TNRCC	Texas Natural Resource Conservation Commission
TSMS	Texas State Mapping System
TWDB	Texas Water Development Board
USA-CERL	U.S. Army Construction Engineering Research Laboratory
USDA-NRCS	U.S. Department of Agriculture Natural Resource Conservation Service
USGS	United States Geological Survey
USLE	Universal Soil Loss Equation
UTM	Universal Transverse Mercator
VAT	Value Attribute Table
VirGIS	Virginia Geographic Information System
WAIS	Wide Area Information Servers
WGEN	Weather Generation Model