

## Appendix B. Detailed GIS Methodology for Tabulation of Assessment Area Statistics

*From TASK 13 - Construction, Updates and Delivery of Access/eXcel base data sets suitable for final assessment calculation by Department of Health*

### Calculation of Assessment Area Statistics for each Public Water Intake

#### System Requirements:

ArcView 3.2 GIS  
Spatial Analyst Extension  
SWAP Data CD  
Microsoft Access Database

#### Notes:

**Tabulate Areas Command** from within ArcView (Spatial Analyst Extension Required)

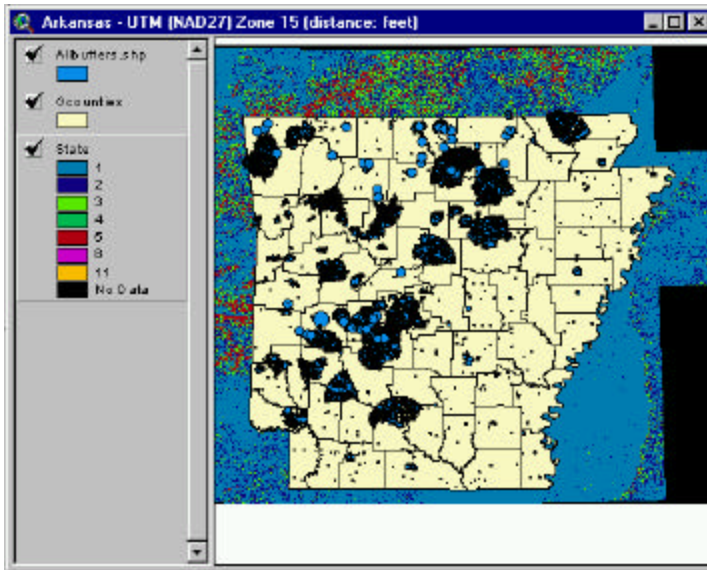
#### Data Requirements:

Individual Assessment Areas for each Public Water Intake (well/surface/other)  
STATSGO (250k Statewide Soils)  
Permeability  
Depth to Bedrock  
Land Use / Land Cover (100k Statewide GAP data)  
**Geology (500k Statewide Geology) These data were used for this example**  
Slope (Derived from Statewide 30m DEM)  
Slope Ranges Specified from Dept. of Health

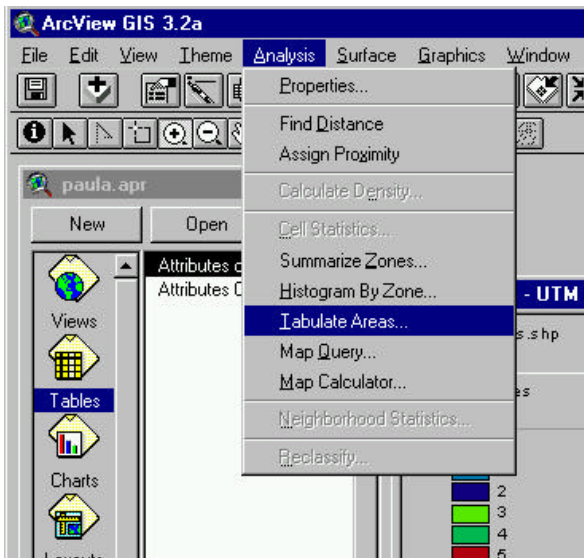
#### Methodology:

Create an ArcView Project for conducting the analysis  
Load SWAP data CD into CD-ROM (or have access to data on hard-drive)  
Open a View and Set Projection to UTM (NAD27) Zone 15 with Distance Units (Feet)  
Load Appropriate (Background) Data for Analysis  
(d:\sourcedata\swap\_proj\arc\_info\counties\gcounties\polygons)  
(d:\sourcedata\swap\_proj\shapefiles\allbuffers.shp (polygon)  
(d:\sourcedata\swap\_proj\arc\_info\geology\state (GRID Coverage)

Should look like the following graphic:

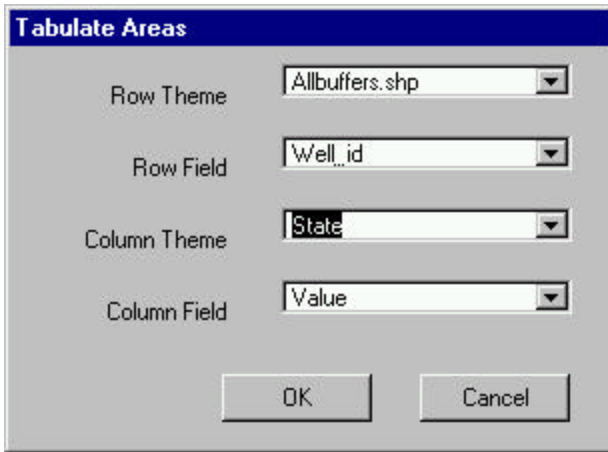


Select the **Tabulate Areas** tool from the Analysis Drop-Down Menu:  
(As Shown Below)

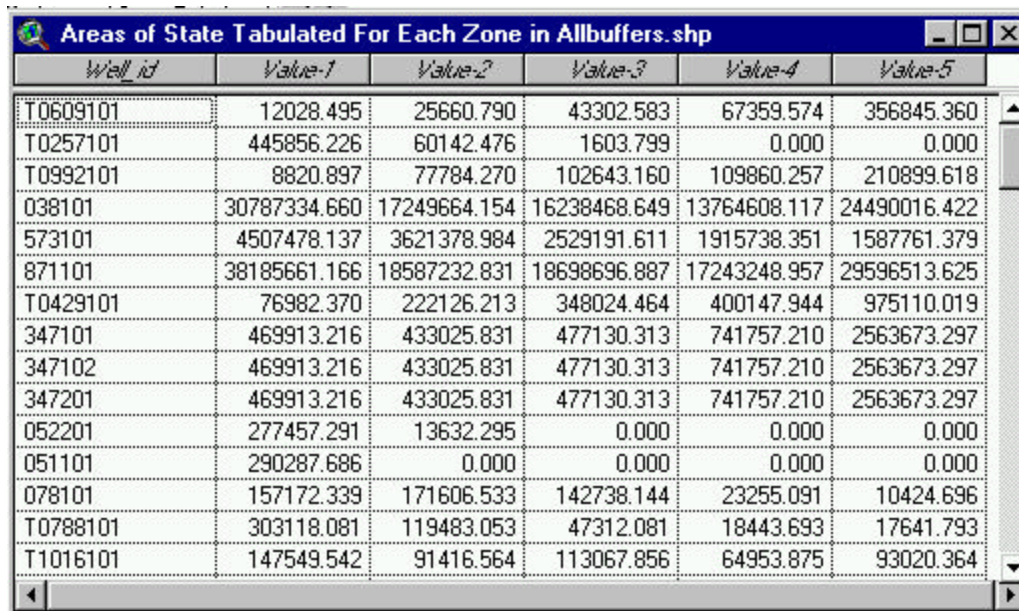


**Select the appropriate columns for reporting the output of the tabulation:**

(Notice that the Row Theme is “Well\_id” because it’s Unique and the Column Theme is (State – which is Geology) and the Column Field is “Value” because those are the SWAP model values for the Geologic Categories as determined by the Dept. of Health Susceptibility Model Methods. **NOTE: A summary will only be created for the “selected records” in the Allbuffers.shp file, so you can limit your summary to Northwest Arkansas by Graphically selecting records on the screen or with a Query in ArcView.**



Click the OK button after selecting the appropriate Themes and Columns. Output from Tabulate Areas is an .dbf Table (like the one below)



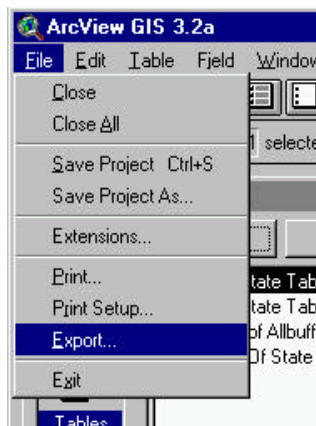
<i>Well_id</i>	<i>Value-1</i>	<i>Value-2</i>	<i>Value-3</i>	<i>Value-4</i>	<i>Value-5</i>
T0609101	12028.495	25660.790	43302.583	67359.574	356845.360
T0257101	445856.226	60142.476	1603.799	0.000	0.000
T0992101	8820.897	77784.270	102643.160	109860.257	210899.618
038101	30787334.660	17249664.154	16238468.649	13764608.117	24490016.422
573101	4507478.137	3621378.984	2529191.611	1915738.351	1587761.379
871101	38185661.166	18587232.831	18698696.887	17243248.957	29596513.625
T0429101	76982.370	222126.213	348024.464	400147.944	975110.019
347101	469913.216	433025.831	477130.313	741757.210	2563673.297
347102	469913.216	433025.831	477130.313	741757.210	2563673.297
347201	469913.216	433025.831	477130.313	741757.210	2563673.297
052201	277457.291	13632.295	0.000	0.000	0.000
051101	290287.686	0.000	0.000	0.000	0.000
078101	157172.339	171606.533	142738.144	23255.091	10424.696
T0788101	303118.081	119483.053	47312.081	18443.693	17641.793
T1016101	147549.542	91416.564	113067.856	64953.875	93020.364

The Output from Tabulate Areas contains an “Unique ID” for each record (ie the Well\_id) and an area for each category (Value field in this example) found in the Geology GRID Themes (which is called “State” in this example).

**IMPORTANT: The Area unit is based upon the Projection defined for the View so in this case since we're working in UTM NAD27 Zone 15 our units of measure are METERS, so these values are square meters for each "Value" field whether it's Value-1 or Value-2, etc...**

The next step is to export this table as a .dbf file (dBase IV) and then import the table into Excel or Access so that you can use the power of a Spreadsheet or Database to SUMMARIZE these columns into something useful.

Within ArcView, make sure the Output Table from the Tabulate Areas command is Active; then Select the **Export** command from the **File** Drop Down Menu.



Select the **dBase** format for exporting to either Excel or Access. (this format works best, but you must remember that column names must be less than 10 characters without any "reserved" characters. Name the Output file something you'll recognize, like "geol\_sum.dbf" but ALSO make sure your output filename is no longer than 8 characters long (without the 3 character extension .dbf).

Now Import that Exported dBase table into Excel or Access and continue with your report generation.

For Excel, Select File > Open and then change your selected file types to include dBase format (.dbf) and the exported table will open easily.

**Note: These methods should now be repeated using: ggap(LULC), STATSGO, Slope\_Grids.**