APPENDIX D

AQUIFER VULNERABILITY RANKING SYSTEM

DRASTIC: A Standardized System for Evaluating Groundwater Pollution Potential Using Hydrogeologic Settings (EPA/600/2-87/035 June 1987).

DRASTIC is an acronym composed of letters for each of the measurable parameters for which data are generally available from a variety of reference sources, including the Texas Water Development Board, Natural Resource Conservation Service, Bureau of Economic Geology, USGS and others. These parameters are called DRASTIC factors, and include:

*D - **D**epth to water*
*R - net **R**echarge*
*A - **A**quifer media*
*S - **S**oil media*
*T - **T**opography*
*I - **I**mpact of the vadose zone media*
*C - hydraulic **C**onductivity of the aquifer*

In the DRASTIC methodology, each of these factors has a "range" and associated "rating" - for example, Depth to water has the following ranges and ratings:

Range	Rating
0-5 feet	10
5-15 feet	9
15-30 feet	7
30-50 feet	5
50-75 feet	3
75-100 feet	2
100+ feet	1

As is evident, the "rating" has a higher numeric value for a shallower depth to water.

Net Recharge has a "range" based on inches of infiltration.

Aquifer media has a "range" based on rock type, as is Impact of vadose zone material. Soil media is similarly based on soil type.

Topography's range is based on percent slope.
The range for hydraulic Conductivity is based on gallons per day per square foot.

The "ratings" are then multiplied by an assigned "weight" for each of the factors - for Depth to water, the assigned "weight" is 5. For Topography, the assigned "weight" is 1. These "weights" are for a pollution potential from general, industrial, and municipal sources. The factors receive a different set of assigned "weights" for pollution potential from agricultural sources. Factor "weights" may also be based on the best professional judgement of a geo-scientist doing the analysis.

Factor "ratings", multiplied by their assigned "weights", are then added together to yield a DRASTIC index, a numerical indicator of an aquifer's relative susceptibility to impacts from surface activities in a given location. More information may be obtained from the publication referenced at the top of this section.

Table D.1 Aquifer Vulnerability Ranking

Major Aquifers	Average Drastic Index	Vulnerability Rank *
Seymour	144	High
Edwards (Balcones Fault Zone - San Antonio)	135	High
Edwards (Balcones Fault Zone - Austin)	126	High
Carrizo-Wilcox	117	Medium
Edwards-Trinity (Plateau)	107	Medium
Ogallala (South)	99	Medium
Gulf Coast	95	Medium
Trinity	95	Medium
Cenzoic Pecos Alluvium	95	Medium
Ogallala (North)	87	Low
Hueco-Mesilla Bolson	84	Low
Minor Aquifers	**Average Drastic Index**	**Vulnerability Rank ***
Brazos River Alluvium	144	High
Ellenberger-San Saba	126	High
Marble Falls	126	High
Hickory	114	Medium
Nacatoch	111	Medium
Blossom	109	Medium
Queen City	108	Medium
Lipan	108	Medium

Minor Aquifers	Average Drastic Index	Vulnerability Rank *
Rustler	*106*	*Medium*
Blaine	*102*	*Medium*
Bone Springs-Victorio Peak	*100*	*Medium*
Capitan Reef Complex	*98*	*Medium*
Sparta	*98*	*Medium*
Marathon	*96*	*Medium*
West Texas Bolsons	*90*	*Low*
Edwards-Trinity (High Plains)	*83*	*Low*
Rita Blanca	*83*	*Low*
Woodbine	*82*	*Low*
Igneous	*79*	*Low*
Dockum	*78*	*Low*
Yegua-Jackson	*Not Available*	*Not Available*