

DRASTIC Indices for Selected Agricultural Areas in Utah<sup>4</sup>

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## Summary

The main objective of this report is to present contour maps of DRASTIC indices for selected areas in Utah. In general, the higher the DRASTIC index value, the greater the potential for ground-water pollution. The acronym DRASTIC is derived from the following hydrogeologic factors which affect vertical movement of water through the soil, and hence affect downward movement of contaminant:

D - Depth to water

R - (Net) Recharge

A - Aquifer Media

S - Soil Media

T - Topography

I - Impact of the Vadoze Zone

C - (Hydraulic) Conductivity of the Aquifer

DRASTIC uses a combination of weights and ratings for the hydrogeologic factors to produce the DRASTIC index, which is a relative ranking. DRASTIC is a widely used methodology developed by Aller and others (1985) for the Environmental Protection Agency.

This study utilizes cropping maps of the selected areas which were prepared by the Automated Geographic Reference Center (AGR), State Division of Data Processing, Salt Lake City, Utah 84114. These maps were drawn using UTM (kilometer) coordinates and a scale of 1 cm = 1.2 km. One of these maps is found in this report in the pocket for each respective area. As can be seen in the maps, crops are differentiated using different colors. Non-irrigated crops are shown in red and water is shown in blue. The location of the area considered in a particular map is identified via

a solid red rectangle on a small drawing of Utah that is included in the legend of each map. Also shown on the small drawing of Utah are the locations of all areas considered in this study.

The DRASTIC methodology was employed to compute numerous DRASTIC indices for each considered area. Representative sources of data used in this effort were detailed by Eisele and others (1989). Then DRASTIC index values were contoured using the SURFER software package (Golden Software, Inc., 1984). Contouring was performed using kriging and matrix smoothing and contour maps were scaled the same as the cropping maps.

A tracing paper copy and a transparency of the appropriate DRASTIC contour map are also found in each respective area pocket. By matching the kilometer coordinates and grid lines, transparencies of the contour maps can be easily laid over the cropping maps. This should be useful for those wishing to assess the potential for groundwater contamination to result from particular cropping areas.

In general, for Utah, a DRASTIC index value of 180 or above is considered to be high and shows a high vulnerability to ground-water contamination. A high index value does not however mean that groundwater contamination will necessarily occur at a particular location. These contoured DRASTIC values are not precise. Spatial variation in hydrogeologic parameters is significant, initial data is never as detailed as is desirable, and contouring is itself an estimation procedure. Nevertheless, the DRASTIC values are useful for screening purposes.

## References and Sources

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