EXECUTIVE SUMMARY

This report summarizes the results of an evaluation of the impact of septic system discharges into groundwater within the Tooele Valley. The study area includes the unincorporated areas north and east of Tooele City and Grantsville. The purpose of the report is to recommend septic system densities that will protect groundwater for drinking water supplies.

A review of septic system density related studies demonstrates that throughout the United States, high septic system densities often result in degradation of groundwater quality. Existing regulations promulgated by the Utah Division of Drinking Water and Division of Water Quality provide a basis for Tooele County to implement septic system density limitations for the protection of groundwater.

Nitrate is used as an indicator of septic system groundwater pollution because it is persistent in the groundwater, is easy to monitor, and there is a reliable historical record from existing groundwater sources. Groundwater in Tooele Valley has been classified by the U.S. Geological Survey as Class I-A Pristine and Class II Drinking Water quality. Background nitrate concentrations in the mountain areas upgradient from human development in the Tooele Valley are less than 1 mg/L based on available information. Areas within Tooele Valley that are downgradient of development (including septic systems) have nitrate concentrations from 2 to 5 mg/L.

The study area was divided into 4 smaller subareas based upon hydrogeologic conditions and groundwater flow paths within the valley. These include the Lakepoint Subarea, East Erda Subarea, Erda / Lincoln Subarea, and West Erda Subarea. Hydrogeologic data for each subarea was used in a mass balance approach with risk analysis to determine septic system densities that would prevent nitrate concentrations from degrading to above 5 or 6 mg/L. The recommended septic system density is 6 acres per septic system in the Lakepoint Subarea and 5 acres per septic system in the other 3 subareas. Consideration should be made for existing subdivisions that currently exceed these densities (as dense as 1.2 acres per septic system).