

## **Abstract**

Citizen scientists and governments are managing resources and collaborating at a level unimaginable before the era of Web 2.0. The opportunities that currently exist for these collaborations are as exciting as they are manifold. These opportunities are only out-paced by the numerous challenges that scientists and citizens face. This thesis presents web mapping applications and associated databases developed for collecting, storing and depicting groundwater well data. These Geographic Information Systems (GIS) tools were developed to support the collaboration between citizen scientists and a local water agency, monitoring groundwater resources in two basins in Sonoma County, California: Santa Rosa Plain and the Sonoma Valley Groundwater Basin. The government-supplied data provided by the Sonoma County Water Agency and volunteer gathered data provided by volunteers from Sonoma Valley ensured the continued success of groundwater resource monitoring. While these volunteers were not trained professionals, the data and information that they provide is unique and invaluable. Their efforts, coupled with the local government agency have made resource management plans for groundwater successful. This thesis was successful in improving the previous methods of data management, communication and data-sharing while also providing opportunities for future improvement.