Rhode Island Department of Environmental Management
Office of Water Resources

A Summary of Rhode Island

GROUNDWATER CLASSIFICATION and GROUNDWATER STANDARDS

September 2009

The Rhode Island Department of Environmental Management (DEM) "Groundwater Quality Rules" classify all of the state's groundwater resources and establish groundwater quality standards for each class. The four classes are designated GAA, GA, GB, and GC in accordance with the RI Groundwater Protection Act of 1985 (RI General Laws 46-13.1). Groundwater classified GAA and GA is to be protected to maintain drinking water quality, whereas groundwater classified GB and GC is known or presumed to be unsuitable for drinking water use without treatment. Greater than 90% of the state's groundwater resources are classified as suitable for drinking water use (i.e., class GAA and GA). See attached Groundwater Classification map.

The groundwater classes were delineated on 1:24000 scale US Geological Survey quadrangle maps. These maps, which represent the official delineations, are available for review at the Office of Water Resources and on the DEM website.

Groundwater Classifications

Class GAA

Groundwater classified GAA are those groundwater resources that are known or presumed to be suitable for drinking water use without treatment and are located in one of the three areas described below. Groundwater classified GAA underlies approximately 21% of the state. Groundwater classified GAA includes the following:

- The state's major stratified drift aquifers that are capable of serving as a significant source for a public water supply ("groundwater reservoirs") and the critical portion of their recharge area as delineated by DEM;
- The wellhead protection area for each public water sysem community water supply well. Community water supply wells are those that serve resident populations and have at least 15 service connections or serve at least 25 individuals, e.g., municipal wells and wells serving nursing homes, condominiums, mobile home parks, etc.; and
- Groundwater dependent areas that are physically isolated from reasonable alternative water supplies and where the existing groundwater warrants the highest level of protection. At present, only Block Island has been designated as meeting this criterion.

Class GA

Groundwater classified GA are groundwater resources, which like GAA, are known or presumed to be suitable for drinking water use without treatment. However, groundwater classified GA does not fall within any of the three priority areas described above under GAA. Approximately 70% of the state overlies groundwater classified GA.

Class GB

Groundwater classified GB is that groundwater which may not be suitable for drinking water use without treatment due to known or presumed degradation. DEM relied on data from known sources of contamination and land use information for the GB delineation. Groundwater classified GB lies under approximately 9% of the state. The areas where the groundwater is classified GB are served by public water systems. Groundwater classified GB is located beneath the following:

- Highly urbanized areas of the state, primarily those areas with dense concentrations of industrial and commercial activity, that have been identified from land use information;

- The permanent waste disposal area as approved by DEM at the sites of historically permitted or approved inactive landfills and inactive land disposal sites for solid waste, hazardous waste, or sewage sludge;
- Active sites that are permitted for the land disposal of sewage sludge, unless such disposl site is associated with a licensed solid waste landfill; and
- The area immediately surrounding the specific waste sites above where DEM has determined that the groundwater is not suitable for public or private drinking water use.

Class GC

Groundwater classified GC is or may be unsuitable for drinking water use due to certain waste disposal practices. The areas where the groundwater is classified GC are limited to the current DEM permitted waste disposal area at solid waste landfills as established in a valid operating license issued by DEM and the areas surrounding these landfills that are determined by DEM to be suitable for solid waste disposal. At present, there are only two operating solid waste landfills, and the groundwater classified GC at these two sites lies beneath .02% of the state.

Groundwater Quality Standards

Class GAA and GA

Because GAA and GA are suitable for drinking water use without treatment, both classes are subject to the same groundwater quality standards. The GAA and GA standards are numerical and narrative in form. These standards are used in evaluating the impact of permitted activities and as remediation goals in areas of groundwater contamination. The numerical standards are the federal drinking water standards (maximum contaminant levels or MCLs), plus two additional standards for substances frequently encountered in RI groundwater for which MCLs have not been adopted (naphthalene and MTBE)**.**

Preventive action limits (PALs) have been set at 50% of the numerical groundwater quality standard. PALs are used in reviewing groundwater data at approved discharges to groundwater to ensure that the groundwater quality standards are not exceeded. PALs are not used in establishing groundwater remediation objectives.

DEM has established a narrative standard for those pollutants that do not have a numerical standard. All such pollutants are not to be in groundwater classified GAA or GA in any concentration which will impair the groundwater as a source of drinking water or which will adversely affect other beneficial uses of the groundwater. Federal health advisories and other public health information will be used to determine appropriate concentrations.

Class GB and GC

Groundwater classified GB and GC shall be of a quality that does not:

- Threaten public health or the environment;
- Adversely impact current or future uses of property, groundwater, or surface water; or
- Violate any surface water quality standards or surrounding groundwater quality standards.

There is no goal to restore groundwater classified GB or GC to drinking water quality, however, groundwater remediation may be required in order to protect public health and the environment. In addition to the narrative standards, DEM has adopted numerical groundwater remediation objectives for 16 volatile organic compounds in groundwater classified GB (these objectives are in the DEM “Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases”). These objectives are designed to control threats to human health based on the potential for contaminants in the groundwater to volatilize and accumulate in indoor air (e.g., a basement). No numerical remediation objectives or numerical groundwater quality standards have been established for groundwater classified GC.

Groundwater Classification