

## 3.2 GROUNDWATER

Sonoma County's groundwater plays an extremely important role in our natural environment, communities, industry sectors and agriculture. In 2002, there were approximately 40,000 wells in Sonoma County, with 42% of the population supported at least in part by groundwater. Nearly all of the county's population relies on groundwater as either a primary or backup source of water supply. The release of contaminants or pollutants into this resource from natural sources or human activities has the potential for adverse impacts upon human health, the environment and property, depending on the type, location, and quantity of materials released.



The amount of groundwater in an area varies by the recharge from rainfall, the surface runoff in streams and drainage channels, and the local underground geology. The alluvial soils, sand and gravel found in valleys generally can hold large amounts of water and thus constitute the largest aquifers in the county. Sandstone and some other sedimentary rocks can still absorb some water. However, many upland areas of the county are composed of harder rock formations where groundwater is only found in cracks and fractures.

Using information on geology and water yields, the County utilizes a four tier classification system to indicate general areas of groundwater availability. Class 1 are Major Groundwater Basins; Class 2 are Major Natural Recharge Areas; Class 3 are Marginal Groundwater Availability Areas; and Class 4 are Areas with Low or Highly Variable Water Yield. Since County maps of these areas are utilized in the development review and well permitting process and the requirements for proving adequate groundwater vary by these classes, a rigorous process is needed to assure that classification mapping is based on the latest available data.

In unincorporated Sonoma County, most water users obtain their water from groundwater. Groundwater wells also supply many community water systems and occasionally provide a supplemental or backup source for some of the large municipal systems. As concern over future availability of surface water from the Russian River Basin has heightened in recent years, more municipalities are developing, or considering development of, groundwater resources.

Public concerns over depletion of groundwater supplies have increased as development increases and uses groundwater supplies, but limited factual data about existing groundwater levels and use is currently available upon which to fully assess the problem or to formulate a comprehensive management strategy. Complicating the problem is the proprietary nature of well drilling data, the inconsistent character of the County's varied geology, and water rights law.

In response to reports that groundwater levels have declined in some areas, the County has

initiated a long term program to increase the available data on groundwater resources and to systematically organize and use it as development is planned and new well permits are sought. Programs are underway to assess the available groundwater in the County's major basins. As these data collection and monitoring efforts begin to produce better information, County decision makers will be in a better position to determine what further measures may be appropriate in order to properly manage these resources.

**GOAL WR-2:                   Manage groundwater as a valuable and limited shared resource.**

**Objective WR-2.1:**   Conserve, enhance and manage groundwater resources on a sustainable basis that assures sufficient amounts of clean water required for future generations, the uses allowed by the General Plan, and the natural environment.

**Objective WR-2.2:**   Develop a scientifically based program to collect the data needed to assess and understand groundwater conditions.

**Objective WR-2.3:**   Encourage new groundwater recharge opportunities and protect existing groundwater recharge areas.

**Objective WR-2.4:**   Increase institutional capacity and expertise within the County to competently review hydrogeologic reports and data for critical indicators and criteria.

**Objective WR-2.5:**   Avoid additional land subsidence caused by groundwater extraction.

**The following policies, in addition to those in the Public Facilities and Services, Land Use, and Open Space and Resource Conservation Elements, shall be used to accomplish the above objectives:**

**Policy WR-2a:** Encourage and support research on and monitoring of local groundwater conditions, aquifer recharge, watersheds and streams where needed to assess groundwater quantity and quality.\*

**Policy WR-2b:** Initiate and support educational programs to inform residents, agriculture, businesses and other groundwater users of best management practices in the areas of efficient water use, water conservation, and increasing groundwater recharge.\*

**Policy WR-2c:** Work with well drillers and other parties familiar with groundwater conditions in Sonoma County to develop well permit standards in order to:

- (1)   Improve the data obtained from well permit applications on locations, depths, yield, use, flow direction where appropriate, and water levels of proposed and existing wells on the site.
- (2)   Establish standards to reduce the potential for well interference and drawdown.
- (3)   Ensure sufficient groundwater quantity and quality for existing and proposed uses using the subject well through standards for pump tests, well yields, pollutant levels, and

water storage, particularly for higher capacity wells.

- (4) In areas where a groundwater management plan has been approved and has been accepted by the County, require the issuance of well permits and any limitations imposed on well permits to be consistent with the adopted plan.\*

**Policy WR-2d:** Continue the existing program to require groundwater monitoring for new or expanded discretionary commercial and industrial uses using wells. Where justified by the monitoring program, establish additional monitoring requirements for other new wells.\*

**Policy WR-2e (formerly RC-3h):** Require proof of groundwater with a sufficient yield and quality to support proposed uses in Class 3 and 4 water areas. Require test wells or the establishment of community water systems in Class 4 water areas. Test wells may be required in Class 3 areas. Deny discretionary applications in Class 3 and 4 areas unless a hydrogeologic report establishes that groundwater quality and quantity are adequate and will not be adversely impacted by the cumulative amount of development and uses allowed in the area, so that the proposed use will not cause or exacerbate an overdraft condition in a groundwater basin or subbasin. Procedures for proving adequate groundwater should consider groundwater overdraft, land subsidence, saltwater intrusion, and the expense of such study in relation to the water needs of the project.\*

**Policy WR-2f:** Require that discretionary projects in Urban Service Areas maintain the site's pre-development recharge of groundwater to the maximum extent practicable. Develop voluntary guidelines for rural development that would accomplish the same purpose.\*

**Policy WR-2g:** In cooperation with Sonoma County Water Agency (SCWA), DWR, and other public agencies and well owners, support the establishment and maintenance of a system of voluntary monitoring of wells throughout the county, utilizing public water system wells and private wells where available. Encourage participation in voluntary monitoring programs, and, if funds are available, consider funding of well monitoring where determined necessary in order to stimulate participation.\*

**Policy WR-2h:** In cooperation with SCWA, DWR and other public agencies, support the establishment and maintenance of a groundwater data base from available application data, well tests, monitoring results, study reports and other sources; analyze the data collected in an annual report to the Board; provide the data to DWR; and use the data along with other available information to refine the mapping of groundwater availability classifications. Protect the proprietary nature of well drilling data and release it only in summary form.\*

**Policy WR-2i:** In order to identify areas where groundwater supplies may be declining, in the annual report review well permit data, monitoring data and reported problems and recommend to the Board of Supervisors areas where comprehensive groundwater studies are needed. As part of the first annual report, consider the recommendations of the recently completed groundwater studies in the Joy Road, Mark West Springs, and Bennett Valley areas, as well as the Sonoma Valley Groundwater Management Plan. In each such special study area that is approved by the Board following a public hearing, develop a comprehensive groundwater assessment that includes the following:

- (1) An existing system of monitoring wells and stream gauges,
- (2) Locations of water wells,
- (3) Available data on groundwater and surface water levels and contamination,
- (4) Maps and graphs that show past and present data and changes in precipitation, imports, groundwater levels, groundwater quality, rates of extraction, and the relationship of groundwater to surface water,
- (5) Drillers' logs, geologic data and monitoring data needed to estimate water yields in the area,
- (6) Estimated future rates of imports, recharge, extraction, exports, changes in groundwater levels, and possible changes in groundwater quality,
- (7) A water budget for the area that estimates the total amount of water gain or loss in the area,
- (8) Any needed changes in well monitoring, data collection and reporting, and
- (9) Provisions for applicant fees and other funding of County costs.

If an area assessment, as defined above, demonstrates a need for additional management actions to address groundwater problems, prepare a plan for managing groundwater supplies pursuant to the California Water Code or the County's land use or other legal authority. Include involvement by the affected water users, well drillers, local agencies, private water companies and landowners. In recognition of concerns regarding the potential for overdraft condition in the south Santa Rosa Plain groundwater basin, give a high priority to preparation of a groundwater assessment and adoption of a management plan or other appropriate actions in this area prior to approval of any city annexations and changes in land use or density in this area of the county.\*

**Policy WR-2j:** Cooperate with the incorporated Cities, SCWA, DWR, US Geological Survey, well drillers, and all water users and purveyors in the development of a comprehensive groundwater assessment for each major groundwater basin in the county and the priorities, sequence and timing for such studies. Prepare such assessments to meet the applicable requirements of the California Water Code for a "groundwater management plan" and, where appropriate, include the following:

- (1) Computer models of groundwater recharge, storage, flows, usage and sustainable yield,
- (2) Assessment of nitrates, boron, arsenic, saltwater and other water quality contaminants,
- (3) Analysis of resource limitations and relationships to other users for wells serving public supply systems and other large users,
- (4) Opportunities for changing the sources of water used for various activities to better match the available resources and protect groundwater,

- (5) Possible funding sources for monitoring, research, modeling and development of management options, and
- (6) Provisions for applicant fees and other funding of County costs.

If a basin assessment indicates that future groundwater availability, water quality and surface water flows may be threatened and there may be a need for additional management actions to address groundwater problems, prepare a plan for managing groundwater supplies which may require limitations on water extraction and use and other special standards for allowed development, wells, extraction or use. Consideration of new management actions shall include involvement by the interests and parties stated above in development of alternatives addressing specific problems and a review of legal and fiscal issues for each alternative.\*

**Policy WR-2k:** Encourage and support comprehensive studies of long term changes in climate and precipitation patterns in the county and region.\*

**Policy WR-2l:** Increase institutional capacity and expertise within the County to competently review hydrogeologic reports and data for critical indicators and criteria.\*

**Policy WR-2m:** Work with SWRCB, DWR, California Department of Health Services (DHS), CalEPA, public water suppliers, and applicable County and City agencies to seek and secure funding sources for development of groundwater assessment, protection, enhancement and management programs.\*

**Policy WR-2n:** Where area studies or monitoring find that land subsidence has occurred, support analysis of how the subsidence is related to groundwater extraction and develop a groundwater management plan or other appropriate actions, where practicable, to avoid further subsidence.\*