

Guidelines for Preparing Groundwater Studies For Small-Scale Agricultural Processing Facilities

PJR-118

Purpose: The purpose of these guidelines is to set forth the general content and analyses required for groundwater studies to demonstrate that available groundwater supply is sufficient to meet the existing and proposed uses on a site on a sustainable basis without resulting in adverse impacts to surface or groundwater. The goal of the groundwater study is to ensure that the County's water resources are managed and used in a way that protects these resources to ensure sustainable groundwater supplies. Water use should not cause long term declines or degradation in available surface water or groundwater resources. These standards do not apply to small agricultural processors that use public water or surface water only.

The amount of groundwater available can vary from site to site depending upon a number of factors, such as the well design, groundwater recharge, underlying geology, and other water uses. Groundwater studies may also need to consider groundwater overdraft, land subsidence, and saltwater intrusion depending on the site location. As such, preparation of a site-specific groundwater report is often necessary to assess the adequacy of groundwater supplies to serve the proposed project as well as the project's potential effect on groundwater sustainability and nearby surface water sources.

The County maps four categories of groundwater availability in the County as follows:

- Class 1 areas are Major Groundwater Basins;
- Class 2 areas are Major Natural Recharge Areas;
- Class 3 areas are Marginal Groundwater Availability Areas; and
- Class 4 areas with Low, or Highly Variable, Water Yield.

The requirements for groundwater studies vary by these classes and more thorough analysis, including possible well tests, may be required in the marginal groundwater availability areas. Countywide mapping of these classes may be viewed at: http://www.sonoma-county.org/prmd/gisdata/pdfs/grndwater_avail_b_size.pdf. [Projects located in Groundwater Availability Class 4 require a Use Permit and a groundwater study.] The following procedure is for small-scale agricultural processing facilities in Class 1, 2, or 3 areas.

Procedure: The small-scale agricultural processing facility will not be eligible for a ministerial approval unless the groundwater supply serving the facility is adequate. The following standards will apply to existing wells or new wells. The groundwater supply serving the facility will be considered adequate if any of the following apply:

- The proposed facility would not result in a net increase in water use on site. Net increase is determined by comparing the existing annual water consumption of the existing lawful uses on site with the projected total annual usage of the existing and proposed uses; or
- The water source is in Groundwater Availability Zones 1 and 2 and is not within a groundwater basin which has an adopted Groundwater Management Plan; or
- The water source is in Groundwater Availability Zone 3 or is within the area of an adopted Groundwater Management Plan, and a qualified professional (California Professional Geologist, Certified Engineering Geologist, Certified Hydrogeologist with expertise in groundwater geology) prepares a Groundwater Study certifying that the onsite groundwater supply is adequate to meet existing and proposed uses on the site on a sustained basis. The study must also document that the operation of the agricultural processing facility will not:
 - exacerbate an overdraft condition, land subsidence or saltwater intrusion in a groundwater basin;
 - adversely affect neighboring streams;
 - result in well interference at offsite wells.

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Groundwater Studies must be prepared by a California registered geologist, a certified engineering geologist, or a certified hydrogeologist with expertise in groundwater geology and contain the following information and analysis:

- 1) A detailed estimate of the total existing and proposed water use on site. The total water usage would include water used to: Irrigate crops, provide frost protection, water livestock, clean and sanitize facilities and equipment, residential and landscaping needs, and other on-farm water uses. Water usage shall be discussed in terms of daily use, peak use and average annual use in gallons and acre feet.
- 2) The methods and models used in the analysis shall be described and the assumptions, coefficients and factors and the basis for conclusions provided including citations of the professional literature used. The groundwater report must provide analysis and evidence to support professional finding.
- 3) Description of regional geologic and hydrologic setting, identifying watershed groundwater basins, recharge areas and geologic structures effecting groundwater availability, quality and variability, the distribution and extent of the geologic formations within the project area and discuss their water bearing characteristics;
- 4) The location, depth, and yield of wells and ground water recharge in the potential cumulative impact area within a 1,000 foot radius from the onsite supply well. The groundwater study must disclose any public information regarding well failures or unsuccessful well drilling attempts in the potential impact area and discuss the efforts made to identifying existing and abandoned wells.
- 5) Projection of the continued availability of groundwater, including analysis of recharge rates and storage capacity within the impact area during a prolonged drought of three years or more where rainfall is 50 percent of average.
- 6) A site plan showing the existing and proposed wells, leachfields, storage ponds, buildings, property lines, residences, streams, and roads within the project potential impact area..
- 7) An assessment of the cumulative effect of water withdrawals in the project impact area and the proposed project's effect on and contribution to, the potential cumulative groundwater supply impacts in the area.
- 8) Calculations of pumping drawdown and cone of depression shall be provided if the project's supply well has a well casing diameter of less than 10 inches and any existing off-site water well is within 300 feet, or, the supply well has a well casing diameter greater than 10 inches and any existing off-site water well is within 500 feet
- 9) If the project supply well is off-site, then a copy of the recorded easement and any recorded covenant or agreement governing the rights or the use of the water shall be included in the report. If the water rights are deemed to be temporary, then the project shall not rely upon the water supply from the off-site water well.
- 11) Project sites located within a basin for which a Groundwater Management Plan has been adopted must address and consider the findings and recommendations of that Plan in the groundwater study and address cumulative impacts, based upon the Sonoma County General Plan, to groundwater levels, water supply and water quality.
- 12) Assess whether the water use will substantially deplete groundwater supplies that would result in adverse impact to aquifer volumes or groundwater levels that would cause or exacerbate existing water supply overdraft deficits, offsite well interference, land subsidence, saltwater intrusion, and reduced stream flow.
- 13) Confirm that the existing water supply well is equipped with a metering device to measure water use, and an apparatus and reference elevation for monitoring ground water elevation.
- 14) Estimate of the amount of groundwater recharge within the project parcel and cumulative impact area in acre-ft per year. If the estimated recharge is not sufficient to support all current, projected (per the General Plan), and proposed water demand in the impact area, then a water balance shall be prepared and documentation of any supplemental water supply sources, including surface water rights and permits is required.

Guidelines for Estimating and Assessing Existing and Proposed Groundwater Usage for Small-Scale Agricultural Processing Facilities

To determine if the proposed small-scale agricultural processing facility would result in a net increase in water usage on site, an applicant will have to prepare a detailed analysis. That analysis must compare the existing annual water consumption to the projected annual water consumption would be if the small agricultural processing facility is approved and is operated at its maximum capacity. The maximum capacity must be stated in the application and must be achievable within the limitations of the ordinance standards.

Estimates of onsite water usage: The existing water usage would include water used in: Irrigate or provide frost protection to crops; water livestock; clean and sanitize facilities and equipment; residential and landscaping needs on site; and other on-farm uses.

The estimate of onsite water usage should reflect the annual water usage with maximum agricultural production. The production levels used in the calculations should be reflective of the farm's actual historic production levels.

Estimates of projected water usage: The estimates of projected water usage would be the sum of annual onsite water usage plus the projected additional water usage of the processing facility. Agricultural processing can use significant amounts of water but it does vary depending on the type of products produced and processing procedures used. Water uses may include, but are not limited to: cooking, ingredient, cleaning, sanitizing, conveyance, restrooms, landscaping, cooling and heating.

The initial start-up operations may use less water than the facility at maximum capacity. In order to assure that onsite water supplies are adequate to serve both the initial and the long range stages of the small-scale production facility, the estimate shall be based on the usage of the processing facility at maximum capacity recognizing the limits on facility size and importation.

Methodology: The measurements, assumptions, factors and sources used to arrive at the estimated totals should shall be described and listed and a rational for all assumptions provided.

The amount of water saved from water conservation or water reuse measures to be installed and implemented concurrently with the processing facility, or which have been implemented on the farm during the last three years, may be subtracted from the projected use of the proposed facility. All such calculations must be provided and documentation through a farm or ranch plan or other tool must be described and referenced.

Water use and water conservation estimates can be derived from onsite monitoring, estimates prepared by a civil engineer, documented water use of similar facilities, technical studies prepared by industry and academic institutions which are applicable to this region.

For purposes of the above comparison, any recharge resulting from the onsite wastewater shall not be considered.

Resources for Preparing Groundwater Reports and Water Use and Impact Assessments

- Interviews with well drillers and interviews with property owners in the potential impact area within 1,000 feet of supply well.
- Public records of pump tests, also referred to as a “Dry Weather Yield Certifications” available at PRMD
- Public records of any previous hydrologic reports prepared in the project vicinity available at PRMD.
- Any available groundwater monitoring data in the vicinity that may have been collected and reported to PRMD since 2004, when groundwater monitoring was added as a requirement for private wells using 0.5 acre feet per year or more.
- Peer reviewed groundwater and water use studies pertaining to Sonoma County published by Government agencies and/or academic institutions including but not limited to: the United States Geological Survey (USGS), California Department of Water Resources (DWR), California Geological Survey (CGS), Sonoma County Water Agency, North Coast Regional Water Quality Control Board, the University of California Division of Agriculture and Natural Resources, and the UC Cooperative Extension.
- Public environmental review documents, such as Environmental Impact Reports, and related studies that may have assessed groundwater issues for other projects in the project vicinity.
- Site specific pump tests, monitoring conducted for purposes of assessing the proposed projects ground water supply or impacts.
- Groundwater basin studies and/or adopted groundwater basin management plans. (Access information of groundwater basin studies or management plans at the Sonoma county water agency at: <http://www.scwa.ca.gov>)
- Countywide mapping of the four Groundwater availability classes may be viewed at: http://www.sonoma-county.org/prmd/gisdata/pdfs/grndwater_avail_b_size.pdf.
- Where a project application and processing fees have been submitted to PRMD and PRMD has required preparation of a groundwater study, PRMD may provide authorization to private qualified professionals to access confidential well completion reports (driller’s logs) at the State Department of Water Resources.