

## **Winter Water Testing Guidelines for New Development**

Phone 831-454-5323  
Email [RPC@SantaCruzCounty.US](mailto:RPC@SantaCruzCounty.US)

### **PURPOSE**

This EHS policy memorandum describes the methodology and standard testing protocol for both the measurement and evaluation of seasonal high groundwater and the measurement and evaluation of near surface soil saturation on undeveloped parcels proposed for onsite wastewater disposal within the County of Santa Cruz.

### **BACKGROUND**

The EHS Land Use Program implements Santa Cruz Country Code (SCCC) Section 7.38.150.B.7 when making determinations of compliance with regard to groundwater separation requirements for proposed onsite sewage disposal systems and land division projects. Groundwater separation requirements are derived from the Regional Water Quality Control Board's (RWQCB) Central Coast Region Water Quality Control Plan (Basin Plan). Modifications have since been adopted for the use of alternative technology systems and the repair/replacement of onsite sewage disposal systems servicing parcels developed prior to September 16, 1983 (See SCCC Section 7.39.095.B.1, the San Lorenzo Wastewater Management Plan, and the Guidelines for Use of Nonstandard Onsite Sewage Disposal Systems). SCCC Section 7.38.120.B describes seasonal rainfall conditions necessary for an official evaluation of seasonal high groundwater during annual wet-season test periods (WWT).

### **WHERE IS WWT REQUIRED?**

For parcels lacking adequate data and/or when EHS does not have adequate knowledge or information about the area or when maps, files, or other sources indicate potential seasonal high groundwater and/or prolonged near surface soil saturation, Winter Water Testing (WWT) will be required before EHS may proceed with permit application reviews. Applicants are notified of the WWT requirement and are notified in writing when the WWT test period reopens. Applicants may request WWT services as a separate 2-hour consultation where no sewage disposal permit application has been submitted or can use a "full site evaluation" that includes WWT services. For all parcels requiring WWT, applicants must submit the completed Site Evaluation forms and fees according to the requirements outlined below.

### **PROCEDURES:**

#### **A. Sewage Disposal Proposals Requiring Winter Water Testing**

Sewage disposal proposals must include information on verifiable site soils conditions, duration of saturation of near surface soils (upper 4-feet) and groundwater information adequate to confirm that water table separation requirements are satisfied, and specific dispersal system will function properly. Site testing for groundwater will be required unless Environmental Health staff determine that there is already adequate information regarding the location and determine that groundwater separation requirements can be met.

#### **B. Site Evaluation with WWT Service Request**

1. Early application planning, site work, and preparation are strongly encouraged. All required site work, soils excavations, soils morphology determinations, groundwater piezometer installations and surface saturation port installations should be completed prior to the official WWT start date unless otherwise approved by EHS. Locations for testing shall be identified and approved by EHS staff.



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2. Install the piezometers and near surface soil saturation ports before preparing and submitting the WWT Monitoring Plan.
3. Submit "Site Evaluation" forms, site plans, WWT Monitoring Plans and fees by January 1, as set forth in SCC section 7.38.120.B unless otherwise approved by EHS.
4. WWT evaluations not submitted on time will cause the septic system application approval to be postponed until the subsequent winter testing periods.
5. Submit a site plan after WWT testing is completed that clearly indicates the actual location of each piezometer, near surface soil saturation port, and all test-pit excavations.

## C. WWT Monitoring Plan

The WWT Monitoring Plan must minimally include the following elements:

- Detailed site plans with piezometer and near surface soil saturation test port locations and development logs (i.e., diameter or hole and pipe intervals/depths of sand, gravel, bentonite, slotted pipe, etc.)
- Proposed frequency and duration of monitoring.
- Description of observed test-hole soils profile characteristics:  
**Note:** Soils morphology determination must be performed by a Qualified Professional Formally trained in soils science.
- Description of near surface soil saturation duration testing methodologies.

## D. Piezometer Design

1. Piezometer must be installed and constructed in accordance with the above work plan; also see Figure 1 (attached sheet).
2. Piezometers must be constructed with 2" minimum to 4" maximum Schedule 40 PVC, ABS or NDS leach pipe (non-perforated) piping and shall be equipped with threaded endcaps or snugly fitted end-plugs.
3. Each piezometer shall be equipped with a minimum functional 1" wide x 12" deep (minimum) annular seal composed of bentonite, concrete or cement grout to prevent infiltration of surface and near surface water from channeling down the annular space of the borehole. Deeper annular seals may be necessary for accurate groundwater level measurements, based on soil conditions.
4. Piezometer casings must extend at least 6" above grade and must be slotted at the desired depth below the 12" minimum surface seal depth.
5. Clean gravel or approved sand must be placed to fill the annular space below the seal or as designed in EHS approved WWT Monitoring Plan.
6. Piezometer shall be labeled with permanent ink for identification purposes. A permanent reference mark, from which all water tables measures are to be taken, must also be provided along the top edge of each piezometer riser.
7. At the end of the official WWT monitoring period each piezometer will be deconstructed and the remaining bore holes backfilled with clean native material.

## E. Piezometer Siting and Installation

1. A minimum of 3 piezometers shall be installed across the area proposed for wastewater dispersal (this means a total of 3 piezometers needed for both the primary and expansion dispersal areas if located in close proximity). Additional piezometers may be required by EHS to obtain more accurate or comprehensive groundwater data.



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2. An additional array of 3 WWT piezometers may be required if 100% leach field expansion area is not in close proximity.
3. One piezometer will be installed near each end of the proposed dispersal area (including top and bottom portions of sloped dispersal areas); a third piezometer shall be installed centrally within the designated dispersal area. The depth of the piezometer screen or slots shall be equal to: {proposed total trench depth} + {groundwater separation requirement set forth in SCCC 7.38.150.B.7: 5', 8', 20' or 50' depending on perc rate and distance to a water body} or {proposed total trench depth} + 1', 2', 3', or 5' if enhanced treatment is specified. Ex. 2.5' proposed flow with 1.5' cover soil, therefore a 4' total trench depth +8' (if well is +250' feet away from septic system and soil is medium perc, 6-20 mpi) = 12 feet piezometer depth).
4. Additional piezometers will be required for depths above each restricting layer, if any are identified, as determined by soils morphology and EHS site observations.
5. WWT for Alternative and mound systems, where the standard separations are not possible, and groundwater is high must be discussed with EHS staff prior to finalizing of the WWT Monitoring Plan.

## F. Near Surface Soil Saturation Testing

In addition to testing for water table depth, additional data shall be obtained to verify that near surface soil saturation will not adversely affect function of the proposed dispersal system. Existing percolation test ports or new test ports can be used for near surface soil saturation duration determination. Existing perc test data and/or new test data may be used for near surface soil saturation testing as long as testing is extended over a time frame that verifies that water either moves through upper soils relatively rapidly (i.e., percolates faster than 30 minutes per inch) and/or does not remain perched over tight soils, in critical dispersal zones, for an extended period of time. Unless EHS determines that adequate information exists, the following testing for saturation will be required.

- A minimum of 2 near surface soil saturation ports shall be installed across the area proposed for wastewater dispersal (this means a lot of 3 ports needed for both the primary and expansion dispersal areas if located in close proximity). Additional ports may be required by EHS to obtain more accurate or comprehensive surface saturation data.
- An additional 3 WWT near surface soil saturation ports may be required if 100% leach field expansion area not in close proximity. One near surface soil saturation port will be installed near each end of the proposed dispersal area (including top and bottom portions of sloped dispersal areas) a third port shall be installed centrally within the designated dispersal area. The depth of the ports shall be equal to the proposed total trench depth. Additional ports may be required, ad determined by soils morphology and EHS site observations.

## G. Qualified Professionals Requirement for WWT

WWT data collection, analysis of results, and final reporting must be performed by an independent and actively licensed Qualified Professional (QP); including Registered Environmental Health Specialists, Soil Scientists, Geotechnical Engineers, Registered Professional Geologists, Soils Engineers ("Soil Engineer" means a state of California Registered Civil Engineer whose field of expertise is soil mechanics), and Registered Civil Engineers (Ordinance 1417 § 2, 1994). All the above Qualified Professionals must have specialized training/ education in present day descriptions and interpretations of soils morphology.



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## H. Data Analysis and Interpretation

1. The Qualified Professional shall present a WWT Final Report to EHS on behalf of the applicant wherein all required WWT information outlined above is compiled and results interpreted. The QP shall submit a professional opinion regarding the subject parcel's suitability for sewage disposal and present system design criteria based on site evaluation and WWT findings.
2. The qualified Professional must report WWT findings to EHS within one year after the WWT period terminates, regardless of the outcome of the study.
3. Extremely heavy rainfall with high GW reading and near surface soil saturation which appear to be short-lived or brief inundation events may be discounted, as set forth in SCCC Section 7.38.120.B. The highest remaining readings shall be used as the acknowledged measured depth to seasonal high groundwater and/or near surface soil saturation for disposal system design and permitting purposes.
4. EHS staff must be schedules to observe at least one set of piezometer readings and two sets of near surface soils saturation readings (initial reading taken shortly after significant rain and the other showing the time length of near surface soil saturation duration) with the QP present during the WWT testing period.



Figure 1. CROSS SECTION OF TYPICAL GROUNDWATER PIEZOMETER

