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WATER PRODUCTION STANDARDS AND TEST PROCEDURES

Purpose

The following standards apply to individual water supplies serving 1 to 4 service connections for proposed subdivisions, individual residences in the coastal zone, and accessory dwelling units where proof of water is needed in accordance with Humboldt County Code. These standards are intended to assure that development is consistent with the limitations of the parcel's water supply. Water production testing results shall be valid for a period of five (5) years without a comprehensive justification for extension from a Registered Geologist or a Registered Civil Engineer.

The water production test is necessary to identify the sustained yield of a water supply and demonstrate that the proposed source has sufficient, and sustainable, capacity to meet the minimum water supply requirements. However, water rights entitlements are not considered under this policy. Developers and owners must demonstrate compliance with applicable laws and regulations related to water resources during the development project evaluation.

Water production testing must be conducted in conformance with the procedures herein. Alternative testing procedures may be utilized if they yield equivalent results, have no greater impact to neighboring wells or surface waters, and are approved in writing by the Division of Environmental Health prior to the test.

WATER PRODUCTION STANDARDS

- For individual residences the minimum required water supply per residence from the source shall be 1.0 gallons per minute (gpm) per dwelling unit. This quantity may be reduced to a minimum of 0.5 gpm per dwelling unit if a minimum of 1,500 gallons of domestic water storage is provided for the residence. Note that this storage volume must be dedicated to domestic use and does not include storage for fire suppression, if required.

- Minimum required water supply for commercial, institutional, and industrial facilities shall be determined by a licensed civil or mechanical engineer and accepted by the County Planning Department during project review. The procedure outlined in this document may be used to demonstrate specific capacity.

- Water production tests for springs and streams must be conducted by a Licensed Well Drilling Contractor (C-57), Licensed Land Surveyor, Registered Civil Engineer, Registered Geologist, or Registered Environmental Health Specialist. Other qualified consultants may conduct water production tests if they obtain prior written approval from the Division of Environmental Health.

- Well production tests must be conducted by a Licensed Well Drilling Contractor (C-57), Registered Civil Engineer, or Registered Geologist. Other qualified consultants may conduct water production tests if they obtain prior written approval from the Division of Environmental Health.

- All water production tests must be conducted during the dry season and be representative of the lowest annual water production anticipated from the source. The dry season testing period is August 1 through September 30. The period may be modified, extended, or terminated by the Division of Environmental Health during periods of unusual rainfall.

- The Division of Environmental Health may waive or modify the dry season testing requirement on a case-by-case basis where adequate documentation is presented to determine adequate water supply is available, accessible and sustainable for the proposed development.

- Requests for waivers, modifications, or proposals for alternative testing procedures must be submitted in writing with appropriate supporting information.

- In cases, where extraction may have long term impacts to surface and/or groundwater supplies in areas identified as Critical Watershed Areas or Critical Water Supply Areas, by the Humboldt County Board of Supervisors, an analysis of impacts from a certified hydrogeologist may be required.

WATER PRODUCTION TEST PROCEDURES

Streams and Springs: Where Water Overflows the Collection Facility

The water tester shall measure the time required to fill a container of a known volume (minimum size two (2) gallons) to determine the source water flow rate in gallons per minute. At least three measurements must be made to complete a test. If the rates vary considerably (by more than 33 percent), a minimum of ten measurements must be taken to complete a test. The average of the recorded measurements shall be considered the test production rate. A minimum of three (3) tests shall be taken, each spaced at least seven (7) days apart.

Wells and Springs: Where Water Must Be Pumped from The Collection Facilities

The static or non-pumping water level shall be established prior to the start of the test, and the volume stored in the well or spring shall be calculated. For existing wells, it may be necessary to prohibit pumping 12 to 24 hours prior to beginning the test. For newly developed wells, production testing shall commence no sooner than 7-days following well development.

A sustained yield, metered pump test is required for pumped water sources for a minimum specified time period of 12 hours for water systems with 1-2 connections, 24 hours for water systems with 3-4 connections, and 72 hours for systems with 5 or more connections. Note: also refer to Section 64563 of the California Code of Regulations for systems with 5 or more connections.

When multiple sources are proposed to provide the minimum water supply for a shared water system each source shall be tested simultaneously.

Water pumped from the water source during testing shall be conserved by storage or routed to a recharge/discharge area beyond the influence of the pump test (minimum 200 feet from well). The pump shall be set at the depth of the lowest producing zone of the spring or well. During the initial stage of the production test, a volume of water equivalent to the calculated volume stored in the well or spring shall be removed as quickly as possible.

During the test, the pumping water level (drawdown) and discharge rate shall be measured according to the following schedule:

Time since pumping initiated (including pumping to remove stored volume)	Time Interval
0 to 10 minutes	Record every 1 minute
10 to 45 minutes	Record every 5 minutes
45 to 90 minutes	Record every 15 minutes
90 to 180 minutes	Record every 30 minutes
180 minutes to end of test	Record every 1 hour

Should the measurements not be made exactly at the time specified, the actual time of each measurement shall be recorded.

Once the calculated volume stored in the spring or well is removed, the water source shall be pumped at a flow rate equal to or greater than the minimum required flow for a duration equal to or greater than the minimum specified time period. If the pump breaks suction at a flow rate higher than the minimum requirement, the pumping rate may be slowly decreased to not less than the minimum required supply flow. Each time the pump breaks suction, the pumping rate shall be reduced by a minimum of 5 percent to a rate that allows the pump to continuously operate. The well shall be pumped at this rate until the drawdown stabilizes for a minimum of 3 consecutive hours. The discharge rate and drawdown, thus established, shall be maintained until the 3 hour drawdown stabilization concludes or the minimum test duration expires, whichever is longer. If the pump breaks suction at or below the minimum required water supply rate, the test fails.

For water well sources, the minimum required pump test duration may be reduced to a minimum specified time period of 8 hours for water systems with 1-2 connections or 16 hours for water systems with 3-4 connections if, after at least 4 hours of pumping, the following conditions are met:

- the pump never breaks suction with the pumping water level
- the specific capacity (pump rate divided by drawdown) is greater than 0.05

For both spring and water well sources, the 72 hour test duration for sources serving 5 or more connections may be modified by the Division of Environmental Health if sufficient justification is provided in writing by the qualified test conductor; in no case shall the 72 hour test be reduced to less than 48 hours.

On completion of pumping, the final discharge rate and pumping water level shall be recorded, and post-test recovery measurements shall begin. Recovery measurements shall be made according to the above drawdown schedule until the water source recovers to 95% of the original static water level or until a maximum duration of 72 hours is completed, whichever is sooner. If a 95% recovery cannot be obtained within 72 hours following the pump test, the water source's yield is inadequate to support the proposed development.

All measurements shall be recorded and reported with the highest degree of accuracy. All data and information pertinent to the project shall be submitted on a form(s) prepared by, or approved by, the Division of Environmental Health (see Attachments 1 and 2) and accompanied by a summary report of the testing. The summary report shall include a site plan encompassing all existing, and proposed, developments and all hydrologic features within 1000 feet of each water source being tested.

Drawdown effects on all wells within 300 feet of the proposed production well, or spring, must be evaluated and disclosed. Impacts to flow rates, static water level and recovery of neighboring wells greater than 5% shall not be approved as demonstration of adequate water supplies. Additionally, an adequate water supply pump test shall not have an impact to neighboring wells with less than 1.0 gpm per connection, within 300 feet, greater than 1%.

Effective 07/30/2021

(Attachment 1) **DRY WEATHER WATER PRODUCTION TEST DRAWDOWN DATA**

Owner: _____ **APN:** _____

Well Location latitude: **longitude:**

_____1/4	_____1/4	_____1/4	**Section:** _____	**Township** _____ N / S	**Range** _____ E / W

Type of Water Measuring Equipment: _____ **Date Test Performed:** _____

Company Performing Test: _____ **Measured By**: _____

TIME DATA	WATER LEVEL DATA	DISCHARGE DATA
PUMP ON Date:_____ Time: _____ (t_0) **PUMP OFF** Date: _____ Time: _____ (t_1) **DURATION OF AQUIFER TEST** Pumping: _____ Recovery: _____	**STATIC WATER LEVEL:** _____ **MEASURING POINT:** _____ **HEIGHT OF MEASURING POINT ABOVE GROUND:** _____	**HOW WAS DISCHARGE MEASURED?** _____ **DEPTH OF PUMP/AIRLINE:** _____

Pumping Data: **Specific Capacity:**

Date	Clock Time	Time Since Pump Started (min.) t_0	Pumping Water Level Measurement (ft)	Pump Rate (discharge) gpm	Comments on Factors Affecting Test Data

(Attachment 2) **DRY WEATHER WATER PRODUCTION TEST RECOVERY DATA**

Owner: _____ **APN:** _____

Well Location latitude: **longitude:**

_____1/4	_____1/4	_____ 1/4	**Section:** _____	**Township** _____ N / S	**Range** _____ E / W

Type of Water Measuring Equipment: _____ **Date Test Performed:** _____

Company Performing Test: _____ **Measured By**: _____

TIME DATA	WATER LEVEL DATA	DISCHARGE DATA
PUMP ON Date:_____ Time: _____ (t_0) **PUMP OFF** Date: _____ Time: _____ (t_1) **DURATION OF AQUIFER TEST** Pumping: _____ Recovery: _____	**STATIC WATER LEVEL:** _____ **MEASURING POINT:** _____ **HEIGHT OF MEASURING POINT ABOVE GROUND:** _____	**HOW WAS DISCHARGE MEASURED?** _____ **DEPTH OF PUMP/AIRLINE:** _____

Recovery Data:

Date	Clock Time	Time Since Pump Shutoff (min.) t_1	Recovery Water Level Measurement (ft)	Comments on Factors Affecting Test Data