

## ISLAND COUNTY STANDARD PUMPING TEST

**Subject:** Pumping test requirements for new and previously unapproved well sources in areas rated as low risk with regard to seawater intrusion.

**Purpose:** To determine whether the well and aquifer are capable of supplying the water at the rate desired and to provide information necessary to determine the proper pump settings (depth) in the well.

### POLICY

1. A qualified water professional shall oversee testing of the well.
2. An access post, as described in the Department of Ecology's Groundwater Bulletin No. 1 (ECY 040-1-3, Rev. 12/90), shall be installed and maintained.
3. The source shall be pump tested at no less than the maximum design rate at which it is to be used.
4. The duration of the continuous test shall be such that the product of the time pumped, in minutes, and the pumping test rate, in gallons per minute (gpm) will equal the total maximum daily demand, in gallons, for the total connections to be served. The following equation shall apply:

$$Q \times T = \text{Maximum daily demand}$$

Where Q = Proposed pump rate (maximum design rate of withdrawal) in gallons per minute

T = Time of continuous pumping at Q in minutes

Maximum daily demand = 800 gallons times the total number of connections, or as required by the system

5. Depth to water measurements should be recorded to the nearest 1/100<sup>th</sup> foot, the interval between measurements gradually increases as the test progresses as follows:

Time Since Pumping Began or Ended	Time Interval
0-2 minutes	10 seconds
2-5 minutes	30 seconds
5-15 minutes	1 minute
15-50 minutes	5 minutes
50-100 minutes	10 minutes
100-Shutdown	30 minutes

6. In no case shall the proposed source be pump tested for less than four hours **after stabilization has occurred**. Stabilization is defined as a drop in water level of less than or equal to 0.1 feet per hour.
7. Pumping shall be followed by recovery data collection until 95% of recovery is achieved. Recovery measurements must be made in the same manner as the drawdown measurements. In order to facilitate accurate recovery data collection, the system shall incorporate backflow check-valve(s) that will prevent water within the riser pipe from flowing back into the well when the pump is shut off.
8. Water samples must be collected from the source using proper sampling procedures and analyzed by a laboratory certified by the Washington state Department of Health. All systems must collect a sample for chloride and conductivity analysis within the first hour of the test. Additional samples must be taken within the last 15 minutes of pumping and analyzed for the water quality test(s) as outlined in Table 1.
9. When the pumping test is completed, the data shall be compiled into a report and sent to the Island County Health Department. The report shall include the following:
  - a. A well construction report (well log) for the pumping well.
  - b. A map and description (¼, ¼, Section, Township, Range) accurately indicating the well location, as well as the land surface elevation to the nearest foot above sea level.
  - c. Well depth, depths to the top and bottom of each screen interval and depth to the pump intake.
  - d. A legible table including all water measurement data collected during pumping and recovery.
10. It is recommended that data on pumping water-levels, chlorides, and tidal fluctuations be plotted on a single graph with respect to time. See attached graph for example.
11. In a well field situation or an aquifer where extensive studies have been accomplished by a professional hydrogeologist to determine well yield, well interference, and specific capacity, the duration of the pumping test may be altered or waived upon approval by the department.

Table 1

<u>Type of System</u>	<u>Test required</u>
Group A Public Water System	Complete Inorganic Chemical Radionuclide Volatile Organic Chemical (VOC) Bacteriological
Group B Public Water System	Complete Inorganic Chemical Bacteriological
Irrigation	Complete Inorganic Chemical
Commercial/Industrial	Complete Inorganic Chemical