Summary of Well Standards

WELL CONSTRUCTION

Monitoring Wells

All cased borings are considered permanent wells and must be permitted and inspected.

Annular Seal Depth Minimum Requirements

- A 5-foot minimum annular seal (vault box is not included as part of seal). A variance may be granted in some circumstances for annular seal depth of less than 5 feet for monitoring wells 20' or less in depth. Annular seal must extend to within three feet of the top of the screened interval of the well (no more than three feet of filter pack above well screen).
- Any excess borehole must be backfilled with approved sealing materials.

Annular Seal Thickness Minimum Requirement

- A minimum 2-inch radial thickness of annular seal is required.

Maximum Screen Length

- A maximum of 25 feet of perforated interval is allowed. If a single casing has more than one screened interval, a maximum of 25 feet between the top of the uppermost perforations to the bottom of the lowermost perforations is allowed.

Acceptable sealing materials

- 21 sack neat cement (four 94-pound bags/55-gallon drum).
- 10 sack sand cement slurry.
- Bentonite chips or pellets are allowed for a transition seal directly above the filter pack.
- Hydrated high solids bentonite slurry with 64%-72% by dry weight solids (sand and sodium bentonite) to the total weight of mixed grout (solids and water); and sand to bentonite ratio of 4:1 to 8:1 by dry weight.
- Make up water must be potable.

Placement of sealing materials

A tremie pipe must be used if seal is more than 30 feet deep or if more than three feet of water is present in the annulus. When water is present, the bottom of the tremie pipe must remain in the sealing materials throughout the sealing process.

Surface Completion

In all cases, a watertight cap must be installed on the wellhead and the wellhead must be protected within a secured (bolted or locked) vault or stovepipe which is cemented in place at the top of the well.

Water Supply Wells

Annular Seal Depth Requirements

Zone 1. Wells Constructed in the Confined Area of the Santa Clara Plain Sub-Basin

a. Wells that are constructed entirely above the major aquitard (typically less than 150 feet) must have an annular seal that is a **minimum of 50 feet in depth** and extends through the entire thickness of a significant aquitard.
b. Wells that extend through the major aquitard must have a well seal that is a **minimum of 150 feet in depth** and extends through the entire thickness of the major aquitard.

Zone 2. Wells Constructed in the Confined Area of the Llagas Sub-Basin

a. Wells that are constructed entirely above the major aquitard (typically less than 100 feet) must have an annular seal that is a **minimum of 50 feet in depth** and extends through the entire thickness of a significant aquitard.
b. Wells that extend through the major aquitard must have a well seal that is a **minimum of 100 feet in depth** and extends through the entire thickness of the major aquitard.

Zone 3. Unconfined Areas of the Santa Clara Plain, Coyote, and Llagas Sub-Basins

Wells constructed in the unconfined portions of the *Santa Clara Plain, Coyote* and *Llagas Sub-Basins* must have an annular seal that is a **minimum of 50 feet in depth** and extends through the entire thickness of a significant aquitard.

Zone 4. Bedrock Areas of the County

All wells constructed in the bedrock portions of the county must have an annular seal that is a **minimum of 50 feet in depth**.

Radial Thickness of Annular Seal

- A minimum 2-inch radial thickness of annular seal is requited by state well standards.
- A minimum 3-inch radial thickness of annular seal is required for municipal water supply wells.

Acceptable Sealing Materials

- 21 sack neat cement (four 94-pound bags/55-gallon drum)
- 10 sack sand cement slurry
- Hydrated high solids bentonite slurry with 64%-72% by dry weight solids (sand and sodium bentonite) to the total weight of mixed grout (solids and water); and sand to bentonite ratio of 4:1 to 8:1 by dry weight.
- Make-up water must be potable

Water Supply Well Construction (cont.)

Placement of Sealing Materials

A tremie pipe must be used to place the sealing material if seal is more than 30 feet deep or more than three feet of water is present in the annulus. When water is present, the bottom of the tremie pipe must remain in the sealing materials throughout the sealing process.

In addition to a tremie pipe, a mechanical positive pressure pump must be used when drilling fluid or large amounts of water must be displaced.

Santa Clara County Environmental Health Department Approval

County Health Department approval is required for all water supply wells. Please call the County Health Department for information, (408) 918-3400.

Water Supply Well Location with Respect to Contaminant Sources and Physiographic Features

All water supply wells must be located an adequate horizontal distance from known or potential sources of pollution. Wells should also be constructed an adequate distance from buildings or other structures so that they can be easily maintained or destroyed.
The following are minimum distances that a proposed water supply well must be setback or separated from a potential contaminant source:

Potential Contaminant Source	**Required Minimum Horizontal Separation Distance Between Well and Potential Contaminant Source**
Any Sewer Line (sanitary, industrial, or storm; main or lateral)	50 Feet
Watertight Septic Tank or Subsurface Sewage Leaching Field (domestic)	100 Feet
Concentrated Animal or Fowl Enclosure or Location where Animals Congregate (feed bin, water trough, stall, etc.)	100 Feet
Cesspool or Seepage Pit	150 Feet

Other

Prior to initiating drilling activities, check your property ownership deed and contact your local water retailer (if applicable) to determine if you own the rights to the water beneath your property.

WELL DESTRUCTION

Monitoring Wells

Sealing requirements

Upon submittal of a permit application, an authorized water District representative will determine the appropriate destruction method for the well, based on the well's construction and/or well compliance issues. The typically accepted monitoring well destruction methods are:

Drill Out Method - The well is drilled out to the total depth of the original boring. All casing, filter pack, and sealing materials are removed, and the resultant boring is backfilled with approved sealing material.

- During drilling, a guide rod or similar device must be employed to ensure that the drilling equipment does not move off the well.

Pressure Grout Method - The well is pressure grouted in place by filling the entire casing with 21-sack neat cement grout and applying a minimum of 25 pounds per square inch of pressure for at least five minutes or until at least an additional 33 percent of the casing's volume of sealing material is pumped into the well.

Removal of pump apparatus and debris

Prior to pressure grouting, all debris, silt, and pumping hardware must be removed from the well.

Acceptable Sealing Materials

Drill Out Method

- Boreholes resulting from well drill-outs may be backfilled with:
  - 21 sack neat cement (four 94-pound bags/55-gallon drum)
  - 10 sack sand cement slurry

Pressure Grout Method

- Pressure grouting must be completed using 21-sack neat cement grout. No aggregate based sealing materials or bentonite may be used.

Placement of Sealing Materials

Drill Out Method

Boreholes resulting from well drill-outs must be backfilled using a tremie pipe to place the sealing material if seal is more than 30 feet deep or if more than three feet of water is present in the borehole. When water is present, the bottom of the tremie pipe must remain in the sealing materials throughout the sealing process.

In addition to a tremie pipe, a mechanical positive pressure pump must be used when drilling fluid or large amounts of water must be displaced.

Monitoring Well Destruction (cont.)

Pressure Grout Method

- A tremie pipe is not required if:
  - Less than three feet of water in casing; or,
  - Casing diameter is less than three inches.

Removal of Surface Completion Features

Following well destruction activities, all surface completion features (well vault boxes, pump pads, etc.) must be completely removed and the site must be brought into a similar condition as the surrounding area.

Water Supply Wells

Sealing requirements

- During permit processing, an authorized water District representative will determine the appropriate destruction method for the well based on the well construction and/or administrative issues. The typically accepted well destruction method is cementation in place.
- In some cases, the casing will be required to be perforated at a specified depth interval prior to sealing.
- All waste generated during destruction activities must be properly managed: this includes, but is not limited to, all waters generated during debris removal or seal placement.

Removal of pump apparatus and debris

- All debris, silt, and pumping hardware must be removed from the well before it is backfilled.
- If a District water meter is present, it must be removed and returned to the District.

Acceptable sealing materials

The well may be backfilled with 21- sack neat cement grout or 10-sack sand cement grout, depending on the well's original construction and the prescribed destruction method.

Placement of sealing materials

A tremie pipe must be used to place the sealing material if seal is more than 30 feet deep or if more than three feet of water is present in the well. When water is present, the bottom of the tremie pipe must remain in the sealing materials throughout the sealing process.