PLUMAS COUNTY

Guidelines for GeoThermal Heat Exchange Wells

THIS INFORMATION IS PROVIDED BY
PLUMAS COUNTY ENVIRONMENTAL HEALTH

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GUIDELINES
FOR
GEOTHERMAL HEAT EXCHANGE WELLS

1. PERMIT APPLICATION

A permit application form for construction of GHEW's must be obtained from Plumas County Environmental Health. Individuals can down load a blank form from Environmental Health's web site at http://www.countyofplumas.com/publichealth/envhealth, or we would be happy to send you one by mail. One application must be submitted for each parcel or system.

The application must include a diagram of the parcel boundaries, potential sources of contamination, buildings or structures and locations of the borings. GHEW applications must be submitted in the name of the current property owner (applicant). The applicant, or his/her agent, must ensure the accuracy of the application, including parcel number (APN), lot number, street address, plot map and other requested information.

Applications which do not include the required information will be deemed incomplete, and will be returned to the applicant for correction.

2. FEES

The appropriate fee, on a single check, or money order, must accompany the application. Also please be aware that Plumas County Environmental Health can not accept credit cards.

3. LOCATION

In order for permits to be issued, the following set-backs must be met. Location restrictions for GHEW's are similar to the set-back requirements for groundwater wells. These set-backs include:

Minimum Separation Distances in Feet

Sources of Contamination	Geothermal Heat Exchange Wells
Septic Tank	25
Leachfield, Leach trench or other sewage infiltration system	50
Sewer lines	25
Perenial Surface Water including lakes, streams, and ponds	25
Community Water system mains and laterals	10

Note: Where adverse conditions exist, the above separation distances may be increased by the Environmental Health in order to protect human health and the environment.
Also Note: All distances apply to closed loop GHEW's. Open loop systems are prohibited.

4. PERMITS

Once the application is submitted, but before the permit is issued, this Department will perform a site inspection. The site inspection is necessary to ensure suitability of the proposed borings relative to potential sources of contamination, such as sewer lines, septic tanks, leachfields and other sources. On particularly challenging sites, the key contact, driller, applicant or other persons may need to participate in the site inspection.

If approved, the signed application becomes the permit and a copy of the permit will be sent to the *"Key Contact Person"*. A copy will also be mailed to the property owner so it is important to be sure you provide us with the correct name and mailing address. The permit is recognized by the permit number and date in the "For Office Use Only" block near the bottom of the form. Additional notes may be present in the upper grid portion of the permit, so **please review this permit carefully**.

5. INSPECTIONS

When scheduling a seal inspection it is important to give as much information as possible, including the applicant name, address, and APN if available. The request for a seal inspection must be made **24 hours in advance** of desired inspection time and date. Once a time and date has been scheduled, this Department will make every effort to keep the appointment. If a representative from the Department is not present after 30 minutes of the scheduled seal installation, the seal may be put in place without the inspector being present. If the inspector fails to keep an appointment, an inspection will be performed at a later time to verify the materials used and adequacy of the completion.

6. SEALING THE UPPER ANNULAR SPACE

- **Upper Annular Size**
  The upper annular space must consist of an 'oversized' hole at least 4 inches in diameter greater than the cumulative outside diameters of the ground loop piping. For instance, one inch outside diameter (OD) ground piping will require a 6 inch boring. One and ½ inch OD piping requires a 7 inch boring. The oversized borehole will facilitate placement of a 2 inch minimum seal thickness between any ground loop piping and the wall of the borehole.

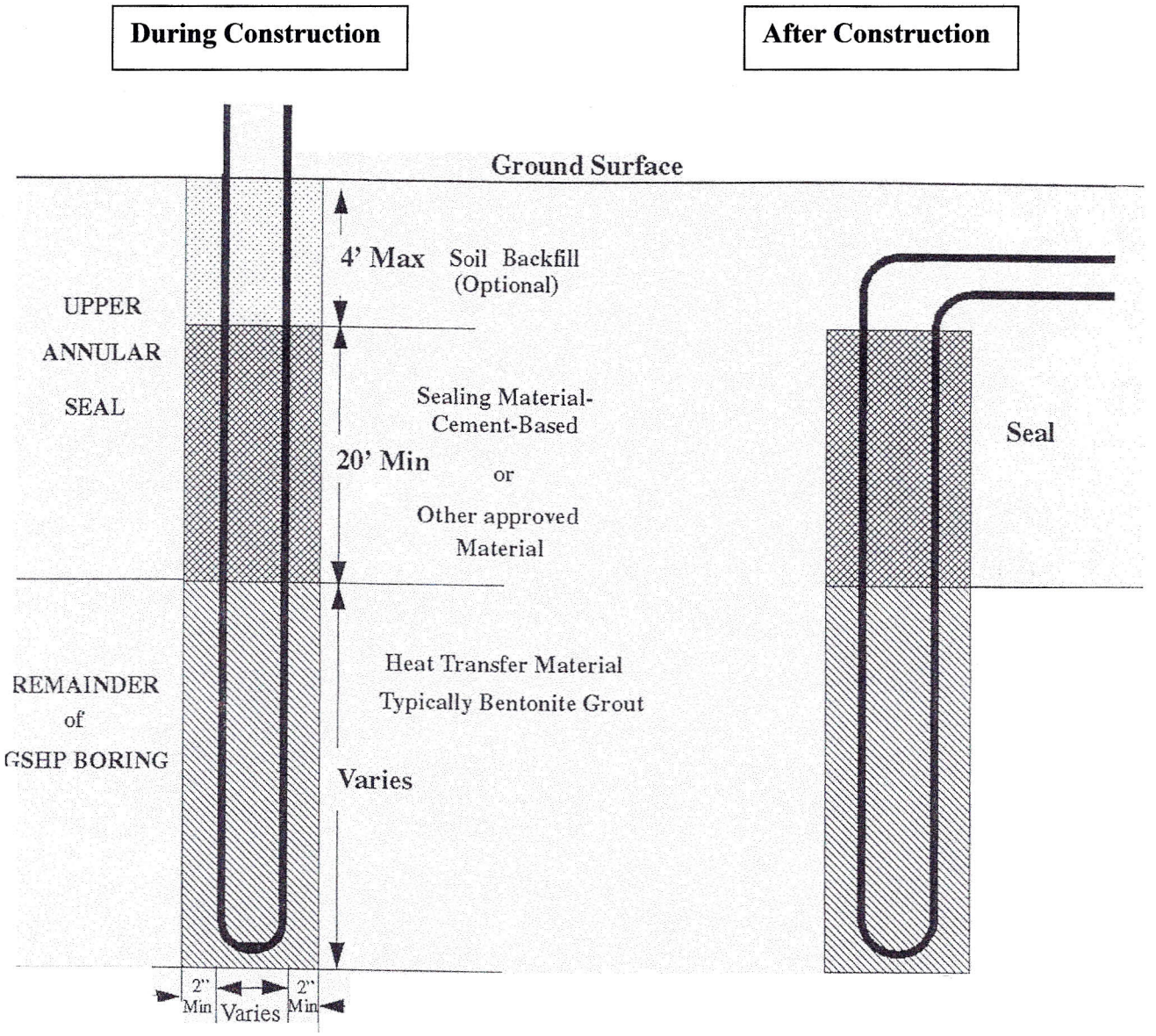
- **Upper Annular Seal Depth**
  The minimum sealing depth of the upper annular space shall be 20 feet. Additional sealing below the required upper 20 feet may be performed without inspection and without approval of sealing material prior to the placement of the 20 foot approved seal.

- **Termination of Upper Annular Seal Below Ground Surface**
  The 20 foot upper annular seal may be terminated below ground but in no case shall it terminate more than 4 feet below the ground surface. In cases where a seal terminates 4 feet below grade, it shall extend to as least 24 feet below grade.

- **Timing of Upper Annular Seal Placement**
  The upper annular seal should be placed as soon as practical after completion of the boring but in no case shall it be left unsealed longer than 14 days after completion of the boring.

- **Method of Placement of Upper Annular Seal**
  The upper seal may be poured by freefall provided the interval to be sealed is dry (free of bentonite grout or drilling fluid) and no deeper than 30 feet from the ground surface. Otherwise, the seal must be pumped from the bottom of the interval via tremie pipe.

- **Upper Annular Seal Material**
  The upper annular seal materials shall be cement-based material as referenced in the California Well Standards Bulletin 74-90. Other materials will not be accepted without prior approval by Environmental Health.

- **Upper Annular Seal Inspection**
  The upper annular seal must be performed under inspection and/or authorization by Environmental Health. Current policy requires a 24 hour advance notice to schedule seal inspection.

GEOTHERMAL HEAT EXCHANGE WELLS
TYPICAL INSTALLATION