

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH



Jewel Mullen, M.D., M.P.H., M.P.A.
Commissioner

Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

August 29, 2013

William M. Rubenstein, Commissioner
Department of Consumer Protection
Room 103, State Office Building
165 Capitol Avenue
Hartford, CT 06106

Re: Proposed Regulations for Well Drilling and Geothermal Systems

Dear Commissioner Rubenstein:

The purpose of this letter is to formally submit written comments on the proposed regulations concerning Well Drilling and Geothermal Systems. The Department of Consumer Protection (DCP) has provided an additional comment period on the proposed regulations as noted in the *Notice of Intent to Amend Regulations* published in the Connecticut Law Journal on July 30, 2013. The Department of Public Health (DPH) previously submitted many of the below comments to DCP informally as part of the follow-up discussions between our agencies on the draft regulations.

The majority of DPH's comments concern Section 25-128-41 for the location of water wells, and to Section 25-128-41a for the location of non-water supply well geothermal system components. The DPH recommends the language in Section 25-128-41a be revised to indicate it applies to geothermal systems, except open-loop geothermal wells, which by definition are water wells and are governed by Sections 19-13-B51a to 19-13-B51m of the Regulations of Connecticut State Agencies. The DPH recommends that Section 25-128-41 be revised to reinforce that open-loop geothermal boreholes constitute water wells that are subject to the siting requirements of the above noted regulations.

The language in Section 25-128-41a must only reference the DPH's publication *Technical Standards for Subsurface Sewage Disposal Systems* (Technical Standards) in matters concerning subsurface sewage disposal systems (A.K.A., septic systems), as they are not applicable to public sewer piping and appurtenances. Section 25-128-41a should also include siting requirements relative to water mains, and fuel/utility lines. It should be noted that the DPH's most recent regulation language recommendations removes any reference to the Technical Standards.



Phone: (860) 509-8000 • Fax: (860) 509-7184 • VP: (860) 899-1611
410 Capitol Avenue, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph

Affirmative Action/Equal Opportunity Employer and Provider
If you require aid or accommodation to fully and fairly enjoy this publication,
please phone (860) 509-7293

As previously noted in past communications with DCP, the DPH has recently modified our recommendations relative to siting closed-loop geothermal boreholes relative to water supply wells in order to lessen possible impacts to water supply wells on adjoining properties. The DPH recommends that the following separating distances and language for geothermal systems be incorporated into Section 25-128-41a of the proposed regulation:

Sec. 25-128-41a. Location of geothermal systems except open-loop geothermal wells

(a) Geothermal systems, except open-loop geothermal wells and the piping between the borehole, trench, or surface water and the building or structure, shall have the following minimum separation distances:

- 25 feet from a subsurface sewage or wastewater septic tank, grease trap or interceptor tank, or pump chamber.
- 50 feet from a subsurface sewage or wastewater leaching system; however, the minimum separating distance may be further reduced with the approval of the Commissioner and concurring approval of the Commissioner of Public Health.
- 50 feet from a below ground tank containing a hazardous substance such as fuel.
- 10 feet from a solid sewer pipe, surface water or groundwater drainage structure/piping, water supply piping, fuel or utility piping. Stone below a foundation floor is not considered part of the groundwater drainage system relative to this separation distance.
- 10 feet from the high water mark of any body of water; however, this does not apply to surface water geothermal systems.
- 50 feet from a water well with a withdrawal rate of 50 gal/min or less; however, the minimum separating distance shall be reduced to 25 feet if the water well has a withdrawal rate of less than 10 gal/min, and the water well is on the closed-loop geothermal system property or the geothermal system does not include a closed-loop bore hole.
- 200 feet from water well with a withdrawal rate greater than 50 gal/min.

(b) Geothermal system piping between the bore hole, trench, or surface water and the building or structure shall be located at least 25 feet from sources of pollution (fuel tanks, septic tanks, leaching systems, etc.) and water wells; however the distance shall be reduced to 10 feet from a subsurface sewage disposal system (septic tank and leaching system) as long as the excavation is not backfilled with free draining material and is approved by the local health department or district.

(c) Compliance with the minimum separating distances shall be based on horizontal measurements, except for non-vertical closed-loop geothermal bore holes which shall maintain the minimum separation distances when measured from any point along the borehole.

Section 25-128-41a includes language that states open-loop geothermal systems that make use of non-potable water shall meet the requirements established by the DPH. This language should be removed as DPH will not be establishing such requirements. There is also a statement that the cited separating distances may be further reduced with the approval of the DCP in consultation with the DPH. If that statement is to be included in the final regulation, it should be modified to indicate that the minimum separating distances to subsurface sewage disposal systems and water wells may be further reduced with the approval of the Commissioner and concurring approval of the Commissioner of Public Health.

The majority of the DPH's other recommendations are relatively minor, and are summarized below by section:

Sec. 25-128-33. Title of regulations: In order to better align the title with the purpose and scope, and it may be helpful to reference the regulations and applicable Statutes & regulations as the CT Well Drilling & Geothermal System Code.

Sec. 25-128-34. Purpose of regulations: Change geothermal bore holes to geothermal systems.

Sec. 25-128-35. Scope of regulations: Recommend including persons installing non-bore hole geothermal systems to the scope of regulation section. Subsection (e) indicates non-water supply wells are not exempt from sections 25-128-58b and 25-128-60b of the regulations, however upon review of those sections it is noted that Sections 25-128-58 through 25-128 (125 typo)-62 are being repealed. Subsection (e) indicates non water-supply wells shall meet Sections 19-13-B51a to 19-13-B51m of the Regulations of Connecticut State Agencies; however these regulations do not apply to non-water supply wells. The DPH supports the development of non-water supply well standards to prevent pollution migration and contamination of aquifers, but understands such standards are beyond the scope of these regulations.

Sec. 25-128-36. Definitions: The DPH recommends revision to some of the definitions, and the addition of a new definition for "Open-loop geothermal system" or have that term listed and defined under a new subsection (e) in the water well definition. The DPH recommends revisions to the following definitions:

- (16) Drawdown: The defined term drawdown is one word, however it is used twice in the definition as two words, draw down. Use of the word should be consistent. The first time it's used, it is in the context of a linear measurement (i.e., feet). The second time it's used, it is used along with the word available to establish a quantity (i.e., gallons) of available storage. It is recommended the last sentence end with: ...known as the drawdown available storage. Section 25-128-39 (a) uses the term "water column depth" in each of the five yield/storage categories; however, that term is not defined. It appears drawdown is the same as water column depth, and if so, the defined term should be used.
- (18) Geothermal bore hole: The definition of this term equates it with closed-loop geothermal systems; however some open-loop geothermal systems include geothermal bore holes. It is recommended the defined term be changed to Closed-loop geothermal bore hole if the definition is only meant for closed-loop geothermal systems.
- (26) Liner pipe: It is recommended that the definition reference both the ASTM pipe specifications (i.e., ASTM D 1785) in addition to the Schedule 40 PVC pipe designation along with any other designations for acceptable industry piping, if applicable. Reference to screens in the definition should be removed, and applicable specifications can be included in Section 25-128-46 Well Screens.
- (34) Repair: The word "disinfecting" should be removed from the definition.
- (28) Owner: The definition should cite geothermal system rather than geothermal bore hole.
- (36) Standing column wells: The grandfather clause must only exempt existing dual use (potable well & open loop geothermal well) water wells that were in use by the effective date of the regulation. Recommend the date be removed from the definition and be replaced with "the effective date of the regulation".
- (38) Water well: Many definitions (Term #s: 1, 2, 5, etc.) and much the text uses the term well. It is recommended the definition be modified to reference both terms, or the defined term should be used throughout. Change the term "open-loop geothermal bore hole" to "open-loop geothermal well" in the first sentence. Change the term "Drilled rock well" to "Drilled well" under subsection (b), and add

subsection (e) Open-loop geothermal well to the list of water wells and define it broadly to cover shallow and deep wells.

Section 25-128-39 Adequate relations of diameter, depth, and yield: See comment under the definition of “drawdown” relative to the term “water column depth”. Subsection (a) should use the term “drilled well” or “drilled rock well” as defined in the definition of water well (see comment under the definition of “water well”, and it is recommended that the word “domestic” be added before the word “use” to make a point that the noted yields and storage capacities do not account for non-domestic uses such as water for irrigation systems. The second sentence under subsection (a) should end with ...satisfactory when the following storage volume or drawdown depth is provided along with a well capable of yielding:

Consideration should be given to listing the required yields along with a minimum storage volume of both the drawdown available storage and the storage provided in the water system’s storage tanks. Currently the required storage is noted to be the larger of two items, storage volume and drawdown depth/water column depth (WCD), the first item having units in gallons and the second in feet. Is it intended to indicate that the cited available storage should be provided if the cited WCD is not available? Rewording would provide clarification.

The calculated drawdown available storage at the cited WCDs results in a volume that is higher than the available storage volumes. A comparison of the ratios of the calculated available drawdown storage compared to the storage in the water tanks indicates a wide range (approximately 2.0 to 1.1) that is not linear. The DPH is available to provide recommendations relative to storage requirements for various yielding wells for individual households.

Section 25-128-55 Promulgation of construction standards: The term geothermal bore hole should be changed to geothermal systems.

Section 25-128-57 Procedure of abandonment: Consideration should be given to allow dug wells to be abandoned with a clean fill (sand and gravel).

Sections 25-128-62a Well Completion Report & 25-128-62b Geothermal System Completion Report: Open-loop geothermal wells are water wells, therefore it would be expected that well completion reports would be completed for those wells. Is that form being modified to reflect that the water well is for an open-loop geothermal system, and is the geothermal system completion report (GSCR) not required for open-loop geothermal wells? The GSCR includes a section on bore hole specifications, and it appears a single form could be completed for a large grid network of geothermal bore holes. If those bore holes were open-loop bore holes, would it be expected that both forms would need to be completed? Historically, a completion report was required for non-water supply wells; however the regulations only requires completion reports for water wells and geothermal systems. Consideration should be given to also requiring completion reports for non-water supply wells to better track those activities.

Section 25-128-63 Exemption from construction standards: This section provides a mechanism for the Board (State Plumbing and Piping Work Examining Board) to provide an exemption with the regulations and construction standards in hardship situations. If that provision is to be included in the final regulation, it should be modified to indicate that exemptions to the minimum separating distances to subsurface sewage disposal systems and water wells may only be granted by the Board following approval by the Commissioner of Public Health.

Figure 1 Construction of Bedrock Wells: The title should be changed to Construction of Drilled Wells.

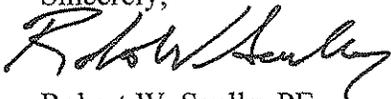
Figures 2 through 5: The soil profiles depicted in the figures are not that common in CT. Clay layers are not commonly found. The USDA Natural Resources Conservation Service can be consulted to obtain soil profiles commonly found in CT.

Section 25-130-1 Permit requirements: Subsection (b) indicates the local health department is to issue a permit for a water well or geothermal system if it conforms to Sections 19-13-B51a to 19-13-B51m of the Regulations of Connecticut State Agencies; however those regulations only apply to water wells, which would include open-loop geothermal wells. The language should be modified to indicate a permit for a geothermal system shall be issued if it conforms to the subject regulations.

Subsection (e) includes provisions for the DCP to issue a permit by an informal/verbal authorization in an emergency situation, and the approval from the local health department would also be required. It is not clear why this provision is needed as DCP's approval would only be required if an exemption is requested, and the local health department couldn't issue an approval if the water supply well or geothermal system is not in compliance with the applicable standards. The subsection further indicates that a follow-up formal written application to DCP for the emergency situation special exemption would need to be made, and if it's refused, the contractor shall cease all work. It would seem to appropriate to hold off commencement of any work on a water well or geothermal system until all permits and exemptions are secured.

If you wish to discuss any of these comments or recommendations, please contact me at (860) 509-7296.

Sincerely,



Robert W. Scully, PE
Supervising Sanitary Engineer
Environmental Engineering & Private Well Programs

Cc: Suzanne Blancaflor, M.S., MPH, Chief, Environmental Health Section, DPH
Ellen Blaschinski, R.S., M.B.A., Chief, Regulatory Services Branch, DPH
Lori Mathieu, Chief, Drinking Water Section, DPH