



COMMONWEALTH of VIRGINIA

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The Honorable J. Chapman Petersen
Member, Senate of Virginia
Post Office Box 1066
Fairfax, Virginia 22038

Dear Senator Petersen:

I am responding to your request for an official advisory opinion in accordance with § 2.2-505 of the *Code of Virginia*.

Issues Presented

You ask whether the Virginia Department of Health has exceeded the authority granted to it pursuant to the Virginia Private Well Construction Act¹ by requiring a private well construction permit for the installation of a direct exchange geothermal heat pump system or by providing its own definition of "water well" or "well." You also ask whether local health departments are authorized to require that contractors installing wells for geothermal heat pump systems be licensed by the Virginia Board of Contractors with a Water Well Classification license pursuant to § 54.1-1100, *et seq.*, in order to be issued a permit to install a direct geothermal heat pump.

Response

It is my opinion that the Virginia Department of Health has not exceeded the authority granted it by the Virginia Private Well Construction Act either in requiring a private well construction permit pursuant to § 32.1-176.4 and 12 VA. ADMIN. CODE § 5-630-220 for the installation of a closed-loop direct geothermal heat pump system or in drafting regulations defining "well" and "water well." Additionally, the local health departments are within their authority to require a Water Well Classification license, pursuant to §§ 32.1-176.4(C) and 54.1-1100 *et seq.*, for the construction of wells for use in a closed loop geothermal heat pump system.

Background

A direct exchange geothermal heat pump system is a model in which a refrigerant is circulated through pipes buried in the ground or submerged in water so that it exchanges heat with the ground, rather than using a secondary heat transfer fluid, such as water or antifreeze solution, in a separate closed loop.²

¹ VA. CODE ANN. §§ 32.1-176.1 through 32.1-176.7 (2009).

² See the definitions provided by the U.S. Department of Energy and the U.S. Environmental Protection Agency: Energy Star Program, "Geothermal Heat Pumps Key Product Criteria," available at

There are four basic types of geothermal heat pump ground loop systems. Three of these—horizontal, vertical, and pond/lake—are closed-loop systems. The fourth type of system is the open-loop option.³ Open-loop systems use well or surface body water as the heat exchange fluid that circulates directly through the geothermal heat pump system. Once it has circulated through the system, the water returns to the ground through the well or a recharge well, or as surface discharge.⁴ Whether the geothermal heat pump system is a closed-loop system appears to be dependent upon the operation of the particular system and will need to be answered on an individual basis.

Applicable Law and Discussion

First, the authority of the Board of Health to develop regulations governing the construction of geothermal wells stems from an express mandate of the General Assembly. The General Assembly has charged the Board of Health with developing regulations that “provide for the issuance of an express geothermal permit allowing, upon proper registration and payment of application fees, the construction of wells used solely for a closed loop geothermal heating system.”⁵ The Board of Health has defined a “closed-loop ground-source heat pump well” system as “a well consisting of a sealed loop of plastic pipe buried beneath the earth's surface to allow heat transfer between the fluid in the pipe and the earth.”⁶ The permit is subject to specific statutory requirements, including that the “construction of the geothermal heating system [] comply with the private well regulations[.]”⁷ It is therefore clear that the Virginia Private Well Construction Act authorizes the Board of Health to oversee the construction of closed-loop geothermal heating systems.

Second, the General Assembly has declared the policy of the Commonwealth to “require that the construction and location of private wells conform to reasonable requirements” as the “improper construction of private wells can adversely affect aquifers as ground water resources in the Commonwealth.”⁸ These requirements are consistent with the Commonwealth’s duty to “protect these ground water resources and to safeguard the public welfare, safety and health” of its citizens.⁹ Further, “[a]ny person intending to construct a private well shall apply to the [Health] Department for and receive a permit before proceeding with [well] construction.”¹⁰ A private well is defined in § 32.1-176.3 as “any

http://www.energystar.gov/index.cfm?c=geo_heat.pr_crit_geo_heat_pumps. The Virginia Private Well Regulations do not include a definition of a geothermal heat pump system.

³ See United States Dep’t of Energy, Energy Savers, Space Heating and Cooling, *available at* http://www.energysavers.gov/your_home/space_heating_cooling/index.cfm/mytopic=12650.

⁴ *Id.*

⁵ Section 32.1-176.4(C) (2009).

⁶ 12 VA. ADMIN CODE. § 5-630-10.

⁷ VA. CODE ANN. § 32.1-176.4(C)(2). Section 32.1-176.4(C) also requires that “all well construction be performed by a person holding a valid, appropriate contractor license with water well classification . . . ;” that “the registration statement accurately identify the property location, the owner's name, address, and contact information, and the contractor's name, address, and contact information;” and that “the registration statement include a detailed site plan, drawn to scale, showing the location of the geothermal heating system and any potential sources of contamination”). The State Board of Health has proposed amendments to its Private Well Regulations to comply with this statutory mandate, and these proposed amendments are under review. See 12 VA. ADMIN CODE §§ 5-630-271 & 5-630-272, *available at* <http://www.townhall.virginia.gov/L/ViewXML.cfm?textid=3752>.

⁸ VA. CODE ANN. § 32.1-176.2 (2009).

⁹ *Id.*

¹⁰ Section 32.1-176.5(A) (2009).

water well constructed for a person on land which is owned or leased by that person and is usually intended for household, ground water source heat pump, agricultural use, industrial use or other nonpublic water well.”¹¹

The State Board of Health has enacted regulations, in accordance with § 32.1-176.4, to “[e]nsure that all private wells are located, constructed and maintained in a manner that does not adversely affect groundwater resources, or the public welfare, safety and health.”¹² Pursuant to these authorities and the concern for the contamination of groundwater as expressed in §§ 32.1-176.4 and 32.1-176.2, the Board of Health defined a “water well” or “well” as, “any artificial opening or artificially altered natural opening, however made, by which ground water is sought or through which ground water flows under natural pressure or is intended to be artificially drawn”¹³ Whenever a person seeks to construct a well, a construction permit must first be obtained from the Commissioner of the Virginia Department of Health.¹⁴

You note that other types of drilling, such as drilling for quarries, reach groundwater levels yet are not regulated by the Virginia Department of Health. It is true that certain drilling activities are exempted from permit requirements pursuant to 12 VA. ADMIN. CODE § 5-630-10, but the geothermal wells at issue here pose particular environmental concerns not posed by other drilling activities. Geothermal wells are placed in close proximity to homes and, therefore, near drinking water supplies and sewage drainfields. The Virginia Department of Health considers issues such as proximity to drinking water wells and sewage drainfields when issuing a geothermal permit, as is its duty pursuant to § 32.1-176.4.¹⁵ If a heat pump well is drilled through or too close to an onsite sewage system drainfield, for example, pathogens could be introduced directly into aquifers that supply drinking water. Moreover, there is a real potential for refrigerant leaking from the closed loop of a direct exchange geothermal heat pump system into the surrounding soil, which could contaminate groundwater.¹⁶

The definition of a “well” in 12 VA. ADMIN. CODE § 5-630-10 as “any artificial opening or artificially altered natural opening, however made, by which ground water is sought or through which ground water flows under natural pressure or is intended to be artificially drawn” falls within the discretion given to the Board in § 32.1-176.2 to “protect . . . ground water resources and to safeguard the public welfare, safety and health.” Defining a “well” is a necessary prerequisite to the Board of Health’s adoption of regulations pertaining to the location and construction of private wells in the Commonwealth under § 32.1-176.4.¹⁷

¹¹ Section 32.1-176.3 (2009).

¹² 12 VA. ADMIN. CODE § 5-630-30.

¹³ *See id.* § 5-630-10 for several exemptions to this definition, including wells drilled for the following purposes: (i) exploration or production of oil or gas, (ii) building foundation investigation and construction, (iii) elevator shafts, (iv) grounding of electrical apparatus, or (v) the modification or development of springs.

¹⁴ *See id.* § 5-630-220(A) (“no person shall construct, alter, rehabilitate, abandon or extend a private well, or allow the construction, alteration, rehabilitation, abandonment or extension of a private well, without a written construction permit from the commissioner”).

¹⁵ *See, e.g., id.* §§ 5-630-380 & 5-630-400.

¹⁶ *See* Virginia Tech Geo4Va website for a discussion of advantages and disadvantages of geothermal heat pump technology and the need for greater care and higher skill for the installation of a direct exchange system, *available at* <http://www.geo4va.vt.edu/A2/A2.htm>.

¹⁷ Also, the specific inclusion of groundwater in this definition is consistent with the purposes of a private well, defined in § 32.1-176.3 as, “any water well constructed for a person on land which is owned or leased by that person

The General Assembly has directed the Board of Health to adopt regulations pertaining to the location and construction of private wells and has charged the Virginia Department of Health with the interpretation and enforcement of those regulations.¹⁸ Virginia courts will accord great weight to the interpretation of a statute by the state agency charged with its enforcement.¹⁹ Moreover, the General Assembly is presumed to be aware of the agency's construction of a particular statute and, when such a construction continues without legislative alteration, the legislature will be presumed to have acquiesced in it.²⁰ In this instance, the General Assembly affirmed the Board of Health's regulation of geothermal heat pump systems through its Private Well Regulations by adding subsection C to § 32.1-176.4 in 2009, directing the Board of Health to include in its regulations provisions for the issuance of an express geothermal permit.²¹

It is therefore my opinion that the statutes enacted by the General Assembly authorize the Virginia Department of Health to regulate the construction of wells used for closed loop geothermal heating systems and that it is within the Board of Health's authority to define what a "well" is for purposes of the Virginia Private Well Construction Act.

Finally, you also ask whether local health departments are authorized to require a water well classification license from the Virginia Board of Contractors as a prerequisite to obtaining a permit to install a direct geothermal heat pump. Section 32.1-176.4(C)(1) mandates that the express geothermal permit issued by the Virginia Department of Health for closed-loop geothermal heat pump systems include the "requirement that all well construction be performed by a person holding a valid, appropriate contractor license with water well classification pursuant to Chapter 11 (§ 54.1-1100 *et seq.*) of Title 54.1." Given this statutory command, local health departments have not exceeded their authority in requiring the Water Well Classification license for installers of closed-loop geothermal wells. As with the initial determination of whether a permit is required for the installation of a direct exchange geothermal heating system, the type of geothermal system being employed will establish whether the requirements of § 32.1-176.4(C) apply.²²

and is usually intended for household, *ground water source heat pump*, agricultural use, industrial use or other nonpublic water well." [Emphasis added.]

¹⁸ Section 32.1-176.4(A). *See, e.g.*, 2008 Op. Va. Att'y Gen. 112, 114 (Department of Health has the authority to require submission of a survey plat with application for private well construction permit).

¹⁹ *See Forst v. Rockingham Poultry Mktg. Coop., Inc.*, 222 Va. 270, 276, 279 S.E.2d 400, 403 (1981) (long-standing Department of Taxation interpretation is entitled to great weight); *Dep't of Taxation v. Progressive Cmty. Club*, 215 Va. 732, 739, 213 S.E.2d 759, 763 (1975) ("the construction of a statute by a state official charged with its administration is entitled to great weight"); 1990 Op. Va. Att'y Gen. 231, 232 (concurring with Board of Health interpretation that bakeries and donut shops without seating areas are not restaurants).

²⁰ *See Commonwealth v. Am. Radiator & Standard Sanitary Corp.*, 202 Va. 13, 19, 116 S.E.2d 44, 48 (1960) ("when [a public official's construction of a statute] has long continued without change the legislature will be presumed to have acquiesced therein"); *Miller v. Commonwealth*, 180 Va. 36, 42, 21 S.E.2d 721, 723 (1942) ("The Legislature is presumed to be cognizant of [the construction given to a statute by public officials], and, when long continued, in the absence of legislation evincing a dissent, the courts will adopt that construction"); 1986-87 Op. Va. Att'y Gen. 194, 194 ("Board's regulations ... have been in effect since 1980 and have not been modified by legislative action of the General Assembly, thereby indicating that the General Assembly has acquiesced in them").

²¹ 2009 Va. Acts ch. 710. *See* 1977-78 Op. Va. Att'y Gen. 77, 78 (When the legislature passes a new law, or amends an old one, it is presumed to act with full knowledge of the law as it stands).

²² Finally, you note that these permitting requirements cause delay and expense for the public and for businesses installing these systems. The General Assembly evidently weighed the policy considerations at issue, namely, the

Conclusion

Accordingly, it is my opinion that the Virginia Department of Health has not exceeded the authority granted it by the Virginia Private Well Construction Act either in requiring a private well construction permit pursuant to § 32.1-176.4 and 12 VA. ADMIN. CODE § 5-630-220 for the installation of a closed-loop direct geothermal heat pump system or in drafting regulations defining “well” and “water well.” Additionally, the local health departments are within their authority to require a Water Well Classification license, pursuant to §§ 32.1-176.4(C) and 54.1-1100 *et seq.*, for the construction of wells for use in a closed loop geothermal heat pump system.

With kindest regards, I am

Very truly yours,



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risks posed by improperly installed or defective systems versus the costs associated with permitting requirements, and chose the latter.