



Connecticut Department of Public Health

**RECOMMENDATIONS TO THE
CONNECTICUT GENERAL ASSEMBLY
FOR ENSURING THE ADEQUACY AND PURITY OF NEW
PRIVATE DRINKING WATER WELLS**

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Report to the Connecticut General Assembly

In the 2008 legislative session the General Assembly passed the following legislation:

Public Act 08-184

Sec. 51. (Effective from passage) The Department of Public Health, in consultation with the Departments of Environmental Protection and Consumer Protection, shall convene a working group of individuals to study and make legislative recommendations to ensure that property owners of new construction, with a private water supply well that serves as the source of drinking water are assured of an adequate supply of water that meets current standards for potability as defined in the regulations of Connecticut state agencies. The working group shall also study and make recommendations concerning the installation of replacement water supply wells on properties where there is insufficient area to meet the current separation distances as specified in the regulations of Connecticut state agencies. The working group shall consist of: (1) The Commissioner of Public Health, or the commissioner's designee or designees; (2) the Commissioner of Environmental Protection, or the commissioner's designee or designees; (3) the Commissioner of Consumer Protection, or the commissioner's designee or designees; and (4) various interested stakeholders who have expressed to the Department of Public Health a willingness to work with the department on such issues. Not later than July 1, 2009, the working group shall report, in accordance with section 11-4a of the general statutes, its legislative recommendations to the joint standing committees of the General Assembly having cognizance of matters relating public health, environment and consumer protection.

The Department of Public Health (DPH) convened a workgroup to study the issues raised by PA-0184. The workgroup met six times, starting in September 2008. The issues addressed by the workgroup were divided into three general areas concerning private wells:

1. Adequacy of water supply for new private wells
2. Purity of water supply for new private wells
3. Replacement wells for existing private wells that cannot meet the locations and permit requirements of § 19-13-B51 of the Public Health Code. This includes situations where a private well cannot be sited on a property in compliance with the prescribed separation distances, and for sites where a code compliant subsurface sewage disposal system cannot be identified.

Introduction

When one thinks of a private well the image of a single well serving a single house or dwelling comes to mind, however private wells serve many other different types of buildings. A private water supply well means an artificial excavation, constructed by any method, for the purposes of getting water for drinking or other domestic use and serving a single consumer and less than twenty-five (25) persons. In this case consumer means any

private dwelling, hotel, motel, boarding house, apartment building, store, office building, institution, mechanical or manufacturing establishment, or other place of business or industry served by the well. Thus small businesses, industrial plants, and apartment buildings may be served by a private well. In Connecticut, approximately 13-15% of the state's population (455,000 to 525,000 people) is served by private wells

When an individual purchases an undeveloped property not served by public water, it is generally assumed that a water supply well can be installed that will produce an adequate supply of potable water for the needs of the owner. While not a common occurrence, there are some challenging areas in Connecticut where the underlying bedrock is low yielding and incapable of providing a satisfactory volume of water for general domestic purposes. In order to obtain a certificate of occupancy (CO) for a new dwelling not served by public water, it must be demonstrated that an adequate supply of safe drinking water is available in accordance with the requirements of the Public Health Code (Sections 19-13-B51a through m inclusive and 19-13-B101) and the Connecticut Well Drilling Code. A CO is signed by the local building official, and the sign-off is predicated by the approval of the drinking water supply by the local Director of Health. The Director of Health bases the approval on the results of the laboratory analysis of the well water and the information contained in the well completion report and well permit. The laboratory analysis is used to evaluate the water quality (potability). The well driller completes both the well permit and well completion report. The well permit indicates the well location and the distances from any sources of pollution; the well completion report indicates the well yield and construction information.

Adequacy of Water Supply for New Private Well

Section 25-128-39 of the Well Drilling Code has specific requirements for water storage capacity of a well based upon the well yield. The well yield is defined as the quantity of water per unit time, commonly expressed in gallons per minute or gpm, which may flow or be pumped continuously from a well. The lower the well yield, the more storage capacity is required. Storage capacity can be in the well borehole itself and/or in storage tanks. The Well Drilling Code recommends that wells with a yield of less than 0.5 gpm not be used as the sole source of water for a household. Table 1 summarizes the requirements of the Well Drilling Code and wells that meet these requirements can be considered to provide an adequate supply of water for normal use. For situations where the water usage is excessive, these requirements may not be adequate.

Table 1 Well Storage Capacity Requirements Based on a 6-inch Diameter Well

Well Yield, gpm	Available Storage
5	75 gals or water column depth of 100 feet.*
3.5	150 gals or water column depth of 150 feet.*
2	225 gals or water column depth of 200 feet.*
1	400 gals or water column depth of 375 feet.*
0.5	600 gals or water column depth of 450 feet.*

*Whichever is greater. Note that for a 6-inch diameter well, each foot of the water column is equivalent to 1.5 gallons.

For planning purposes a water usage of 75-gallons per day per individual is often used. For a household of four, this would translate to 300-gallons per day. The Well Drilling Code requires a well with a yield of 0.5-gpm have a storage capacity of 600-gallons. Using this figure in combination with the estimate of 75-gallons per day per individual, means this should be adequate for a household of up to eight individuals. Where this could be a problem is a multi-family house or small apartment building that does not meet the minimum threshold (25 people) for a public water company. For example a multi-family house containing 20 individuals served by a single well with a low yield could require more storage capacity than is specified by the Well Drilling Code. Section 25-128-39 of the Well Drilling Code refers to storage requirements for individual households. The Well Drilling Code should be expanded to include all private water systems (e.g. those systems not meeting the definition of a public water system). It was suggested that, similar to the existing regulations for subsurface sewage disposal systems (SSDS), the storage capacity for a given well be calculated on the number of bedrooms in the home as well as the well yield. The SSDS regulations use a design flow of 150-gallons per bedroom per day for determining the septic tank capacity. The workgroup recommends that for homes with more than four bedrooms, the storage capacity be increased by 150-gallons per bedroom over four bedrooms.

Another area of concern is a household that may use more extraordinary volumes of water beyond normal domestic needs. For example a household that uses a well to fill a swimming pool, whirlpool tub, or for lawn irrigation, etc. would likely require significantly more water than the 75-gallons per day per individual estimate. There are also recent examples of households that install full body showers with multiple showerheads that use copious amounts of water (upwards of 50-gpm). A well driller installing a well does not know the volume of water the household might require, but is held to compliance with the Well Drilling Code. Therefore a new well, even though it meets all existing regulations and requirements, may be inadequate if such uses are planned. There was also discussion on automatic lawn sprinkler systems and the potential waste associated with these devices. Although it was noted that water might be wasted, it is available to recharge the aquifer, though not necessarily helping adjacent property owners. The members of the workgroup recommended some type of automatic cutoff switch be required so systems do not activate during rainy periods. Toward the end of the workgroup's deliberations it was noted the legislature passed Public Act 09-32, An Act Concerning Efficiency Standards for Residential Lawn Sprinkler Systems. This act requires residential lawn sprinklers systems installed after July 1, 2010 to be equipped with such a device.

There is some concern regarding the rare instance where the installation of a new well affects the availability of water and yield of pre-existing well(s). For example consider the situation where a homeowner installs a new well equipped with a high capacity pump used for irrigation purposes. This high pumping rate may lower the water table and affect his or her drinking water well as well as a neighboring well(s). A new well, with a high capacity pump, that is drilled significantly deeper than pre-existing wells in the area may be especially problematic on pre-existing wells installed at shallower depths. Since there

is no prescribed separation distances between pumping wells in the PHC, it may be warranted, in some cases, to conduct simultaneous well yield tests on the wells to determine what effect, if any, the new well would have on the neighboring wells. This would require the cooperation of neighbors, which may be difficult if not impossible to obtain. However it might be necessary to require some minimum separation distance between water supply wells to minimize any potential negative effects. Local directors of health have no way of knowing what size pump is installed in a well, and therefore cannot evaluate if the pumping rate for the new well might be an issue. The workgroup recommends that for new construction the sanitary radius of the well be located on the same property or some conservation area such as designated open space or wetland.

It was recognized during the workgroup's deliberations that there are certain geographic areas of the state where groundwater is scarce to non-existent due to the hydrogeological conditions of the underlying bedrock aquifer. These areas are sporadically located throughout the state, and were identified when actual private wells were being drilled, even at depths of over 1000 feet. Members of the Connecticut Water Well Association (a well drillers industry group) indicated that within the geographical area they service, they are fairly knowledgeable of where an adequate supply of groundwater will be a problem. Members of Connecticut Association of Directors of Health (CADH) and the Connecticut Environmental Health Association (CEHA) also indicated that health department staff had some knowledge of areas in their jurisdiction where groundwater supply was a problem. Members were asked to consider whether they could put together a list of known problem areas. Concern was raised that if such a list was developed, some homeowner's property values could be affected leading to potential lawsuits against either the health department or the DPH. It was discussed that in areas where there is a known scarcity of groundwater, an extended yield test be performed. The typical yield test for a private well is 4-hours. Public Drinking water wells require a yield test lasting a minimum of 18-hours. However requiring the 18-hour test would be more expensive (\$2500-\$3000) to the property owner and no guarantee that the well would produce an adequate supply year round. The United States Geological Survey developed an equation that evaluates the adequacy of a long term water supply at a home site based on three basic factors including the amount of water potentially available, consumed and re-cycled or reused or available for recharge. The equation can be used to determine whether the aquifer will yield a supply based on the family and expected water use. That equation may be useful for poor yield areas. The DPH and DEP will further study this.

The representatives from the well drillers association indicated that in their experience well yield is not a large problem in Connecticut. This is validated by published geological information in Connecticut. However when problems with newer wells going dry do occur, the depth the pump is installed in the well is often the problem. Some wells require deep depths (>400-feet) in order to obtain a satisfactory supply of water. As wells are drilled deeper, the drilling costs associated with the increased depth also increases. In addition to the drilling costs, the cost to install the pump gets quite expensive as the depth increases past 400-feet due to the increased amount and type of cabling needed. In order to decrease costs, the builder or homeowner may insist the pump be installed at a shallower depth in the well thereby decreasing the cost and limiting the usable storage

capacity in the well borehole. This could significantly decrease the volume of water available to be pumped from the well, especially if the well yield is low. For example, consider a well drilled to 800-feet, the depth of the water column is 400-feet, and the well yield is 1 gpm. The Well Drilling Code would require this well to have a storage capacity of 375-feet, which it does. However if the pump is installed to a depth of 450-feet, the water column available for pumping (depth of the water column above the pump) is only 50-feet (equivalent to 75-gallons), well below the storage capacity needed.

In view of the preceding discussion, the current well completion report has no information on the depth the pump was installed or the pump's flow rate. Making this information available to the local Director of Health would be a way to monitor whether a well/pump configuration has the necessary storage capacity as well as documenting the pump and pump setting. It was noted that some health departments/districts have already instituted a well pump record. This record requires certain information akin to the well completion report, but specific for the pump installation. It is recommended that such a well pump record be required statewide thus enabling directors of health to verify that the well/pump configuration is compliant with existing regulations. More importantly the information on the proposed well pump record would provide the homeowner with additional information about their well that is often overlooked and not necessarily retained.

Another issue that has emerged in recent years regards ownership of wells in certain developments, specifically what might be categorized as cluster developments. A traditional subdivision is a large parcel of land that is divided into individual lots, where the individual homeowner owns each lot. A cluster development generally sites homes on smaller parcels of land, where the additional land that could have been allocated to individual lots is converted to common open space for the residents. Ownership of the open space or common areas would depend on the specific agreement for the development. This means each homeowner may not necessarily have ownership of their individual water supply and/or subsurface sewage disposal system. In some instances the water supply well is deeded to the homeowner through a fee simple arrangement while open space areas might fall under an exclusive use agreement. A fee simple arrangement is a mechanism for deeding ownership to an individual. Exclusive use means the individual has the exclusive use of something, but does not own it. In order to determine what specifically the homeowner owns and what the development association owns, it is necessary to examine the agreement. Although cluster developments have redeeming positive qualities, they also pose regulatory challenges for drinking water supply and sewage disposal. Regardless of who is responsible for the private well, the unit owner or the association, it must be made clear in the declaration who is the responsible party. Failure to do so presents problems for local health officials as well as the unit owner in the situation where a repair or replacement well is required. A copy of the guidance developed by a separate workgroup is included in Appendix 3.

Purity of Supply for a New Private Water Supply Well

New private drinking water supply wells, hereafter referred to as private wells, are under the purview of the local Director of Health. Section 19-13-B101 of the Public Health Code requires new private wells to be tested by a state certified laboratory. If the results of the tests are in compliance with the Public Health Code (PHC), the Director of Health will approve the water supply as fit for human consumption. The list of required tests is relatively short. The required tests are total coliform bacteria, nitrate, nitrite, sodium, chloride, iron, manganese, hardness, turbidity, pH, sulfate, apparent color and odor. Connecticut General Statute (CGS) 19a-37 prohibits any regulation that may require the water in a private residential well be tested for organic chemicals. However this statute does provide the local Director of Health discretionary power to require a sample to be analyzed for organic chemicals when reasonable grounds exist to suspect that organic chemicals may be present in the private well. The workgroup considered whether to recommend the statute be rewritten to allow the DPH to require testing of private wells for organic chemicals. The consensus was that as the local Director of Health has the authority to require additional testing, the change was not needed. The workgroup suggested that the DPH and DEP, in conjunction with the Connecticut Environmental Health Association and Connecticut Association of Directors of Health, arrange to hold workshops across the state to educate directors of health and sanitarians on the importance of organic chemical testing and ways to evaluate the need for such testing.

The PHC standards for levels of contamination in a private well are based upon the standards set for public drinking water by the United States Environmental Protection Agency (EPA). The EPA and the section of the PHC relating to public drinking water define the maximum contaminant level (or MCL) as the maximum permissible level of a contaminant in water that is delivered to any consumer of a public water system. The section of the PHC relating to private wells defines the MCL as the maximum permissible level of a biological or chemical substance in water for a private water supply system. This section of the PHC also requires that MCLs for a private well conform to those specified in subdivisions (2), (3) and (4) of subsection (e) of section 19-13-B102 of the PHC. These sections of the PHC set standards for inorganic chemicals, pesticides, herbicides, polychlorinated biphenyls, and organic chemicals (generally volatile organic compounds or VOCs). The workgroup noted that currently there are no MCLs for private wells for radioactive chemicals. (Note that the EPA does not regulate private wells and therefore there are no federal standards for private wells.)

CGS 22a-471 allows the DPH to set action levels for heavy metals, volatile chemicals, pesticides and other non-naturally occurring chemical constituents in groundwater above which pose an unacceptable risk of injury to the health or safety of persons using such groundwater as a public or private source of water for drinking or other personal or domestic uses. The statute also allows the DEP to provide an interim short- and long-term supply of safe drinking water to persons whose private wells become contaminated from non-naturally occurring pollutants until such time the polluter is identified and takes responsibility for providing an alternative water supply to all affected or potentially affected well owners or, in cases where the polluter can not be identified, the DEP's

potable water program in conjunction with the municipality where the pollution occurs takes on the responsibility for providing affected well owners with an alternative water supply. Under the latter scenario, the work is funded through a state grant made available by the DEP to the municipality.

These action levels as described above are not considered MCLs. CGS 19a-37(d) prohibits the Director of Health from withholding a certificate of occupancy from any water quality test on a private residential well pursuant to this section, unless such test results indicate that any MCL applicable to public water supply systems for any contaminant listed in the PHC has been exceeded. The PHC contains MCLs for many substances, but not all substances. There have been instances where contaminants that do not have MCLs were found in private wells at concentrations above the action level set by the DPH. CGS 19a-37(d) does not allow the DPH or the Director of Health to not issue a CO in these instances because no MCL exceedances have occurred. The workgroup recommends that this statute be repealed, or the DPH develop a process for setting MCLs for certain contaminants that currently do not have MCLs and are considered to be prevalent in the groundwater of Connecticut and at concentrations that pose a risk to public health.

The Radionuclides Rule was recently modified by EPA requiring community public water supplies to begin monitoring for uranium. As a result of the monitoring it was found that several areas of Connecticut had naturally occurring uranium deposits in the bedrock causing levels of uranium in the drinking water to exceed the MCL. As a result of this the DPH notified local health departments/ districts if public water supply wells in their area had MCL violations for uranium. A recommendation was also made to test private wells in the same area for uranium. In most cases this was accomplished, but there were instances where this did not happen in a timely manner and in other instances homeowners refused access to their wells and testing could not be performed. When the information was made public, there was much concern among the citizens in the affected areas. As there are currently no standards for radionuclides for private wells in Connecticut, it is recommended that the regulations for private wells be expanded to include the MCLs for radionuclides. The workgroup also noted that recent legislation was passed by the Connecticut General Assembly requiring the DPH notify the chief local elected official of a municipality in the event a public water supply has an MCL violation.

If a private well has contaminants above the MCL, there are generally treatment systems available that will remove or lower the contaminant to a safe level. The problem with such systems is that they typically generate a backwash and, in many cases, the wastewater is discharged to an on-site septic system. The PHC prohibits the discharge of backwash from water treatment systems to on-site septic systems. Discharges of wastewaters from water treatment systems (e.g., water softeners, iron or manganese removal filters, etc.) to surface waters, sanitary sewer systems (if the level of contaminants in the backwash exceed applicable discharge limits set by the POTW (publicly-owned treatment works)), subsurface sewage disposal systems (SSDS) or to the ground surface are prohibited unless otherwise authorized by the DEP. In some instances

the Commissioner of Public Health may authorize limited volumes of water treatment wastewater to discharge to a SSDS. Some wastewater discharges can actually damage a subsurface sewage disposal system and result in costly repairs. For a dwelling that is not on a public sewer, a separate subsurface wastewater disposal system (such as a drywell) could be installed at the same time the main subsurface sewage disposal system is installed, thus minimizing costs to the prospective homeowner. Any on-site disposal of water treatment system wastewater via a separate/dedicated subsurface disposal system must be in accordance with a DEP General Permit for such Point of Entry system discharges.

The DPH is in the process of developing a database for private well information. It would be helpful if the certified environmental laboratories that perform water testing for new private wells submitted their data to the DPH in an electronic format. This could then be uploaded into the database allowing DPH to develop reports and mapping of well water in the state.

Recommendations for Ensuring the Adequacy and Purity of Supply for Private Wells

- Require a well pump installation record be completed prior to the issuance of a certificate of occupancy for new wells. In the event a replacement well pump is needed, a pump record must be completed within 60-days on installation. All records are to be submitted to the Director of Health. See Appendix 1 for proposed regulation changes and example record.
- Require DEP to complete a General Discharge Permit or develop final guidance for wastewater derived from water treatment systems associated with private wells.
- The DPH should develop a mechanism for setting MCLs for contaminants that currently do not have MCLs and are considered to be prevalent in the groundwater of Connecticut at concentrations that pose a risk to public health. The MCLs should be consistent with the state drinking water action levels established by the DPH pursuant to section 22a-471 of the CGS.
- Modify the PHC to include existing MCLs for radionuclides to apply to private wells.
- The DPH should issue a circular letter to the Directors of Health recommending that wherever possible, the sanitary radius of a new private residential well be located on the same property as the well, or alternatively if any part of the sanitary radius is not on the same property as the well, recommend that part be upon a designated conservation area (such as designated open space, wetlands, etc.) or other area that would have little or no impact on adjoining property.
- For new construction, require additional storage capacity if a dwelling has more than four bedrooms. Additional capacity would be 150-gallons per bedroom. See Appendix 1.

- In the event a second well is installed on a given property and the second well is within the sanitary radius of the drinking water supply well, the Director of Health should require a simultaneous yield test of the two wells.
- The DPH should develop outreach materials for health departments and districts to disseminate to the public concerning private wells and excessive water use.
- The DPH should issue a circular letter to Local and District Health Departments recommending they consult with the local building officials regarding new construction and the installation of drywells if it is likely a water treatment system will be required. The decision to require installation of drywells would be left to the local municipality.
- For new private wells, require environmental laboratories that perform testing on the well to submit the data to the DPH in a format acceptable to the Commissioner. See Appendix 2.
- The DPH and DEP in conjunction with the Connecticut Association of Directors of Health and Connecticut Environmental Health Association, educate directors of health and sanitarians on ways to evaluate adequate yields for domestic purposes and the need for testing parameters above and beyond the normal testing requirements for a CO.
- The Well Drilling Code should be modified to include yield and storage requirements for all private water systems.

Replacement Wells for Marginal Properties

There are many existing homes in Connecticut that were built before regulations were developed or under less restrictive regulations than the current regulations, for private wells and subsurface sewage disposal systems (SSDS). For some of these homes with small lots, there is not enough physical area for a private well to be installed and still meet the setback requirements mandated by the PHC. These are referred to as marginal lots or properties. Many of these homes are located along lakes or the shoreline. In instances where the home is along a lake, the home may be served by public drinking water, a private well, or use lake water for all uses except drinking and cooking.

The PHC does not allow a private well be installed on a lot unless the lot is served by:

1. Public sewers; or
2. There exists a fully code complaint SSDS; or
3. There is enough area to install a fully code complaint SSDS.

There are homes in the state on marginal lots served by both a private well and a SSDS. The SSDS may or may not be code compliant. In some cases the private well may become unusable due to contamination or lack of water. In these cases the building inspector could condemn the property for lack of an adequate supply of water. For these situations, the DPH and local directors of health would like the ability to allow a replacement well be installed through a variance mechanism. In such situations the goal would be to make an existing situation better and prevent condemnation of an existing home. Such a variance mechanism would require DPH approval. The workgroup has drafted proposed regulations for this variance mechanism. See Appendix 4.

Appendix 1
Proposed Regulations for Additional Storage Capacity
And
Well Pump Records

Sec. 25-128-39. Adequate relations of diameter, depth, and yield

Wells shall be of adequate diameter and depth to be capable of yielding the quantity of water required by the user. For the use of an individual household, a bedrock well of six (6) inches in diameter shall be satisfactory when it is capable of yielding:

(a) five (5) gallons per minute and has a storage available of seventy-five (75) gallons or has a water column depth of one hundred (100) feet, whichever is greater;

(b) three and one half (3 1/2) gallons per minute and has a storage available of one hundred fifty (150) gallons or has a water column depth of one hundred fifty (150) feet, whichever is greater;

(c) two gallons (2) per minute and has a storage available of two hundred twenty-five (225) gallons or has a water column depth of two hundred (200) feet, whichever is greater;

(d) one gallon per minute and has a storage available of four hundred (400) gallons or has a water column depth of three hundred seventy-five (375) feet, whichever is greater;

(e) one half (1/2) gallon per minute and has a water column depth of four hundred fifty (450) feet or has a storage available of six hundred (600) gallons, whichever is greater.

(f) storage may be provided using combinations of hydro pneumatic tanks and/or non-pressurized tanks with booster pumps.

(g) wells yielding less than one half (1/2) gallons per minute shall be pump tested for at least eighteen hours (18) to prove the well yield. It is not recommended that a well with less than one half (1/2) gallon be used as the only supply for an individual household.

(h) for residential buildings served by a private residential well with a yield less than 10 gallons per minute, and containing more than four bedrooms, extra storage capacity shall be provided. The extra storage capacity shall be 150-gallons or 100 feet of additional depth of the water column per bedroom, or combination thereof, in excess of four bedrooms.

In the event, however, that in the opinion of the Board, special or unusual geological, hydrological, or other circumstances shall exist in the construction of any well, the Board may determine the minimum requirements of diameter, depth, and yield for the well.

25 - 128 -65 (NEW) Pump records for private wells

The individual installing the pump for a new private residential well shall complete a well pump record on forms, provided by the department. This record must be submitted to and approved by the Director of Health prior to the issuance of a

certificate of occupancy. For a replacement pump said record shall be submitted to Director of Health within 60-days of installation of the pump.

Appendix 2

Proposed Regulations for Allowing MCLs for Radionuclides to Apply to Private Wells

19-13-B101. Testing of water quality in private water supply systems

(a) Definitions. As used in this section:

(1) "Approved laboratory" means a laboratory facility issued a certificate of approval by the Department of Public Health pursuant to sections 19-4-1, 19a-36-a25 through 19a-36-a33, and 19a-36-a57 through 19a-36-a63 of the regulations of Connecticut State Agencies.

(2) "Consumer" means any private dwelling, hotel, motel, boarding house, apartment building, store, office building, institution, mechanical or manufacturing establishment or other place of business or industry to which water is supplied by a source of private water supply.

(3) "Department" means the Connecticut Department of Public Health.

(4) "Disinfected" means pathogenic organisms in the water have been deactivated by chemical oxidants such as chlorine or equivalent agents.

(5) "Domestic purposes" means drinking, bathing, washing of clothes and dishes, cooking, and other common household uses.

(6) "Local Director of Health" means and includes the city, town, borough, or district Director of Health and any person legally authorized to act for the local Director of Health.

(7) "Maximum contaminant level (MCL)" means the maximum permissible level of a biological or chemical substance in water for a private water supply system.

(8) "Organic chemicals" means all substances listed in section 19-13-B102(e) (4) of the regulations of Connecticut State Agencies.

(9) "Private water supply system" means any source of private water supply serving a single consumer and less than twenty five (25) persons, and used for drinking or other domestic purposes.

(10) "Qualified individual" means a licensed sanitarian, local Director of Health, employee of the department, employees of local or state agencies as part of their regulatory or statutory responsibilities, or a person, including an owner or general contractor of a residential construction on which a private water supply system is located, found to be qualified by an approved laboratory to collect water samples from a private water supply system for submission to that laboratory.

(11) "Source of private water supply" means any surface water, spring, well, or underground water source from which water is available by a private water supply system for domestic purposes.

(b) A sample of water collected from a private water supply by a qualified individual shall not be analyzed by the approved laboratory unless it is accompanied by a statement signed by the qualified individual indicating the location of the sample and the address of the private water supply.

(c) MCLS for a private water supply system shall conform to those specified in subdivisions (2), (3), ~~and~~ (4) **and** (5) of subsection (e) of section 19-13-B102 of the regulations of Connecticut State Agencies. The MCL for total coliform bacteria in a private water system is exceeded if the analytical result of the water sample is positive for total coliform bacteria.

(d) The owner of a private water supply system shall have the source of the private water supply sampled directly or sampled from a cold water faucet supplying water for domestic purposes that is located within the building. If water treatment is provided the

owner shall have the sample collected prior to any treatment. The sample shall be at a minimum analyzed for total coliform, nitrate, nitrite, sodium, chloride, iron, manganese, hardness, turbidity, pH, sulfate, apparent color, and odor. The local Director of Health shall require a sample to be analyzed for organic chemicals when reasonable grounds exist to suspect that organic chemicals may be present in the private water supply system. For purposes of organic chemical analyses reasonable grounds means any information that is known by the local Director of Health that indicates that at the time of sampling the particular private water supply system is located on or in proximity to land associated with the past or present production, storage, use, or disposal of organic chemicals or such information as derived from a phase I environmental site assessment. In the event nitrate is at or greater than 10 milligrams per liter and the local Director of Health has reasonable grounds to suspect such pesticides or herbicides are present the sample shall also be tested for alachlor, atrazine, dicamba, ethylene dibromide (EDB), metolachlor, simazine and 2, 4-D. For purposes of these seven pesticide or herbicide analyses, reasonable grounds includes but is not limited to any information that is known by the Director of Health at the time of sampling that the particular private water supply is located on or in proximity to land where any of these seven pesticides or herbicides are or were applied on or in proximity to land used for the production, storage, use or disposal of any of these seven pesticides or herbicides or such information as derived from a phase I environmental site assessment. Compliance with this section shall conform to the following conditions as applicable:

(1) The water quality of a newly constructed source of private water supply shall be sampled by a qualified individual and analyzed by an approved laboratory. The private water supply system shall have been disinfected and the system shall not be sampled until all disinfectant has dissipated. The results of such analyses and a statement signed by a qualified individual attesting to the exact address and location of sampling shall be reported by the approved laboratory to the local Director of Health of the municipality where the property is located within thirty (30) days of the completion of such analyses. Approval by the local Director of Health that the results of the laboratory analyses comply with MCLS applicable to this section shall be obtained before the private water supply is used for domestic purposes.

(2) If an existing private water supply system is sampled within six (6) months of the sale of the property on which the private water supply system is located, it must be sampled by a qualified individual and analyzed by an approved laboratory. The results of the analyses conducted shall be reported by the approved laboratory to the local Director of Health of the municipality where the property is located **and the Commissioner of Public Health in a format specified by the Commissioner**, within thirty (30) days of the completion of the analyses. A test of a private water supply system shall not be required by this section as a consequence or condition of sale, exchange, transfer, purchase or rental of the real property on which the private water supply system is located. (e) This section shall apply to purchase agreements or contracts for the sale of real estate executed on or after December 30, 1996 where title to real estate has not yet passed and to transfers of real estate occurring between December 30, 1996 and the effective date of these regulations where the tests or analyses described in this section were not performed prior to the transfer.

Appendix 3

Draft Guidance for Local Health Departments and Districts Regarding Private Wells and Cluster Developments

CLUSTER DEVELOPMENT GUIDANCE FOR LOCAL HEALTH AUTHORITIES

Cluster developments have become a popular alternative to the traditional housing development. A traditional subdivision is a large parcel of land that is divided into individual lots, where the individual homeowner owns each lot. A cluster development generally sites homes on smaller parcels of land, where the additional land that could have been allocated to individual lots is converted to common open space for the residents. There are some environmental merits for cluster developments, e.g. open space, conservation, storm water management, etc. A cluster development may be termed an open-space development, conservation development, hamlet style, farm village, or other unique name coined by proponents and developers. Take for example a 100-acre parcel. A traditional development might have 50 houses on two-acre lots. A cluster development for the same parcel might have 50 houses on 1/2-acre lots, with the houses "clustered" in several groups. This would result in the houses being on 25 acres and leaving 75 acres of open space. The open space could be owned by all the homeowners through an association or other mechanism.

Ownership of the open space or common areas would depend on the specific agreement for the development. This means each homeowner may not necessarily have ownership of their individual water supply and/or subsurface sewage disposal system. Many times the water supply well is deeded to the homeowner through a fee simple arrangement while open space areas might fall under an exclusive use agreement. A fee simple arrangement is just a mechanism for deeding ownership to an individual. Exclusive use means the individual has the exclusive use of something, but does not own it. In order to determine what the homeowner specifically owns and what the development association owns, it is necessary to examine the agreement. Although cluster developments have redeeming positive qualities, they also pose regulatory challenges for drinking water supply and sewage disposal.

Typically, the rationale of allowing cluster development is a local land use decision that fits into the municipal government's overall planning scheme. Issues like drinking water supply and sewage site development must be consistent with the Connecticut Public Health Code. The Connecticut Department of Public Health (DPH), therefore, offers this document to provide guidance to the Local Health Authorities in water supply site approval for Cluster Developments. This guidance is intended for the circumstances in which the development is not served by public water and the homeowner **OWNS the well.**

There is no intent on the part of DPH to promote any form of development growth over another. Traditionally DPH has encouraged the expansion and growth of community public water systems but certainly recognizes that private well usage under the proper conditions is a valid development method of providing potable drinking water.

REGULATORY DESIGN ISSUES – WATER SUPPLIES

Clustering of services such as domestic waste disposal and domestic well development create additional issues. To address concerns regarding natural resource contamination, low yield aquifers, hydrogeological influences or interferences, and other issues, the DPH suggests the following design issues be considered when a cluster development is being proposed.

The following items are requirements of the Public Health Code and are therefore mandatory for any development:

- All proposed water supply wells must meet all current Public Health Code requirements in addition to the Well Drilling Code statutes and regulations.
- If the homeowner owns the water supply and meets the definition of “Private Water Supply system” that is: “Any source of private water supply serving a single consumer and less than twenty-five (25) persons, and used for drinking or other domestic purposes”. (Refer to Public Health Code Sec. 19-13-B101) This would then be considered a private well development.
- If a water analysis (performed by a certified laboratory) indicates water treatment is necessary, then a designated site for treatment residuals containment must be identified. The Public Health Code prohibits using a septic system for disposal of water treatment waste. Wastewater discharges require permitting by the DEP.
- The homeowner must be made aware of their own responsibilities regarding maintenance of the well and the purity and/or adequacy of supply. This could be accomplished by supplying outreach materials to the new well owner.

The following are recommendations made by the DPH. Local health authorities should consider these depending on the specific situation.

Exploratory Wells

Due to the nature of cluster developments, securing a sufficient water supply may be difficult due to site limitations and restrictions. Therefore the DPH is recommending additional measures be taken to eliminate and/or minimize any potential problems by using this guidance. The loss of adequate potable water supply can be devastating to a homeowner in terms of property value and day to day living. Additionally, the State Building Code indicates the lack of a potable water supply can be grounds for condemning a dwelling for human occupancy. Some areas of Connecticut also lack either adequate groundwater or water fit for consumption. In these cases or in areas where the groundwater quality and quantity are unknown, it is advisable that an exploratory well be installed prior to issuing a construction permit.

The purpose of the exploratory well is to determine the adequacy and purity of the water supply. This can be accomplished by determining the well yield and having the water analyzed by a state certified laboratory for potability. With this in mind it is recommended the well be constructed according to the existing regulations. The well could also be used as a water supply for a future home.

Other Recommendations

- Wells located too close to each other may adversely affect the well yield. Therefore potable wells should not be sited any closer than 25 feet from another potable well. (Anticipated yield less than 10-gpm).
- Any well within a 50 ft. protective area of another well (anticipated yield less than 10-gpm) should be yield tested simultaneously to determine potential influence on one another. Yield may need to be reduced in order to ensure a stable draw down. The lowest yield well may need to be applied to all wells being influenced. (e.g. one well at 7-gpm but influences another well at 4-gpm. Then both wells should be rated at 4-gpm each)
- Adequate storage capacity can help in situations with low or marginal yields. It is strongly recommended that the minimum hydropneumatic storage have a useable 80-gallon capacity. Also, note the Well Drilling Code requirements for storage requirements for new wells. (Sec.25-128-39)
- A lack of potable water can be grounds for condemning a dwelling per the State Building Code (Section P2901.1). If a given homeowners well were to fail, there must be an area where a new well could be installed. A designated alternate site(s) for each private homeowner's well needs to be identified, that also meets all Public Health Code requirements (Sec.19-13-B51(d)). This could be designated in a conservation area or other satisfactory site.

Final Comments:

Although “cluster developments” can work well if designed properly, there is no guarantee that on-site water supply wells will be sufficient for the intended use, however there are steps that local approving agencies can take to minimize potential problems.

As previously stated, the municipal government can make land use decisions and always has the authority and opportunity to require adherence to design guidance by adopting local ordinances, which ultimately, can be more stringent than State Regulations.

It may be advisable to record comments pertaining to the development directly on the site plans. For instance if the developer indicates a certain area is designated for replacement wells or subsurface sewage disposal systems, noting the area on the site plans so that the local planning and zoning can review it would be appropriate. Towns may wish to adopt other formats of documenting this information so that potential homebuyers are adequately informed. Local Health Departments/Districts may consider incorporating any recommendations into local ordinances for ease of enforcement.

Certainly in the last few years it has become more common for developers submit legal documents concerning ownership of wells and septic systems that appear to try and circumvent the Certificate of Public Convenience and Necessity process and/or DEP sewage disposal jurisdiction. Often these documents are difficult for a non-lawyer to understand. It is prudent for the local health department/district to ask straightforward questions regarding the ownership of the wells and septic system and require a certification from the developer.

The Department of Public Health is available for technical assistance, as necessary, to the Local Health Authorities.

Appendix 4

Proposed Regulations for Allowing a Variance to the Public Health

Code for Installation of a Replacement Private Well

And

Recommended Information To Be Submitted For

Application For Variance For Well Separating Distances

Section 19-13-XXXXX Variances for Replacement Wells for Private Water Supply Wells

(a) Definitions. For the purposes of this section:

(1) Private water supply well means a water supply well serving a single customer and less than twenty-five (25) persons, and used for drinking or other domestic purposes.

(2) Replacement Well means a water supply well intended to replace an existing private water supply well.

(3) Variance means a reduction to the separation distances specified in Section 19-13-B51d of the Regulations of the Connecticut State Agencies (RCSA).

(b) This section applies only to replacement wells where the proposed replacement well does not fully meet the requirements of Section 19-13-B51d of the RCSA and is replacing an existing well that may also not be in compliance with the existing RCSA. This section does not apply to public water supply wells or properties not served by an existing private well. The owner of the proposed replacement well shall submit an application for a variance to Section 19-13-B51d to the local Director of Health on forms prescribed by the Commissioner of Public Health (Commissioner). The local Director of Health shall then review the application, and if in agreement forward the application to the Commissioner within 30-days of receiving a complete application.

(c) The Commissioner shall review the application and any supporting documentation the Commissioner deems necessary, in order to determine if a variance to the requirements Section 19-13-B51d of the RCSA is warranted. The review of the application and supporting documentation shall be completed within 30-days of receiving a complete application and all associated documentation. If the Commissioner determines the replacement well is not warranted, the application shall be denied. The Commissioner may grant a variance upon finding that:

(1) The existing private water supply well has been rendered non-potable as evidenced by laboratory testing of the water supply or the well no longer produces sufficient potable water for drinking or other domestic use as determined by a reliable

well yield test performed in accordance to the Well Drilling Code; or the proposed replacement well location will be more protective of public health; and

(2) There is no community water supply system available as specified in Section 19-13-B51m of the RCSA; and

(3) The applicant must show the installation of the replacement well will not have a detrimental effect upon the existing sewage disposal system for the property and the proposed well does not diminish the septic repair area.

(4) The Commissioner has made a finding that it is unlikely that the replacement water supply well will become non-potable under existing site conditions and will improve the existing condition.

(i) In order to ensure the integrity of the replacement well and protect the water supply, the Commissioner may require additional safeguards and testing above the requirements of existing regulations and statutes. Such safeguards shall be solely at the discretion of the Commissioner.

(ii) The applicant shall provide a plot plan, certified by a professional engineer or licensed land surveyor, which identifies the location of wells and any sources of pollution on any properties directly adjacent to the property in question or within the sanitary radius of the proposed well. The local Director of Health or his agent shall perform an on-site inspection of the property prior to forwarding the application to the Commissioner. The Commissioner shall take this information into account while evaluating the application.

(iii) The applicant shall notify the owners of any adjacent properties within the sanitary radius of the proposed well by certified mail of the location of the proposed replacement well.

(iv) In the event a variance is granted, the variance shall be noted on the land records, or other means discoverable in a title search, and made available to prospective buyers in the event the property is sold or renters if the property is rented.

(5) All other requirements of the Connecticut General Statutes and the RCSA regarding water supply wells have been met.

(d) Upon granting a variance or denying the application, the Commissioner or his designee shall notify the local Director of Health in writing. The local Director of Health shall notify the applicant of the Commissioners findings within 5-business days after receiving said notification. If the variance is granted, the local Director of Health shall issue a permit for the replacement well within 5-business days of receiving notification by the Commissioner in accordance with Section 19-13-B51m of the RCSA.

INFORMATION RECOMMENDED TO BE SUBMITTED FOR APPLICATION FOR VARIANCE FOR WELL SEPARATING DISTANCES

The applicant should provide the following information concerning the location of proposed well requiring exceptions to PHC 19-13-B51d, to include information on properties directly adjacent to the subject property as necessary.

Ideally, the information will be presented on a “to scale” drawing, as appropriate.

- Lot size, with dimensions of property lines
- Proposed well location
- Location of any other wells on subject or adjacent properties
- Location of any sanitary sewer lines
- Location of any subsurface sewage disposal systems, including reserve areas
- Location of footing drains, including footing drain discharge piping.
- Location of storm water drainage systems, or groundwater control systems
- Location of wetlands and watercourses, including intermittent streams
- Location of nearest public water service, if within 200’ of the subject property line
- Location of in-ground fuel tanks, including propane
- Location of other structures, including pools
- Private conservation or other easements
- Location of any underground utilities (telephone, electrical, gas, etc.)
- 100 year flood elevation, if applicable
- Statement as to anticipated water consumption needs