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September 28, 2017

VIA ELECTRONIC MAIL AND U.S. MAIL

Melanie Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Petition 1224 – Woods Hill Solar, LLC; Potential Issues with Area Wells

Dear Ms. Bachman:

I am writing on behalf of my client, Woods Hill Solar, LLC, in response to your September 18, 2017 letter concerning sedimentation issues that were discovered in several water wells in the area near the Woods Hill Solar Project site. In response to your correspondence, Woods Hill Solar, LLC retained Fusion Engineering, PC to investigate the site and the surrounding wells to ascertain the potential causes of the issue.

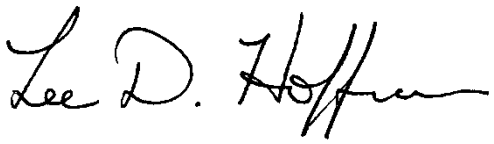
Fusion conducted an inspection of the area on September 21, 2017, and prepared a report of its findings shortly thereafter. An original and fifteen copies of this report are included for the Siting Council's review.

As you can see from the enclosed report, it is the professional conclusion of Fusion that the impacts to the wells that are being complained of are unlikely to have occurred as a result of the activities at the Woods Hill Solar Project. After the Council has reviewed this report, we would be happy to discuss the matter further with the Council, should it so desire.

I trust that the foregoing adequately addresses the Siting Council's inquiry for the time being. Should you have any questions concerning the foregoing, please contact me at your convenience.

I certify that a copy of this letter has been provided to all parties listed below and any parties on the service list for this Petition.

Sincerely,



Lee D. Hoffman
Counsel for Woods Hill Solar, LLC

Enclosure

cc: Christina M. Walsh, Connecticut Siting Council
Honorable Craig Baldwin, First Selectman, Town of Pomfret
Ryan Brais, Zoning Enforcement Officer, Town of Pomfret
Briony Angus, Senior Project Manager, Tighe & Bond

MEMORANDUM

Project Name:	Woods Hill Solar, LLC	**Date:**	2017.9.25
Project Address:	Woods Hill Road, Pomfret, CT		
TO:	Aaron Mlynek Aaron.Mlynek@westwoodps.com; Raymond Selves Raymond.Selves@res-group.com; Jason Thompson Jason.thompson@res-group.com; Scott Morgan Scott.Morgan@res-group.com; Matthew Keown Matthew.Keown@res-group.com Al Jenson Al.Jensen@res-group.com		
FROM:	Jane Smith, PE jane@fusionepc.com Fusion engineering, pc		

At the request of Woods Hill Solar, LLC, Fusion Engineering, PC (Fusion), completed an investigation into complaints received from neighboring properties regarding siltation of their drinking water wells. An inspection was completed with Jason Thompson (RES) on September 21, 2017.

The complaint originated from the homeowner located at 381 Woods Hill Road (Church Street). Two additional addresses of concern were identified as listed below; all three properties are located to the south of the Woods Hill project site (see Attachment 1):

371 Church Street (approx. 0.6 miles South)
356 Church Street (approx. 0.5 miles South)

While the southern portion of the Wood Hill Solar project site has had some clearing completed, the perimeter silt fence is in good condition and there was no visible indication that any sediment breach had occurred. The Church Street properties are of significant distance away, such that a surface impact to the water wells is highly unlikely.

From the Google Earth elevation profile (Attachment 1), it appears the Church Street properties are generally downgradient of the Project Site, however, there is also a low point in the road north of the Church Street addresses, preventing a continuous surface flow from the site.

The private well heads were visible from the road, and appear to be drilled wells rather than dug wells. The condition appeared to be rusted and aged, although this was difficult to determine from a distance (approximately 70 feet from the road). The location of the well between the house and the road is typical of the properties in this area.

RES contacted another adjacent property owner (Keith; whose property borders the south perimeter of Area 10), who indicated that he was not seeing sediment in his water well. Keith also indicated his well is approximately 300-400 feet deep, which is in line with the current state codes for installing private drinking water wells (see Attachment 3 Sec 15-128-39, and Attachment 4).

Depth requirements vary depending on the gallons per minute (gpm) needed for the well. The minimum water column depth is 100 ft (or 75 gallons of storage, whichever is greater) for a well capable of yielding 5 gpm. Typical construction of bedrock drinking water wells includes steel casing from the 6 inches above ground surface to 5 feet into the bedrock, to prevent impact from the overburden material.

Following the site inspection, Fusion also completed an online investigation into the history of the wells installed in the area and the potential aquifer being used. Sources included the Connecticut Department of Energy and Environmental Protection (CTDEEP), the Northeast District Department of Health (NDDH), The Department of Consumer Protection, and Google Earth.

The CT DEEP Surficial Aquifer Potential Map of Connecticut provided some information on the presence of aquifers in the region and their relative thickness, however it does not include depth to the aquifer(s).

The NDDH unfortunately did not have any files in their online water and sewer database for the specific addresses in question. Neighboring properties along Church Street and Woods Hill Road had information primarily regarding sewer installations/connections, and at most included a site sketch that depicted the well location on the lot. It is Fusion's understanding that an in-person request at the Brooklyn, CT office of the NDDH conducted by RES also did not result in any further information on the wells located at Church Street properties.

Conclusions:

Given the distance from the Church Street residences and assuming a typical installation under current well drilling codes, it is Fusion's professional opinion that it is unlikely there is an impact to the private wells due to the Project activities. Additional information on the well construction and the local aquifer would allow for a definitive determination.

Attachments:

1. Church Street Elevation Profile
2. 371 & 356 Church Street Aerial (showing well location)
3. CT Regulation of the Department of Consumer Protection Concerning Well Drilling and Geoexchange Systems
4. CT Department of Public Health Well Siting, Construction, and Permitting Requirements
5. Assessors Cards for 371 & 356 Church Street

References:

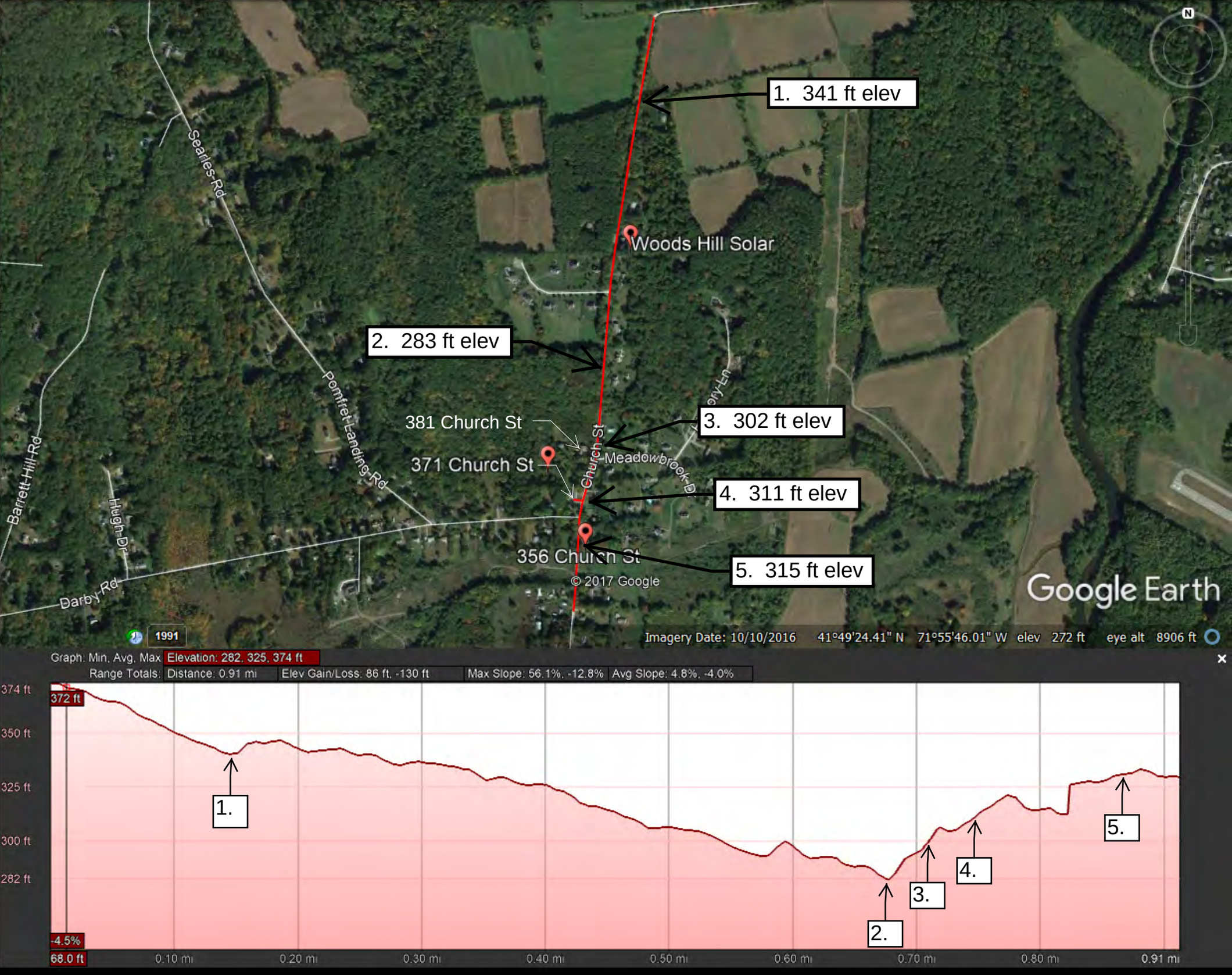
CT Department of Public Health
http://www.ct.gov/dph/cwp/view.asp?a=3140&q=400544&dphNav_GID=1828&dphPNavCtr=|#48151

CT General Statues Chapter 482: Well Drilling
https://www.cga.ct.gov/current/pub/Chap_482.htm

Department of Consumer Protection, Description of Organization, Rules of Practice, and Regulations for the Well Drilling Industry §§ 25-128-1—25-128-64
https://eregulations.ct.gov/eRegsPortal/Browse/RCSA/%7B5A0198CF-C041-4299-B189-A2C1E4B10A39%7D

The Public Health Code of the State of Connecticut Title 19-13-B51
http://www.sots.ct.gov/sots/lib/sots/regulations/title_19/013b.pdf

CT DEEP Surficial Aquifer Potential Map of Connecticut
http://www.ct.gov/deep/cwp/view.asp?a=2701&Q=431436&deepNav_GID=1641


1. 341 ft elev
Woods Hill Solar
2. 283 ft elev
381 Church St
3. 302 ft elev
371 Church St
Church St
Meadowbrook Dr
4. 311 ft elev
356 Church St
5. 315 ft elev
© 2017 Google
Google Earth
Searles Rd
Pomfret Landing Rd
Barrett Hill Rd
Hugh Dr
Darby Rd
1991
Imagery Date: 10/10/2016 41°49'24.41" N 71°55'46.01" W elev 272 ft eye alt 8906 ft

Graph: Min, Avg, Max Elevation: 282, 325, 374 ft
Range Totals: Distance: 0.91 mi Elev Gain/Loss: 86 ft, -130 ft Max Slope: 56.1%, -12.8% Avg Slope: 4.8%, -4.0%
374 ft
350 ft
325 ft
300 ft
282 ft
372 ft
-4.5%
68.0 ft
1.
2.
3.
4.
5.
0.10 mi
0.20 mi
0.30 mi
0.40 mi
0.50 mi
0.60 mi
0.70 mi
0.80 mi
0.91 mi


371 Church St
Church St
Meadowbrook Dr
Well Head
381 Church St
Approx. 74ft
to road
Darby Rd
356 Church St
N
Google Earth
500 ft

S TATE OF CONNECTICUT
REGULATION
of the
DEPARTMENT OF CONSUMER PROTECTION
(NAME OF AGENCY)

concerning

WELL DRILLING AND GEOEXCHANGE SYSTEMS
(SUBJECT MATTER OF REGULATION)

[Description of Organization, Rules of Practice,]
Industry Standards of Practice, Registration Requirements, and
Regulations for [the] Well Drilling [Industry] and Geoexchange Systems

Section 1. Section 25-128-33 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 25-128-33. Title of regulations

These regulations, together with the [regulatory] provisions of [Chapter] chapter 482 of the General Statutes, and [the section] sections 19-13-B51a through 19-13-51Bm, inclusive of the [Public Health Code] Regulations of Connecticut State Agencies, relating to water supply wells, shall be collectively known as the Connecticut Well Drilling Code.

Sec. 2. Section 25-128-34 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 25-128-34. Purpose of regulations

The purpose of the regulations shall be to govern the construction, repair, development, and abandonment of wells and geoexchange bore holes, in order to safeguard the public health, [and] to provide an adequate supply of clean and uncontaminated water for all persons in the state of Connecticut [.], and to provide for the safe and efficient use of the heating and cooling properties of the earth.

Sec. 3. Section 25-128-35 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 25-128-35. Scope of regulations

(a) Well [Contractors and Drillers] drilling contractors and registered drillers. The regulations shall apply to any person who engages in the industry, procedures, or operation, full time or part-time, for compensation or otherwise, of obtaining water from a well or wells by drilling[,] or other methods [.], or of drilling geoexchange bore holes. A well drilling contractor is any person regularly offering to the general public [the] their own personal services [of his] or the services of any employees [or himself] in the industry of obtaining water from a well for any purpose or use [.], or in the industry of drilling geoexchange bore holes.

(b) Abandoned wells or geoexchange bore holes. The regulations shall apply to any person who abandons and permanently discontinues the use of a well or geoexchange bore hole, or to any person who is responsible by law for the abandonment of a well or geoexchange bore hole except as provided by [Section] section 25-134 of the General Statutes.

(c) Special exception for farmers. The regulations shall not require a person who constructs a well on [his own or leased] property owned or leased by said person, intended for use only for farming purposes on [his] said person's farm, to obtain a certificate of registration or a permit, as provided by Section 25-132 of the General Statutes. A completion report shall be filed pursuant to sections 25-128-62a or 25-128-62b, as appropriate, of the Regulations of Connecticut State Agencies.

(d) Well development. The regulations shall apply to any person who performs work on a well for the purpose of increasing the yield of a well or otherwise improving the quality or quantity of water that might be obtained from the well.

(e) Non water-supply wells. Pursuant to [Section] section 25-133 of the General Statutes, non water-supply wells are exempt from these regulations except for sections 25-128-35, 25-128-58b, and 25-128-60b. Non water-supply wells shall be constructed according to [the public health code] sections 19-13-B51a through 19-13-B51m, inclusive, of the Regulations of Connecticut State Agencies, and any and all municipal ordinances. [For the purposes of these regulations the term "non water-supply well" includes peizometers, containment recovery wells, and monitor wells.]

(f) Machine or Equipment operators. An exemption from the registration requirements set forth in Section 25-129 is provided for the operating of a drilling device or excavating machine to a depth not greater than one hundred (100) feet below the frost line of a well or the point of geoexchange bore hole termination by an appropriately qualified machine or equipment operator subordinate. Said exemption is limited to the artificial excavation of the ground for a non-water supply well or for geoexchange system work, for the purposes of and to safely remove and or replace ground material within trenches or bore holes, provided such person has been delegated the task by and is under the direct supervision and within sight of a person registered for such work, and does not, in any way, implicate a safety concern.

Sec. 4. Section 25-128-36 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 25-128-36. Definitions

(a) Unless expressly stated otherwise, the following terms shall, for the purpose of the Connecticut Well Drilling Code and any permit or completion report filed pursuant to said Code, have the meanings indicated in this section.

(b) Words used in the present tense include the future; words used in the masculine gender include the feminine and neuter; the singular number includes the plural and the singular.

(c) Where the terms are not defined in this section or in [Section] section 25-126 of the General Statutes, they shall have their ordinarily accepted meanings or such as the context may imply.

(1) Access port: A suitable opening into the well to allow measurement of water level.

(2) Annular space: The space between two objects, one of which is surrounded by the other. This includes the space between the wall of an excavation and the wall of a pit; between the wall of an excavation and the casing or piping of a well or geoexchange bore hole; or between two casings.

(3) ANSI or American National Standards Institute: Nonprofit member organization originally founded in 1918 as the American Engineering Standards Committee, whose mission is the establishment and promotion of voluntary business and technical standards.

[(3)] (4) Aquifer: A water bearing [earth material] strata which can transmit water in significant quantity. It can be either consolidated rock, such as [ledge rock] bedrock, or unconsolidated material, such as sand, gravel, or soil with boulders.

[(5) Bentonite clay grout: A mixture of bentonite clay and water with not less than two pounds of bentonite clay for every gallon of water.]

[(4)] (5) Artesian well: A well in which static water level rises above the top of the aquifer. The aquifer is confined by an impermeable geologic formation overlying the aquifer.

(6) ASTM or American Society for Testing and Materials: the voluntary standards development organization founded in 1898.

[(6)] (7) Board: The State Plumbing and Piping Work Examining Board.

[(7)] (8) Casing: A pipe placed in a well or geoexchange bore hole to prevent the walls from caving, or to seal off surface drainage and other contaminants, so that they cannot enter the well or bore hole.

(9) Closed-loop geoexchange fluid: The heat transfer fluid circulating within the piping and associated components of a closed-loop geoexchange system. These fluids serve to transfer energy between the earth or water surrounding the piping and the heat exchange components of the geoexchange system. Fluids that have been approved for use by the Department are set forth in section 25-128-39b of these regulations, and include specific liquids, gases, and refrigerants which change their physical state upon circulation through the geothermal piping.

(10) Closed-loop geoexchange system: A heat exchange system consisting of piping buried or placed in a geoexchange bore hole, trench, or pond. These self-contained systems, having no interchange with groundwater, are intended to transfer energy between the earth or water surrounding the piping and the geoexchange fluid circulating within the piping. These systems include Direct Exchange or Direct Expansion systems which employ a refrigerant heat transfer fluid that changes its physical state between liquid, vapor and gas as the fluid circulates through the geoexchange piping.

[(8)] (11) Construction of well: All acts necessary to construct or repair wells for any intended purpose of use, including the location and excavation of the well, placement of casings, screens, and fittings, and well development and testing.

[(9)] (12) Contamination: The act of introducing into water, foreign materials of such nature, quality, and quantity as to cause degradation of the quality of the water in a bore hole or surrounding aquifer.

[(10)] (13) Disinfection: The inactivation of harmful organisms present in water, through use of an accepted chlorine solution or other accepted disinfection material or procedure.

[(11)] (14) Drawdown: The extent of lowering of the water table or piezometric surface within or adjacent to the well, resulting from the discharge of water from the well. Draw down is measured between the static water level and the pumping water level. The quantity of water available in the well from the static water level to the pump intake is known as the draw down available.

[(12)] (15) Established ground surface: The permanent elevation of the surface of the ground at the site of the well after completion of grading, excavation; or other land movements.

(16) Geoexchange bore hole: Bore holes used solely for the purpose of heat transfer which are fitted with closed-loop heat exchange piping per section 25-128-39b of the Regulations of Connecticut State Agencies.

(17) Geoexchange system: A closed-loop or open-loop heat exchange system used for the purpose of heating or cooling by utilizing the relatively constant temperature of the earth as a heat source or heat sink.

(18) GPS or Global Positioning System: A location-finding method whereby user-operated receivers determine their position by communicating with satellites. The United States Department of Defense developed this system, officially known as "Navigation Satellite Timing and Ranging Global Positioning System."

[(13)] (19) Ground water: Water encountered below the ground surface of the earth within the zone of saturation that can supply wells and springs.

[(14)] (20) Grout or grouting material: A low permeability material placed in the annular space between the casing and the formation or within the [borehole] bore hole which is at least as impermeable as the soil formation. The purpose of the grout is to resist the migration of pollutants into the annular space.

(21) IGSHPA or International Ground Source Heat Pump Association: A non-profit organization founded in 1987 in the state of Oklahoma and dedicated to advancing the technology of ground source heat pumps and promoting their use.

[(15) Cement grouts: A mixture of Portland cement, sand, and water. The mixture is usually composed of one bag of Portland cement weighing ninety-four (94) pounds, an equal volume of dry sand, and five to six gallons of water.

(A) Neat cement grout: A mixture of not more than six gallons of clear water to one bag of Portland cement.

(B) Sand cement grout: A mixture of not more than two parts sand to one part Portland cement, and not more than six gallons of clear water to each bag of cement.

(C) Concrete grout: A mixture of Portland cement, sand, gravel and water.

(D) Bentonite grout: mined processed bentonite clay.

(E) Bentonite cement grout: A mixture of cement grout or sand cement grout with approximately ten per cent (10%) bentonite added to reduce shrinkage.

(F) Natural grout: A mixture of water and natural materials excavated during drilling of the well. The materials shall be placed by whatever techniques are effective for the existing conditions to achieve maximum density, strength, and impermeability of the fill material.

(G) Sand clay grout: A mixture of bentonite clay and sand in equal proportions.]

[(16)] (22) Flowing artesian well: A well in which the static water level is higher than the top of the casing and water flows from the well.

[(17)] (23) Installation of pumps and pumping equipment: The procedure employed in the placement and preparation for operation of pumps and pumping equipment, including all construction involved in making entrances to the well and to the building, establishing seals, installing pump piping, valves, wiring, electrical controls and tanks.

[(18)] (24) Liner pipe: Pipe that is installed inside a completed and cased well for the purpose of sealing off undesirable water or for repairing ruptured or punctured casing or screens. The liner pipe and screens may be constructed of PVC schedule forty (40) plastic.

(25) Non water-supply well: A well not constructed for the purpose of obtaining or providing water for drinking or other domestic, industrial, commercial, agricultural, irrigation or recreational use. Types of non water-supply wells include the following: Peizometers, containment recovery wells, aquifer remediation wells, and monitor wells which may be constructed for the purpose of aquifer testing or monitoring, ground contamination testing, obtaining samples of ground water quality and/or measuring ground water level.

(26) NSF or NSF International: A non-profit organization founded in 1944 as the National Sanitarian Foundation whose mission is, in part, to develop standards and product certifications to promote public health and safety and to protect the environment.

[(19)] (27) Owner: Any person or [his] such person's agent who holds the title or other rights of property where a well or geoexchange bore hole is constructed, repaired, or abandoned.

[(20)] (28) Potable water: Water free from impurities in amounts sufficient to cause disease or other harmful physiological effects, with the minimum or maximum bacteriological, physical, and chemical composition as defined by the applicable laws and regulations of the Department of Public Health [Services].

(29) Private Water Supply Well: A non-public water system well used to supply a private water supply system as per section 19-13-B101(a) of the Regulations of the Connecticut State Agencies.

(30) Public Water System Well: a water supply well used by a public water system, as defined in section 19-13-B102(a) of the Regulations of Connecticut State Agencies, for the existing or potential purpose of providing public drinking water.

(31) Pump and discharge geoexchange system: A type of open-loop geoexchange system where ground water from an aquifer is pumped directly from a water well to a building, where it transfers its heat energy to a heat pump. After leaving the building, the water is discharged to a permitted discharge point.

(32) Pump and recharge geoexchange system: A type of open-loop geoexchange system where ground water from an aquifer is piped directly from a water well to a building, where it transfers its heat energy to a heat pump. The water is then pumped back into the same aquifer's specific zone of influence via a second discharge or diffusion well.

[(21)] (33) Repair: Any work involved in the reaming, sealing, installing, changing of casing [depths] depth or height, perforating, screening, cleaning, disinfecting, [acidizing] acid washing, surging, [hydrofracting] hydrofracturing or other redevelopment of a well.

[(22)] (34) Specific capacity: The yield of a well expressed in gallons per minute per foot of drawdown, as abbreviated "gpm/ft."

(35) Standing column wells: A type of open-loop geoexchange system where temperate water from the bottom of the well is withdrawn, circulated through a heat pump exchanger and returned to the top of the water column in the same well. Also known as "turbulent wells."

[(23)] (36) Static water level: The depth to the surface of the water in a well measured from the land surface or other convenient, permanent, and specified datum, when no water is being discharged from the well and the water level has reached equilibrium.

[(24)] (37) Water well: [An artificial excavation or opening in the ground, by which ground water can be obtained or through which it flows under natural pressure or is artificially withdrawn.] A water supply well constructed for the purpose of obtaining or providing water for drinking or other domestic, industrial, commercial, agricultural, irrigation or recreational use, including open-loop geoexchange bore holes. Common types of water wells include the following:

(a) [Well bored or augered] Bored or augured well: Any excavation made for water, or in exploration for water, using power driven equipment, where the drill consists of a continuous spiral of metal or a hollow cylinder or bucket attached to a shaft, and where the excavated material is brought to the ground service by upward movement along the surface of the spiral or removed by the bucket.

[(b) Well gravel: A well constructed into unconsolidated material. In the zone immediately surrounding the well screen more permeability is obtained by hydraulic action or by removing the finer formation material and replacing it with artificially graded coarser material.]

[(c) Well drilled rock] (b) Drilled rock well: A well drilled into consolidated rock in which that portion of the well drilled into the overlying unconsolidated material is supported by a casing.

[(d) Well dug] (c) Dug well: A well excavated into a shallow aquifer.

(d) Gravel well: A well constructed into unconsolidated material. In the zone immediately surrounding the well screen more permeability is obtained by hydraulic action or by removing the finer formation material and replacing it with artificially graded coarser material.

[(e) Well monitor: A well constructed for the purpose of aquifer testing, obtaining samples of ground water quality and/or measurement of ground water level.]

[(25)] (38) Well-seal: An approved arrangement or device used to cap a well or to establish and maintain a junction between the casing or curbing of a well and the pipe or equipment installed therein, the purpose or function of which is to prevent contaminants from entering a well at the upper terminal.

(39) Well abandonment: Actions taken to ensure that a well which is no longer in use shall not be a source or conduit for contamination of ground water resources.

(40) Well contractor: A person regularly offering to the general public the personal services of said contractor or the services of said contractor's employees in the industry of obtaining water from a well for any purpose or use.

(41) Well hydrofracturing: A method of well development used to improve the specific capacity of new or existing drilled wells. Certain zones within the well are pressurized in excess of one hundred (100) pounds per square inch ("psi") with water in an effort to force open fractures in the bedrock.

[(26)] (42) Well vent: An outlet at the upper terminal of a well casing to allow equalization of air pressure in a well but at the same time so constructed as to avoid entry of water and foreign material into the well.

[(27)] (43) Well yield: The quantity of water per unit of time which may flow or be pumped continuously from a well [.], commonly expressed in gallons per minute, abbreviated "gal/min."

[(28) Well hydro fracturing: A method of well development used to improve the specific capacity of new or existing drilled wells. Certain zones within the well are pressurized in excess of one hundred (100) psi with water in an effort to force open fractures in the bedrock.

(29) Well abandonment: Actions taken to ensure that a well which is no longer in use shall not be a source or conduit for contamination of ground water resources.

(30) Well contractor: A well drilling contractor is any person regularly offering to the general public the services of his employees or himself in the industry of obtaining water from a well for any purpose or use.

(31) Master well driller: A master well driller is any person experienced and skilled in the industry of obtaining water from a well for any purpose or use.]

Sec. 5. Section 25-128-37 of the Regulations of Connecticut State Agencies is amended as follows:

Sec. 25-128-37. Manner of construction

The construction of any well or geoexchange bore hole shall be planned and carried out in a manner to guard against waste and contamination of ground water resources.

Sec. 6. Section 25-128-38 of the Regulations of Connecticut State Agencies is amended as follows:

Sec. 25-128-38. Application of public health [code] regulations

The regulations for the construction of wells, as provided herein, shall be construed in a manner consistent with the provisions of [Sections 19-13-B51] sections 19-13-B50 to 19-13-B51m, inclusive, of the [Public Health Code] Regulations of Connecticut State Agencies. In the event any conflict shall appear, the interpretation of the regulations shall be made which affords the greater protection of the public health.

Sec. 7. Section 25-128-39 of the Regulations of Connecticut State Agencies is amended as follows:

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

[Wells] (a) All new water 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] 1. 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] 2. 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] 3. Three 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] 4. 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] 5. 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[,] or has a water column depth of four hundred fifty (450) feet, whichever is greater.

[(f)] (b) [storage] Storage may be provided using [combinations] any combination of hydropneumatic tanks [and/or] and non-pressurized tanks with booster pumps.

[(g)] (c) [wells] 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] 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.

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

Sec. 8. The Regulations of Connecticut State Agencies are amended by adding sections 25-128-39a, 25-128-39b, and 25-128-39c as follows:

NEW
Sec. 25-128-39a. Geoexchange bore holes

Geoexchange bore holes shall be a minimum of four (4) times the Inside Diameter (“ID”) of the largest individual loop pipe employed in the geoexchange system to allow for the proper installation of piping and grout.

NEW
Sec. 25-128-39b. Closed-loop geoexchange system fluid

(a) Closed-loop geoexchange system fluids permitted for use in closed-loop geoexchange systems include:

1. The refrigerants commonly referred to as R-134A, R-407C, and R-410A;

2. Potable water;

3. Heat transfer fluids containing potable water combined with a maximum of twenty (20) percent food grade proplylene glycol or potassium acetate; and

4. Other geoexchange system fluids or additives approved by the Department of Consumer Protection in consultation with the Department of Public Health.

(b) All chemicals used or added to potable water circulating through a closed-loop geoexchange system shall meet NSF/ANSI Standards Sixty (60) or Sixty One (61), be generally recognized as a direct food additive, or be approved by the Department of Consumer Protection in consultation with the Department of Public Health and the Department of Environmental Protection.

NEW
Sec. 25-128-39c. Closed-loop geoexchange system piping

(a) The only acceptable materials for the underground portion of a closed-loop geoexchange system are as follows:

1. Copper, provided that a cathodic protection system be employed where soil conditions, such as abnormally high acidity, are judged by the registered contractor, or the local or state authority having jurisdiction over soil conditions, to be beneficial to the longevity of such copper;

2. High density, polyethylene extrusion compound having a cell classification of PE 345434c or PE 355434c with an Ultraviolet ("UV") Stabilizer of C, D or E as specified in ASTM D-3350 with the following exception: This material shall exhibit zero (0) failures when tested for one hundred ninety two (192) hours or more under ASTM D-1693, Condition C, as required in ASTM D-3350. This material shall maintain a one hundred sixty (160) pounds per square inch ("psi") hydrostatic design basis at 73.4 degrees Fahrenheit per ASTM D-2837, and shall be listed in PPI TR4 as a PE 3408 piping formulation; and

3. Those materials approved by the Department of Consumer Protection in consultation with the Department of Public Health and the Department of Environmental Protection.

(b) The only acceptable methods for joining sections of buried geoexchange piping are as follows:

1. For copper piping assemblies, by the use of brazed joints;

2. For polyethylene piping assemblies, by use of the heat fusion process in accordance with the pipe manufacturer's specifications, or by use of mechanical stab fittings approved by the IGSHPA; and

3. For piping made of materials approved pursuant subsection (a)(3) of Section 25-128-39c of the Regulations of Connecticut State Agencies, by the use of those methods approved by the Department of Consumer Protection in consultation with the Department of Public Health and the Department of Environmental Protection.

(c) All geoexchange systems shall be pressure tested with water, air, or an inert gas to a minimum of one hundred fifty (150) percent above the heat pump manufacturer's operating specifications for a minimum period of thirty (30) minutes before being put into service. Any system found to leak shall be repaired or replaced and then retested before being put into service.

Sec. 9. Section 25-128-40 of the Regulations of Connecticut State Agencies is amended as follows:

Sec. 25-128-40. Pumps and pumping equipment

(a) Pumps and pumping equipment shall be installed in the well to make the most efficient use of well storage.

(b) Pumps and pumping equipment shall be located to permit convenient access for inspection, maintenance and repair.

(c) In the event the base plate of a pump is placed directly over the well, the base plate shall be of a type designed to form a watertight seal with the well casing or pump foundation, as provided by Section 19-13-B51j of the [Public Health Code] Regulations of Connecticut State Agencies.

(d) The well shall be properly vented at the well head to allow for pressure changes within the well.

(e) The electrical wiring used in connection with the pump shall conform to specifications of the State Basic Building Code.

(f) Contaminated water shall not be used for the purpose of priming any pump.

(g) Any connection between a geoexchange system and a domestic water supply shall include a reduced pressure backflow preventer.

Sec. 10. Section 25-128-41 of the Regulations of Connecticut State Agencies is amended as follows:

Sec. 25-128-41. Location and protection of wells

The location of any well upon premises shall be subject to approval by the local health officer of the municipality in which the said premises are located, and shall be as provided by [Section 19-13c] section 19a-39 of the General Statutes, and by [Sections 19-13-B50] sections 19-13-B51a to 19-13-B51m, inclusive, of the [Public Health Code] Regulations of Connecticut State Agencies.

Sec. 11. The Regulations of Connecticut State Agencies are amended by adding section 25-128-41a as follows:

NEW
Sec. 25-128-41a. Location of geoexchange bore holes

(a) Closed-loop geoexchange bore holes shall have the following minimum separation distances:

25 feet from a subsurface sewage disposal system, septic tank, grease interceptor tank or pump chamber that is shown to be watertight per the Department of Public Health publication *Technical Standards for Subsurface Sewage Disposal Systems*.
50 feet from a subsurface sewage disposal leaching system or other source of pollution such as a septic tank, pump chamber, grease interceptor tank (except those found to be watertight per the publication *Technical Standards for Subsurface Sewage Disposal Systems)*, sewer mains of a non-verifiable tight connection, or structures, tanks, or other containers of hazardous substances located below ground, including fuel tanks.
10 feet from a building sewer, sewer lateral, or sewer main that are constructed of extra heavy cast iron pipe or equal approved type of tight joint.
10 feet from high water mark of any body of water, a drain carrying surface water, or from a foundation drain, unless the geoexchange piping is directly placed within a body of water.
25 feet from a private water supply well or other non-public water system well with a withdrawal rate of less than 10 gal/min.
50 feet from private water supply well or other non-public water system well with a withdrawal rate of greater than 10 gal/min.
25 feet from a public water system well with a withdrawal rate less than 10 gal/min.
50 feet from a public water system well with a withdrawal rate greater than 10 but less than 50 gal/min.
200 feet from a public water system well with a withdrawal rate greater than 50 gal/min.

(b) Open-loop geoexchange systems that make use of potable water shall meet the requirements of water wells pursuant to sections 19-13-B50 through 19-13-B51m, inclusive of the Regulations of Connecticut State Agencies. Open-loop geoexchange systems that make use of non-potable water shall meet the requirements established by the Department of Public Health.

(c) Any underground piping connecting the piping located in a geoexchange bore hole to a structure must maintain the separation distances for a utility service trench as specified in the publication *Technical Standards for Subsurface Sewage Disposal Systems*, published by the Department of Public Health. Additionally, any excavation between five (5) and twenty five (25) feet from a subsurface sewage disposal septic system shall not be backfilled with free draining material.

(d) All distances in this section shall be measured horizontally, but geoexchange bore holes placed in the ground at an angle other than ninety degrees from the surface shall maintain the minimum separation distances when measured from any point along the borehole.

Sec. 12. Section 25-128-41 of the Regulations of Connecticut State Agencies is amended as follows:

Sec. 25-128-42. Drilling[, general] <u>of water wells</u>

(a) [The well] <u>Water wells</u> shall be so constructed that a pump of capacity equal to the desired yield can be installed and operated for different yields.

(b) Any water used shall be disinfected or of drinking water quality.

(c) Any chemicals or other additives used in drilling shall be cleaned out from the well.

(d) Rock cuttings shall be cleaned out of the well.

(e) The well shall be tested as provided by [Section 19-13-B51] <u>section 19-13-B51l</u> of the [Public Health Code] <u>Regulations of Connecticut State Agencies</u>.

[(f) The well driller shall prepare and maintain a log on forms supplied by the Board, and shall submit copies of the log to the Board and to the owner or owners of the well, respectively. The log shall clearly identify the location of the well upon the premises.]

[(g)] <u>(f)</u> Well development shall be performed only by properly registered persons.

[(h)] (g) Subcontracted work shall be performed only by properly registered persons.

[(i)] (h) No solder containing more than 0.2 per cent lead shall be used in making joints and fittings in any public or private potable water supply system or any water user's pipelines.

Sec. 13. Section 25-128-48a of the Regulations of Connecticut State Agencies is amended by adding subsections (c) through (g) as follows:

Sec. 25-128-48a. Annular space

(a) Any annular space between the outside of the piping or casing and the natural materials penetrated by [the] a well or geoexchange bore hole shall be filled with suitable material to make this space as impervious to the movement of fluids and competent to support the piping or casing as are the natural materials surrounding the well or geoexchange bore hole. The driller may fill the annular space with the natural materials excavated during the drilling of the well or geoexchange bore hole to meet the following requirements:

(1) the annular space shall be fitted as completely as possible from the bottom of the casing to the land surface without any depressions, voids, holes or channels;

(2) the driller shall employ whatever techniques are effective for the existing conditions to achieve maximum density, strength and impermeability of the fill material; and

(3) the surface of the fill material shall be sloped away from the casing.

(b) In [cases] locations where potentially contaminating or corrosive fluids are encountered, or impermeable natural materials cannot be adequately placed and compacted to where geologic conditions or the isolation distance may not be adequate, the annular space shall be grouted for the full length of the casing, or the portion thereof below the frost line or pitless adaptor, so that no fluids may move in the zone needing to be grouted.

(c) Common types of grout or grouting materials used in the process of well drilling or in the abandonment of wells and geoexchange bore holes include the following:

1. Bentonite cement grout: A mixture of cement grout or sand cement grout with a minimum of ten per cent (10%) bentonite added to reduce shrinkage.

2. Bentonite clay grout: A mixture of mined, processed bentonite clay and water with not less than two pounds of bentonite clay for every gallon of water.

3. Cement grouts: A mixture of Portland cement, sand, and water. The mixture is commonly composed of one bag of Portland cement weighing ninety-four (94) pounds, an equal volume of dry sand, and five to six gallons of water.

4. Concrete grout: A mixture of Portland cement, sand, gravel and water.

5. Natural grout: A mixture of water and natural materials excavated during drilling of a well. The materials shall be placed by whatever techniques are effective for the existing conditions to achieve maximum density, strength, and impermeability of the fill material.

6. Neat cement grout: A mixture of not more than six (6) gallons of clear water to one (1) bag of Portland cement weighing ninety-four (94) pounds.

7. Sand cement grout: A mixture of not more than two (2) parts sand to one (1) part Portland cement, and not more than six (6) gallons of clear water to each ninety-four (94) pound bag of Portland cement.

8. Sand clay grout: A mixture of bentonite clay and sand in equal proportions, and clear water.

(d) Salt water resistant grouts shall be used where appropriate. Any additives to the grout other than silica sand and water shall meet NSF/ANSI Standard Sixty (60).

(e) All closed-loop geoexchange bore holes, upon installation of loop piping, are to be grouted with one of the following grouting materials:

1. Grout 111, as developed by Brookhaven National Laboratories for use with copper piping typically employed in a Direct Exchange geothermal system, or an equivalent material;

2. High grade bentonite or thermally enhanced bentonite compounds containing a minimum of twenty percent (20%) by weight of bentonite, with a maximum coefficient of permeability of 10^{-7} cm/s; or

3. Other grouting materials approved by the Department of Consumer Protection in consultation with the Department of Public Health.

(f) Grouts are to be mixed and installed in accordance with the manufacturer's specifications. Grouts may be used whether consolidated or unconsolidated formations are encountered. All closed-loop geoexchange system bore holes shall be grouted within seven days of the completion of drilling. After installation of piping, the bore hole shall be covered with a protective layer of grout at least one (1) foot thick and three feet in diameter, centered over the bore hole. Detectable underground tape shall be installed above all bore hole locations.

(g) All closed-loop geoexchange system bore holes shall be filled using the tremie method. The entire bore hole shall be filled with grout beginning at the bottom of the bore hole. The tremie employed shall be properly sized for the type of grout used, the ground conditions encountered, and the type of loop system installed. For boreholes that do not employ casing, a minimum three and one half (3.5) inch diameter bore hole shall be drilled. For bore holes that employ casing, the bore hole shall have a minimum diameter of four (4) inches. Drilling mud and cuttings shall not be mixed into the bore hole.

Sec. 14. Section 25-128-49 of the Regulations of Connecticut State Agencies is amended as follows:

25-128-49. Well head completion and equipment

The completion of the well head and the equipment used shall be as follows:

(a) The top of the casing shall be cut off reasonably smooth and level.

(b) In the event the well head is enclosed, the enclosure shall be adequately drained. In the event a well pit is used, it shall be drained in the manner provided by [Section 19-13-B51] section 19-13-B51i of the [Public Health Code] Regulations of Connecticut State Agencies.

(c) All water piping shall be protected against freezing.

(d) The well shall be equipped with a tightly fixed vented cap or a sanitary seal with an access port for ventilation. The access port shall have a minimum, inside diameter of one quarter (1/4) inch. It shall be installed and maintained in such a manner as to prevent the entrance of water, dust, insects, or other foreign material, and to permit ready access for the purpose of water level measurement.

Sec. 15. The Regulations of Connecticut State Agencies are amended by adding section 25-128-49(a) as follows:

NEW
25-128-49a. Geoexchange bore hole termination

Geoexchange bore holes shall be terminated a minimum of four (4) feet below the proposed finished grade and shall be fed to the point of termination, except that bore holes terminating in a structure shall be terminated flush with the finished floor. Casing, if used during bore hole drilling, shall be capped from the time of installation until the installation of the Geoexchange system piping. As the bore hole is being grouted, the casing may be withdrawn.

Sec. 16. Section 25-128-51 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 25-128-51. Tests of yield

All new and repaired water supply wells shall be tested for yield and capacity, as provided by [Section 19-13-B51 K (b)] section 19-13-B51k(b) of the [Public Health Code] Regulations of Connecticut State Agencies, and all static and pumping water levels and well discharge shall be measured and recorded, with the pumping rate held constant. The test shall be made by one of the following methods: the pump method, the bailer-recovery method, the air rotary drill method, or the air lift method. For wells serving a single family the well may be tested for yield by removing as much water as is practicable from the well and measuring the rate of recovery. Geoexchange bore holes for closed-loop geoexchange systems shall not be yield tested.

Sec. 17. Section 25-128-52 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 25-128-52. Disinfection of wells

All wells serviced, repaired, or newly drilled shall be disinfected by chlorination as provided by [19-13-B51 K (c)] section 19-13-B51k(c) of the [Public Health Code] Regulations of Connecticut State Agencies.

Sec. 18. Section 25-128-53 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 25-128-53. Construction of non-water supply wells and geoexchange bore holes

All wells used for other purposes than the supply of water for human consumption, and all geoexchange bore holes, shall be constructed, repaired, and maintained in such a manner that they are not a source or cause of ground water contamination.

Sec. 19. Section 25-128-54 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 25-128-54. Maintenance and repair of wells, geoexchange bore holes and pumping equipment

All wells and geoexchange bore holes shall be maintained in a proper condition to conserve and protect ground water resources, and shall not be a source or cause of contamination or pollution of the water supply of any aquifer. All materials and construction practices used in the maintenance, repair, or replacement of any well shall be the same as those required for the construction of a new well or geoexchange bore hole. All maintenance, repair, hydrofracturing, developing, and replacement work shall be done only by a [registered well driller] person holding the appropriate registration issued by the Department pursuant to section 25-129 of the General Statutes, or by a licensed plumber or electrician acting within the scope of the person's license, as provided by [Section] section 25-129(d) of the General Statutes[, and Articles 5 and 6 of the regulations].

Sec. 20. Section 25-128-55 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 25-128-55. Promulgation of construction standards

The regulations for the construction, maintenance, and repair of wells and geoexchange bore holes, as provided herein shall be promulgated in cooperation with the [State] Department of Public Health [Services] and the Department of Environmental Protection.

Sec. 21. The Regulations of Connecticut State Agencies are amended by adding Section 25-128-57a as follows:

NEW

Sec. 25-128-57a. Abandonment of geoexchange systems

When decommissioning a geoexchange system, closed-loop geothermal fluid shall be displaced with bentonite grout or a substance approved by the Department of Consumer Protection in consultation with the Department of Public Health and the Department of Environmental Protection, or otherwise be evacuated from the geoexchange system by a process approved by the Department of Consumer Protection. After displacement or evacuation of the fluid, the bore hole and excavation shall be filled and covered with grout to provide a cap at least twelve (12) inches thick over the bore hole. All fluids or gases shall be contained and properly disposed of.

Sec. 22. Sections 25-128-58a through 25-125-62 of the Regulations of Connecticut State Agencies are hereby repealed.

Sec. 23. The Regulations of Connecticut State Agencies are amended by adding section 25-128-62a as follows:

NEW
Sec. 25-128-62a. Well Completion Report

A contractor shall, within 60 days of completion, file a Well Completion Report Form in a format acceptable to the Commissioner of Consumer Protection. Copies of said form shall be concurrently submitted to the owner, the Department of Consumer Protection, the Department of Environmental Protection, and the local health department or district.

Sec. 24. The Regulations of Connecticut State Agencies are amended by adding section 25-128-62b as follows:

NEW
Sec. 25-128-62b. Geoexchange System Completion Report

A registered well contractor shall, within 60 days of completion, file a Geoexchange System Completion Report Form in a format acceptable to the Commissioner of Consumer Protection. Copies of such form shall be concurrently submitted to the owner, the Department of Consumer Protection, the Department of Environmental Protection, and the local health department or district. Said report shall include the following:

Name of the contractor; address; registration number; type of work completed, i.e. drill bore holes, install and grout loops, bore hole abandonment.

System Location:
Town; driller map number; GPS coordinates; latitude and longitude; address; zip code; nearest two cross streets.

System Owner:
Name; company name; address; city; state; zip code; telephone number.

Bore Hole Specifications:
Date first bore hole drilled; date last bore hole drilled; total number of bore holes drilled; total number of bore holes used in system; diameter of bore holes; depth of bore holes in feet; spacing intervals of bore holes in feet; average depth to bedrock in feet; average depth of bedrock in feet; geologic materials and thickness of materials penetrated; amount and type of casing, if any; static water levels.

Loop Field Installation:
Installer name; registration number; piping loop material used; number of loops installed; depth of closed loop in feet; date last loop installed; date bore hole grouted; type of grout used; average number of bags to grout each loop; pounds per bag of grout; cubic feet of grout used for each bore hole.

The type and volume of closed-loop geothermal fluid to be used in closed loops shall be denoted, and the form shall provide for a confirmation that detectable underground tape has been installed above the bore hole location.

Attached to each form shall be a diagram prepared or approved by the contractor showing major buildings, septic systems, and water supply wells on site.

Sec. 25. Section 25-128-64 of the Regulations of Connecticut State Agencies is hereby repealed.

Sec. 26. The Regulations of Connecticut State Agencies are amended by adding Figures Six (6) and Seven (7) to the Appendix following section 25-128-64 of the Regulations of Connecticut State Agencies as follows:

FIG. 6 Termination of exterior Geoexchange bore holes:

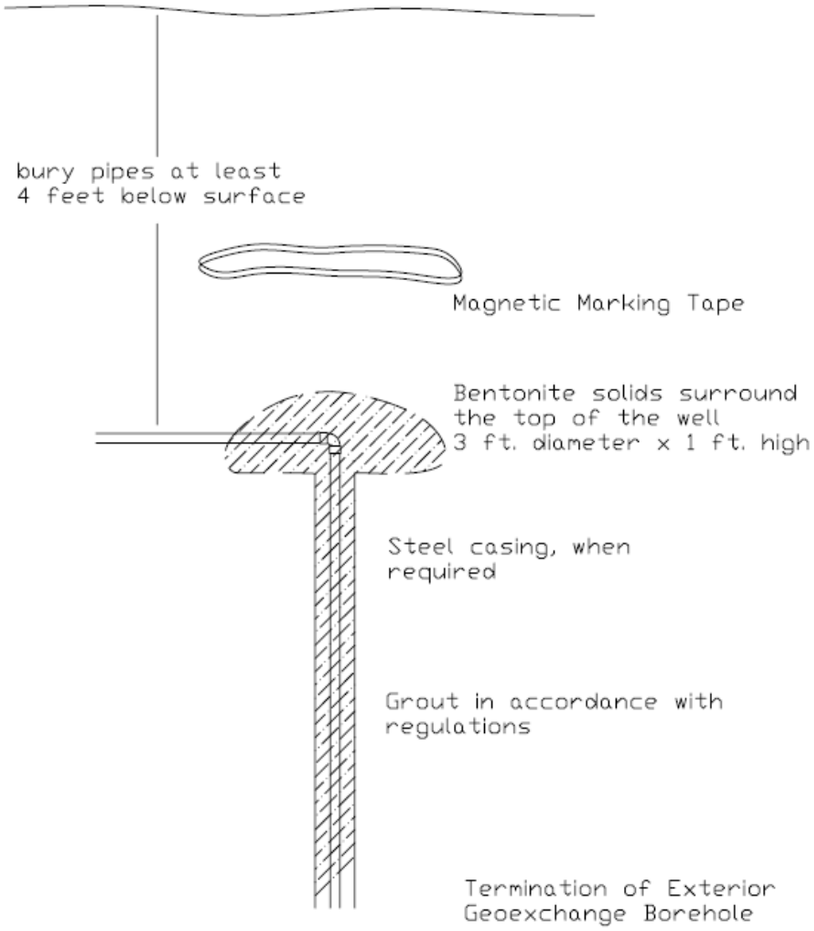
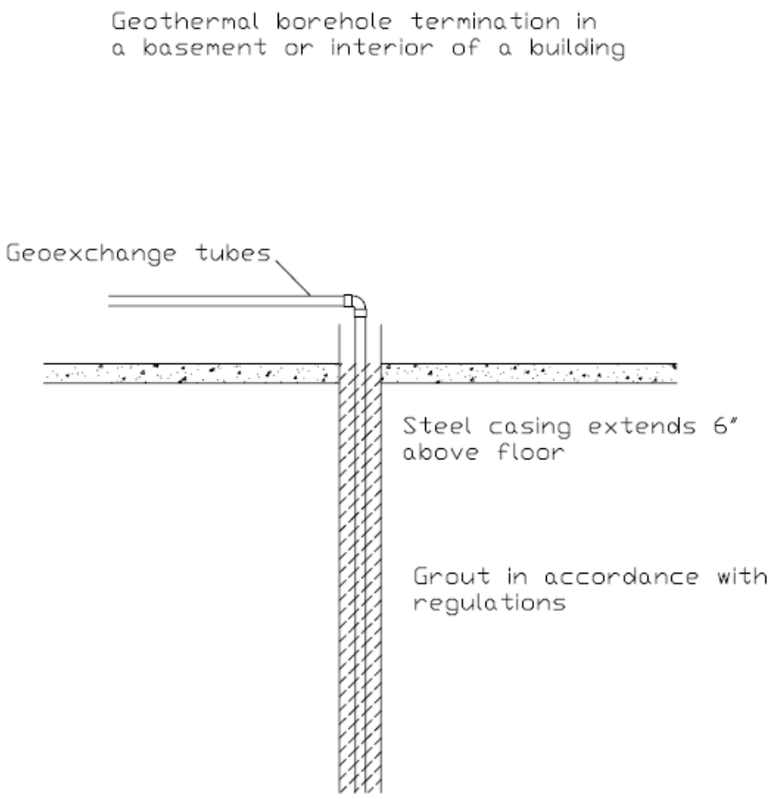


FIG. 7 Termination of interior Geoexchange bore holes:



Sec. 27. Sections 25-129-1 and 25-129-2, inclusive, of the Regulations of Connecticut State Agencies are hereby amended to read as follows:

[Sec. 25-129-1 Limited Well Casing Extension Contractor W-5

The requirements for the registration of a contractor-limited to well casing extension W-5 shall be a contractor's license to perform plumbing and piping work pursuant to chapter 393 of the Connecticut General Statutes. This registration permits the registrant to perform well casing extension, repair and maintenance work. The applicant shall demonstrate knowledge of well casing extension, repair and maintenance work by passing a written examination conducted pursuant to section 20-333 of the Connecticut General Statutes.

Sec. 25-129-2. Limited Well Casing Extension Contractor W-6

The requirements for the registration of a journeyperson-limited to well casing extension W-6 shall be a journeyperson's license to perform plumbing and piping work pursuant to chapter 393 of the Connecticut General Statutes. This registration permits the registrant to perform well casing extension, repair and maintenance work only while in the employ of a contractor licensed for such work. The applicant shall demonstrate knowledge of well casing extension, repair and maintenance work by passing a written examination conducted pursuant to section 20-333 of the Connecticut General Statutes.]

25-129-1 Unlimited Well Driller Contractor W-1

A person holding a W-1 registration may perform any work as defined by section 25-129 of the General Statutes. As provided by section 25-129 of the General Statutes, the board hereby establishes certain requirements for the registration of well drilling contractors. This registration permits the registrant to construct a well, including but not limited to, the installation, repair and maintenance of pumps, pump motors, pump piping, valves, wiring, electric controls and tanks. Before any registration is issued to any individual, the Board shall require that the applicant submit:

(1) The applicant’s full, legal name, street address, city, state and zip code;

(2) A certificate of liability insurance specifying well drilling purposes and providing liability coverage for bodily injury of at least one hundred thousand dollars ($100,000) per person with an aggregate of at least three hundred thousand dollars ($300,000), and for property damage of at least fifty thousand dollars ($50,000) per accident with an aggregate of at least one hundred thousand dollars ($100,000);

(3) Documentation that the applicant has been actively engaged in the well drilling trade as a well driller for a period of thirty-six (36) months prior to the date of application and/or has held a valid W-2 registration for at least two years;

(4) The name and address of any employee of the applicant who holds a registration pursuant to this chapter;

(5) Letters of references from a Connecticut registered Well Driller Contractor, a local public health official and one (1) other responsible citizen which attest to the applicant's integrity and ability to act as a Well Driller Contractor; and

(6) The applicant shall be found in compliance with all provisions of subsection (e) (1) of section 25-129 of the General Statutes, concerning the applicant’s conduct in the well drilling industry.

Sec. 25-129-2. Unlimited Well Driller W-2

The requirements for this registration shall be three (3) years as a driller trainee or possesses equivalent experience and training. This registration permits the registrant to construct a well, including but not limited to, the installation, repair and maintenance of pumps, pump motors, pump piping, valves, wiring, electric controls and tanks only while the registrant is in the direct and regular employment of a contractor registered for such work. The applicant shall demonstrate knowledge of well drilling by passing a written examination conducted pursuant to sections 21a-7(1) and 21a-8(5) of the General Statutes.

Sec. 25-129-3. Limited Non-Water Supply Contractor W-3

As provided by Section 25-129 of the General Statutes, the Board hereby establishes certain requirements for the registration of well drilling contractors. This registration permits the registrant to construct a non water-supply well, as defined in section 25-128-36(c) of these regulations, including but not limited to, the installation, repair and maintenance of pumps, pump motors, pump piping, valves, wiring, electric controls and tanks. Before any registration is issued to any individual the Board shall require that the applicant submit:

(1) The applicant's full, legal name, street address, city, state and zip code;

(2) A certificate of liability insurance specifying well drilling purposes and providing liability coverage for bodily injury of at least one hundred thousand dollars ($100,000) per person with an aggregate of at least three hundred thousand dollars ($300,000), and for property damage of at least fifty thousand dollars ($50,000) per accident with an aggregate of at least one hundred thousand dollars ($100,000);

(3) Documentation that the applicant has been actively engaged in the well drilling trade as a well driller for a period of thirty-six (36) months prior to the date of application and/or has held a valid W-4 registration for at least two years;

(4) The name and address of any employee of the applicant who holds a registration pursuant to this chapter;

(5) Letters of references from a Connecticut registered Non-Water Supply Contractor, a local public health official and one (1) other responsible citizen which attest to the applicant's integrity and ability to act as a Non-Water Supply Contractor; and

(6) The applicant shall be found in compliance with all provisions of subsection (e) (1) of section 25-129 of the General Statutes, concerning the applicant's conduct in the well drilling industry.

Sec. 25-129-4. Limited Non-Water Supply Driller W-4

The requirements for this registration shall be one (1) year as a driller trainee or possess equivalent experience and training. This registration permits the registrant to construct a non water-supply well, as defined in section 25-128-36(c) of these regulations, including but not limited to, the installation, repair and maintenance of pumps, pump motors, pump piping, valves, wiring, electric controls and tanks, only while the registrant is in the direct and regular employment of a contractor registered for such work. The applicant shall demonstrate his knowledge of well drilling by passing a written examination conducted pursuant to Sections 21a-7(1) and 21a-8(5) of the General Statutes.

Sec. 25-129-5. Limited Well Casing Extension Contractor W-5

The requirements for the registration of a contractor-limited to well casing extension W-5 shall be a contractor's license to perform plumbing and piping work pursuant to chapter 393 of the Connecticut General Statutes. This registration permits the registrant to perform well casing extension, repair and maintenance work. The applicant shall demonstrate knowledge of well casing extension, repair and maintenance work by passing a written examination conducted pursuant to section 20-333 of the Connecticut General Statutes.

Sec. 25-129-6. Limited Well Casing Extension Journeyperson W-6

The requirements for the registration of a journeyperson-limited to well casing extension W-6 shall be a journeyperson's license to perform plumbing and piping work pursuant to chapter 393 of the Connecticut General Statutes. This registration permits the registrant to perform well casing extension, repair and maintenance work only while in the employ of a contractor licensed for such work. The applicant shall demonstrate knowledge of well casing extension, repair and maintenance work by passing a written examination conducted pursuant to section 20-333 of the Connecticut General Statutes.

Sec. 25-129-7. Limited Geothermal Contractor W-7

This registration permits the registrant to construct a geoexchange bore hole or geoexchange system, as defined in section 25-128-36c, including but not limited to, the installation, repair and maintenance of piping, casing, heat transfer media, pumps, pump motors, and valves, but excluding Direct Exchange systems as defined within Section 25-128-36(10). Before any registration is issued to any individual the board shall require that the applicant submit:

(1) The applicant's full, legal name, street address, city, state and zip code;

(2) A certificate of liability insurance specifying well drilling purposes and providing liability coverage for bodily injury of at least one hundred thousand dollars ($100,000) per person with an aggregate of at least three hundred thousand dollars ($300,000), and for property damage of at least fifty thousand dollars ($50,000) per accident with an aggregate of at least one hundred thousand dollars ($100,000);

(3) Documentation that the applicant has been actively engaged in the geoexchange bore hole drilling trade as a Geothermal Driller for a period of thirty-six (36) months prior to the date of application and/or has held a valid W-8 registration for at least two years;

(4) The name and address of any employee of the applicant who holds a registration pursuant to this chapter;

(5) Letters of references from a Connecticut registered Geothermal Contractor and one (1) other responsible citizen which attest to the applicant's integrity and ability to act as a Geothermal Contractor; and

(6) The applicant shall be found in compliance with all provisions of subsection (e) (1) of section 25-129 of the General Statutes, concerning the applicant’s conduct in the well drilling industry.

Sec. 25-129-8 Limited Geothermal Driller W-8

The requirements for this registration shall be one (1) year as a Geothermal Driller trainee or possess equivalent experience and training. This registration permits the registrant to construct a geothermal bore hole or geoexchange system, as defined in section 25-128-36c, including but not limited to, the installation, repair and maintenance of piping, casing, heat transfer media, pumps, pump motors, and valves, but excluding Direct Exchange systems as defined within Section 25-128-36(10), only while the registrant is in the direct and regular employment of a contractor registered for such work. The applicant shall demonstrate knowledge of well drilling by passing a written examination conducted pursuant to sections 21a-7 (1) and 21a-8 (5) of the General Statutes.

Sec. 25-129-9. Limited Direct Exchange Geothermal Contractor W-9

This registration permits the registrant to construct a geothermal bore hole or geothermal system, but limited to those bore holes employing Direct Exchange or Direct Expansion technology, as defined within section 25-128-36(10), including but not limited to, drilling associated with the installation of copper or other piping containing a Direct Exchange heat transfer medium, the installation, repair and maintenance of piping, casing, and heat transfer media. Before any registration is issued to any individual the board shall require that the applicant submit:

(1) The applicant’s full, legal name, street address, city, state and zip code;

(2) A certificate of liability insurance specifying well drilling purposes and providing liability coverage for bodily injury of at least one hundred thousand dollars ($100,000) per person with an aggregate of at least three hundred thousand dollars ($300,000), and for property damage of at least fifty thousand dollars ($50,000) per accident with an aggregate of at least one hundred thousand dollars ($100,000);

(3) Documentation that the applicant has been actively engaged in the geoexchange bore hole drilling trade as a Direct Exchange Geothermal Driller for a period of thirty-six (36) months prior to the date of application and/or has held a valid W-10 registration for at least two years;

(4) The name and address of any employee of the applicant who holds a registration pursuant to this chapter;

(5) Letters of references from a Connecticut registered Direct Exchange Geothermal Contractor and one (1) other responsible citizen which attest to the applicant's integrity and ability to act as a Direct Exchange Geothermal Contractor; and

(6) The applicant shall be found in compliance with all provisions of subsection (e) (1) of section 25-129 of the General Statutes, concerning the applicant’s conduct in the well drilling industry.

Sec. 25-129-10 Limited Direct Exchange Geothermal Driller W-10

The requirements for this registration shall be one (1) year as a Direct Exchange Geothermal Driller Trainee or possess equivalent experience and training. This registration permits the registrant to construct a geothermal bore hole or geoexchange system, but limited to those bore holes employing Direct Exchange or Direct Expansion technology, as defined within section 25-128-36(10), and associated components of a direct exchange system including but not limited to, drilling associated with the installation of copper or other piping containing a Direct Exchange heat transfer medium, the installation, repair and maintenance of piping, casing, heat transfer media, only while the registrant is in the direct and regular employment of a contractor registered for such work. The applicant shall demonstrate knowledge of Direct Exchange geothermal bore hole drilling by passing a written examination conducted pursuant to sections 21a-7(1) and 21a-8(5) of the General Statutes.

Sec. 25-129-11. Driller Trainee

Driller Trainees may perform the work for which they are being trained, but only in the presence and under the supervision of a properly registered contractor or the holder of a limited drilling registration. Nothing in chapter 482 of the Connecticut General Statutes shall be construed to prohibit the employment of one driller trainee by a registered well drilling contractor and an additional driller trainee for each person employed by a contractor who holds a limited drilling registration.

Driller Trainees, under the supervision of a registered contractor or the holder of a limited registration, may do minimal cleaning work not in the presence of such supervising contractor or registrant, and shall be allowed to perform the following certain work provided that a registered contractor has certified to the Department of Consumer Protection in writing that such driller trainee has obtained minimum experience of on the job training ("OTJ") hours in the following areas of well drilling work:

Cable Tools (Minimum 500 OTJ Hours)

Work limited to: Surging; Bailing; Cleaning and Developing; Test Pumping; Drilling in consolidated material when cased.

Excluding: Casing installation; Drilling in unconsolidated material; Well construction.

Rotary (Minimum 1500 OTJ Hours)

Consolidated rock (Bedrock) material: Work limited to drilling in a cased hole in a consolidated or bedrock formation; excluding casing installation.

Unconsolidated material: No work permitted at any time without the supervision of a person registered to perform this work.

Development: Work limited to Air lifting; Jetting; Test pumping.

Hydrofracturing (Minimum 500 OTJ Hours)

May perform the following work: Hydrofracturing; Test pumping.

Pumps and Piping (Minimum 2000 OTJ Hours)

A trainee may, after 2000 OTJ hours, install pumps and associated piping and related equipment for wells drilled by a W-l contractor while the helper is under the employ of such contractor.

Abandonment (Minimum 500 OTJ Hours)

Any abandonment work, such as the removal of pumps and piping, shall comply with the procedures of abandonment of the well, as provided in the well drilling regulations.

NEW

Sec. 28. The Regulations of Connecticut State Agencies are hereby amended by adding Section 25-130-1, as follows:

Sec. 25-130-1. Permit requirements

(a) Before commencing work on the construction, repair, development, hydrofracturing or abandonment of any well or geoexchange system, a registered contractor shall complete an application for a permit in a format acceptable to the Commissioner of Consumer Protection, and such application shall be filed with the authority having jurisdiction for the issuance of a permit, as provided by section 25-130 of the General Statutes. By filing said application, the applicant agrees that all work under the permit shall be done in strict compliance with the Connecticut Well Drilling Code, unless a special exemption from one or more of the applicable regulations has been granted by the Department.

(b) The contractor shall then submit the completed, signed permit application for each well or geoexchange system, with the proper fee to the local director of health or the director's agent, who shall approve such permit if said proposed well or geoexchange system conforms to sections 19-13-B51a through 19-13-51Bm, inclusive of the Regulations of Connecticut State Agencies, established pursuant to section 19a-36 of the Connecticut General Statutes. No well or geoexchange system shall be installed until such a permit has been issued and approved.

(c) Water supply well permits shall be evaluated according to their content with regard to proper separating distances as outlined in the Connecticut Well Drilling Code and sections 19-13-B51a through 19-13-51Bm, inclusive of the Regulations of Connecticut State Agencies, established pursuant to section 19a-36 of the Connecticut General Statutes.

(d) The application for a permit by a registered driller shall include an appropriate map or plot plan, showing the location of each proposed well or geoexchange bore hole on the premises in relation to roads, intersections, and other permanent land features. All permit applications shall be signed by an appropriately registered contractor.

(e) Notwithstanding any provision of this article, the Department may grant a permit for the construction, repair, or abandonment of any well or bore hole by its informal, verbal authorization, if it determines that an emergency situation exists with respect to the necessity for the construction, repair, or abandonment of the well or bore hole. The well drilling contractor shall also obtain the approval of the local director of health or such director's agent, for the work intended to be done. Within a reasonable time after giving its authorization, the Department shall require that a written application for a permit, and, if necessary, a written application for a special exemption shall be made, in compliance with the provisions of this article and Sections 25-130 and 25-133 of the General Statutes. In the event the formal application for the permit or exemption is refused, the contractor shall, upon written notification by the Department, immediately cease all work on the well or geoexchange system.

(f) Permit applications, permits, and completion reports may be filed or transmitted electronically as required by each recipient.

Statement of Purpose

The purpose of this regulation is to update the Connecticut Well Drilling Code to conform with current industry practices, to incorporate standards related to geothermal bore hole drilling and system installation, including four new geothermal-specific limited license categories, to make technical changes to existing language for clarity, to re-number existing sections to more properly track the applicable underlying statutes, and to provide gender neutrality in the language employed.

These regulations provide for updated definitions which conform to current industry practice, and also to incorporate specific definitions for geothermal bore hole drilling. Additional provisions are added to regulate geothermal systems to help assure that the water supply is not contaminated due to substandard drilling practices or component installation. The Department believes these regulation changes will protect the public health and safety, and in particular, help to protect the water supply from contamination.

The regulation implements changes to the Well Drilling Code, which is part of the regulatory structure of the Department of Consumer Protection.

CERTIFICATION
M-39 REV. 1/77

Be it known that the foregoing:

[X] Regulations [ ] Emergency Regulations

Are:

[ ] Adopted [X] Amended as hereinabove stated [ ] Repealed

By the aforesaid agency pursuant to:

[X] Sections **4-168** , **25-128(b)** , **and 25-129** of the General Statutes and

[ ] Sections _____ of the General Statutes, as amended by Public Act. No. _____ of the _____ Public Acts.

[ ] Public Act. No. _____ of the Public Acts.

After publication in the Connecticut Law Journal on _____ 20_____ of the notice of the proposal to:

[ ] Adopt [X] Amend [ ] Repeal such regulations

(If applicable): And [X] the holding of an advertised public hearing on _____ day of _____ 20_____.

WHEREFORE, the foregoing regulations are hereby:

[ ] Adopted [X] Amended as hereinabove stated [ ] Repealed

Effective:

[X] When filed with the Secretary of the State.
(OR)

[ ] The _____ day of _____ 20_____.

In Witness Whereof:	DATE	SIGNED (Head of Board, Agency or Commission)	OFFICIAL TITLE, DULY AUTHORIZED **COMMISSIONER**

Approved by the Attorney General as to legal sufficiency in accordance with Sec. 4-169, as amended, C.G.S.:	SIGNED	OFFICIAL TITLE, DULY AUTHORIZED

[ ] Approved.

[ ] Disapproved.

[ ] Disapproved in part (Indicate Section Numbers disapproved only).

[ ] Rejected without prejudice.

By the Legislative Regulation Review Committee in accordance with Sec. 4-170, as amended, of the General Statutes.	DATE	SIGNED (Clerk of the Legislative Regulation Review Committee)

Two certified copies received and filed, and one such copy forwarded to the Commission on Official Legal Publications in accordance with Section 4-172, as amended, of the General Statutes.

DATE	SIGNED (Secretary of the State)	BY

INSTRUCTIONS

One copy of all regulations for adoption, amendment or repeal, except emergency regulations, must be presented to the Attorney General for his determination of legal sufficiency. Section 4-169 of the General Statutes.

Seventeen copies of all regulations for adoption, amendment or repeal, except emergency regulations, must be presented to the standing Legislative Regulation Review Committee for its approval. Section 4-170 of the General Statutes.

Each regulation must be in the form intended for publication and must include the appropriate regulation section number and section heading. Section 4-172 of the General Statutes.

Indicate by "(NEW)" in heading if new regulation. Amended regulations must contain new language in capital letters and deleted language in brackets. Section 4-170 of the General Statutes.

Well Siting, Construction and Permitting Requirements

Applicable regulations for the construction, repair, development, and abandonment of wells

Connecticut Department of Public Health:

The Public Health Code (PHC) of the State of Connecticut Title 19 provides regulations on public health and safety, the current version in use became effective on January 12, 1971. Regulations pertaining to the construction and location of water supply wells are applicable at the time the well is constructed. The regulations refer to the term "water supply well". The term "private well" is used to describe a water supply well that typically serves a residential home; however private wells also supply small businesses and other establishments where the daily population supplied by the well is less than 25 people. Regulations regarding the construction and location of a private well can be found by clicking on the link above and searching within Title 19 for:

- Water Supply Wells and Springs
  - PHC Section 19-13-B51(a) through Section 19-13-B51(m) (pages 82-88)

For wells constructed prior to 1971, the version of the regulations at the time the well was constructed is applicable:

- The Public Health Code of the State of Connecticut and Other Department Regulations, effective June, 1966, Section 19-13-B51
- The Sanitary Code of the State of Connecticut, effective December 8, 1959, Section 181-1-132

Connecticut Department of Consumer Protection; Connecticut WELL DRILLING CODE includes:

- Well Drilling, Chapter 482
  - Regulations, Description of Organization, and Rules or Practice for the Well Drilling Industry, Sections 25-128-33 through 25-128-64
  - Regulations on Well Casing Extension, Sections 25-129-1 through 25-129-2

Requirements regarding **permits for private wells** can be found in the PHC Section 19-13-B51m and the Well Drilling Code, Sections 25-128-61 through 25-128-62:

Prior to commencing work on the construction, repair, development, hydrofracturing or abandonment of any well, a registered well contractor shall apply to The State Plumbing and Piping Work Examining Board then to the local Director of Health or his or her agent for the town work is to take place. No well shall be drilled until such a permit has been issued and approved.

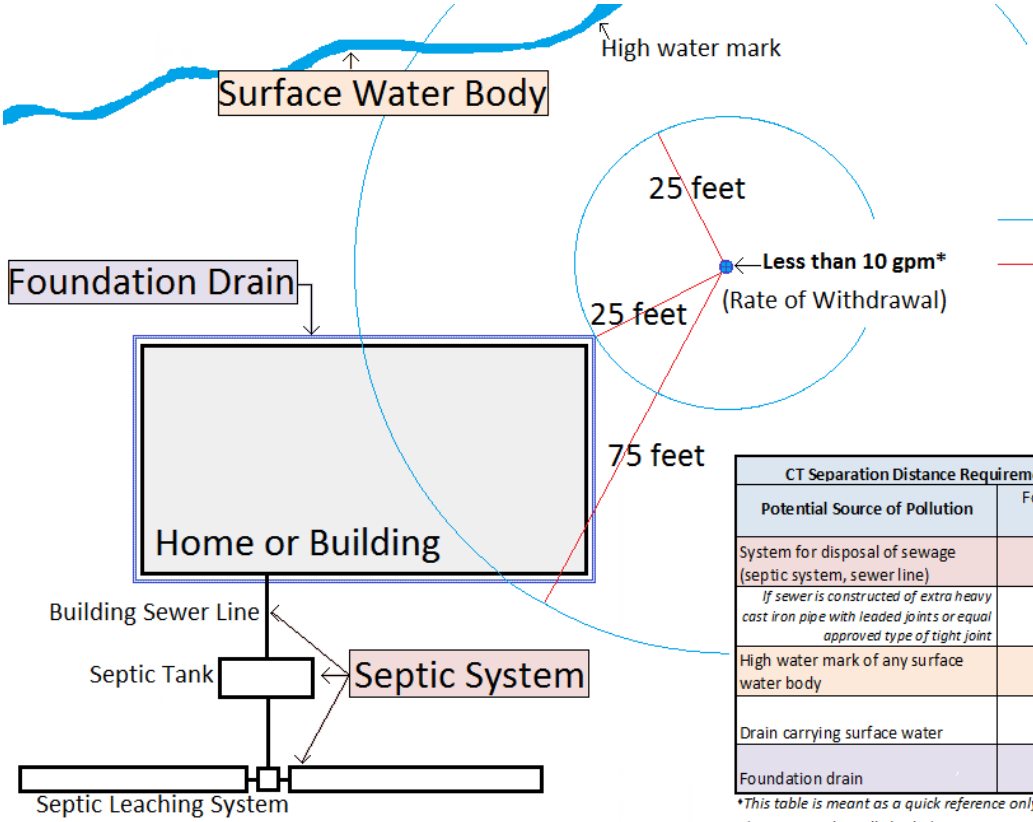
You can find contact information for your local health department at:

Connecticut Local Health Map

Department of Consumer Protection; Plumbing, Pipefitting and Well Drilling Licensing:

Applications, Forms and other

Requirements regarding **private well separation distance requirements** can be found in the Connecticut PHC Section 19-13-B51d. Location.



CT Separation Distance Requirements for Private Wells (PHC Section 19-13-B51d)*			
Potential Source of Pollution	For Wells <10 gpm*	For Wells 10 - 50 gpm*	For Wells >50 gpm*
System for disposal of sewage (septic system, sewer line)	75 feet	150 feet	200 feet
If sewer is constructed of extra heavy cast iron pipe with leaded joints or equal approved type of tight joint	25 feet	75 feet	100 feet
High water mark of any surface water body	25 feet	50 feet	50 feet
Drain carrying surface water	25 feet	50 feet	50 feet
Foundation drain	25 feet	50 feet	50 feet

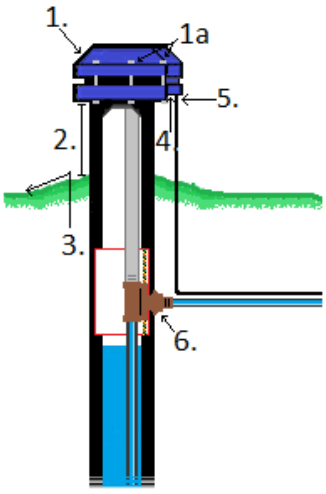
**This table is meant as a quick reference only, refer to PHC Section 19-13-B51d for further detail.*

**Water Supply Wells (includes irrigation & open loop geothermal wells) must maintain required separation distances based on their withdrawal rates in gpm (gpm = gallons per minute).*

General **well construction standards for private wells** can be found in both the Connecticut PHC and the Connecticut Department of Consumer Protection Well Drilling Code.

Drilled Well Construction:

General



Note: Not all drilled wells are equipped with a pitless adaptor (6.) and a submersible pump. Some well pumps are located inside the home and use suction to draw water from the well.

1. Well cap should be watertight and equipped with a gasket. All bolts (1a) should be properly secured to ensure compression of the gasket.

2. The top of the well casing should extend at least 6-inches above grade.

3. Grading around the well should slope away from the well casing to prevent surface water from pooling around it.

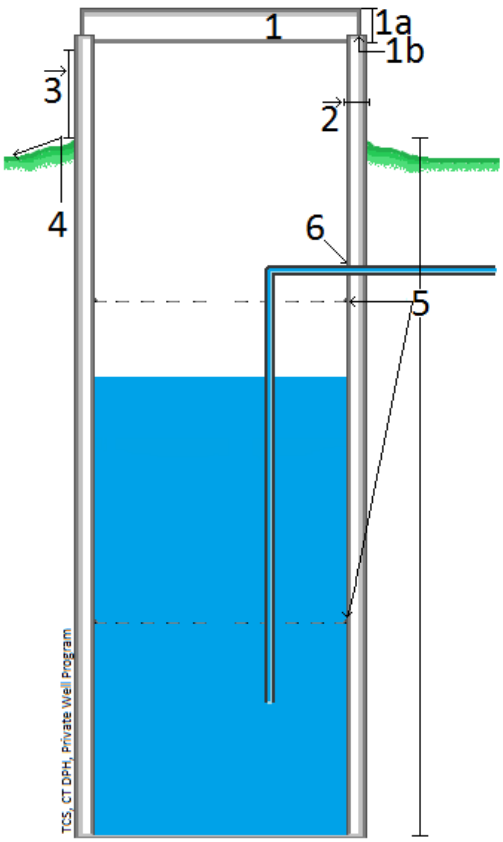
4. Air vents on newer style watertight well caps are located on the underside of the well cap. In some instances a "mushroom" style air vent may be placed on top of the well cap. All air vents should be screened and shielded.

5. Electrical conduit connection should be watertight and properly sealed to the well cap.

6. Pitless adaptor configuration allows water pumped from a submersible pump (located deeper in the well) to flow to your home plumbing system.

7. Refer to CT DPH, Public Health Code Section 19-13-B51 and the CT DCP, Well Drilling Code Section 25-128-33 through 25-128-64 to view all applicable regulatory requirements for new well construction in their entirety.

Dug Well Construction:
General



1. There should be a watertight joint between the well casing and the well cover.
   1a. The well cover should be at least 4-inches thick and constructed of reinforced concrete.
   1b. The well cover should overlap the well casing by at least 2-inches.

2. The dug well casing or side walls should be constructed of watertight concrete that is at least 4-inches thick, or other CT DPH approved material.

3. The top of the well casing should extend at least 6-inches above grade.

4. Grading around the well casing should slope away from the well casing to prevent surface water from pooling around it.

5. There should be watertight joints between the dug well's cement tiles or other approved material used to construct the side walls. The dug well casing or side walls should extend to a depth of least 10-feet below grade.

6. The water discharge line from the well to the home should be sealed watertight at the well casing and all other junctions.

7. Refer to CT DPH, Public Health Code Section 19-13-B51 and the CT DCP, Well Drilling Code Section 25-128-33 through 25-128-64 for all applicable regulatory requirements.

Property Location: 381 CHURCH ST | **MAP ID:** 36/ / 55-1/ / | **Bldg Name:** | **State Use:** 1010

Vision ID: 2755 | **Account #** 00247110 | **Bldg #:** 1 of 1 | **Sec #:** 1 of 1 | **Card** 1 of 1 | **Print Date:** 08/10/2017 21:30

CURRENT OWNER

DESOUSA MICHAEL P & SUSAN C

381 CHURCH ST

BROOKLYN, CT 06234

Additional Owners:

TOPO.	UTILITIES	STRT./ROAD	LOCATION

SUPPLEMENTAL DATA

Other ID: 36/055-01	490 PENALT
DEED RESTRI(	DEV RIGHT'
CENSUS 9051	SUBDIVISIO
FIRE DISTRIC	SURVEY #
EASEMENT	DEV LOT #
SEWER	
GIS ID:	*ASSOC PID#*

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
RES LAND	1-1	52,700	36,900
DWELLING	1-3	218,900	153,200
RES OUTBL	1-4	2,700	1,900
	Total	274,300	192,000

6019
BROOKLYN, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
DESOUSA MICHAEL P & SUSAN C	583/ 185	10/03/2016	Q	I	268,500	00
PONTRELLI KENNETH W & MARYANN	333/ 108	06/16/2004			275,000	
R&M BUILDERS INC	333/ 105	06/16/2004	U	I		
RILEY PATRICK	320/ 105	01/26/2004	U	I		
POIRIER LINDA A	297/ 194	06/26/2003	U	V		
SCHNEIDER TRUST	117/ 1	10/22/1991	U	V	20,000	

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2016	1-1	36,900	2015	1-1	36,900	2014	1-1	42,600
2016	1-3	153,200	2015	1-3	153,200	2014	1-3	160,600
2016	1-4	1,900	2015	1-4	1,900	2014	1-4	1,900
	Total:	192,000		*Total:*	192,000		*Total:*	205,100

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	218,900
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	2,700
Appraised Land Value (Bldg)	52,700
Special Land Value	0
Total Appraised Parcel Value	274,300
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	274,300

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

NOTES

BEIGE IA

ALSO FORCED HOT AIR (09)

FBM - FAMILY ROOM

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
7373	07/24/2006	DK	Deck	3,000	06/20/2009	100	10/01/2007	10X15 DECK ATTACH
7034	06/30/2005	RS	Residential	1,000	06/20/2009	100	10/01/2005	18' AG POOL W/GATE
6922	04/14/2005	RS	Residential	2,000	06/20/2009	100	10/01/2005	16 X 16 DECK
6562	01/06/2004	NC	New Construct	138,000	06/20/2009	100	05/26/2004	1540 SF 1ST FLR W/24

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
10/05/2016			MS	47	Change Legal Owne
06/20/2009			JP	00	Measure+Listed
01/26/2009			DK	01	Measure+1Visit
01/26/2009			DK	02	Measure+2Visit

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing Spec Use	Special Pricing Spec Calc	S Adj Fact	Adj. Unit Price	Land Value
1	1010	Single Fam MDL-01	RA				1.36	AC	48,800.00	0.7939	5	1.0000	1.00	0050	1.00				1.00		52,700

Total Card Land Units: 1.36 AC | **Parcel Total Land Area:** 1.36 AC | **Total Land Value:** 52,700

Property Location: 381 CHURCH ST | **MAP ID:** 36/ / 55-1/ / | **Bldg Name:** | **State Use:** 1010

Vision ID: 2755 | **Account #** 00247110 | **Bldg #:** 1 of 1 | **Sec #:** 1 of 1 | **Card** 1 of 1 | **Print Date:** 08/10/2017 21:30

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	01		Ranch
Model	01		Residential
Grade	05		B-
Stories	1		
Occupancy	1		
Exterior Wall 1	25		Vinyl Siding
Exterior Wall 2			
Roof Structure	03		Gable/Hip
Roof Cover	03		Asph/F Gls/Cmp
Interior Wall 1	05		Drywall/Sheet
Interior Wall 2			
Interior Flr 1	12		Hardwood
Interior Flr 2	14		Carpet
Heat Fuel	02		Oil
Heat Type	05		Hot Water
AC Type	01		None
Total Bedrooms	03		3 Bedrooms
Total Bthrms	2		
Total Half Baths	0		
Total Xtra Fixtrs			
Total Rooms	5		
Bath Style	02		Average
Kitchen Style	02		Modern

CONSTRUCTION DETAIL (CONTINUED)

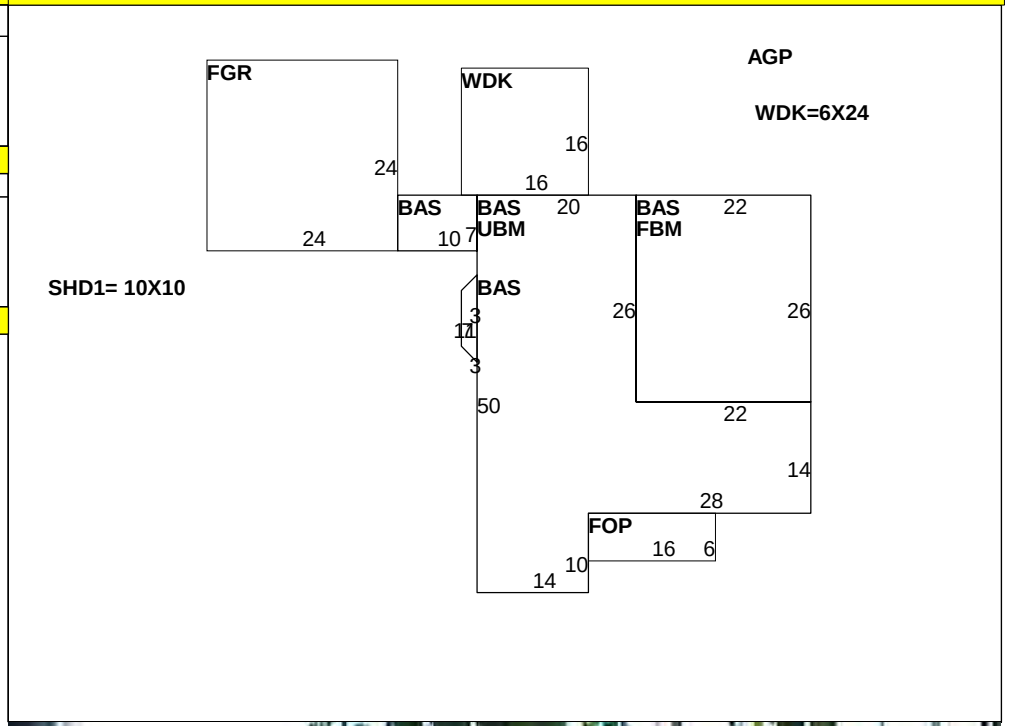
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
1010	Single Fam MDL-01	100

COST/MARKET VALUATION

Adj. Base Rate:	85.51
Replace Cost	232,920
AYB	2004
EYB	2009
Dep Code	G
Remodel Rating	
Year Remodeled	
Dep %	6
Functional Obslnc	
External Obslnc	
Cost Trend Factor	1
Condition	
% Complete	
Overall % Cond	94
Apprais Val	218,900
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
WDK	WOOD DECK			L	144	14.00	2006		0		70	1,400
SHD1	SHED FRAME			L	100	14.00	2009		0		90	1,300

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	1,908	1,908	1,908	85.51	163,147
FBM	Basement, Finished	0	572	229	34.23	19,581
FGR	Garage	0	576	230	34.14	19,667
FOP	Porch, Open	0	96	19	16.92	1,625
UBM	Basement, Unfinished	0	1,248	312	21.38	26,678
WDK	Deck, Wood	0	256	26	8.68	2,223
	Ttl. Gross Liv/Lease Area:	1,908	4,656	2,724		232,920

Property Location: 371 CHURCH ST | **MAP ID:** 36/ / 54/ / | **Bldg Name:** | **State Use:** 111C

Vision ID: 174 | **Account #** 00017300 | **Bldg #:** 1 of 2 | **Sec #:** 1 of 1 | **Card** 1 of 2 | **Print Date:** 08/10/2017 17:32

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
RAHEB EDMOND M				
PO BOX 5				
DANIELSON, CT 06239-0033				
Additional Owners:				

SUPPLEMENTAL DATA

Other ID: 36/054	490 PENALT
DEED RESTRI(	DEV RIGHT'
CENSUS 9051	SUBDIVISIO
FIRE DISTRIC	SURVEY # 6/10
EASEMENT	DEV LOT #
SEWER	
GIS ID:	*ASSOC PID#*

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
COM APTM	2-3	494,300	346,000
COM LAND	2-6	125,500	87,900
		Total 619,800	433,900

6019 BROOKLYN, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
RAHEB EDMOND M	167/ 259	02/06/1996			0	
BASS SUSAN & HARRIS	71/ 813	04/27/1981	U	I		
JOHN GRUNIGAN ET ALS	69/ 267	09/06/1979	U	I		
OTTO JEFFREY B & CAROLYN	56/ 23	07/23/1973	U	I		
OTTO JEFFREY B & HEIMALL CAROLYN	56/ 18	07/02/1973	U	I		
HEIMALL CLIFFORD E & DORIS L	47/ 248	04/30/1969	U	V		

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2016	2-3	346,000	2015	2-3	346,000	2014	2-3	370,500
2016	2-6	87,900	2015	2-6	87,900	2014	2-6	49,700
	Total:	433,900		*Total:*	433,900		*Total:*	420,200

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				2015

NOTES

4, 4-2-1 UNITS

2, 3-1-1 UNITS

STARTED VINYL P/U 2010

ECON = MKT

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	269,200
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	0
Appraised Land Value (Bldg)	125,500
Special Land Value	0
Total Appraised Parcel Value	619,800
Valuation Method:	I
Adjustment:	0
Net Total Appraised Parcel Value	619,800

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
8218	08/06/2009	RS	Residential	11,000	09/17/2009	5	10/01/2009	VINYL SIDING ENCLC
1508	07/15/1987	EL	Electric	2,000		100	07/15/1987	SMOKE DETECTOR
1410	02/25/1986	RE	Remodel	24,000		100	02/25/1986	RENOVATIONS DUE T
1124	10/02/1985	RF	Roofing	2,000		100	10/16/1985	REPAIR ROOF

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
09/17/2009			DK	26	Building Permit
01/27/2009			DK	01	Measure+1Visit

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing		S Adj Fact	Adj. Unit Price	Land Value
1	111C	APT 4-UNT MDL-94	R30				0.69	AC	48,800.00	1.3364	5	1.0000	2.50	0050	1.00				1.00		112,500
11(	R30	111C				4.81	AC	0.00	1.0000	0		1.000		0.00	0.0000				9100.00	13,000	Acre

Total Card Land Units: 5.50 AC | **Parcel Total Land Area:** 5.5 AC | **Total Land Value:** 125,500

Property Location: 371 CHURCH ST **MAP ID:** 36/ / 54/ / **Bldg Name:** **State Use:** 111C

Vision ID: 174 **Account #** 00017300 **Bldg #:** 1 of 2 **Sec #:** 1 of 1 **Card** 1 of 2 **Print Date:** 08/10/2017 17:32

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	14		Apartments
Model	94		Comm/Ind
Grade	03		Average
Stories	2		
Occupancy	6		
Exterior Wall 1	02		Comp./Wall Brd
Exterior Wall 2			
Roof Structure	03		Gable/Hip
Roof Cover	03		Asph/F Gls/Cmp
Interior Wall 1	05		Drywall/Sheet
Interior Wall 2			
Interior Floor 1	14		Carpet
Interior Floor 2			
Heating Fuel	04		Electric
Heating Type	07		Electr Basebrd
AC Type	01		None
Bldg Use	111C		APT 4-UNT MDL-94
Total Rooms			
Total Bedrms			
Total Baths			
Heat/AC	00		NONE
Frame Type	02		WOOD FRAME
Baths/Plumbing	02		AVERAGE
Ceiling/Wall	06		CEIL & WALLS
Rooms/Prtns	02		AVERAGE
Wall Height	8		
% Comn Wall			

CONSTRUCTION DETAIL (CONTINUED)

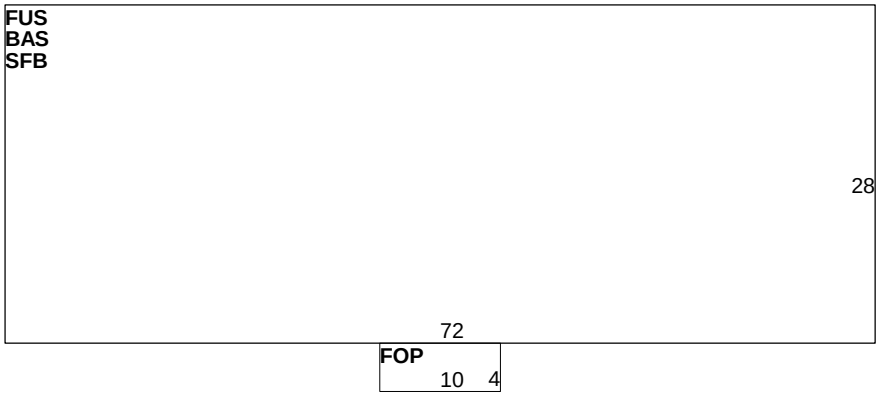
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
111C	APT 4-UNT MDL-94	100

COST/MARKET VALUATION

Adj. Base Rate:	64.34
Replace Cost	363,843
AYB	1969
EYB	1989
Dep Code	G
Remodel Rating	
Year Remodeled	
Dep %	26
Functional Obslnc	
External Obslnc	
Cost Trend Factor	1
Condition	
% Complete	
Overall % Cond	74
Apprais Val	269,200
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	2,016	2,016	2,016	64.34	129,710
FOP	Porch, Open	0	40	10	16.09	643
FUS	Upper Story, Finished	2,016	2,016	2,016	64.34	129,710
SFB	Bsmt Fin Above Grade	1,613	2,016	1,613	51.48	103,781
	Ttl. Gross Liv/Lease Area:	5,645	6,088	5,655		363,843

Property Location: 371 CHURCH ST | **MAP ID:** 36/ / 54/ / | **Bldg Name:** | **State Use:** 111C

Vision ID: 174 | **Account #** 00017300 | **Bldg #:** 2 of 2 | **Sec #:** 1 of 1 | **Card** 2 of 2 | **Print Date:** 08/10/2017 17:32

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
RAHEB EDMOND M				
PO BOX 5				
DANIELSON, CT 06239-0033				
Additional Owners:				

SUPPLEMENTAL DATA

Other ID:	36/054	490 PENALT	
DEED RESTRI(		DEV RIGHT	
CENSUS	9051	SUBDIVISIO	
FIRE DISTRIC		SURVEY #	6/10
EASEMENT		DEV LOT #	
SEWER			
GIS ID:		ASSOC PID#	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
COM APTM	2-3	494,300	346,000
COM LAND	2-6	125,500	87,900
		Total	619,800	433,900

6019
BROOKLYN, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
RAHEB EDMOND M	167/ 259	02/06/1996			0	
BASS SUSAN & HARRIS	71/ 813	04/27/1981	U	I		
JOHN GRUNIGAN ET ALS	69/ 267	09/06/1979	U	I		
OTTO JEFFREY B & CAROLYN	56/ 23	07/23/1973	U	I		
OTTO JEFFREY B & HEIMALL CAROLYN	56/ 18	07/02/1973	U	I		
HEIMALL CLIFFORD E & DORIS L	47/ 248	04/30/1969	U	V		

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2016	2-3	346,000	2015	2-3	346,000	2014	2-3	370,500
2016	2-6	87,900	2015	2-6	87,900	2014	2-6	49,700
	Total:	433,900		Total:	433,900		Total:	420,200

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

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ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				2015

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	225,500
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	0
Appraised Land Value (Bldg)	0
Special Land Value	0
Total Appraised Parcel Value	619,800
Valuation Method:	I
Adjustment:	0
Net Total Appraised Parcel Value	**619,800**

NOTES

6- 4-2-1 UNITS
ECON = MKT

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
09/17/2009			DK	26	Building Permit
01/27/2009			DK	01	Measure+1Visit

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing		S Adj Fact	Adj. Unit Price	Land Value
2	111C	APT 4-UNT MDL-94	R30				0	SF	0.00	1.0000		1.0000	1.00		0.00				.00		0

Total Card Land Units: 0.00 AC | Parcel Total Land Area: 5.5 AC | Total Land Value: 0

Property Location: 371 CHURCH ST **MAP ID:** 36/ / 54/ / **Bldg Name:** **State Use:** 111C

Vision ID: 174 **Account #** 00017300 **Bldg #:** 2 of 2 **Sec #:** 1 of 1 **Card** 2 of 2 **Print Date:** 08/10/2017 17:32

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	14		Apartments
Model	94		Comm/Ind
Grade	03		Average
Stories	2		
Occupancy	6		
Exterior Wall 1	02		Comp./Wall Brd
Exterior Wall 2			
Roof Structure	03		Gable/Hip
Roof Cover	03		Asph/F Gls/Cmp
Interior Wall 1	05		Drywall/Sheet
Interior Wall 2			
Interior Floor 1	14		Carpet
Interior Floor 2			
Heating Fuel	04		Electric
Heating Type	07		Electr Basebrd
AC Type	01		None
Bldg Use	111C		APT 4-UNT MDL-94
Total Rooms			
Total Bedrms			
Total Baths			
Heat/AC	00		NONE
Frame Type	02		WOOD FRAME
Baths/Plumbing	02		AVERAGE
Ceiling/Wall	06		CEIL & WALLS
Rooms/Prtns	02		AVERAGE
Wall Height	8		
% Comn Wall			

CONSTRUCTION DETAIL (CONTINUED)

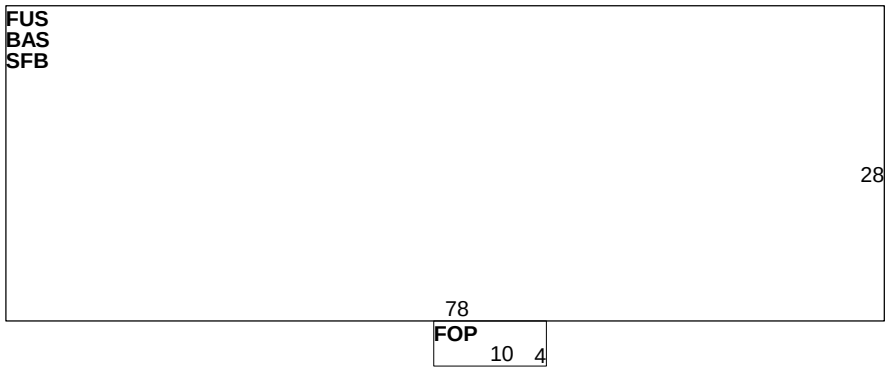
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
111C	APT 4-UNT MDL-94	100

COST/MARKET VALUATION

Adj. Base Rate:	63.48
Replace Cost	388,815
AYB	1969
EYB	1983
Dep Code	A
Remodel Rating	
Year Remodeled	
Dep %	32
Functional Obslnc	
External Obslnc	10
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	58
Apprais Val	225,500
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	2,184	2,184	2,184	63.48	138,640
FOP	Porch, Open	0	40	10	15.87	635
FUS	Upper Story, Finished	2,184	2,184	2,184	63.48	138,640
SFB	Bsmt Fin Above Grade	1,747	2,184	1,747	50.78	110,900
	Ttl. Gross Liv/Lease Area:	6,115	6,592	6,125		388,815

Property Location: 356 CHURCH ST | **MAP ID:** 36/ / 57/ / | **Bldg Name:** | **State Use:** 1010

Vision ID: 947 | **Account #** 00091800 | **Bldg #:** 1 of 1 | **Sec #:** 1 of 1 | **Card** 1 of 1 | **Print Date:** 08/10/2017 18:44

CURRENT OWNER

BEAUSOLEIL RODNEY D & VICTOR
356 CHURCH ST
BROOKLYN, CT 06234-1625
Additional Owners:

TOPO.	UTILITIES	STRT./ROAD	LOCATION

SUPPLEMENTAL DATA

Other ID:	36/057	490 PENALT	
DEED RESTRI(		DEV RIGHT	
CENSUS	9051	SUBDIVISIO	
FIRE DISTRIC		SURVEY #	
EASEMENT		DEV LOT #	
SEWER			
GIS ID:		*ASSOC PID#*	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
RES LAND	1-1	43,400	30,400
DWELLING	1-3	133,700	93,600
		Total 177,100	124,000

6019
BROOKLYN, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
BEAUSOLEIL RODNEY D & VICTORIA E	235/ 100	01/31/2001			0	
POMPOSELLI JAMIE	230/ 50	09/20/2000	U	I	42,500	
FARROW DAVID ANDREW	227/ 287	07/06/2000	U	I		
FARROW DON PHILLIP	160/ 184	05/17/1995	U	I		
FARROW DON PHILLIP	160/ 182	05/17/1995	U	I	35,000	
BEAUSOLEIL VICTOR P & STEVEN I	144/ 343	11/15/1993	U	I		

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2016	1-1	30,400	2015	1-1	30,400	2014	1-1	38,900
2016	1-3	93,600	2015	1-3	93,600	2014	1-3	108,200
Total:		124,000	*Total:*		124,000	*Total:*		147,100

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

NOTES

BEIGE IA

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	131,300
Appraised XF (B) Value (Bldg)	2,400
Appraised OB (L) Value (Bldg)	0
Appraised Land Value (Bldg)	43,400
Special Land Value	0
Total Appraised Parcel Value	177,100
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	177,100

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
2129	12/21/2005	CO	CO ISSUED	0		100	12/21/2005	CO FOR 7040
7040	07/05/2005	NC	New Construct	92,000		100	12/21/2005	1586 SF SFD W/484 SF (

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
04/02/2015			DM	58	Data mailer no chge
01/27/2009			DK	00	Measure+Listed

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing: Spec Use	Special Pricing: Spec Calc	S Adj Fact	Adj. Unit Price	Land Value
1	1010	Single Fam MDL-01	R30				0.48	AC	48,800.00	1.8511	5	1.0000	1.00	0050	1.00				1.00		43,400

Total Card Land Units: 0.48 AC | **Parcel Total Land Area:** 0.48 AC | **Total Land Value:** 43,400

Property Location: 356 CHURCH ST **MAP ID:** 36/ / 57/ / **Bldg Name:** **State Use:** 1010

Vision ID: 947 **Account #** 00091800 **Bldg #:** 1 of 1 **Sec #:** 1 of 1 **Card** 1 of 1 **Print Date:** 08/10/2017 18:44

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	03		Colonial
Model	01		Residential
Grade	04		C+
Stories	2		
Occupancy	1		
Exterior Wall 1	25		Vinyl Siding
Exterior Wall 2			
Roof Structure	03		Gable/Hip
Roof Cover	03		Asph/F Gls/Cmp
Interior Wall 1	05		Drywall/Sheet
Interior Wall 2			
Interior Flr 1	14		Carpet
Interior Flr 2			
Heat Fuel	02		Oil
Heat Type	05		Hot Water
AC Type	01		None
Total Bedrooms	03		3 Bedrooms
Total Bthrms	1		
Total Half Baths	1		
Total Xtra Fixtrs			
Total Rooms	5		
Bath Style	02		Average
Kitchen Style	02		Modern

CONSTRUCTION DETAIL (CONTINUED)

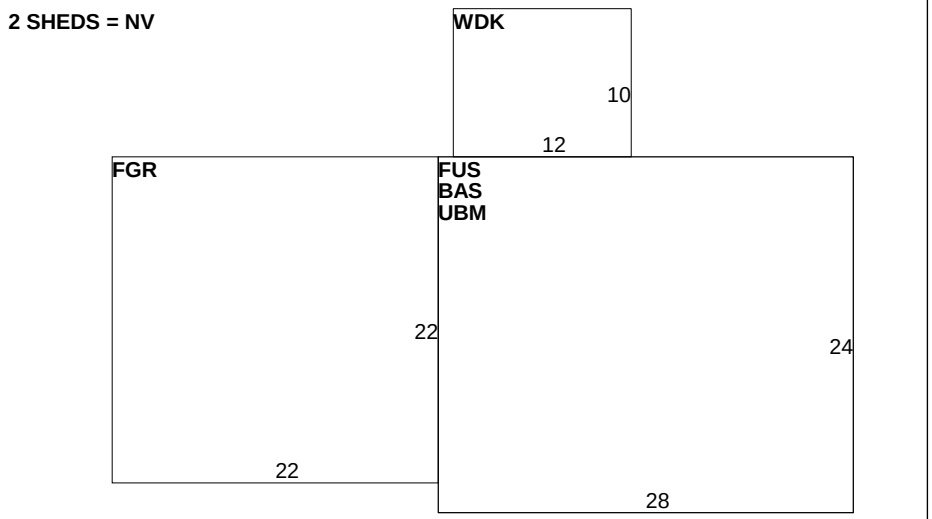
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
1010	Single Fam MDL-01	100

COST/MARKET VALUATION

Adj. Base Rate:	87.86
Replace Cost	150,948
AYB	2005
EYB	2007
Dep Code	A
Remodel Rating	
Year Remodeled	
Dep %	8
Functional Obslnc	
External Obslnc	5
Cost Trend Factor	1
Condition	
% Complete	
Overall % Cond	87
Apprais Val	131,300
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
FPL3	FIREPLACE 2			B	1	2,800.00	2007		1		100	2,400

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	672	672	672	87.86	59,044
FGR	Garage	0	484	194	35.22	17,045
FUS	Upper Story, Finished	672	672	672	87.86	59,044
UBM	Basement, Unfinished	0	672	168	21.97	14,761
WDK	Deck, Wood	0	120	12	8.79	1,054
	Ttl. Gross Liv/Lease Area:	1,344	2,620	1,718		150,948