

DEPARTMENT OF ENERGY AND ENVIRONMENT

WELLS AND BORINGS

**21 DCMR CHAPTER 18
WELL CONSTRUCTION, MAINTENANCE, AND
ABANDONMENT STANDARDS**

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1800 PURPOSE AND SCOPE

1800.1 The provisions of this chapter shall be applicable to the construction, maintenance, and abandonment of wells in the District of Columbia, pursuant to the Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code §§ 8-103.01 *et seq.*).

1800.2 The purpose of this chapter is to ensure that the construction, maintenance, and abandonment of a well is undertaken in a manner that protects public health and safety and the environment.

1801 APPLICABILITY

1801.1 A person engaged in the construction, maintenance, and abandonment of a well in the District shall comply with the requirements set forth in this chapter.

1801.2 A person shall not construct, maintain, or abandon a well in a manner that may create a point source or non-point source of pollutants to waters of the District, impair the beneficial uses of waters of the District, or pose a hazard to public health and safety or the environment.

1801.3 A well owner shall ensure that, as applicable:

- (a) The construction of the well is conducted in accordance with §§ 1809 through 1826;
- (b) The use and maintenance is conducted in accordance with §§ 1827 through 1829; and
- (c) The abandonment of the well is conducted in accordance with §§ 1830 and 1831.

- 1801.4 If a well was constructed prior to March 31, 2017, the well owner shall ensure that:
- (a) The well does not pose a hazard to public health and safety or the environment and does not impair the beneficial uses of waters of the District;
 - (b) The well, well cap, upper terminus, and well labeling meet the requirements in §§ 1820 and 1821; and
 - (c) By March 31, 2021, the well is registered with the Department in accordance with the requirements of § 1806; or
 - (d) By March 31, 2021, the well is abandoned in accordance with the requirements of §§ 1830 and 1831.

1802 WELL CONSTRUCTION BUILDING PERMIT EXEMPTIONS

- 1802.1 An infiltration test well constructed and used in accordance with Chapter 5 (Water Quality and Pollution) of Title 21 of the District of Columbia Municipal Regulations (DCMR) and the Stormwater Management Guidebook shall be exempt from the requirements of this chapter.
- 1802.2 A well constructed for use in a best management practice in accordance with Chapter 5 of Title 21 DCMR and the Stormwater Management Guidebook shall be exempt from the requirements of this chapter.
- 1802.3 A well construction building permit shall not be required for a well which meets all of the following conditions:
- (a) The well is constructed to a depth of ten feet (10 ft.) or less;
 - (b) The lower terminus of the well does not intersect the seasonal water table;
 - (c) The well is not sited within twenty-five feet (25 ft.) of the mean high watermark of District surface waters;
 - (d) The well is not sited within twenty-five feet (25 ft.) of wetland;
 - (e) The construction and maintenance of the well is performed in accordance with the requirements of this chapter; and
 - (f) The well is abandoned within five (5) business days of completion of construction in accordance with § 1830.1.

- 1802.4 If during the construction of a well for which no building permit was required, field conditions or new information indicate that any condition in § 1802.3 will not be met, the well owner shall:
- (a) Stop all well construction work and related activities;
 - (b) Notify the Department within twenty-four (24) hours of the discovery;
 - (c) Propose immediate corrective actions;
 - (d) Implement Department-ordered corrective actions to prevent an imminent hazard to public health and safety or the environment; and
 - (e) If additional action is necessary to meet the requirements of this chapter, or if requested by the Department, submit a well construction building permit application in accordance with § 1803.
- 1802.5 A well construction building permit shall not be required for the maintenance of a registered well, provided that the maintenance does not include a modification or material change in the original permitted design, specifications, or construction of the well.
- 1802.6 The Department may allow a well owner to delay submitting a well construction building permit application if:
- (a) The well owner immediately notifies the Department of an emergency circumstance that may impact a well, the environment, or public health and safety, which requires immediate corrective action;
 - (b) The Department deems an emergency circumstance to exist, where obtaining a work plan approved by the Department for the maintenance or abandonment of a well would result in a delay that could pose an immediate hazard to public health and safety or the environment;
 - (c) The well owner complies with the application procedures in § 1803 within seventy-two (72) hours after the emergency is identified; and
 - (d) All work is conducted in accordance with applicable construction, maintenance, and abandonment requirements.
- 1802.7 A well abandonment permit shall not be required if:
- (a) The well is abandoned within thirty (30) days following the completion of construction of the well; and

- (b) A well abandonment work plan developed in accordance with §§ 1830 and 1831 is submitted with the initial well construction building permit application.

1803 WELL CONSTRUCTION PERMIT APPLICATION PROCEDURE

1803.1 Except as provided in § 1802, no person shall construct a well in the District without a well construction work plan conforming to the requirements of § 1803.3 approved by the Department, and a well construction building permit approved by the Department and issued by the Department of Consumer and Regulatory Affairs (DCRA).

1803.2 The well owner shall apply to the DCRA for a well construction building permit, which shall be issued by DCRA subject to the requirements of this chapter.

1803.3 Beginning on April 1, 2017, a well construction building permit application shall include a well construction work plan containing the following information, which shall be submitted to the Department for review and approval:

- (a) The well owner's name, mailing address, telephone number, and electronic mailing address;
- (b) The property owner's name, mailing address, telephone number, and electronic mailing address, if different from the well owner information provided pursuant to § 1803.3(a);
- (c) The well driller's name, address, telephone number, and electronic mailing address, a copy of the pertinent DCRA license(s), and a copy of the well driller's current driller's license;
- (d) The physical location of the property on which the well is sited, including the physical address, a square, suffix, and lot, or closest physical location identifier;
- (e) The intended use of the well;
- (f) A description of the well construction details;
- (g) A well design diagram or schematic detailing how the well will be constructed;
- (h) The topographic description of the site;
- (i) The geology underlying the property where the well is sited;

- (j) The proximity to the one hundred (100)-year floodplain;
- (k) The name of the aquifer or aquifers that will be penetrated;
- (l) The name of the aquifer or aquifers that will be screened, if applicable;
- (m) The proximity to and details of recognized environmental conditions identified on or adjacent to the property where the well will be sited;
- (n) Methods to prevent aquifer cross-contamination where a recognized environmental condition has been identified on or adjacent to the property where the well will be sited;
- (o) A site map, plat, or plan depicting:
 - (1) The lot and square;
 - (2) The geographical location of the well within the property boundaries;
 - (3) The geographical location of the well in relation to the nearest street intersection;
 - (4) The setback distances from property lines;
 - (5) The setback distances from recognized environmental conditions identified on the property where the well is sited;
 - (6) The identification of public spaces;
 - (7) The identification of structures and driveways;
 - (8) The extents of the land disturbing activities including any construction entrance and stockpile area(s);
 - (9) The identification of waters of the District of Columbia on or adjacent to the property where the well will be sited;
 - (10) Compass directions;
 - (11) A scale bar; and
 - (12) A key or legend;
- (p) A description of the well construction activity including:

- (1) The well construction materials and well installation equipment to be used;
- (2) The well construction methods including drilling methods and procedures, and drilling fluids to be used; and
- (3) Details of decontamination procedures, if applicable;
- (q) The plan for handling, analyzing, and disposal of derived waste; and
- (r) A description of any equipment or materials that shall or may be placed in the well such as:
 - (1) Pumps;
 - (2) Pipes;
 - (3) Loops;
 - (4) Packers; or
 - (5) Liners.

1803.4 In addition to the requirements of § 1803.3, the well construction work plan for the construction of a closed-loop ground source heat pump well shall include:

- (a) The type of closed-loop ground source heat pump system;
- (b) The design capacity of the proposed closed-loop ground source heat pump system;
- (c) The total number of loops in the well, loop configuration, the total number of loops in the system, the angles of the loops to the vertical plane and the depth to which they will be placed in the subsurface;
- (d) The pipe dimensions, type of pipe, and pipe material;
- (e) Details of the proposed circulation fluid, including:
 - (1) The type of circulation fluid;
 - (2) The concentration of the circulation fluid;

- (3) The manufacturer's specifications and product details including any additives or anti-corrosive agents;
 - (4) The applicable Safety Data Sheets for the chemicals used in the circulation fluid;
 - (5) Any known or potential environmental or public health and safety concerns or issues related to the use of the material as a circulation fluid for a closed-loop ground source heat pump system; and
 - (6) A pollution prevention plan and spill response plan to address the storage, handling, and management of the circulation fluid.
- (f) The type, mix ratios, and permeability of the grout, including how the grout will be inserted and the grout manufacturer's specifications for using the grout;
 - (g) The type, length, placement, and reason for using any outer casing material;
 - (h) The types of fittings and joints, and the procedures for sealing fittings and joints;
 - (i) The footprint of a proposed structure that shall be placed on top of a closed-loop ground source heat pump system must be clearly shown on the site plan; and
 - (j) Identification of any structure or operation that may impact or be impacted by the closed-loop ground source heat pump system.

1803.5 In addition to the requirements of § 1803.3, the well construction work plan for construction of a dewatering well shall include:

- (a) The proposed volume of water to be pumped and the estimated flow rate;
- (b) The proposed or anticipated radius of influence;
- (c) The quality of water to be pumped and supporting analytical data;
- (d) The details of any proposed treatment of recovered water containing known or suspected contaminants;
- (e) A copy of any required District or federal permit(s) issued or the status of a pending application for the required District or federal permit(s);

- (f) The purpose of dewatering;
- (g) The type, make, and model of pump used, including the horsepower;
- (h) The type and placement of the well screen;
- (i) The depth of pump intake;
- (j) The location of effluent discharge;
- (k) A description of discharge location such as, combined sewer system, public or private storm sewer system, water body, or licensed offsite facility;
- (l) The available analytical data for the property where the well will be sited, if a recognized environmental condition has been identified;
- (m) The proximity of the dewatering well to known sensitive receptors including, surface water bodies, wetlands, groundwater recharge areas, wellhead protection areas, and recognized environmental conditions located on the property and on properties adjacent to where the well will be sited;
- (n) A pollution prevention plan and spill response plan for a site where a system is anticipated or proposed for the treatment of dewatering well effluent;
- (o) The name of the aquifer(s) to be dewatered;
- (p) The proposed or anticipated decrease in potentiometric surface; and
- (q) The duration of dewatering expressed as start and end dates and the total dewatering period.

1803.6 In addition to the requirements of § 1803.3, the well construction work plan for construction of a ground freeze well shall include:

- (a) The purpose or application of the ground freeze well and ground freeze well system;
- (b) The proposed or anticipated radius and depth of influence of each ground freeze well;
- (c) The configuration or geometry of the ground freeze well system;

- (d) Proximity of ground freeze well system to underground utilities and means of protecting potentially affected utilities;
- (e) The type of refrigerant system to be used;
- (f) The type of refrigerant or coolant fluid to be circulated or used;
 - (1) The type of circulation fluid;
 - (2) The concentration of the circulation fluid;
 - (3) The manufacturer's specifications and product details including any additives or anti-corrosive agents;
 - (4) The applicable Safety Data Sheets for the chemicals used in the circulation fluid; and
 - (5) Any known or potential environmental or public health and safety concerns or issues related to the use of the material as a circulation fluid for a ground freeze well system;
- (g) The loop or circulation configuration within the well;
- (h) The circulation pipe dimensions, type of pipe, and pipe material;
- (i) The type, mix ratios, and permeability of the grout, including how the grout will be inserted and the grout manufacturer's specifications for using the grout;
- (j) The distribution manifold configuration and materials to be used;
- (k) The proposed or anticipated flow of refrigerant or circulating fluid;
- (l) The type, length, placement, and reason for using any outer casing material;
- (m) A pollution prevention plan and spill response plan to address the storage, handling, and management of the refrigerant or coolant fluid; and
- (n) If additional water will be introduced to supplement the ground freeze system, the method the water will be introduced into the formation.

1803.7

In addition to the requirements of § 1803.3, the well construction work plan for construction of an injection well shall include;

- (a) A copy of the EPA Underground Injection Control Permit or identification of an applicable exemption of this permit;
- (b) The volume of fluid to be injected;
- (c) The chemical, biological, physical, and radiological quality of the fluid to be injected;
- (d) The Technical Information Sheet and Safety Data Sheet for each treatment material to be used;
- (e) The proposed injection rate or feasible range;
- (f) The proposed or anticipated radius and depth of influence;
- (g) The injection method;
- (h) The location and maximum number of injection points;
- (i) The details of any proposed pilot testing;
- (j) The location and number of observation wells;
- (k) The proposed monitoring plans and monitoring protocols;
- (l) The duration of injection;
- (m) The identification of receiving aquifer(s);
- (n) Any expected impact to the subsurface;
- (o) Any expected impact to adjoining properties;
- (p) The proximity to surface water and potential ecological receptors;
- (q) Any expected impact to the closest surface water and potential ecological receptors;
- (r) The volume of the water to be treated;
- (s) The quality of the water to be treated;
- (t) The source of the contaminants;
- (u) The proposed implementation schedule;

- (v) The compliance schedule;
- (w) The compliance monitoring program;
- (x) A copy of any previous report or data related to the investigation and feasibility of the proposed action;
- (y) A map or series of maps showing the following:
 - (1) The topography;
 - (2) The geology;
 - (3) The location of on-site and nearby utility lines;
 - (4) The type and extent of the contaminants;
 - (5) The location of the proposed treatment system;
 - (6) The location of any existing contaminant treatment system; and
 - (7) The location of compliance monitoring wells;
- (z) The expected short-term and long-term effects on the environment and public health; and
- (aa) Any other relevant information.

1803.8 In addition to the requirements of § 1803.3, the well construction work plan for construction of a water supply well shall include:

- (a) The intended use of the water supply well;
- (b) The proposed withdrawal method;
- (c) The make and model of the pump;
- (d) The proposed drawdown on the aquifer(s);
- (e) The proposed groundwater withdrawal rates;
- (f) The proposed aquifer pump test;
- (g) The aquifer pump test data from a nearby test well or existing supply well;

- (h) The aquifer water quality data;
- (i) The size of the population that will be served by the withdrawal; and
- (j) The operation and maintenance details of the well.

1803.9 In addition to the requirements of §§ 1803.3 through 1803.8, the Department may require supplemental information related to the construction, maintenance, or intended use of a soil boring, recovery well, monitoring well, observation well, piezometer, industrial supply well, irrigation supply well, domestic supply well, or any other type of well.

1803.10 A well owner may request a special compliance standard or the modification of a requirement of this chapter, if conditions or circumstances exist such that compliance will result in poor construction, maintenance, or abandonment of a well or will preclude the construction of the well.

1803.11 A request for a special compliance standard or modification under § 1803.10 shall be submitted in writing to the Department for review and approval, and shall include:

- (a) A description of the circumstances or site conditions that warrant special consideration;
- (b) The proposed special compliance standard or modification request;
- (c) Documentation establishing that the proposed special compliance standard or modification is adequate and protective of public health and safety and the environment; and
- (d) The signature of the well owner certifying that the information in the request for the special standard is accurate and complete to the best of the owner's knowledge.

1803.12 Prior to construction of a well, a Department-approved well construction building permit application and well construction work plan may be modified provided the proposed modification is submitted to the Department and to the DCRA for review and approval in accordance with the requirements of §§ 1803.10 and 1803.11.

1803.13 During the construction of a well, a Department-approved well construction building permit application and well construction work plan may only be modified if:

- (a) The well owner immediately notifies the Department and the DCRA in writing; and
- (b) The modification of the well construction building permit and well construction work plan does not violate District or federal laws or regulations.

1804 DEPARTMENT REVIEW

1804.1 The Department shall review each well construction building permit application submitted to the Department of Consumer and Regulatory Affairs (DCRA) and each well construction work plan to ensure that it meets the standards and requirements of this chapter.

1804.2 The Department may conduct the review and approval of a complete well construction building permit application and well construction work plan as part of the following remedial or removal actions or programs:

- (a) The Voluntary Remedial Action Program, pursuant to Section 6213 of Title 20 of the District of Columbia Municipal Regulations (DCMR);
- (b) An enforcement corrective action taken pursuant to the District of Columbia Underground Storage Tank Management Act of 1990, as amended, D.C. Official Code §§ 8-113.01 *et seq.*, and its implementing regulations in Chapters 55-70 of Title 20 DCMR;
- (c) The Voluntary Cleanup Program, pursuant to D.C. Official Code §§ 8-633.01 *et seq.*; or
- (d) An enforcement action taken pursuant to the District of Columbia Brownfield Revitalization Amendment Act of 2000, as amended; D.C. Official Code §§ 8-631.01 *et seq.*

1804.3 The Department may reject an incomplete well construction building permit application or well construction work plan.

1804.4 If the Department rejects an incomplete well construction building permit application and well construction work plan, the Department shall notify the well owner in writing of the reason for the rejection.

1804.5 The Department shall reject the well construction building permit application and well construction work plan if the proposed well violates any District or federal laws or regulations, or poses a hazard to the environment, public health and safety, or otherwise interferes with the designated or beneficial uses of the waters of the District.

- 1804.6 The Department may consider the following when reviewing the well construction building permit application and well construction work plan:
- (a) The effects of the geology, topography, hydrology, hydrogeology, and hydraulics of the area of interest;
 - (b) The population density and water use;
 - (c) The potential to impact or be impacted by nearby properties;
 - (d) The conditions of the surface and subsurface;
 - (e) The current and future water quality;
 - (f) The designated and beneficial uses of the waters of the District;
 - (g) The depletion rate of the water resources;
 - (h) The on-site and nearby recognized environmental conditions; and
 - (i) Public health and safety and the environment.

- 1804.7 The Department's approval of a well construction building permit application and well construction work plan may be subject to additional conditions to ensure compliance with District or federal laws or regulations and the protection of the public health and safety, and the environment, including:
- (a) Requirements for the use of outer-casing during the construction of a soil boring;
 - (b) Requirements for the construction of a double-cased well;
 - (c) Limits on pumping rates and pumping duration;
 - (d) Special grouting requirements;
 - (e) Special use restrictions;
 - (f) Restrictions on well dimensions;
 - (g) Restrictions on well locations within the property boundary;
 - (h) Restrictions on well construction methods;

- (i) Special drilling requirements;
- (j) Special requirements for construction in various geologic formations;
- (k) Special requirements for construction in various ecological environments;
- (l) Special well construction material requirements;
- (m) Special monitoring requirements;
- (n) Special maintenance requirements;
- (o) Restrictions on well operation; and
- (p) Special abandonment requirements.

1804.8 The Department may require that a well owner submitting a well construction building permit application collect data or conduct analyses to determine if the proposed well impacts the District's water resources, including the following information:

- (a) Lithological and geophysical boring logs;
- (b) Grain size analysis;
- (c) Land survey data;
- (d) Groundwater elevation data;
- (e) Groundwater quality data including field parameters;
- (f) Hydrogeological tests such as, pump or slug tests;
- (g) Modeling of groundwater, heat or contaminant flow; and
- (h) Leachability testing and modeling.

1805 FEE SCHEDULE

1805.1 Fees shall be paid in full at the time an application for well construction or well registration is made, as specified in Table 1.

Table 1: Well Fee Schedule

| ITEM | FEE |
|--|---|
| Well Permit Review and Registration Origination | |
| a. Closed-Loop Ground Source Heat Pump Well | \$15.00 per well or \$150.00 per lot |
| b. Temporary Construction Dewatering Well and Ground Freeze Well | \$5.00 per well or \$125.00 per lot |
| c. Monitoring Well, Observation Well, Piezometer/Soil Boring, Injection Well, and Recovery Well | \$10.00 per well or \$100.00 per lot |
| d. Water Supply Well | \$75.00 per well |
| Well Registration Renewal | |
| a. Biennial well(s) registration renewal | \$25.00 per lot |
| b. Five-Year Closed-Loop Ground Source Heat Pump Well(s) registration renewal | \$25.00 per lot |
| Changes to Well Registration | |
| a. Change-in-Ownership | \$25.00 per lot |
| b. Change-in-Well-Use | \$25.00 per lot |

1805.2 The Department may adjust the fees for inflation once every calendar year beginning on January 1, 2017, using the Urban Consumer Price Index published by the United States Bureau of Labor Statistics.

1806 WELL REGISTRATION

1806.1 The Department shall issue a unique well registration number for each well included in an approved well construction building permit application and well construction work plan or registered with the Department.

1806.2 By March 31, 2021, a well owner of any well constructed prior to March 31, 2017, shall:

- (a) If the well was permitted by the Department, submit a well completion report in accordance with § 1826;
- (b) If the well was not permitted by the Department, submit a registration application in accordance with § 1806.3; or
- (c) Abandon the well in accordance with the procedures in §§ 1830 and 1831 of this chapter.

1806.3

The well registration application required by § 1806.2 shall include:

- (a) The well owner's name, mailing address, telephone number, and electronic mailing address;
- (b) The property owner's name, mailing address, telephone number and electronic mailing address, if different from the information provided pursuant to § 1806.3(a);
- (c) The well driller's name, address, telephone number, electronic mailing address, and a copy of the pertinent Department of Consumer and Regulatory Affairs (DCRA) license(s);
- (d) The physical location of the property on which the well is sited, including the physical address, the square, suffix, and lot number, or the closest physical location identifier;
- (e) The specifications of the well such as the well diameter, depth, and construction materials, if known;
- (f) The well construction as-built schematic detailing the well construction, if available;
- (g) The well boring logs, if available;
- (h) The well construction method and procedures, if known;
- (i) The well construction completion date, if known;
- (j) The well use and corresponding application information for the following types of wells:
 - (1) Ground source heat pump, including well information required in § 1803.4;
 - (2) Dewatering well, including information required in § 1803.5;
 - (3) Ground freeze well, including information required in § 1803.6; and
 - (4) Injection well, including information required in § 1803.7.
- (k) If the well is in the public right of way or public space, a copy of the Public Space Permit;

- (l) The horizontal location of the well using either the Maryland State Plane Coordinate System or latitude and longitude;
- (m) The vertical elevation of the top of the well casing based upon North American Datum 1988 (NAVD88);
- (n) A site map, plat, or plan depicting:
 - (1) The lot and square;
 - (2) The geographical location of the well within the property boundaries;
 - (3) The geographical location of the well in relation to the nearest street intersection;
 - (4) The setback distances from property lines;
 - (5) The setback distances from recognized environmental conditions identified on the property where the well is sited;
 - (6) The identification of public spaces;
 - (7) The identification of structures and driveways;
 - (8) The identification of waters of the District of Columbia on or adjacent to the property;
 - (9) Compass directions; and
 - (10) A scale bar;
- (o) A key or legend;
- (p) The last measured depth to water and the recording date;
- (q) The well yield for supply wells;
- (r) The well development log, if available;
- (s) Any information that suggests or indicates that there is or may be negative impacts to the waters of the District due to the construction, operation, or maintenance of the well;
- (t) The structural integrity of the well;

- (u) The condition of the well surface completion;
- (v) The presence and condition of the well cap, lock, and cover, and whether or not they meet the requirements of § 1820;
- (w) An attestation signed by the well owner that the information provided is accurate and complete to the best of the owner's knowledge; and
- (x) Any other relevant information.

1806.4 The Department may require submission of additional information as part of the well registration application as it relates to the intended use of the well, including the use of a recovery well, monitoring well, observation well, piezometer, industrial supply well, irrigation supply well, or domestic supply well.

1806.5 The Department shall cancel the registration of a well that has not been constructed or is not in the process of being constructed within the period covered by the well construction building permit.

1806.6 Except for a well constructed under a Department regulatory action and a closed-loop ground source heat pump well, the owner of an existing and permitted well shall renew the well registration every two (2) years.

1806.7 The owner of a closed-loop ground source heat pump well shall renew the well registration every five (5) years.

1806.8 The well registration renewal required by §§ 1806.6 and 1806.7 shall include the unique well registration number provided by the Department for each well and any changes to the information specified in § 1806.3.

1806.9 A well owner who fails to submit a well registration or well registration renewal request by the required deadline shall abandon the well in accordance with §§ 1830 and 1831 within sixty (60) days.

1807 CHANGE OF WELL USE OR OWNER

1807.1 Upon the transfer of ownership of a well, the new well owner shall register the well with the Department by March 31st of the calendar year following the transfer of the well ownership.

1807.2 The use of a well as specified and approved by the Department in a well construction building permit application, well construction work plan, or well registration shall not be changed, except in accordance with § 1807.3.

- 1807.3 A well owner who proposes to change the use of a well shall submit an application with the following information:
- (a) The well owner's name, mailing address, telephone number, and electronic mailing address;
 - (b) The property owner's name, mailing address, telephone number, and electronic mailing address, if different from the information provided pursuant to § 1807.3(a);
 - (c) The physical location of the property on which the well is sited, in the form of a physical address, a square, suffix, and lot, or closest physical location identifier;
 - (d) The well construction building permit number for the well;
 - (e) A description of the specific proposed change(s) in use;
 - (f) A statement of how the change(s) will be achieved;
 - (g) If a licensed well driller is required as part of the change(s) in use, the licensed well driller's name, address, telephone number, electronic mailing address, a copy of the pertinent Department of Consumer and Regulatory Affairs (DCRA) license(s), and a copy of the well driller's current driller's license; and
 - (h) A description of any potential impacts to the waters of the District as a result of the proposed change(s) in use.

1808 WELL DRILLERS IN THE DISTRICT

- 1808.1 Except in accordance with §§ 1808.3 and 1808.4, no person shall construct, maintain, or abandon a well within the District unless that person is a licensed well driller and possesses a current Department of Consumer and Regulatory Affairs business license.
- 1808.2 A well owner shall ensure the construction, maintenance, and abandonment of a well is performed under the direct supervision of a licensed well driller.
- 1808.3 A licensed well driller shall not be required for the construction of a well using hand operated or hand driven tools, including hand-augers, soil probes, and hand shovels.

1808.4 A licensed well driller shall not be required for the maintenance of a well, provided that the maintenance does not require the application of chemical treatment, the maintenance of an installed pump, or a material change in the original permitted design, specification, or construction of the well.

1809 WELL CONSTRUCTION REQUIREMENTS: GENERAL

1809.1 A well shall be constructed in accordance with a well construction work plan approved by the Department and a well construction building permit issued by the Department of Consumer and Regulatory Affairs (DCRA).

1809.2 A well owner shall provide a minimum of two (2) full business days' notice to the Department prior to commencing the construction of a well.

1809.3 A well owner shall obtain public utility clearance pursuant to the Underground Facilities Protection Act of 1980, effective March 4, 1981 (D.C. Law 3-129; D.C. Official Code §§ 34-2701 *et seq.*), as amended.

1809.4 A well owner shall obtain clearance of underground facilities with non-utility operators, including the Washington Metropolitan Area Transit Authority (WMATA).

1809.5 A soil boring shall not be subject to the construction standards of § 1809.6, and §§ 1815 through 1826, provided that all the following conditions are met:

- (a) The intended use of the well as a soil boring is identified in the Department-approved well construction permit application and well construction work plan; and
- (b) The soil boring is abandoned in accordance with §§ 1830 and 1831 within twenty-four (24) hours of starting construction of the borings.

1809.6 A well shall be constructed from the bottom of the boring to the top of the well using materials free of contaminants and compatible with the intended well use and the surrounding surface and subsurface conditions and shall include the following components:

- (a) A well casing;
- (b) A well point or plug;
- (c) A well screen;
- (d) A filter pack;

- (e) A low-permeability seal; and
- (f) Grout within the annulus between the borehole wall and well casing.

1809.7 A well shall not hydraulically connect otherwise confined aquifers, causing aquifer cross-contamination, or hydraulically connect those portions of a single aquifer where contaminants exist in separate and definable layers within the aquifer.

1810 WELL CONSTRUCTION REQUIREMENTS: SITING

1810.1 A well shall be constructed so that it is accessible for cleaning, treatment, repair, testing, inspection, abandonment, and any other work that may be necessary.

1810.2 A well shall not be constructed within or under any building other than a separate structure constructed specifically for the housing of pumping equipment, unless otherwise approved in writing by the Department and specifically noted in the approved well construction work plan.

1810.3 A well housed in a separate structure in accordance with § 1810.2 shall be properly marked to indicate the category of the well and the well registration number.

1810.4 Except as provided by § 1810.5, buildings or other structures shall not be constructed on top of a registered and permitted well, unless the well has been abandoned in accordance with §§ 1830 and 1831, or unless otherwise approved by the Department.

1810.5 Buildings or other structures may be constructed on top of ground source heat pump wells, provided that adequate access is available to the loops to allow attachment to the building headers and for well operation, repair, maintenance, and abandonment.

1810.6 A well shall not be constructed or maintained in a manner that interferes with or damages any pre-existing subsurface structures, including utility lines, long-term combined sewer control shafts, diversion structures, diversion sewers, diversion tunnels, and Washington Metropolitan Area Transit Authority (WMATA) transit tunnels.

1810.7 A well sited within the one hundred (100)-year floodplain or a low-lying area prone to flooding shall be constructed in accordance with § 1820.2.

- 1810.8 A well shall be located a minimum of twenty-five feet (25 ft.) from the mean high watermark of waters of the District or waters of the United States of America and a minimum of twenty-five feet (25 ft.) from a wetland, unless authorized in writing by the Department.
- 1810.9 A domestic supply well shall be sited a minimum of one hundred feet (100 ft.) from a recognized environmental condition.
- 1810.10 A closed-loop ground source heat pump well shall be sited in accordance with the following standards:
- (a) A closed-loop ground source heat pump well shall not be constructed within five hundred feet (500 ft.) of a recognized environmental condition without prior written approval of the Department;
 - (b) A closed-loop ground source heat pump well shall be located at least twenty-five feet (25 ft.) away from a water supply well;
 - (c) A closed-loop ground source heat pump well with a capacity of two (2) tons or less shall be sited a minimum of eight feet (8 ft.) from the property boundary;
 - (d) A closed-loop ground source heat pump well with a capacity greater than two (2) tons, but less than or equal to four (4), tons shall be sited a minimum of ten feet (10 ft.) from the property boundary; and
 - (e) A closed-loop ground source heat pump well with a capacity greater than four (4) tons or a commercial closed-loop ground source heat pump system shall be sited a minimum of ten feet (10 ft.) from the property boundary, and the permissible distance from the boundary shall be definitively determined based on the following criteria:
 - (1) The geology, topography, hydrology, hydrogeology, and hydraulics of the area of interest;
 - (2) The design of the closed-loop ground source heat pump system;
 - (3) The closed-loop ground source heat pump system's heating and cooling capacity;
 - (4) The closed-loop ground source heat pump system's proximity to other ground source heat pump wells; and
 - (5) The closed-loop ground source heat pump system's proximity to property boundaries.

1810.11 If a proposed closed-loop ground source heat pump well does not meet the siting criteria outlined in § 1810.10, the well owner may submit a request to the Department for a special compliance standard in accordance with the requirements of §§ 1803.10 and 1803.11.

1811 WELL CONSTRUCTION REQUIREMENTS: RELOCATION DURING CONSTRUCTION

1811.1 Except as set forth in § 1811.2, a well may be relocated during construction for the avoidance of utility lines, building footings, or other sub-surface obstructions provided that:

- (a) The well is not relocated more than ten feet (10 ft.) from the approved and permitted location identified in the well construction building permit application;
- (b) The new well location meets the requirements of this chapter;
- (c) The new well location is situated on the same lot and square number listed on the well construction building permit application;
- (d) The unsuccessful well, cased or uncased, is abandoned in accordance with the requirements of §§ 1830 and 1831 of this chapter; and
- (e) The Department has not prohibited well relocation in the approved well construction work plan.

1811.2 A closed-loop ground source heat pump well shall not be relocated from the position shown on the well construction building permit and the Department-approved well construction work plan, without written approval by the Department.

1812 WELL CONSTRUCTION REQUIREMENTS: SANITARY PROTECTION

1812.1 A well owner is responsible for sanitary protection of the well during construction, maintenance, and abandonment.

1812.2 During well construction, the well and any water-bearing formation shall be protected against contaminants from any source, including surface water drainage.

1812.3 If construction of a well is suspended for any period of time prior to the completion of the well, the well annulus or open borehole shall be covered and protected from surface water drainage and the vertical migration of contaminants and other materials through the well casing and well annulus, and the well casing capped in accordance with the requirements of § 1820.1.

1812.4 A soil boring or well meeting the requirements of § 1818.2 shall be covered and protected from surface water drainage and the vertical migration of contaminants and other materials when not in use.

1812.5 In the event that contaminants not addressed in the well construction building permit are encountered during the construction, maintenance, or abandonment of a well, the well owner shall:

- (a) Stop all well construction work and related activities;
- (b) Immediately notify the Department and other applicable emergency personnel;
- (c) Propose immediate corrective action;
- (d) Implement Department-approved corrective actions to prevent an imminent hazard to the public health and safety, or the environment; and
- (e) If additional action is necessary to investigate or remediate the contaminants, or is required by this chapter or requested by the Department, develop and submit a well construction work plan to the Department for review and approval.

1812.6 In the event that contaminants not addressed in the well construction building permit are encountered during the construction, maintenance, or abandonment of a well under a Department regulatory action, the well owner shall notify the Department and other applicable emergency personnel and take necessary measures to contain and minimize the spread of contaminants.

1812.7 All materials, including drilling fluids or muds, used in the construction of a well shall be free of contaminants and shall not cause the groundwater to become polluted in violation of District or federal laws and regulations.

1813 WELL CONSTRUCTION REQUIREMENTS: DERIVED MATERIAL FROM WELL CONSTRUCTION, MAINTENANCE, AND ABANDONMENT

- 1813.1 A well owner shall ensure all derived waste from the construction, maintenance, or abandonment of a well is managed and handled in accordance with this chapter and all District and federal laws and regulations.
- 1813.2 A well owner shall containerize all derived waste from the construction, maintenance, or abandonment of a well sited on a property where a recognized environmental condition has been identified and take the following measures:
- (a) Representative sample(s) of the derived waste shall be collected and analyzed for known or suspected contaminants by a National Environmental Laboratory Accreditation Conference-certified laboratory using appropriate EPA-approved procedures;
 - (b) All derived waste shall be stored and transported in United States Department of Transportation-approved containers; and
 - (c) All derived waste shall be permanently removed from the site for disposal in accordance with all District and federal laws and regulations.
- 1813.3 No person shall place, use, store, or dispose of derived waste from the construction, maintenance, or abandonment of a well in a manner that the derived waste may come into contact with or leach into the waters of the District, thereby violating the District Water Quality Standards in Chapter 11 (Water Quality Standards) of Title 21 of the District of Columbia Municipal Regulations (DCMR), or resulting in acute or chronic exposure to aquatic biota or otherwise posing a hazard to public health and safety or the environment.
- 1813.4 Soil or sediment derived from the construction, maintenance, or abandonment of a well may be placed on the site or stockpiled, provided it meets the following requirements:
- (a) The soil or sediment is characterized as non-hazardous waste in accordance with § 1813.2(a) and does not pose a hazard to public health and safety and the environment;
 - (b) The soil or sediment contains a concentration of total petroleum hydrocarbons (TPH) of less than one hundred parts per million (100 ppm); and
 - (c) The soil and sediment stockpile or placement complies with the District's erosion and sediment control requirements in Chapter 5 (Water Quality and Pollution) of Title 21 DCMR.
- 1813.5 No person shall discharge the following into a separate stormwater sewer or waters of the District without obtaining applicable District and federal permits:

- (a) Dewatering effluent;
- (b) Groundwater treatment system effluent;
- (c) Process water; or
- (d) Derived waste.

1813.6 A person may include in a well construction work plan request for approval of the placement of fluid waste derived from the construction, maintenance, or abandonment of a well, on the ground surface or in an unlined pit provided:

- (a) Representative analytical data indicates compliance with the District Water Quality Standards in Chapter 11 of Title 21 DCMR and all other applicable federal standards or regulations;
- (b) The fluid waste is free of solids;
- (c) The fluid waste does not have an observable sheen or free product;
- (d) The fluid waste is characterized in accordance with § 1813.2(a) and has a total petroleum hydrocarbons (TPH) concentration of less than one part per million (1 ppm); and
- (e) The fluid waste meets the following infiltration requirements:
 - (1) Erosion and sediment control requirements in Chapter 5 of Title 21 DCMR;
 - (2) Does not create surface ponding;
 - (3) Does not discharge onto an adjacent property, a nearby surface water body, or stormwater sewer; and
 - (4) Does not create or constitute a public nuisance or a hazard to the public health and safety, and the environment.

1814 WELL CONSTRUCTION REQUIREMENTS: DRILLING FLUIDS

1814.1 Only potable water shall be used to create a water-based drilling fluid.

1814.2 The use of a drilling fluid containing additives shall only be permitted if:

- (a) Use of the additive is approved by the Department in the well construction building permit application;
- (b) The additive is used in accordance with manufacture's recommendations; and
- (c) The additive does not pose a hazard to public health and safety or the environment.

1815 WELL CONSTRUCTION REQUIREMENTS: WELL CASING

- 1815.1 No person shall use well casing materials, well fittings, or well equipment that creates a condition which poses a hazard to public health and safety or the environment or results in violations of District or federal laws or regulations.
- 1815.2 Materials to be used for well casing must be appropriate for on-site application and approved by the American Society for Testing and Materials (ASTM), the American Water Works Association, or the NSF International.
- 1815.3 A well casing shall be strong enough to withstand the structural load and stresses imposed by conditions inside and outside the well during and after construction.
- 1815.4 A well casing shall be in good condition, free of pits, breaks, or cracks that may compromise the structural integrity or water-tightness of the well casing.
- 1815.5 Except for pre-packed wells installed using direct push technology, the diameter of the borehole shall be sized to accommodate the well casing and the well annulus requirements specified in § 1818.4.
- 1815.6 A plastic well casing shall be manufactured of polyvinylchloride (PVC) material and shall be at a minimum Schedule 40 or have a minimum standard dimension ratio of twenty-one (21).
- 1815.7 A well constructed with plastic PVC material shall not exceed a depth greater than one hundred and fifty feet (150 ft.).
- 1815.8 If steel casing is used:
- (a) The casing shall be new, seamless or electric-resistance welded, galvanized, or black steel. Galvanizing shall be done in accordance with the requirements of ASTM A53/A53M-07, as amended;
 - (b) The casing, threads, and couplings shall meet or exceed the specifications of ASTM A53/A53M-07 or A589/589M-06, as amended; and

- (c) The casing thickness shall meet or exceed the following specifications, unless an alternative thickness is approved in the well construction work plan:
 - (1) Steel well casing up to and including a nominal size of six inches (6 in.) in diameter shall be at minimum Schedule 40; or
 - (2) Steel well casing larger than six inches (6 in.) in diameter shall be at the minimum 0.280 inches.

1815.9 If thermoplastic casing is used:

- (a) The casing shall be new; and
- (b) The casing and joints shall meet or exceed all the specifications of ASTM F480-06b, except that the outside diameters shall not be restricted to those listed in ASTM F480-06b.

1815.10 A steel casing shall be used for a well constructed in crystalline rocks, unless an alternative casing is approved in the well construction work plan.

1815.11 Joints for a well casing shall meet the following requirements:

- (a) All joints shall be water tight;
- (b) All joints shall be joined in accordance with the manufacturer's recommendations;
- (c) Joints for steel well casing shall be electrically welded or threaded; and
- (d) Joints for plastic well casing shall be threaded and not glued.

1815.12 A temporary well casing and liner shall be of such minimum thickness as required to withstand the structural load imposed by conditions inside and outside the well.

1816 WELL CONSTRUCTION REQUIREMENTS: WELL SCREENS

1816.1 No person shall construct a well in which the well screen extends across more than one aquifer, unless:

- (a) A special compliance standard request was submitted in accordance with §§ 1803.10 and 1803.11;
- (b) Adequate justification is provided to support the request;

- (c) The cross-contamination of aquifers is prevented; and
- (d) The request is approved by the Department in the well construction work plan.

1816.2 A well that derives water from an unconsolidated aquifer shall be equipped with a well screen that limits the entrance of sediment material into the well following well development.

1816.3 Only a machine-manufactured well screen shall be used in the construction of a well, unless otherwise approved by the Department.

1816.4 A well screen shall have sufficient structural strength to support the intended use of the well.

1816.5 A well screen shall be installed with fittings necessary to seal the well screen to the well casing.

1816.6 A lead packer and lead swedge shall not be used to seal a well screen to the well casing.

1816.7 A fitting shall be provided to close the bottom of the well screen and to cap, plug, or otherwise close the bottom of the well.

1816.8 A well screen of a well sited on a property where a recognized environmental condition has been identified shall be constructed to prevent structural degradation.

1817 WELL CONSTRUCTION REQUIREMENTS: FILTER PACK IN WELL

1817.1 Except for a pre-packed well, a filter pack shall be placed in the well annulus surrounding the well screen.

1817.2 A filter pack shall extend a minimum of two feet (2 ft.), but no further than three feet (3 ft.) above the well screen.

1817.3 A filter pack shall be comprised of sand or gravel that has been washed with water and is free of clay, silt, and organic material.

1817.4 A filter pack shall not contain iron or manganese in concentrations greater than that in the ground when the well is installed or adversely affect the quality of water withdrawn from the well or the groundwater that comes into contact with the filter pack.

1817.5 A filter pack material stored at the drilling site shall be stored on a clean surface or in a clean container to prevent any on-site contaminants from mixing with the filter pack materials.

1817.6 A filter pack shall be inserted by one of the following methods:

- (a) By placing the filter pack down the annulus;
- (b) By placing a water-filter pack mix down the annulus; or
- (c) By using a tremie pipe to insert a water-filter pack mix at the bottom of the annulus and slowly raising the tremie pipe.

1817.7 A pre-packed well screen shall:

- (a) Be used in accordance with the manufacturer's specifications and recommendations;
- (b) Not contain materials that may alter groundwater chemistry or pose a hazard to the environment or public health and safety; and
- (c) Be pre-approved in writing by the Department prior to installation.

1817.8 The well filter pack material shall not hydraulically connect otherwise confined aquifers, without prior written approval from the Department.

1818 WELL CONSTRUCTION REQUIREMENTS: WELL GROUTING

1818.1 Except as provided in §§ 1818.2 and 1818.3, a person constructing a well with an annulus shall pressure grout the well in accordance with the grouting standards of this chapter.

1818.2 The grouting of a monitoring well, observation well, piezometer, injection well, or recovery well shall not be required if all the following conditions are met:

- (a) The un-grouted annulus exists above the anticipated water table;
- (b) A low-permeable seal a minimum of two feet (2 ft.) thick is installed atop the filter pack;
- (c) The upper terminus of the well is protected in accordance with § 1812.3;
- (d) The well is not constructed or maintained in a manner that allows the vertical migration of contaminants in the aquifer;

- (e) The well penetrates a single aquifer; and
 - (f) The well is abandoned within thirty (30) days of well completion in accordance with §§ 1830 and 1831.
- 1818.3 The grouting of a dewatering well shall not be required if all the following conditions are met:
- (a) The well is constructed to a maximum depth of twenty feet (20 ft.) below ground surface;
 - (b) The well penetrates a single aquifer;
 - (c) The well is constructed and maintained in a manner that does not allow the vertical migration of contaminants in the aquifer; and
 - (d) The well is abandoned within one-hundred and eighty (180) days of well completion in accordance with §§ 1830 and 1831.
- 1818.4 The annulus of a well to be grouted shall be a minimum of one and one-half inches (1.5 in.) wide, or the diameter of the annulus shall be a minimum of three inches (3 in.) greater than the outside diameter of a well casing.
- 1818.5 A low-permeability seal a minimum of two feet (2 ft.), but no greater than three feet (3 ft.) thick, shall be placed atop the filter pack to prevent surface water from entering the screened interval.
- 1818.6 A sodium-based bentonite slurry grout shall be placed on top of the low-permeability seal and extend towards the ground surface with sufficient space to install the upper well terminus.
- 1818.7 A request may be made to the Department in accordance with §§ 1803.10 and 1803.11 to deviate from the grouting standards of this chapter, provided the deviation does not result in a less protective standards than those set forth in this chapter.
- 1818.8 A well shall be grouted as soon as feasible, but not later than twenty-four (24) hours after the well casing has been set in place, unless otherwise specified in the well construction building permit or well construction work plan authorized in accordance with the requirements of §§ 1803.10 and 1803.11.
- 1818.9 If pressure grouting the annulus is not feasible during the construction of a monitoring well, observation well, or a piezometer, the well shall be grouted by pouring medium-size, sodium-based bentonite chips or pellets down the well annulus in a manner that prevents the bridging of the bentonite chips or pellets.

- 1818.10 A well in which a permanent outer casing is installed shall be grouted in a manner that will allow the grout to set prior to the top of the inner casing being terminated below ground surface.
- 1818.11 The material of a low-permeability seal shall sustain a hydraulic conductivity equal to or less than 1×10^{-7} centimeters per second (1×10^{-7} cm/s) and be comprised of:
- (a) Sodium-based bentonite slurry:
 - (1) At a ratio of two (2) pounds of sodium-based bentonite powder to one (1) gallon of potable water; or
 - (2) At a mix ratio according to the manufacturer's specifications, provided that the grout results in a low-permeability seal with a hydraulic conductivity equal to or less than 1×10^{-7} cm/s;
 - (b) Sodium-based bentonite-cement at a ratio of one hundred fifty pounds (150 lbs) of bentonite powder to ninety-four pounds (94 lbs) of portland cement hydrated with eighty-two gallons (82 gal) of potable water;
 - (c) Hydrated, medium-size bentonite chips at a ratio of one (1) gallon of potable water to twelve and one-half pounds (12.5 lbs.) of medium-size, sodium-based bentonite chips or pellets; or
 - (d) Hydrated, specially-coated, medium-size bentonite pellets which allow a time-delayed reaction at a ratio of one (1) gallon of potable water to twelve and one-half pounds (12.5 lbs.) of medium-size, sodium-based bentonite chips or pellets.
- 1818.12 Standards for grouting shall be as follows:
- (a) Well grouting shall be performed to provide a water-tight seal against downward fluid migration along the well annulus into the filter pack, well screen, and surrounding aquifer;
 - (b) A sodium-based bentonite slurry mixture shall be installed by pumping the slurry mixture through a tremie pipe at least one inch (1 in.) in diameter using a positive placement technique;
 - (c) If a borehole diameter is not wide enough for a slurry mixture to be emplaced using a tremie pipe, the following sodium-based bentonite chips shall be used:

- (1) Uncoated, sodium-based bentonite chips shall be used above the potentiometric surface, with a sufficient amount of potable water added to fully hydrate the chips; or
 - (2) Specially coated, time-release sodium-based bentonite pellets shall be used when several layers of pellets must be emplaced below the potentiometric surface of the well, with a sufficient amount of potable water shall be added to fully hydrate the pellets if there is insufficient groundwater entering the well;
- (d) Sodium-based bentonite chips and pellets shall be sized according to the well diameter to be filled, and the chips or pellets shall be less than one fifth (1/5) the radial thickness of the annulus into which they are to be placed, except that medium or coarse sized chips may be used in well diameters from four inches (4 in.) to ten inches (10 in.);
- (e) Sodium-based bentonite chips and pellets shall be placed within the borehole in a manner that prevents the bridging of the bentonite chips or pellets;
- (f) Medium-size, sodium-based bentonite chips or pellets shall be used at a ratio of one (1) gallon of potable water to twelve and one-half pounds (12.5 lbs.) of medium-size, sodium-based bentonite chips or pellets as follows:
- (1) The chips or pellets shall be pre-screened to remove fragments; and
 - (2) The chips or pellets shall be hydrated in accordance with the manufacturer's specifications to ensure that the chips or pellets achieve a low-permeability seal with a hydraulic conductivity equal to or less than 1×10^{-7} cm/s;
- (g) If an outer casing is required for a well penetrating a confined or multi-layer aquifer with the potential for aquifer cross-contamination, the space between the open borehole wall and the outer casing shall be pressure grouted, and the following shall be required:
- (1) The annulus between the open borehole wall and the outer casing shall be pressure grouted;
 - (2) The outer casing shall be installed and pressure grouted a minimum of ten feet into the uppermost confining layer; and

(3) In the event the confining layer is less than ten feet (10 ft.) in thickness, the outer casing shall be pressure grouted entirely through the uppermost confining layer;

- (h) All grout materials placed in the borehole shall be free of contaminants;
- (i) All sand and gravel placed in the borehole shall be silica based and inert, unless a material other than silica is used in a commercially available product that is inert and meets all other grouting requirements;
- (j) Drill cuttings or muds shall not be left in boreholes, or placed in the borehole as fill material and shall not be used as a grouting material; and
- (k) All grout inserted into a well annulus for sealing purposes shall not be disturbed until the grout has fully set.

1818.13 Grouting materials for unconsolidated formations shall meet the following requirements:

- (a) Grout shall be fully hydrated and comprised of sodium-based bentonite, or a sodium-based bentonite-cement mixture comprised of a minimum of five percent (5%) and a maximum of ten percent (10%) sodium-based bentonite, and a minimum of ninety percent (90%) and a maximum of ninety-five percent (95%) cement;
- (b) Cement shall be hydrated consistent with § 1818.14(a) of this chapter; and
- (c) A sodium-based bentonite clay shall not be used if it may come into contact with groundwater with a known pH below five (5.0) or groundwater having a total dissolved solids content greater than one thousand milligrams per liter (1,000 mg/L).

1818.14 Grouting materials for consolidated formations shall consist of the following:

- (a) Portland cement or quick-setting cement in a ratio of no greater than six (6) gallons of water per ninety-four pound (94 lb.) sack of cement or as otherwise authorized by the Department in the well construction work plan;
- (b) Sodium-based bentonite powder may be added to the cement grout in an amount of five pounds (5 lbs.) for each ninety-four pound (94 lb.) sack of cement; and

- (c) When adding sodium-based bentonite clay to neat Portland cement grout, additional water shall be allowed at a rate of one (1) gallon of water to two pounds (2 lb.) of sodium-based bentonite powder.

1818.15 The grouting of a closed-loop ground source heat pump well shall meet the following requirements:

- (a) Approved sealing and filling materials shall include fully hydrated high solids sodium-based bentonite grout comprised of a minimum twenty percent (20%), but no greater than thirty percent (30%) of solids by weight, or approved high efficiency, thermally-enhanced grouts comprised of a maximum twenty percent (20%) by weight silica sand to powdered sodium-based bentonite;
- (b) All grout shall meet the manufacturer's specifications and the hydraulic conductivity of the low-permeability seal shall be equal to or less than 1×10^{-7} cm/s;
- (c) The hydraulic conductivity value shall be derived by using American Society for Testing and Materials (ASTM) D-5084 and verified by an independent testing facility certified by American Association of State Highway & Transportation Officials, Materials Reference Laboratory to perform ASTM D5084 at the time of verification;
- (d) The entire length of the borehole shall be grouted from bottom to top with sodium-based bentonite or thermally enhanced grout specifically designed to facilitate heat transfer and provide a low-permeability seal;
- (e) Grouting shall be completed immediately after installing the geothermal loop or in case of extenuating field conditions, no later than twenty-four (24) hours after installing the geothermal loop;
- (f) Open boreholes shall be protected as necessary to prevent the entry of surface water or pollutants;
- (g) Boreholes with temporary casing shall be grouted during or before removal of casing depending on borehole stability;
- (h) Boreholes with permanent outer casing shall be grouted and the grout shall be allowed to set before the top of the casing is terminated below ground level;
- (i) Boreholes with no casing shall be looped and grouted immediately after drilling;

- (j) When voids are encountered, including fractures in bedrock and degraded bedrock, the borehole shall be cased from below the void to the surface; and
- (k) Boreholes drilled with a mud rotary drilling system in unconsolidated formations shall be looped and grouted immediately after drilling.

1818.16 If the annulus cannot be grouted in accordance with this chapter, the well shall be abandoned in accordance with §§ 1830 and 1831.

1818.17 The Department may impose additional requirements pertaining to the grouting of a well in the well construction building permit to ensure the protection of public health and safety and the environment.

1819 WELL CONSTRUCTION REQUIREMENTS: WELL DEVELOPMENT

1819.1 A well constructed for the purpose of determining the physical or chemical characteristics of groundwater shall be developed in accordance with the requirements of this section.

1819.2 Well development shall consist of cyclic or intermittent pumping, surging, or both, either mechanically or by using potable water or air under pressure.

1819.3 Well development shall continue until formation cuttings, mud, drilling fluids and additives are removed from the well.

1819.4 Well development shall occur as soon as feasible following installation and after grout is firmly set, but no sooner than twenty-four (24) hours.

1819.5 A well shall be developed to remove the fine sands, silts, clays, and rock particles from the aquifer surrounding the well screen or intake interval, to meet the following requirements:

- (a) The water recovered from the well shall contain less than five milligrams (5 mg) of sand or larger particles per liter of water. Particles with a diameter between 0.0625 and 2.0 millimeters shall be considered sands;
- (b) The water recovered from the well shall have a turbidity of less than twenty (20) NTU (Nephelometric Turbidity Units), except when the turbidity is due to the oxidation of dissolved iron or manganese naturally occurring in the water; and
- (c) The pH, specific conductivity, temperature, and turbidity of the water recovered from the well are determined to be within a ten percent (10%) range and considered at equilibrium.

1820 WELL CONSTRUCTION REQUIREMENTS: WELL CAPS AND UPPER TERMINUS OF WELL

1820.1 Except as provided in §§ 1820.3 and 1820.4, the upper terminus of a well shall meet the following requirements, unless otherwise approved in writing by the Department in accordance with §§ 1803.10 and 1803.11;

- (a) A well shall be covered with a secure and locking well cap, meeting the following requirements:
 - (1) A well cap shall be constructed to prevent the introduction of contaminants, or any other foreign material including surface runoff;
 - (2) A vented capping device shall be screened so as to prevent the entry of insect and animals; and
 - (3) The well cap shall be locked or incapable of removal without the use of tools;
- (b) The surface completion shall be set in a cement well pad with minimum dimensions of two feet (2 ft.) by two feet (2 ft.) and domed to prevent water from entering the well;
- (c) A protective metal casing with a locking cap shall be installed around a well completed at or above ground surface, extending at least six inches (6 in.) above the top of the well and cemented into place at least one foot (1 ft.) below ground surface; and
- (d) A metal housing shall be installed on top of the well completed below ground surface and a limited-access water tight protective cover shall be installed to prevent the inflow of surface water, or the metal housing shall be provided with drains to keep water out of the well and below the well cap.

1820.2 For a well sited within the 100-year floodplain or low lying areas prone to flooding, the top of the well head shall not terminate less than twenty-four inches (24 in.) above the finished ground surface and shall be fully protected from surface water intrusion, unless otherwise approved in accordance with §§ 1803.10 and 1803.11.

1820.3 A dewatering well or ground freeze well constructed for temporary construction applications shall be exempt from § 1820.1, provided all the following conditions are met:

- (a) The well is sited within a secured perimeter not accessible to the public;
- (b) The well meets the requirements of §§ 1812.1 through 1812.4; and
- (c) The well is abandoned within one-hundred and eighty (180) days of well completion in accordance with §§ 1830 and 1831.

1820.4 A monitoring well, observation well, piezometer, injection well or recovery well shall be exempt from §§ 1820.1(b) through 1820.1(d) provided all the following conditions are met:

- (a) The well meets the requirements of §§ 1812.1 through 1812.4; and
- (b) The well is abandoned within thirty (30) days of well completion in accordance with §§ 1830 and 1831.

1820.5 The upper terminus of an industrial supply well, irrigation supply well, and a domestic supply well shall be required to meet the following standards:

- (a) The well shall be constructed with an access port with a minimum inside diameter of one-half inch (0.5 in.), allowing for a water level measurement by a steel or electric tape;
- (b) The access port shall be constructed with a removable cap and seal to protect from entry of water, dust, insects, animals, or other foreign material, but allows access for water level measurements;
- (c) If a pump motor is not installed directly over the well, an access port shall be constructed atop the well; and
- (d) If a pump motor is installed directly over the well, an access port shall be installed through the pump base or outside the well casing at some accessible point below the base of the pump.

1820.6 A closed-loop ground source heat pump well shall not require a secure and locking well cap provided the closed-loop ground source heat pump well is constructed in accordance with § 1823.

1820.7 The cover of a well completed below ground surface shall be designed to withstand the maximum expected loadings.

1820.8 The construction and use of a well pit, pump pit, or other facility installed or constructed below ground surface are prohibited, unless prior written approval has been granted by the Department in accordance with §§ 1803.10 and 1803.11.

1821 WELL CONSTRUCTION REQUIREMENTS: WELL LABELING

- 1821.1 A well registration number issued by the Department in accordance with § 1806 shall be attached or labeled at a visible location to the terminal surface of a well.
- 1821.2 For closed-loop ground source heat pump wells, the well registration number shall be attached to a visible location along the supply and return line entering the building or vault.
- 1821.3 A well registration label shall not be required for a soil boring, monitoring well, observation well, piezometer, injection well, or recovery well provided the well is abandoned within thirty (30) days of well completion in accordance with §§ 1830 and 1831.
- 1821.4 A dewatering well or ground freeze well constructed for temporary construction applications shall not require a well registration label, provided all the following conditions are met:
- (a) The well is sited within a secured perimeter not accessible to the public;
 - (b) The well construction building permit and well completion details are maintained at the property where the well is sited; and
 - (c) The well is abandoned within one-hundred and eighty (180) days of well completion in accordance with §§ 1830 and 1831.
- 1821.5 Well registration labels shall be unique to each well registered in accordance with § 1806 and shall not be reused or duplicated for use by other registered or unregistered wells.

1822 WELL CONSTRUCTION REQUIREMENTS: MONITORING WELL, OBSERVATION WELL, AND PIEZOMETER

- 1822.1 The construction of a monitoring well, observation well, or piezometer shall be conducted by a method that allows for the determination of characteristics of the geologic materials under the site, unless otherwise approved by the Department in the well construction work plan.
- 1822.2 A monitoring well, observation well, or piezometer's uncompleted borehole shall not penetrate to a depth greater than the depth to be monitored, and any portion of the borehole that extends to a depth greater than the depth to be monitored shall be grouted completely to prevent vertical migration of contaminants.

1823 WELL CONSTRUCTION REQUIREMENTS: CLOSED-LOOP GROUND SOURCE HEAT PUMP WELL

- 1823.1 A closed-loop ground source heat pump system shall contain pipes, loops, or loop configurations that meet the requirements of this chapter.
- 1823.2 Unless otherwise specified in this chapter, closed-loop ground source heat pump well exchanger pipe and fitting materials shall meet the standards and specifications in the document *Closed-Loop/Geothermal Heat Pump Systems Design and Installation Standards*, Revised Edition 2008, published by the International Ground Source Heat Pump Association, Oklahoma State University, which is adopted and incorporated by reference.
- 1823.3 All closed-loop ground source heat pump well exchanger pipe and fitting materials shall be stenciled with the applicable American Society for Testing and Materials (ASTM) standard.
- 1823.4 If a closed-loop ground source heat pump well exchanger pipe and fitting materials do not meet the requirements of § 1823.2, the proper documentation of manufacturer specifications shall be supplied to the Department in the well construction work plan for approval.
- 1823.5 A closed-loop ground source heat pump system installer and licensed well driller shall be experienced, trained, certified, or accredited by a recognized professional organization specializing in the installation of ground source heat pump systems.
- 1823.6 A closed-loop ground source heat pump well and system shall not be designed or operated in a manner to allow system heating or cooling of soil, rock, or water beyond the property line where the well is sited.
- 1823.7 Permanent casing shall be used for a closed-loop ground source heat pump well sited on a property where a recognized environmental condition has been identified.
- 1823.8 Permanent casing for closed-loop ground source heat pump wells shall be constructed of new steel where organic contaminants are present.
- 1823.9 A closed-loop ground source heat pump well shall be constructed with a high density polyethylene (HDPE) factory manufactured pipe forming a loop, and shall be grouted in accordance with § 1818.15.
- 1823.10 Pipe joints and fittings installed and buried shall be socket or butt thermally fused or electro-fused according to the pipe manufacturer's specifications.
- 1823.11 Glued or clamped pipe joints shall not be used below ground.

- 1823.12 Dimensions for closed-loop ground source heat pump systems shall meet the following requirements:
- (a) A pipe with a diameter of less than one and one quarter inch (1.25 in.) (3.175 cm) (nominal) shall be manufactured in accordance with ASTM D-3035 with a minimum (based on pressure rating) dimension ratio of 11;
 - (b) A pipe with a diameter from one and one quarter inch (1.25 in.) (3.175 cm) (nominal) up to three inches (3 in.) (7.62 cm) in diameter shall be manufactured in accordance with ASTM D-3035 with a minimum (based on pressure rating) dimension ratio of 11; and
 - (c) A pipe with a diameter of three inches (3 in.) (7.62 cm) (nominal) and larger shall be manufactured in accordance with ASTM D-3035, with a minimum (based on pressure rating) dimension ratio of 17 or D-2447 (Schedule 40).
- 1823.13 The closed-loop ground source heat pump boring diameter shall be a minimum of four inches (4 in.) to sufficiently allow the placement of grout using a tremie pipe and the heat exchanger loop piping.
- 1823.14 Flushing, purging, pressure, and flow testing of closed-loop ground source well and system components shall meet the following requirements:
- (a) The loops shall be pressure tested before installation;
 - (b) All horizontal components of the ground heat exchanger shall be flushed, pressure tested, and flow tested prior to backfilling;
 - (c) The heat exchangers shall be tested hydrostatically at one hundred and fifty percent (150%) of the pipe design rating or three hundred percent (300%) of the system operating pressure, if this value is the smaller of the two; and
 - (d) No visible leaks shall occur within a thirty (30) minute period.
- 1823.15 All buried pipes and plumbing shall be marked with underground warning tape at a depth of twenty-four inches (24 in.).
- 1823.16 All closed-loop ground source heat pump system piping shall be capped and protected until the manifold piping is ready to be connected.

- 1823.17 All closed-loop ground source heat pump system piping shall be connected to the building in accordance with the manufacturer's recommendations and all local building and plumbing codes.
- 1823.18 The solution contained in a closed-loop ground source heat pump well piping system shall not contain any substances that pose a hazard to the public health and safety or the environment and shall be:
- (a) Potable water; or
 - (b) A food-grade quality antifreeze solution that is non-toxic, non-corrosive, long-lasting, and that does not exceed twenty percent (20%) antifreeze in solution.
- 1823.19 Pressure testing of the closed-loop ground source heat pump system network shall be conducted prior to putting the system into operation.
- 1823.20 No person shall install any other type of ground source heat pump system not specified in this chapter unless approved by the Department in the well construction work plan.
- 1823.21 A person requesting the use of materials or procedures that differ from those provided in this section shall provide documentation demonstrating that the substitute materials or procedures are in compliance with relevant District construction codes and International Ground Source Heat Pump Association standards, and that such use would provide an equivalent material strength and durability.
- 1823.22 The construction of an open-loop ground source heat pump system shall be prohibited.

1824 WELL CONSTRUCTION REQUIREMENTS: GROUND FREEZE WELL

- 1824.1 The American Society for Testing and Materials (ASTM) standard A-120/A-53 steel shall be used for subsurface freeze pipes, unless otherwise approved in a well construction work plan by the Department in accordance with §§ 1803.10 and 1803.11.
- 1824.2 The subsurface connections of steel freeze pipes installed in a ground freeze well shall be welded.
- 1824.3 A ground freeze well system shall be installed by a licensed well driller experienced in installing ground freeze well systems or trained, certified, or accredited by a recognized professional organization specializing in the installation of ground freeze well systems.

- 1824.4 Flushing, purging, pressure, and flow testing of a ground freeze well and system components shall meet the following requirements:
- (a) The loops shall be pressure tested before installation; and
 - (b) All horizontal components of the ground freeze distribution manifold shall be flushed, pressure tested, and flow tested prior to backfilling.

1824.5 No coolant fluid or refrigerant circulated within the ground freeze downhole piping or ground freeze distribution manifold shall contain any substances that pose a hazard to public health and safety or the environment.

1824.6 Pressure testing of the ground freeze well system shall be conducted and operating pressures shall be maintained in accordance with the manufacturer's specifications prior to putting the system into operation.

1825 WELL CONSTRUCTION REQUIREMENTS: RECOVERY WELL

1825.1 The materials and the methods used to construct, maintain, and abandon a recovery well shall be compatible with the chemical and physical properties of the pollutants known to exist or potentially exist where a well will be sited.

1825.2 A recovery well borehole shall not penetrate to a depth greater than the depth from which contaminants are to be recovered.

1825.3 If a well or borehole extends to a depth greater than the depth from which contaminants are to be recovered, the well or borehole shall be grouted in accordance with § 1818 to prevent vertical migration of contaminants.

1825.4 No person shall discharge the effluent of a recovery well to the waters of the District prior to obtaining all applicable District and federal permits.

1826 WELL CONSTRUCTION REQUIREMENTS: REPORTING

1826.1 Within sixty (60) calendar days of construction of a new well, a well owner shall provide a well completion report to the Department in accordance with the reporting requirements of § 1826.3.

1826.2 A well completion report shall not be required for a well currently under a Department regulatory action, or for a well that is exempt from the well construction building permit requirement pursuant to § 1802.

1826.3 A well completion report submitted to the Department shall include the following details:

- (a) The well owner's name, mailing address, telephone number, and electronic mailing address;
- (b) The property owner's name, mailing address, telephone number, and electronic mailing address, if different from the information provided pursuant to § 1826.3(a);
- (c) The physical location of the property on which the well is sited, in the form of a physical address, a square, suffix, and lot, or closest physical location identifier;
- (d) The well construction as-built schematic detailing the well construction;
- (e) The intended use of the well;
- (f) The building permit number;
- (g) The well registration number;
- (h) The well construction completion date;
- (i) The horizontal location of the well using either the Maryland State Plane Coordinate System or latitude and longitude;
- (j) The vertical elevation of the well casing based upon the North American Datum 1988 (NAVD88), if required;
- (k) The placement and description of any equipment or materials that were or could be placed in the well such as, pumps or liners, or any water-impacting activities;
- (l) The geological boring logs;
- (m) The well development logs;
- (n) A statement signed by the well owner that the well was constructed in accordance with well construction building permit issued by DCRA, the well construction work plan, the well registration, and in accordance with the well construction procedures of this chapter; and
- (o) Any other relevant information not included in the well construction building permit application or the well registration application.

1827 WELL USE AND MAINTENANCE: GENERAL

- 1827.1 A well owner shall maintain a well in a manner that does not pose a hazard to public health and safety or the environment.
- 1827.2 The well owner shall ensure that the use and maintenance of a well is conducted in accordance with the well construction building permit, the well construction work plan, the well registration conditions, and all District and federal laws and regulations.
- 1827.3 If a well owner is unable or unwilling to use or maintain a well in accordance with § 1827.2, the well owner shall:
- (a) Submit a request to the Department for special standards in accordance with the requirements of §§ 1803.10 and 1803.11; or
 - (b) Abandon the well in accordance with §§ 1830 and 1831.
- 1827.4 If the maintenance of a well requires a modification or material change to the original permitted design, specifications, use, or construction of the well, a well owner shall submit a well construction work plan for review and approval by the Department.
- 1827.5 Within sixty (60) days of work completed in accordance with § 1827.4, the well owner shall submit to the Department a report detailing the work that was performed with supporting documentation.
- 1827.6 No person shall use or maintain a well that may significantly deplete or degrade groundwater resources or significantly interfere with groundwater recharge.
- 1827.7 No person shall discharge fluids withdrawn from a well to a separate stormwater sewer or waters of the District that may cause a violation of the District Water Quality Standards in Chapter 11 of Title 21 of the District of Columbia Municipal Regulations (DCMR), result in acute or chronic exposure to aquatic biota, or pose a hazard to the public health and safety or the environment, without obtaining applicable District and federal permits.
- 1827.8 A well owner shall ensure that sampling equipment used in a well is free of contaminants and that decontamination procedures are performed in accordance with EPA-approved procedures.
- 1827.9 A well owner shall ensure that dedicated sampling equipment used in a well is maintained in accordance with the manufacturer's specifications and does not pose a hazard to public health and safety or the environment.

- 1827.10 A well owner shall use materials for the maintenance of a well that meets the requirements for new construction, in accordance with §§ 1815 through 1826.
- 1827.11 A well owner shall notify the Department within twenty-four (24) hours of discovery of damage to a well or a well not operating in accordance with its approved use.
- 1827.12 No person shall maintain a well through the application of chemical treatment except in accordance with a well maintenance work plan reviewed and approved by the Department.
- 1827.13 A well owner shall repair or replace broken, punctured, or otherwise defective or unserviceable well casing, well screen, fixtures, seals, or any part of the well head, or the well owner shall properly abandon and seal the well as specified in §§ 1830 and 1831.

1828 WELL USE AND MAINTENANCE: MONITORING OR OBSERVATION WELL

- 1828.1 When conducting the well development of a monitoring or observation well, a well owner shall allow groundwater flow conditions to equilibrate prior to purging the well.
- 1828.2 If the well construction or well development methods introduced fluids, following the development of the well, a well owner shall allow the well to rest at least seven (7) days prior to purging and sampling.
- 1828.3 Prior to sampling a monitoring or observation well, a person shall purge the well to facilitate collection of an accurate, reproducible, and representative groundwater sample, in accordance with appropriate EPA-approved sampling procedures.
- 1828.4 An owner of a monitoring or observation well shall maintain the well to ensure that any testing procedures are appropriate for the intended use as stated on the well construction building permit and in the well construction work plan.
- 1828.5 An owner of a monitoring or observation well shall comply with the data collection requirements of the District's Water Quality Monitoring Regulations in Chapter 19 (Water Quality Monitoring Regulations) of Title 21 DCMR if the results are to be submitted to the Department for regulatory and applicable decision-making purposes.

1829 WELL USE AND MAINTENANCE: INJECTION WELL

- 1829.1 A well owner shall obtain written approval from the Department in accordance with the requirements of this chapter for the injection of a substance into a well or an injection system within the District.
- 1829.2 A well owner shall obtain an EPA Underground Injection Control Permit or an exemption from such permit for the injection of a substance into a well or an injection system within the District.
- 1829.3 A well owner or a person responsible for injecting a fluid into a well by active or passive means shall prevent, to the maximum extent possible, the migration of a hazardous substance, a hazardous waste, or a pollutant beyond the boundary of the property where the well is sited, to a human or ecological receptor, or to the waters of the District.
- 1829.4 A well owner or a person responsible for injecting a fluid into a well shall minimize any negative impact to the natural degradation of a contaminant not targeted for treatment by the injection system.
- 1829.5 A person responsible for injecting water into a well for testing purposes, including determining soil hydraulic conductivity, shall ensure that the water is clean, potable, and meets the District Water Quality Standards in Chapter 11 of Title 21 of the District of Columbia Municipal Regulations.

1830 WELL ABANDONMENT REQUIREMENTS: GENERAL

- 1830.1 Except in accordance with §§ 1802.3 and 1802.7, at least thirty (30) days prior to abandoning a well, a well owner shall submit to the Department a well abandonment work plan for review and approval by the Department.
- 1830.2 A well abandonment work plan submitted to the Department shall include the following details, in addition to the information provided in § 1826.3:
- (a) The reason(s) for abandonment;
 - (b) The depth and diameter of the well;
 - (c) The well abandonment details, including the procedures and materials used;
 - (d) The details describing how any waste materials from the abandoned well or derived from well abandonment will be collected and disposed of in accordance with District and federal laws and regulations;

- (e) The details regarding the well's condition and whether or not any obstructions exist that may potentially interfere with the abandonment processes;
- (f) The well driller's name, address, telephone number, electronic mailing address, a copy of the pertinent Department of Consumer and Regulatory Affairs licenses, and a copy of the well driller's license;
- (g) A statement signed by the well owner that the well will be abandoned in accordance with the well abandonment requirements of this chapter; and
- (h) Any other relevant details.

1830.3 A well shall be abandoned in accordance with the approved well abandonment work plan within sixty (60) days of Department approval of the plan.

1830.4 During the abandonment of a well, a Department-approved well abandonment work plan may be modified only if:

- (a) The well owner immediately notifies the Department;
- (b) The modification of the well construction building permit, and well construction work plan, or well abandonment work plan does not violate District or federal laws or regulations; and
- (c) A well abandonment report is submitted to the Department detailing the modifications or revisions to the well abandonment work plan.

1830.5 If additional time is required to abandon a well a request may be submitted to the Department in accordance with §§ 1803.10 and 1803.11.

1830.6 A dewatering well shall be permanently abandoned in accordance with the requirements of this chapter as soon as the dewatering period ends, but no later than seven (7) calendar days following the termination of pumping.

1831 WELL ABANDONMENT PROCEDURES

1831.1 A person abandoning a well shall, if feasible, remove all obstructions that may interfere with the effective sealing operations by cleaning out the borehole or re-drilling.

1831.2 A person abandoning a well shall remove all well upper terminus completion structures and well casing.

- 1831.3 If the removal of the well casing or obstructions is not feasible, the following shall be performed to ensure that the well casing and annulus or voids are filled with sealing or fill materials:
- (a) Rip or perforate the well casing below ground surface;
 - (b) Over-drill the well casing for removal; or
 - (c) Submit an alternate abandonment procedure to the Department for approval in accordance with §§ 1803.10 and 1803.11.
- 1831.4 The abandoned well shall be completely filled and sealed in such a manner that vertical fluid migration within the well, including the annulus surrounding the well casing, is effectively and permanently prevented.
- 1831.5 The following materials shall be used for filling and sealing a well for abandonment:
- (a) A sodium-based bentonite slurry; or
 - (b) Hydrated, medium size, sodium-based bentonite chips or pellets, if:
 - (1) The diameter of the well casing is less than one and one-quarter inches (1.25 in.) and the well is not over-drilled for abandonment; or
 - (2) The well is no more than ten (10) feet below ground surface; and
 - (i) The terminus of the well does not intersect the water table; and
 - (ii) The well is sited greater than twenty-five feet (25 ft.) from the mean high watermark of a waters of the District or waters of the United States of America and twenty-five feet (25 ft.) from a wetland.
- 1831.6 In the event the diameter of a well does not allow for a slurry mixture to be emplaced using a tremie pipe, sodium-based chips or pellets shall be used in accordance with § 1818.
- 1831.7 Clay, silt, sand, gravel, crushed stone, and mixtures of these materials are considered fill material, and shall only be used under the following conditions:
- (a) In soil borings in areas where no known or suspected, historic or current, groundwater or soil contamination exists;

- (b) In a manner that shall mimic the original, stratigraphic layering of geologic units;
- (c) In a manner that shall not create a conduit between aquifers;
- (d) In a manner that shall not cause negative impacts to groundwater quantity or quality; and
- (e) With prior written approval of the Department in accordance with §§ 1803.10 and 1803.11 or 1830.1.

1831.8 A well shall be abandoned by filling it with the appropriate sealing materials introduced at the bottom of the well by using a tremie pipe and placed progressively upward to at least two feet (2 ft.) below ground surface.

1831.9 The abandoned well shall be furnished with suitable materials to create a final cover similar to that of the surrounding area, such as a cold patch, or a non-coal tar based hot patch, or native soils or a combination of these materials.

1831.10 All abandonment sealing material shall be placed in one continuous operation using methods that prevent free fall, bridging, dilution, or separation of aggregates from cementing materials, unless otherwise approved by the Department.

1831.11 A well in a consolidated formation shall be filled by placing gravel in the water producing zones, and cement or cement-grout in accordance with § 1818.14 in the non-water producing zones to the ground surface. A suitable packer shall be placed between the gravel and the sealing material.

1831.12 A well penetrating a confined and multiple aquifer formation shall be abandoned by placing sealing materials throughout the confining horizon and water producing zone(s).

1831.13 In a well penetrating a consolidated formation where known contaminants exist, only cement or cement-grout in accordance with § 1818.14 shall be used to seal and abandon a well.

1831.14 In a multiple aquifer well, the well shall be filled and sealed in such a way that exchange of water from one aquifer to another is prevented and all fluids are permanently confined to the specific strata in which they were first encountered.

1831.15 A person abandoning a closed-loop ground source heat pump well or ground freeze well shall comply with the following procedure:

- (a) Pressure test the closed-loop system including the well and header piping, to identify any leaks and isolate and seal them with high solids, low-permeability grout equal to or less than 1×10^{-7} cm/s;
- (b) Capture any circulation fluids and flush the loop piping with potable water to remove all contaminants in non-leaky piping systems;
- (c) Conduct a laboratory analysis of the final flush (abandonment solution) and submit the results to the Department;
- (d) After pressure testing and flushing the system, fill the loops with potable water;
- (e) Cut off the piping in the well at least five feet (5 ft.) below the ground surface and seal it with a permanent fusion cap;
- (f) If gaps are found in the annulus grout seal during the decommissioning process, pump grout into the deficient borehole annulus in a continuous operation until undiluted grout returns to the surface;
- (g) If there is visual evidence of subsidence greater than one foot (1 ft.) at a well, excavate the ground to the top of the well, and grout the open well using a tremie pipe or by surface methods consistent with the requirements of § 1818;
- (h) If a previously decommissioned closed-loop ground source heat pump system is breached and no known contaminant is present, reseal the system using a permanent fusion cap; and
- (i) If contaminants are known or suspected to have entered a damaged pipe, purge the pipe again, fill it with potable water, and reseal.

1832

INSPECTION

1832.1

Upon the presentation of appropriate credentials to the well owner and the property owner where a well is sited, the Department may:

- (a) Access the property where a well is sited;
- (b) Inspect and copy any records kept in accordance with this chapter, including any reports, information, or analytical data; and
- (c) Inspect and collect a sample of any soil or water to assist in regulating the quality of waters of the District and ensuring compliance with this chapter,

or with conditions stated in the well construction building permit or well registration.

1832.2 If the construction, maintenance, or abandonment of a well is conducted contrary to the approved well construction building permit or work plan or in a manner that poses or causes a hazard to the public health and safety or the environment, the well owner shall immediately stop all work and immediately notify the Department.

1832.3 A well owner shall ensure that the Department-approved well construction building permit and work plan are present at the site during well construction activities and available to the Department's site inspector upon request.

1833 ENFORCEMENT AND PENALTIES

1833.1 The Department may issue an order requiring compliance with this chapter or elimination of any violation.

1833.2 The Department may order a well owner to abandon a well in accordance with §§ 1830 and 1831 if the Department determines that any of the following conditions apply:

- (a) The well poses a hazard to public health and safety or the environment; or
- (b) The well is not constructed in accordance with the standards of this chapter.

1833.3 No person shall continue any work related to the construction, maintenance, or abandonment of a well for which a stop work order has been served, except such work as the person has been directed by the Department to perform to correct a violation.

1833.4 Each instance or day of a violation of each provision of this chapter shall be a separate violation.

1833.5 The Department may seek criminal prosecution if a person violates a provision of this chapter, pursuant to the Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code § 8-103.16).

1833.6 The Department may bring a civil action in the Superior Court of the District of Columbia, or any other court of competent jurisdiction, for civil penalties, damages, and injunctive or other appropriate relief, pursuant to the Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code §§ 8-103.17 and 8-103.18).

- 1833.7 As an alternative to a civil action, the Department may impose an administrative civil fine, penalty, and order for costs and expenses pursuant to the Department of Consumer and Regulatory Affairs Civil Infractions Act of 1985, effective October 5, 1985 (D.C. Law 6-42; D.C. Official Code §§ 2-1801 *et seq.*).
- 1833.8 When civil infraction fines are the only penalties pursued in a particular case, the Department of Consumer and Regulatory Affairs Civil Infractions Act of 1985, effective October 5, 1985 (D.C. Law 6-42; D.C. Official Code §§ 2-1801.01 *et seq.*) and the regulations adopted thereunder shall govern the proceedings in lieu of this chapter, and where there is a violation, a notice of infraction may be issued without first issuing a notice of violation or threatened violation.
- 1833.9 Except when otherwise provided by statute, a person violating a provision of this chapter shall be fined according to the schedule set forth in Title 16 (Consumers, Commercial Practices, and Civil Infractions) of the District of Columbia Municipal Regulations.
- 1833.10 Neither a criminal prosecution nor the imposition of a civil fine or penalty shall preclude an administrative or judicial civil action for injunctive relief or damages, including an action to prevent unlawful construction or to restrain, correct, or abate a violation on or about any premises, or to recover costs, fees, or money damages, except that a person shall not, for the same violation of this chapter, be assessed a civil fine and penalty through both the judicial and the administrative processes.

1834 ADMINISTRATIVE APPEALS AND JUDICIAL REVIEW

- 1834.1 With respect to a matter governed by this chapter, a person adversely affected or aggrieved by an action of the Department shall exhaust administrative remedies by timely filing an administrative appeal with, and requesting a hearing before, the Office of Administrative Hearings (OAH), established pursuant to the Office of Administrative Hearings Establishment Act of 2001, effective March 6, 2002 (D.C. Law 14-76; D.C. Official Code §§ 2-1831.01 *et seq.*), or OAH's successor.
- 1834.2 For the purposes of this chapter, an action of the Department taken with respect to a person includes:
- (a) An approval;
 - (b) A denial;
 - (c) A modification;
 - (d) An order;

- (e) A notice of infraction;
- (f) A determination; or
- (g) Any other action of the Department which constitutes the consummation of the Department's decision-making process and is determinative of a person's rights or obligations.

1834.3 A person aggrieved by an action of the Department shall file a written appeal with OAH within the following time period:

- (a) Within fifteen (15) calendar days of service of the notice of the action; or
- (b) Within another period of time, if expressly provided in a section of this chapter governing a particular Department action.

1834.4 Notwithstanding another provision of this section, the Department may toll a period for filing an administrative appeal with OAH if it does so explicitly in writing before the period expires.

1834.5 OAH shall:

- (a) Resolve an appeal or Notice of Infraction by:
 - (1) Affirming, modifying, or setting aside the Department's action complained of, in whole or in part;
 - (2) Remanding for Department action or further proceedings, consistent with OAH's order; or
 - (3) Providing such other relief as the governing statutes, regulations, and rules support;
- (b) Act with the same jurisdiction, power, and authority as the Department may have for the matter currently before OAH; and
- (c) By its final decision render a final agency action which will be subject to judicial review.

1834.6 The filing of an administrative appeal shall not in itself stay enforcement of an action, except that a person may request a stay according to the rules of OAH.

1834.7 The burden of proof in an appeal of an action of the Department shall be allocated to the person who appeals the action, except the Department shall bear the ultimate burden of proof when it denies a right.

- 1834.8 The burden of production in an appeal of an action of the Department shall be allocated to the person who appeals the action, except that it shall be allocated:
- (a) To the Department when a party challenges the Department's suspension, revocation, or termination of a:
 - (1) Permit; or
 - (2) Other right;
 - (b) To the party who asserts an affirmative defense; and
 - (c) To the party who asserts an exception to the requirements or prohibitions of a statute or rule.

1834.9 The final OAH decision on an administrative appeal shall thereafter constitute the final, reviewable action of the Department, and shall be subject to the applicable statutes and rules of judicial review for OAH final orders.

1834.10 Nothing in this chapter shall be interpreted to:

- (a) Provide that a filing of a petition for judicial review stays enforcement of an action; or
- (b) Prohibit a person from requesting a stay according to the rules of the court.

1899 DEFINITIONS

1899.1 When used in this chapter, the following terms shall have the meanings ascribed (definitions that are codified in the relevant Acts are indicated as [Statutory], and are reprinted below for regulatory efficiency):

Abandonment - the act of properly sealing a well.

Annulus - the space between two cylindrical objects one of which surrounds the other, such as the space between a drill hole and a well casing pipe or between two well casings.

Aquifer - a geologic unit or formation that is water bearing and yields water.

Aquifer cross-contamination - a condition in which contaminants have migrated from one aquifer to another via any hydraulic connection or hydraulic mechanism.

ASTM – the American Society for Testing Materials.

Casing - the pipe or tubing, constructed of specific materials with specified dimensions and weights, which is installed in a borehole during or after completion of a well, to prevent formation material from entering the well, and to prevent entry of undesirable substances into the well.

Closed-loop ground source heat pump system - a ground source heat pump system that utilizes closed-loop ground source heat pump wells.

Closed-loop ground source heat pump well - a well in which fluid is circulated in a continuous closed-loop fluid system, installed beneath the surface of the earth or in a medium where the system can obtain sufficient cooling or heat exchange.

Confined aquifer - an aquifer bounded above and below by confining units.

Confining unit - a body of impermeable or distinctly less permeable material above or below an aquifer.

Consolidated formation - any geologic formation in which the earth materials have become firm and coherent through natural rock forming processes.

Contaminant - a biological, chemical, physical, or radiological material that poses a hazard to public health and safety or the environment, or interferes with a designated or beneficial use of the District of Columbia's waters.

DCRA – the District of Columbia Department of Consumer and Regulatory Affairs.

Department – the Department of Energy and Environment.

Department regulatory action - a Department action(s), including remedial or removal actions, performed under the Voluntary Remedial Action Program, pursuant to Section 6213 of Title 20 (Environment) of the District of Columbia Municipal Regulations (DCMR); the District of Columbia Underground Storage Tank Management Act of 1990, as amended (D.C. Official Code §§ 8-113.01 *et seq.*), and its implementing regulations in Chapters 55-70 of Title 20 DCMR; the Voluntary Cleanup Program, pursuant to D.C. Official Code §§ 8-633.01 *et seq.*; or the District of Columbia Brownfield Revitalization Amendment Act of 2000, as amended (D.C. Official Code §§ 8-631 *et seq.*).

Derived waste - any unwanted, or discarded material, solid, liquid, or gas, that is derived from well construction, operations, maintenance, and

abandonment activities including drill cuttings, drilling fluids, mud slurries, or well decontamination, development or purge waters.

Dewatering well - a well used to lower groundwater levels for construction such as for footings, sewer lines, building foundations, elevator shafts, or parking garages.

Discharge - spilling, leaking, releasing, pumping, pouring, emitting, emptying, or dumping of any pollutant or hazardous substance, including a discharge from a storm sewer, into or so that it may enter District of Columbia waters. [Statutory]

District - the District of Columbia. [Statutory]

Domestic supply well - a water supply well used for potable water supply purposes, including drinking, bathing, showering, cooking, dishwashing, and maintaining oral hygiene.

Drill cuttings - any material, typically solids, removed from a borehole during drilling activities.

Drilling fluid - water or air-based fluid used in a well drilling operation.

EPA – the United States Environmental Protection Agency.

Filter pack - clean, well-rounded, smooth, uniform sand or gravel, which is placed in the annulus of the well between the borehole wall and the well screen to prevent formation material from entering the well.

Floodplain - a relatively flat or low land area which is subject to partial or complete inundation from an adjoining or nearby stream, river, or watercourse; or any area subject to the usual and rapid accumulation of surface waters from any source; as depicted in the Flood Insurance Rate Map and Flood Insurance Study for the District prepared by the Federal Emergency Management Agency.

Formation - a distinct assemblage of earth materials, consolidated or unconsolidated, grouped together into a unit that is convenient for description or mapping.

Gravel - any loose rock that is larger than two millimeters (2 mm).

Ground freeze well – a well constructed for the installation of subsurface freeze pipes designed to freeze the surrounding soil and groundwater to increase their combined strength and create an impervious strata; ground freezing is

typically used for construction of shafts, deep excavations, tunnels, groundwater control, structural underpinning, and containment of hazardous waste.

Ground source heat pump system - a mechanical system for heating and cooling that utilizes the naturally occurring, ambient ground temperature and the transfer of thermal energy to or from the earth.

Groundwater - underground water, except for water in pipes, tanks, and other containers created or set up by people.

Grout - any stable, impervious, bonding material reasonably free of shrinkage which is capable of providing a water-tight seal in the annular spaces of a well.

Hazardous Substance - any toxic pollutant referenced in or designated in or pursuant to § 307(a) of the Federal Water Pollution Control Act; any substance designated pursuant to § 311(b)(2)(A) of the Federal Water Pollution Control Act; or any hazardous waste having the characteristics of those identified under or listed pursuant to the District of Columbia Hazardous Waste Management Act of 1977, as amended.

Hazardous waste - any waste or combination of wastes of a solid, liquid, contained gaseous, or semisolid form which, because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Such wastes include, but are not limited to, those which are toxic, carcinogenic, flammable, irritants, strong sensitizers, or which generate pressure through decomposition, heat or other means, as well as containers and receptacles previously used in the transportation, storage, use or application of the substances described as a hazardous waste.

Industrial supply well - a non-potable water supply well used to supply water to an industrial or commercial facility for use in the production of goods and services.

Infiltration test - any method used to measure the rate that stormwater may move vertically through the soil profile.

Infiltration/Exfiltration well - below ground surface device primarily used to detain stormwater runoff before allowing it to infiltrate the device's sidewalls and bottom prior to treatment and release to the surrounding soil.

Injection well - a well through which liquid or gas is injected, under pressure or gravity flow, into the subsurface for the purpose of maintaining formation pressure, recharging the aquifer, or the treatment of contaminants.

Installation - any structure, equipment, facility, or appurtenances thereto, operation, or activity which may be a source of pollution.

Irrigation supply well - a non-potable water supply well used for irrigating land, crops, or other plants other than household lawns and gardens.

Licensed well driller - a person licensed by a state or federal district to be responsible for on-site work relating to the drilling, construction, development, testing, maintenance or abandonment of a well; well rehabilitation and repair; and the installation, modification, or repair of a well pump or related equipment.

Lot - a lot recorded on the records of the Surveyor of the District of Columbia.

Maintenance - any action undertaken to prevent the deterioration of a well from its original permitted and registered specifications or any action undertaken to restore a well to its original permitted and registered specifications, enabling a well to operate according to its intended use.

Modification - the alteration or rework of a well involving a material change in the original permitted design or construction, including but not limited to deepening, increasing the diameter, casing, perforating, and screen removal.

Monitoring well - a well installed for the sole purpose of assessing subsurface conditions and collecting groundwater samples.

Multi-layer aquifer – an aquifer containing unconsolidated units of varying permeability or zones bound by confining units.

Non-point source - any source from which pollutants are or may be discharged other than a point source.

Observation well - a well used for the sole purpose of determining groundwater levels.

Open-loop ground source heat pump system - a ground source heat pump system that withdraws groundwater from a well for use in the heat exchange unit of the system and then discharges the groundwater to the

aquifer via a return well or standing column well or to a surface water body.

Person - any individual, including any owner or operator as defined in this chapter; partnership; corporation, including a government corporation; trust association; firm; joint stock company; organization; commission; the District or federal government; or any other entity. [Statutory]

Piezometer - a non-pumping, non-potable well used for measuring ground water levels or potentiometric surface.

Point source - any discrete source of quantifiable pollutants, including but not limited to a municipal treatment facility discharge, residential, commercial or industrial waste discharge or a combined sewer overflow; or any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. [Statutory]

Pollutant - any substance which may alter or interfere with the restoration or maintenance of the chemical, physical, radiological, and biological integrity of the waters of the District; or any dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemicals, chemical wastes, hazardous wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, oil, gasoline and related petroleum products, and industrial, municipal, and agricultural wastes. [Statutory]

Potable - water that is free from impurities in amounts sufficient to cause disease or harmful physiological effects and that conforms with the National Primary Drinking Water Standards as listed in 40 C.F.R. Part 141.

Potentiometric surface - a surface representing the hydraulic head of ground water, represented by the water-table altitude in an unconfined aquifer or by the altitude to which water will rise in a properly constructed well in a confined aquifer.

Pressure grouting - a process by which grout is confined within the borehole or casing and by which sufficient pressure is applied to drive the grout into and within the annular space or zone to be grouted.

Property owner - a person listed as the legal titleholder of record of real property.

Purge - the act of removing groundwater from a well to collect groundwater samples that are representative of aquifer conditions, commonly accomplished by using a pump, prior to collecting accurate, reproducible, and representative groundwater samples for field and/or laboratory analysis.

Recognized environmental condition - the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property due to any release to the environment, under conditions indicative of a release to the environment or, under conditions that pose a material threat of future release to the environment. The term includes hazardous substances or petroleum products even under conditions in compliance with laws and regulations.

Recovery well - a well used to withdraw groundwater for disposal or treatment of contaminants contained within the groundwater.

Remediation - an activity performed with the intent to recover, dispose of, clean up, or treat pollutants or contaminants.

Sanitary protection - any means of protecting groundwater from contaminants from entering a well.

Separate stormwater sewer - a system of pipes or other conduits, including road drainage systems, catch basins, curbs, gutters, ditches, man-made channels, and storm drains, used to convey untreated stormwater directly to waters of the District and not part of a combined or sanitary sewer systems.

Site - a tract, lot, or parcel of land, or a combination of tracts, lots, or parcels of land for which development is undertaken as part of a unit, sub-division, or project.

Sodium-based bentonite - a plastic, colloidal clay derived from volcanic ash consisting of at least eighty-five percent (85%) montmorillonite, with an ability to absorb fresh water and swell in volume.

Soil Boring - a well constructed without the installation of a well casing, well screen, or the placement of other construction materials down hole, for the purpose of determining the physical or chemical characteristics of soil or groundwater.

Standard Dimension Ratio (SDR) - the quotient obtained when the outside diameter of thermoplastic well casing is divided by the wall thickness.

Stormwater Management Guidebook - the current manual published by the Department containing design criteria, specifications, and equations to be used for planning, design, and construction, operations, and maintenance of stormwater and best management practices.

Surface water - all of the rivers, lakes, ponds, wetlands, inland waters, streams, and all other water and water courses within the jurisdiction of the District of Columbia.

Temporary well casing - a durable pipe placed or driven into a borehole to maintain an open annular space around the permanent casing during construction of a well.

Unconfined aquifer - an aquifer in which no relatively impermeable layer exists between the water table and the ground surface and an aquifer in which the water surface is at atmospheric pressure.

Unconsolidated formation or aquifer - any loosely cemented or poorly indurated earth material including such materials as uncompacted gravel, sand, silt and clay. Alluvium, soil, and overburden are terms frequently used to describe such formations.

Waters of the District - flowing and still bodies of water, whether artificial or natural, whether underground or on land, so long as in the District of Columbia, but excludes water on private property prevented from reaching underground or land watercourses, and also excludes water in closed collection or distribution systems. [Statutory]

Water Quality or Quality of Water – refers to the chemical, physical, biological, and radiological characteristics of water.

Water supply well - a potable or non-potable well used to supply water for industrial, irrigation, or domestic purposes.

Well - any test hole, shaft, or soil excavation created by any means including, but not limited to, drilling, coring, boring, washing, driving, digging, or jetting, for purposes including, but not limited to, locating, testing, diverting, artificially recharging, or withdrawing fluids, or for the purpose of underground injection. [Statutory]

Well casing - a pipe placed in a borehole to provide unobstructed access to the subsurface or to provide protection of groundwater during and after well installation, or both. Inner well casing (also known as riser pipe) which extends from the well screen to or above the ground surface provides

access to groundwater from the surface and outer well casing is used to prevent migration of contaminants from one aquifer to another.

Well construction building permit - a building permit issued by DCRA with a well construction work plan approved by the Department.

Well development - the act of removing fine particulate matter or fluids used during the construction of a well to clear the well and establish a good hydraulic connection with the surrounding aquifer by any means, including surging, jetting, overpumping, and bailing.

Well owner - a person who has the legal right to construct a well for personal use or for the use of another person. [Statutory]

Well screen - a structural device which supports the well excavation, allows entrance of sub-surface fluids into a well or exit from a recharge well, and which acts as a filter to keep sediment from entering a well.

Wetland - a marsh, swamp or other area periodically inundated by tides or having saturated soil conditions for prolonged periods of time and capable of supporting aquatic vegetation. [Statutory]