

**ST. JOHNS RIVER WATER MANAGEMENT DISTRICT**

**CHAPTER 40C-3, F.A.C.**

**WATER WELLS**

**Revised  
May 20, 2008**



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WATER WELLS

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**40C-3.011 Policy and Purpose.**

(1) The purpose of Chapter 40C-3, F.A.C., is to implement the duties and responsibilities of the District under Part III, Chapter 373, F.S., and those responsibilities and duties delegated to the St. Johns River Water Management District by the Department of Environmental Protection relative to regulating the location, construction, repair, or abandonment of wells, and the licensing of water well contractors. It is the policy of the Governing Board that these rules are reasonably necessary to insure the protection and management of water resources and the health, safety, and general welfare of the people of this District.

(2) The rules in this chapter implement the regulation of wells through the following parts:

(a) Part I of this chapter establishes a permitting system for the location, construction, repair or abandonment of wells.

(b) Part II of this chapter establishes the minimum standards for the construction, repair, or abandonment of wells.

(3) Additional District rules relating to well construction are found in Chapter 40C-5, F.A.C., (Artificial Recharge), and 40C-2, F.A.C., (Consumptive Use).

(4) Rules relating to Water Well Contractor Licensing and enforcement guidelines are found in Chapter 62-531, F.A.C., (Water Well Contractors).

*Specific Authority 373.044, 373.113 FS. Law Implemented 373.103(1), 373.306, 373.308, 373.309, 373.313, 373.314, 373.316, 373.319, 373.323(2), 373.326, 373.329, 373.333, 373.342 FS. History-- New 10-14-84, Formerly 40C-3.011, 40C-3.0011, Amended 9-17-89.*

**40C-3.021 Definitions.** When used in this chapter:

(1) "Abandoned Water Well" means a well the use of which has been permanently discontinued. Any well that is in such a state of disrepair, as determined by a representative of the District, that its continued use for the purpose of obtaining groundwater or disposing of water or liquid wastes is impracticable, is considered to be abandoned.

(2) "Annulus or Annular Space" means any artificially created void between a well casing and a borehole wall or the space between two casings.

(3) "Aquifer" means a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield useful quantities of groundwater to wells and springs.

(4) "Casing diameter" or "diameter of casing" means the largest nominal permanent water bearing casing. For the purposes of this section, the diameter of the casing at the upper terminus will be presumed to be the diameter for the entire length, unless the well owner or contractor can demonstrate that the well has a smaller diameter permanent water bearing casing below the upper terminus.

(5) "Confining Unit" means a body of distinctly less permeable material stratigraphically adjacent to one or more aquifers. "Intermediate" as used in paragraph 40C-3.517(4)(c) refers to the materials and specifically carbonates that lie between and collectively retard the exchange of water between the overlying surficial aquifer system and the underlying Floridan aquifer system. The system nomenclature is described in Florida Geological Survey Special Publication No. 28 (1986).

- (6) "Consolidated" means a stratum which is cemented with a binding substance commonly derived from within the deposit containing that stratum.
- (7) "Consumptive Use Permit" means a permit issued under Chapter 40C-2, F.A.C.
- (8) "Contractor" means any person licensed by the Department, or a water management district, in accordance with Chapter 62-531, F.A.C., and engaged in the business of construction, repair, or abandonment of wells.
- (9) "Department" means the Florida Department of Environmental Protection.
- (10) "Driller" means a licensed contractor or a person working for a licensed contractor who actually constructs the well.
- (11) "Drive Shoe" means any device specifically designed, fabricated and installed to protect the lower end of a water well casing or liner pipe from collapse or other damage while the casing or liner pipe is being driven into place.
- (12) "Field Log" means an accurate, written documentation of all construction activities needed to fill out well completion reports.
- (13) "Filter Pack" means sand or gravel that is uniform, clean, and siliceous. It is placed in the annulus of the well between the borehole wall and the well screen.
- (14) "Gang Well" means a system where two (2) or more water wells are coupled together with a common header or manifold.
- (15) "Grout" means a mixture of water and either Portland cement (American Concrete Institute type I, type II, type III, or any other types of cement approved by the District), or Bentonite and acceptable additives approved by the District.
- (16) "Inspection Port" means any opening in the well seal or casing wall not less than one-half inch in diameter through which unobstructed access to the inside of the casing can be obtained for measuring water levels.
- (17) "Jetted Well" means a pipe meeting Rule 40C-3.507 standards with an attached well point or open ended screen. The well is installed in unconsolidated formations by the washing action of a water jet.
- (18) "Liner" means a pipe which either is installed within the outer casing to repair, or protect the outer casing or is installed below and separate from the outer casing to seal off casing material which may be encountered in the open hole of the well.
- (19) "Monitoring Well" or "Observation Well" means a well used primarily to monitor hydrologic parameters such as water levels or water quality.
- (20) "Nominal" means those standard sizes of pipe from one-eighth inch to 12 inches, specified on the inside diameter, may be less than or greater than the number indicated. "Nominal" when referred to the grouting annulus means either the available void thickness between telescoped casing varying less than 0.20 inches below standard where one inch of grout is required and 0.35 inches below standard where two inches of grout is required or the average available void thickness between the borehole and outside wall of the casing.
- (21) "Packer" means a device placed within the well casing that seals the joint between two pieces of casing, between the casing and screen, between one formation or water bearing strata and another, or between the formation and the casing.
- (22) "Particulate Material" means any small pieces or grains of naturally occurring sediments.

(23) "Potable Water" means water suitable for human consumption and approvable by the county health unit (Florida Department of Health and Rehabilitative Services).

(24) "Public Water Supply Well" means a well constructed for the purpose of supplying water to a public water system, as permitted under Chapters 62-550, 62-555, 62-560 and 10D-4, F.A.C.

(25) "Public Water System" means a community or non-community system for the provision to the public of piped water for human consumption, provided that such a system has at least 15 service connections or regularly serves at least 25 individuals daily at least 60 days out of the year, as set forth in Chapters 62-550, 62-555, and 62-560, F.A.C.

(26) "Telescoped casing" means an interior casing extending below and sealed within an exterior casing.

(27) "Test Hole" or "Exploratory Well" means any temporarily cased or uncased hole drilled, bored, cored, washed, or jetted, the intended use of which includes obtaining data for engineering or for geophysical or geological exploration, prospecting for minerals or products of mining or quarrying but not for the purposes of producing, disposing of, or searching for water.

(28) "Upper terminus" means that portion of a well casing ending at land surface or within an approved depth below land surface as described in subsection 40C-3.512(6). Land surface is considered to be the ground elevation of the finished grade at the well.

(29) "Water Well" means a well as defined in Section 373.303(7), F.S., which includes any excavation that is drilled, cored, bored, washed, driven, dug, jetted or otherwise constructed when the intended use of such excavation is for the location, acquisition, development or artificial recharge of ground water. This term does not include any well constructed for the purpose of obtaining or prospecting for oil, natural gas minerals or products of mining or quarrying; for inserting media to dispose of oil brine or to repressure oil-bearing or natural gas-bearing formations; or for storing petroleum, natural gas or other products; or for temporary dewatering of subsurface formations for mining quarrying or construction purposes.

(30) "Well Casing" means a pipe installed in a borehole or driven.

(31) "Well Completion" means termination of all construction, repair or abandonment activities. Continuous absence of a drill rig from the construction site for five or more days indicates that the well is deemed completed by the driller, unless proper notification, such as a telephone call, is given to a representative of the District.

(32) "Well Completion Report" means the form supplied by or approved by the District.  
*Specific Authority 373.044, 373.113, 373.171 FS. Law Implemented 373.019, 373.106, 373.303, 373.306 FS. History--New 10-14-84, Amended 12-5-85, Formerly 40C-3.021, 40C-3.0021. Amended 9-17-89.*

**40C-3.0321 Delegation.** The authority for general administration of Chapter 40C-3, F.A.C., is delegated to the executive director of the District. It is the policy of the Board that in making this delegation the executive director is authorized to designate specific staff members to carry out various tasks but that overall supervision and responsibility shall rest with the executive director. The Executive Director, Assistant Executive Director, Director, Department of Resource Management, Assistant Director, Department of Resource Management, or Division Director,

Division of Water Use Regulation are expressly authorized to issue permits under this chapter as provided in Sections 373.342(1), 373.323(5), and 373.342(2), F.S.

*Specific Authority 373.044, 373.113 FS. Law Implemented 373.083(5), 373.308, 373.309(2), 373.323(5), 373.324(2), 373.333, 373.342 FS. History--New 10-14-84, Formerly 40C-3.032, 40C-3.0032. Amended 9-17-89, Formerly 40C-3.032. Amended 12-30-03.*

**40C-3.035 Agreements.** The Governing Board hereby incorporates by reference the following documents:

(1) "Memorandum of Understanding Between the St. Johns River Water Management District and the Department of Environmental Protection Concerning Procedures for Handling Public Drinking Water Supply Well Sources Applications" dated January 20, 1981.

(2) "An agreement Between the City of Jacksonville and St. Johns River Water Management District Regarding Water Wells" dated November 29, 1978.

(3) An Interagency Agreement Between the Department of Environmental Protection and the St. Johns River Water Management District and the Department of Health and Rehabilitative Services, dated June 25, 1992, (revised to read Department of Environmental Protection) regarding delineated area permitting, Chapter 17-524, F.A.C., (transferred to 62-524, F.A.C., February 7, 1995.)

(4) An agreement between Indian River County Health Department and St. Johns River Water Management District regarding water well permitting, dated November 8, 1995.

(5) An agreement between the Florida Department of Health, Clay County Health Department and the St. Johns River Water Management District entitled Water Well Permitting Delegation Agreement dated September 6, 2001.

(6) An agreement between Florida Department of Health-Volusia County Health Department and St. Johns River Water Management District entitled Water Well Permitting Delegation Agreement dated 5-24-07.

(7) An agreement between the Florida Department of Health, St. Johns County Health Department and the St. Johns River Water Management District entitled Water Well Permitting Delegation Agreement dated September 6, 2001.

(8) An agreement between the Florida Department of Health, Nassau County Public Health Department and the St. Johns River Water Management District entitled Water Well Permitting Delegation Agreement dated September 6, 2001.

(9) An agreement between the Florida Department of Health, Flagler County Public Health Department and the St. Johns River Water Management District entitled Water Well Permitting Delegation Agreement dated September 6, 2001.

(10) An agreement between Florida Department of Health, Lake County Health Department and St. Johns River Water Management District regarding water well permitting dated September 7, 1999.

(11) An agreement between Florida Department of Health, Osceola County Health Department and St. Johns River Water Management District regarding water well permitting dated September 7, 1999.

(12) An agreement between Florida Department of Health, Putnam County Health Department and St. Johns River Water Management District regarding water well permitting dated 6-25-02.

(13) An agreement between Florida Department of Health, Brevard County Health Department and St. Johns River Water Management District regarding water well permitting dated 7-24-02.

(14) An agreement between Florida Department of Health, Okeechobee County Health Department and St. Johns River Water Management District regarding water well permitting dated 7-24-02.

(15) An agreement between Florida Department of Health, Baker County Health Department and St. Johns River Water Management District regarding water well permitting dated 1-11-06.

(16) An agreement between Florida Department of Health-Marion County Health Department and St. Johns River Water Management District entitled Amended Water Well Permitting Delegation Agreement dated 5-20-08.

*Specific Authority 373.044, 373.113, 373.171, FS. Law Implemented 373.046, 373.083, 373.309, FS. History--New 10-14-84, Amended 12- 5-85, Formerly 40C-3.035, 40C-3.0035. Amended 1-8-96, 4-21-96, 7-21-96, 12-22-96, 3-10-97, 1-3-00, 9-06-01, 6-25-02, 7-24-02, 1-11-06, 5-18-06, 5-24-0, 5-20-08.*

**40C-3.037 Water Well Contractor Licensing.** Chapter 62-531, F.A.C., effective May 25, 1989, which requires the licensing of water well contractors and includes the water well contractor disciplinary guidelines and procedures manual, is hereby adopted by reference and made part of this rule. The licensing program shall be administered and enforced by the District under the authority delegated to it by the Department of Environmental Protection.

*Specific Authority 373.044, 373.113, 373.171, FS. Law Implemented 373.323, 373.326, 373.333, 373.336, FS. History--New 10-14-84, Formerly 40C-3.038, 40C-3.0038. Amended 8-1-89.*

**40C-3.038 Violations of Contractor Licensing Requirements.**

(1) Violations of the licensing requirements of this chapter are specifically listed at Rules 62-531.380, 62-531.450, and 62-531.500, F.A.C., in effect on July 1, 1989.

(2) Actions which may be taken by the District upon determination that a violation has occurred are set forth in Section 373.333, F.S., and Chapter 40C-1, F.A.C.

*Specific Authority 373.044, 373.309, 373.333, 373.119, 373.129, 373.136, FS. Law Implemented 373.119, 373.333, 373.306, 373.313, 373.129, 373.336, FS. History--New 10-14-84, Formerly 40C-3.0391, 40C-3.00391. Amended 8-1-89.*

**40C-3.039 Penalties.** Penalties for violation of this chapter shall be as provided by Sections 373.129 and 373.336, F.S., and Chapter 62-531, F.A.C., which includes the water well contractors disciplinary guidelines and procedures manual as adopted by the Department and delegated to the water management districts.

*Specific Authority 373.044, 373.113, FS. Law Implemented 373.129, 373.308, 373.309, 373.336, FS. History--New 10-14-84, Formerly 40C-3.039, 40C-3.0039. Amended 8-1-89.*

**40C-3.0391 Enforcement.**

*Specific Authority 373.323(8) FS. Law Implemented 373.323(8) FS. History--New 10-14-84, Formerly 40C-3.037, 40C-3.0037, Amended 6- 4-89. Repealed 8-4-98.*

**PART I PERMITTING**

**40C-3.040 Scope of Part I.** This Part sets forth the permitting requirements applicable to the construction, repair or abandonment of wells. Unless expressly exempted by statute or this chapter, all wells must be permitted prior to construction, repair or abandonment and must be constructed, repaired, or abandoned by a licensed water well contractor.

*Specific Authority 373.044, 373.113, FS. Law Implemented 373.303, 373.308, 373.309, 373.316, 373.326, 373.342, FS. History--New 10- 14-84, Formerly 40C-3.040, 40C-3.0040. Amended 9-17-89.*

**40C-3.041 Permits Required.**

(1) Unless expressly exempted by Statute or this chapter, a well construction permit must be obtained from the District prior to the construction, repair or abandonment of any well within the District's jurisdiction.

(2) A well construction permit must be obtained from the District prior to the construction, repair, or abandonment of any non-potable water well in areas designated by the Department pursuant to Chapter 62-524, F.A.C. All potable wells will require a permit under Chapter 62-524, F.A.C., from the entity to which the authority to issue a permit has been delegated.

(3) Unless expressly exempted by Statute or District rule, a well construction permit must be obtained prior to the construction of any gang well, the total nominal casing sizes of which equal six inches or more, for the purpose of procuring or obtaining water other than for dewatering.

(4) No test hole or exploratory well shall be converted to a water well until a well construction permit is obtained.

(5) A well construction permit is required prior to the construction of any public supply well. Those parts of Chapters 62-550, 62-555, and 62-560, F.A.C., which set forth public supply well construction standards and permitting standards are hereby adopted by reference and made part of this rule. This permitting program shall be administered and enforced by the District under the authority delegated to it by the Department, pursuant to general delegation of authority to water management districts on August 20, 1974. This authority with respect to public supply wells is more specifically set forth in the Memorandum of Understanding between the St. Johns River Water Management District and the Department, dated February 15, 1978.

*Specific Authority 373.044, 373.113, 373.171, FS. Law Implemented 373.103, 373.309, 373.313, 373.316, FS. History--New 10-14-84, Amended 12-5-85, Formerly 40C-3.041, 40C-3.0041. Amended 9-17-89, 1-8-96.*

**40C-3.051 Exemptions.** The following wells are exempt from the requirements of Rule 40C-3.041.

- (1) Existing wells exempted by Section 373.316, F.S.



(2) The wells exempted under subsection 373.303(7), F.S. This exemption does not relieve the applicant from obtaining any permits which may be required under Chapter 40C-2 (Consumptive Use), Chapter 40C-4 (Surface Water Management), Chapter 40C-5 (Artificial Recharge), or Chapter 40C-40 (General Surface Water Management Permits).

(3) The construction, repair, or abandonment of a water well which is a nominal two inches or less inside diameter by an individual who is not a licensed contractor for his own private use on his own or leased property, provided the provisions of Section 373.326(2), F.S., are satisfied. The well must be constructed, repaired or abandoned in accordance with the standards of this chapter and the well completion report is submitted in accordance with Rule 40C-3.411. This exemption does not apply to public water supply wells.

(4) A well constructed solely as a test hole or exploratory well as defined in subsection 40C-3.021(22).

(5) The construction, repair or abandonment of a water well with a nominal casing size of less than six inches by a licensed contractor, provided that a well completion report is submitted in accordance with subRule 40C-3.411(1) and that the well is constructed, repaired or abandoned in accordance with the standards of this chapter. This exemption from permitting requirements in 40C-3.041 does not apply to:

- (a) Public water supply wells,
- (b) Any non-potable well construction in an area delineated pursuant to Chapter 62-524, F.A.C.,
- (c) Any potable well requiring a permit pursuant to Chapter 62-524, F.A.C.
- (d) Any water wells within jurisdictions to which the District has delegated authority pursuant to Rule 40C-3.035, F.A.C., for water well construction for wells less than nominal well casing size of 6".

(6) Wells intended for use as injection wells which have received a permit under Chapter 40C-5, F.A.C.

*Specific Authority 373.044, 373.113, 373.171, 373.309, FS. Law Implemented 373.303, 373.308, 373.313, 373.316, 373.326, FS. History--New 10-14-84, Amended 12-5-85, Formerly 40C-3.051, 40C- 3.0051. Amended 9-17-89, 3-10-97.*

#### **40C-3.101 Content of Application.**

(1) Permits will only be issued upon application by the owner on whose property the well will be located, or the owner's agent.

(2) Applications for permits required by this chapter shall be filed with the District. The application shall contain:

- (a) The name, address, telephone number, license number, and signature of the licensed contractor who will be constructing the well, except in the case of a state agency or political subdivision that needs an indication of approval from the District in order to obtain financing to construct a well. In this case the District will take action on an application for a permit not signed by a licensed contractor by conditioning the effectiveness of the permit on completion of a copy of the application by the licensed contractor that obtains the bid to construct the well, and receipt of the completed copy by the District;

(b) The name, address, telephone number, and signature of the property owner or his agent, if applicable;

(c) Written authorization from the owner designating the authorized agent, if any;

(d) The location of the well (to the nearest one-quarter section, or latitude and longitude to the nearest second, or state plane of coordinates to the nearest one hundred feet), and site map of the well location, depicting landmarks and providing a scale;

(e) The expected depth of the well;

(f) The proposed use of the well;

(g) The estimated average daily volume of the proposed use;

(h) The specification for well construction including the size(s) of the casing to be used, the proposed construction, repair or abandonment method, specifications including casing types, casing diameters and depths; open hole or screened intervals and sizes and screen opening; and proposed grouting materials;

(i) The proposed method of construction and completion of the well, or the method of plugging and abandoning of the well;

(j) The proposed pump size;

(k) The District consumptive use permit number, if a consumptive use permit is required for the use; and

(l) For public supply wells, the name and address of the business, subdivision or other water system for which the well is proposed; the number of persons the well is intended to serve; and a plat or sketch of the well location showing property boundaries, existing buildings or physical features, the location of all known and proposed sources of contamination in the vicinity, and the location of power lines or overhead obstructions.

(3) The application must be signed by the owner or his authorized agent, if applicable. The application must also be signed by a licensed contractor.

(4) The required fee pursuant to Rule 40C-1.603, F.A.C., shall be submitted with the permit application.

(5)(a) In addition to the information required to be included on the District form, the District staff may specifically request such reasonable additional information as may be necessary to evaluate the hydrologic impacts of the withdrawal to ensure that the impacts will not be harmful to the water resources of the District as set forth in Rule 40C-2.301, F.A.C., and are in compliance with statutory and rule requirements. Pursuant to Section 373.232, F.S., the District will cite a specific rule when requesting such additional information.

(b) Such requests for additional information will be made in compliance with Section 120.60, F.S. and Chapter 40C-1, F.A.C.

*Specific Authority 373.044, 373.113, FS. Law Implemented 373.309, 373.342, FS. History--New 10-14-84, Formerly 40C-3.101, 40C- 3.0101. Amended 9-17-89.*

**40C-3.201 Permit Processing Fees.** There shall be a non-refundable permit processing fee as specified by Rule 40C-1.603, F.A.C., payable to the District at the time that an application for a permit is submitted.

*Specific Authority 373.044, 373.109, 373.113, 373.171, FS. Law Implemented 373.109, 373.308, 373.309, 373.313, FS. History--New 10-14-84. Amended 12-5-85, Formerly 40C-3.201, 40C-3.0201, Amended 10-1-87, 8-1-89.*

**40C-3.301 Conditions for Issuance of Permits.**

(1) In order to obtain a permit under this chapter an applicant must submit a permit application as specified in Rule 40C-3.101.

(2) The permit application fee shall accompany the original application according to the fee schedule provided in Rule 40C-1.603, F.A.C.

(3) The applicant must certify that the proposed well will be constructed, repaired or abandoned in compliance with the criteria set forth in Part II of this chapter, which includes Chapter 62-532, F.A.C., adopted by reference therein.

(4) A consumptive use permit, if applicable under Chapter 40C-2, F.A.C., must have already been obtained.

(5) The proposed well must not adversely affect the water resources of the District.

(6) The application must be complete and must meet the requirements of Chapter 373, F.S., and this chapter.

*Specific Authority 373.044, 373.113, FS. Law Implemented 373.103, 373.306, 373.308, 373.309, 373.313, FS. History--New 10-14-84, Formerly 40C-3.301, 40C-3.0301. Amended 9-17-89.*

**40C-3.321 Duration of Permits.**

(1) Each permit shall be valid for a period of ninety (90) days from the date of issuance. In the event construction, modification, repair, or abandonment is not completed within that time, the permitting authority shall extend the time limit upon written request by the permittee, in accordance with (a) and (b), or require the applicant to obtain a new permit before continuing construction, modification, repair, or abandonment of a water well.

(a) One extension of an existing permit for a period not to exceed (90) days shall be granted by the permitting authority upon written request provided:

1. The request is submitted by the permittee prior to the expiration date of the permit; and

2. The permittee affirms circumstances and conditions have not changed substantially since permit issuance so that the proposed water well shall not adversely impact the water resource.

(b) For a public water supply well, an extension not to exceed a period of one (1) year from date of permit issuance shall be granted by the permitting authority, in increments of ninety (90) days, upon written request provided conditions set forth in (a)1. and 2. are satisfied.

(2) Construction, modification, repair, or abandonment of a water well shall not commence or continue after the expiration of a permit, unless written request for an extension has been provided to the District prior to expiration of the permit.

*Specific Authority 373.044, 373.113, FS. Law Implemented 373.113, 373.171, FS. History--New 10-14-84, Formerly 40C-3.321, 40C-3.0321. Amended 9-17-89, 1-8-96.*

**40C-3.341 Suspension and Revocation.**

*Specific Authority 373.044, 373.113, FS. Law Implemented 373.103, 373.306, 373.308, 373.309, 373.313, FS. History--New 10-14-84, Formerly 40C-3.341, 40C-3.0341. Amended 8-1-89. Repealed 8-4-98.*

**40C-3.411 Well Completion Report.**

(1) Well completion reports are required for the construction, repair or abandonment of all wells regardless of whether a permit is required under Rule 40C-3.041. Well completion reports shall be filed with the District by the contractor within 30 days of the completion of the work.

(a) Well completion reports for sites controlled by Chapter 62-761, F.A.C., may include all monitoring wells for the same site on a single form.

(b) Computer generated completion reports developed by the contractor may be used in place of District supplied forms if these reports have been approved by the District prior to use.

(2) The water well contractor shall keep or cause to be kept by a person in his employ a field log. Such records shall be available for inspection by the District at the site during all times when actual work is in progress.

(3) If no work is performed or if the well is not completed, a report shall be filed by the contractor within thirty days of the expiration of the permit stating that no well construction was performed or completed under the permit.

(4) The District may also require that samples be taken during construction and furnished to it along with the completion report. If samples are required, the District will provide containers and instructions.

*Specific Authority 373.044, 373.113, FS. Law Implemented 373.308, 373.309, 373.313, 373.326, 373.342, FS. History--New 10-14-84, Formerly 40C-3.411, 40C-3.0411. Amended 9-17-89.*

**40C-3.451 Emergency Authorization.**

*Specific Authority 373.044, 373.149, 373.171, FS. Law Implemented 373.309, 373.313, 373.335, 373.342, FS. History--New 10-14-84, Formerly 40C-3.451, 40C-3.0451. Amended 9-17-89. Transferred to 40C-1.1010.*

**40C-3.455 Variances.**

*Specific Authority 373.044, 373.113, 373.171, FS. Law Implemented 373.303, 373.308, 373.309, 373.313, 373.316, 373.326, FS. History--New 10-14-84, Amended 12-5-85, Formerly 40C-3.501, 40C- 3.0501. Amended 9-17-89, Transferred from 40C-3.501, Amended 1- 22-90. Repealed 11-11-03*

**40C-3.461 Inspection.**

(1) The District is authorized to inspect any well or abandoned well within its jurisdiction, including those wells permitted under Rule 40C-3.041. Inspections shall be done as necessary to insure conformity with applicable standards. Such inspection may include but need not be limited to geophysical logging, water level measurements, or other methods. Duly authorized representatives of the District, upon presenting proper identification and at reasonable times, may enter upon any premises for the purpose of such inspection.

(2) If, based on such inspection, the District finds that the standards of Part II have not been met, the District shall proceed with enforcement actions as prescribed by Chapter 62-531, F.A.C.

(3) A metallic tag shall be placed on the well head, concrete marker, terminal box, or a permanently attached fixture. The tag shall include, but not be limited to, the following information:

- (a) Contractor license number,
- (b) Date of completion,
- (c) Permit number issued by the District.

1.a. When a contractor provides tags a sample copy of the tag must first be submitted to the District for approval.

b. Tags provided by the contractor must be set in place at the time the well is completed.

2.a. The contractor may elect to use a metallic tag supplied by the District. Written request may be made for such tag either on the permit application form or the completion report, when filed. A fee of \$5.00 per tag will be charged to cover processing costs.

b. The contractor shall certify on the completion report that the metallic tag will be placed within 30 days of receipt by the contractor if using a district supplied tag as set forth in this section.

(4) A site inspection will be conducted by an authorized representative of the District prior to issuing a permit for construction of a public water supply well.

(5) The District shall be notified at least 24 hours in advance of commencement of drilling operations and of placement of grout in the annular space of any public supply water well. A District representative will be on site to observe the commencement of drilling and grouting. If the District is properly notified and an inspector is not at the site at the appointed time or times, the commencement of drilling or grouting may begin in the absence of a District representative. In all circumstances, a copy of all applicable District permits will be available at the construction site during installation.

(6) If, based on an inspection, the District finds any well is an abandoned water well, the well shall be plugged in accordance with Rule 40C-3.531.

(7) The District shall have the right to inspect drilling records upon reasonable notice to a licensed contractor.

*Specific Authority 373.044, 373.171, FS. Law Implemented 373.103, 373.308, 373.309, 373.319, FS. History--New 10-14-84, Amended 12- 5-85, Formerly 40C-3.461, 40C-3.0461. Amended 9-17-89.*

#### **40C-3.492 Violations of Permits.**

(1) Actions, omissions, or conduct which may be considered a violation of this Part shall include but are not limited to the following:

(a) Failure to submit a complete well completion report within 30 days of the completion of construction, repair or abandonment of any well.

(b) Intentional misrepresentation or falsification of records.

(c) Failure to obtain a permit when required under Rule 40C-3.041.

(d) Failure to keep a field log at the drilling site with accurate information of all construction activities.

(e) Failure to provide a field log upon request to a District representative at the drilling site unless a field log is not available at the site.

(f) Failure to report to the District within 30 days of expiration of the permit when no work is performed or the well is not completed.

(g) Failure to comply with any or all permit conditions.

(h) Failure to notify the District 24 hours prior to the commencement of drilling operations of any public supply well.

(i) Failure to notify the District 24 hours prior to the placement of grout in the annular space of any public supply well.

(j) Failure to attach a metallic tag to any well as required in subsection 40C-3.461(3). The contractor shall not be responsible for the tag after it has been attached to the well.

(2) Violations may be reported by any person, including District staff.

*Specific Authority 373.044, 373.113, 373.171, FS. Law Implemented 373.308, 373.309, 373.342, FS. History--New 10-14-84, Amended 12- 5-85, Formerly 40C-3.492, 40C-3.0492. Amended 8-1-89, 9-17-89, 11-11-03.*

## **PART II STANDARDS**

**40C-3.500 Scope of Part II.** This Part sets forth the standards and criteria for the construction, repair and abandonment of wells, including all provisions contained in Chapter 532, F.A.C., which is adopted by reference and made a part of this rule. All wells within the District boundaries must comply with these standards regardless of whether a permit is required under Part I.

*Specific Authority 373.044, 373.113, FS. Law Implemented 373.308, 373.309, FS. History--New 10-14-84, Formerly 40C-3.500, 40C- 3.0500. Amended 9-17-89.*

### **40C-3.501 Variances.**

*Specific Authority 373.044, 373.113, 373.171 FS. Law Implemented 373.303, 373.308, 373.309, 373.313, 373.316, 373.326 FS. History--New 10-14-84, Amended 12-5-85, Formerly 40C-3.501, 40C-3.0501, Amended 9-17-89, Transferred to 40C-3.455.*

### **40C-3.502 Construction Methods.**

(1) Wells must be located, constructed, cased, grouted, plugged, capped, or sealed to prevent uncontrolled surface flow, uncontrolled movement of water from one aquifer or water bearing zone to another, contamination of groundwater or surface water resources, or other adverse impacts.

(a) Monitor wells constructed to meet requirements in Chapter 62-761, F.A.C., shall be protected and sealed in the following manner:

1. Terminal boxes, well compartments, or manhole sleeves approved by the Department or District shall be used to protect the well head from damage in a traffic area.

2. Traffic bumpers shall be installed around the well head in a non-traffic area when casing extends above land surface.

3. Pavement at pad surface shall slope away from the terminal box, well compartment, or manhole sleeve cover to retard movement of surface waters into the well head enclosure. The slope will be a minimum of one inch rise over a twelve inch lateral distance.

4. Non-traffic area installations shall protect the well head from run-off, but need not include a sloped cement pad in addition to the required grout. Wells shall not be installed in depressions that accept run-off from the pad area.

5. Screened areas shall be enclosed in filter pack and an attempt to develop to remove particulate materials and turbidity will be made.

6. Well head enclosures shall be sealed in accordance with subparagraph 40C-3.517(7)(b)1.

7. Well heads shall be sealed in accordance with subparagraph 40C-3.521(2)(b)1.

8. If confining units are penetrated by a monitoring well below an underground tank, construction shall include a casing and grout seal to said unit to protect the underlying aquifer.

9. Monitor wells may only be used in areas where ground water is between four and twenty feet below ground surface or finished grade, whichever is greater in elevation.

(b) Test holes or exploratory wells constructed to obtain engineering, mining, or geophysical data and not for the purposes of producing, disposing, or searching for water shall be sealed in a manner that prevents uncontrolled movement of water in accordance with subsection 40C-3.517(8), F.A.C. The appropriate grout mixture shall be placed in the hole or exploratory well from bottom to top using the tremie method described in subparagraph 40C-3.517(8)(e)2. This requirement shall not apply to shallow excavations for percolation tests or soils analysis, as long as the excavation does not penetrate a confining unit which separates water bearing zones.

(c) Wells permitted under Chapter 62-524, F.A.C., and subsection 40C-3.041(2) shall be constructed, repaired, or abandoned in a manner that meets the special criteria developed for each designated area.

(d)1. The District may designate special construction criteria areas by emergency rule to prevent transport of surface contaminants to ground water or movement of introduced or natural contaminants from one aquifer or zone to another. Criteria set will be the minimum necessary to prevent the movement of contaminants and will be developed in cooperation with other state agencies, local jurisdictions, and the regulated public, and will be undertaken in accordance with Chapter 120, F.S. provisions for emergency rulemaking.

2. The Picketville Landfill Special Construction Criteria Area is located within section 45, Township 1 South, Range 26 East, Duval County. (Legal Description to be provided by City of Jacksonville). Within the Picketville Landfill Area two zones are created:

a. Zone A is comprised of that area approved by the United States Environmental Protection Agency for remedial measures on March 5, 1993, and comprised of (legal description to be supplied by City of Jacksonville).

b. Zone B is comprised of that portion of the Picketville Landfill Special Construction Criteria Area which is not located in Zone A but which is located in Delineated Area as designated by Rule 62-524, F.A.C., and comprised of (legal description to be supplied by City of Jacksonville).

3. The Fairbanks Special Construction Criteria Area is located within sections 1, 2, 10, 11, 12, 13, 14, 15, Township 9 South, Range 20 East, and sections 5, 6, 7, Township 9 South,

Range 21 East, Alachua County, Florida. Within the Fairbanks Special Construction Criteria Area the two zones created are Zone A and Zone B. The legal description can be obtained by contacting the St. Johns River Water Management District, 4049 Reid Street, Palatka, Florida 32177-2529.

(2) Those portions of Chapters 62-524, 62-550, 62-555, 62- 560, 62-610, 62-761, 10D-4, and 10D-6, F.A.C., which establish spacing distances between wells and potential or present contamination sources, are hereby adopted by the District and will be used to designate spacing for affected wells.

*Specific Authority 373.044, 373.309 FS. Law Implemented 373.306, 373.308, 373.309, 373.113 FS. History--New 10-14-84, Formerly 40C-3.502, 40C-3.0502. Amended 9-17-89, 9-16-93, 8-30-94.*

#### **40C-3.507 Casing and Liner Pipe Standards.**

(1) Well casing and liner pipe shall be new or shall be in like new condition if salvaged from a well, test hole, or dry hole. Such casing or pipe shall not be used unless it is free of leaks, corrosion, and dents; is straight and true, and is not out of round. Welded or seamless black or galvanized pipe or casing, stainless steel pipe or casing, or approved types of nonmetallic pipe shall be used for well casing or liner pipe. Well casing installed by driving shall not have less than the dimensions and weights specified in Table 1 unless otherwise approved by the District and shall conform to the American Society for Testing and Materials (ASTM) A-53 or A-120, or American Petroleum Institute (API) 5-L.

(2) Black or galvanized steel casing or liner pipe set into place without driving shall not have less than the dimensions and weights specified in Table 2 and shall conform to the API Standard 5-L (March 1980).



TABLE 1

MINIMUM DIMENSIONS AND WEIGHTS FOR BLACK OR GALVANIZED STEEL CASING OR LINER PIPE INSTALLED BY DRIVING

Nominal Casing Size (in)	Outside Diameter (in)	Nominal Wall Thickness (in)	Plain End Weight (lbs/linear ft)
1.25	1.660	0.140	2.27
1.5	1.900	0.145	2.72
2	2.375	0.154	3.56
3	3.500	0.216	7.58
3.5	4.000	0.226	9.11
4	4.500	0.188	8.62
4	4.500	0.237	10.79
5	5.563	0.258	14.62
6	6.625	0.280	18.97
8	8.625	0.277	24.70
10	10.750	0.307	34.24
12	12.750	0.300	43.77

(3) Black or galvanized steel large OD casing with an outside diameter (OD) between 12 and 30 inches shall have a minimum wall thickness of 0.375 inches and shall be of weights as specified by American National Standards for Wrought Steel and Wrought Iron Pipe ANSI B36.10-1970, for standard pipe. Pipe larger than 30 inches OD shall have a minimum wall thickness of 0.500 inches and shall be of weights as specified by American National Standards for Wrought Steel and Wrought Iron Pipe ANSI B36.10-1970, for standard pipe.

TABLE 2

MINIMUM DIMENSIONS AND WEIGHTS FOR BLACK OR GALVANIZED STEEL CASING OR LINER PIPE SET INTO PLACE WITHOUT DRIVING

Nominal Casing Size (in.)	Outside Diameter (in.)	Nominal Wall Thickness (in.)	Plain Weight (lbs/linear ft in)
3	3.500	0.125	4.51
3.5	4.000	0.134	5.53
4	4.500	0.142	6.61
5	5.500	0.154	8.79
5.5	6.000	0.164	10.22
6	6.625	0.185	12.72
8	8.625	0.188	16.90

(4) Black or galvanized steel casing or liner pipe, with an outside diameter less than 3.500 inches shall have a wall thickness of not less than 0.125 inches. Black or galvanized steel casing or liner pipe with an outside diameter between 10 and 16 inches shall have a wall thickness of not less than 0.250 inches. Steel casing or liner pipe with an outside diameter of 16 inches or more shall have a wall thickness of not less than 0.375 inches.

(5) Stainless steel pipe used or casing or liner pipe shall be at minimum consistent with Schedule 10S of the American National Standards Institute (ANSI B36.19-1965 R 1971), or stronger classification.

(6) Polyvinyl Chloride (PVC) pipe may be used for well casing or liner pipe. Any PVC pipe used to construct a water well shall have been marked by the manufacturer, that it is no less stringent than the National Sanitation Foundation, (NSF), Standard 14 and is suitable for use in potable water systems. Any PVC pipe used for well construction or repair shall have a working pressure rating of not less than 200 psi. at 73 degrees F or shall be at minimum consistent with ASA Schedule 40. Other nonmetallic pipe may be approved by the District prior to use.

(7) Steel well casing and liner pipe may be joined in a watertight manner by threaded couplings or electrical welding methods. PVC pipe shall be joined by solvent bonded or threaded couplings or other approved method which shall meet the strength requirements for casing as specified above.

(8) Nonmetallic and stainless steel well casing or liner pipe shall not be installed or seated by driving unless prior approval is obtained from the District.

(a) For well casing or liner pipe installed by driving, the casing or pipe shall not butt together inside threaded couplings unless the joint is electrically welded so as to be completely watertight. A drive shoe is required for use on casing or pipe installed by driving except when obtaining the water from unconsolidated formations, where a coupling may be used in place of a

drive shoe. A drive shoe is required if any consolidated materials are anticipated within the proposed length of casing.

*Specific Authority 373.044, 373.113, 373.171, FS. Law Implemented 373.306, 373.308, 373.309, 373.113, FS. History--New 10-14-84, Amended 12-5-85, Formerly 40C-3.507, 40C-3.0507. Amended 9-17-89, 9-16-93.*

#### **40C-3.512 Well Construction Requirements.**

(1) In the construction of a well, reasonable caution shall be taken to maintain the work site so as to minimize the entrance of contaminants into the water resource. Materials used in construction shall be reasonably free of contamination. The requirements or construction of public supply wells can be found in Chapter 62-555, F.A.C.

(a) During construction, the water used to mix the drilling fluids must either maintain a minimum free chlorine residual of 10 mg/l or be supplied from a potable well or water supply. If the well or water supply is a known source of contamination or is within a known area of contamination, it shall not be used to provide water to construct the well.

(b) Disinfection of filter or gravel pack materials will follow guidelines found in AWWA Standard A100-84, section 11.4, unless materials are obtained from a commercial source.

(c) Upon completion of construction, the well must be disinfected using a solution of water and available chlorine compounds providing a concentration not less than 50 mg/l. USEPA Manual of Well Construction Practices, EPA-570/9-75-001, Section 54.001-000-000, provides a tabular determination of disinfectant per 100 feet of well depth to achieve the required residual.

(d) For non-potable (non-domestic) wells the contractor may elect either to maintain a minimum of 10 mg/l free chlorine in the water used to mix the drilling fluid during construction of the well or to disinfect the completed well with a solution of water and available chlorine compounds at a concentration of no less than 50 mg/l. Development should occur prior to disinfection so the well may be cleared of chlorine by flushing the entire water system prior to use. The disinfecting agent shall be left in the well for a period of at least twelve hours and then pumped to clear the disinfecting agent taking care to minimize potential damage to the environment. Free-flowing artesian wells will be disinfected by using either potable water or maintaining a minimum free chlorine residual of 10 mg/l in water used to mix the drilling fluid until the free flowing water zone is reached.

(2) For wells which penetrate multiple aquifers or water bearing zones the well shall be completed so as to prevent cross- contamination. If significantly different water quality exists between these aquifers or water bearing zones, leakage of water from one aquifer or water bearing zone to another must be prevented.

(3) For wells finished into unconsolidated aquifers, continuous casing shall extend from the well's terminus to the well screen. The well screen shall be attached to the casing with a watertight seal. The lower terminus of the well screen shall be sealed to prevent the entrance of particulate materials. A tailpipe is allowed if affixed to the screen with a water tight seal and plugged at its lower terminus.

(4) For wells completed into consolidated aquifers, a continuous casing shall extend from the upper terminus and be seated into:

(a) The producing aquifer, or

(b) Into a consolidated stratum within a continuous non-caving confining unit immediately overlying the aquifer from which the water is to be withdrawn.

(5) For wells completed into consolidated aquifers which are constructed using telescoping casings the following practices will be acceptable:

(a) Two casings may be telescoped and sealed with a packer and one casing centralizer when paragraph 40C-3.517(4)(c) construction methods are used. Two centralizers shall be used when the internal casing is grouted. A minimum of 5 feet overlap is required for non public supply wells which are less than 6" in diameter. A minimum ten feet of overlap is required for non public supply wells a minimum of 6" or more in diameter. The minimum required overlap for public supply wells remains 20 feet, as set forth in Chapter 62-555, F.A.C.

(b) The annular space between telescoped casings shall meet minimum grouting standards in subsections 40C-3.517(2)&(3).

(6) The upper terminus of the well to which the well head is affixed shall extend either to land surface or to finished grade, whichever is higher, or where a potential physical or traffic hazard exists, the well head must:

(a) Be placed in an appropriate enclosure terminating at land surface or finished grade, whichever is higher, that allows vertical access to the casing and proper drainage, and that protects the well head from the entrance of contaminants;

(b) Be completed to a point 18 inches or less below land surface or finished grade, whichever is higher. There must be a concrete marker 10 inches in diameter and 4 inches thick with an inserted metal disk clearly marked as required in subsection 40C- 3.461(2) placed at land surface or finished grade. The upper terminus of the casing shall be sealed in a manner to which prevents the entrance of contaminants into the well; or

(c) Be completed to a point 18 inches or less below land surface or finished grade, whichever is higher. A tee and nipple must be affixed so that the casing extends to land surface or finished grade while permitting a below grade water line to extend to a designated location remote to the water well. This subsection does not apply to public supply wells regulated under Chapter 62-555, F.A.C.

(7) For wells constructed in those areas of the District in which chert occurs, the well casing shall extend from its upper terminus to:

(a) A point below the dry season water level of the producing aquifer, or

(b) A point firmly seated in chert overlying a stratum of limestone if the underlying limestone does not produce a quantity of particulate materials after development that will clog a filter or decrease the ability of the well to produce water.

(8) Water wells constructed using Bentonite grouts shall meet all the following requirements:

(a) The casing seat must be clean allowing the casing to set at the total depth bored in a hole reasonably free of drill cuttings;

(b) A formation boot or Portland Cement plug must be installed at the casing seat;

(c) Portland Cement must be placed in the upper three feet of the annular space to prevent deterioration of or damage to the Bentonite seal; and

(d) Bentonite grout may be used only on domestic, irrigation, water source or ground source heat pump installations or well abandonments with a nominal casing diameter of four inches or less. Use of Bentonite grout is not allowed on public supply wells or where artesian flow occurs or in any identified contamination sites.

In all circumstances the requirements of subsection 40C- 3.512(2) must be met. All caving zones within the well must be cased or lined when caving occurs below the casing seat. No casing may be seated into an unconsolidated unit above the producing aquifer.

(9) In addition to the other applicable standards contained in this chapter, wells constructed in the Picketville Landfill Special Construction Criteria Area shall meet the following minimum criteria:

(a) For Zone A, of new wells which are completed into the surficial aquifer system, including the upper sand and lower shallow-rock zone, to a depth of 110 feet below land surface or less than five feet into the intermediate aquifer system are prohibited. This prohibition of new wells does not apply to monitor wells, recovery wells or piezometers which may be used for assessment of clean up of contamination sites.

(b) New wells may be completed into the intermediate aquifer system producing zone at least 300' below ground surface, or into the Floridan aquifer system.

(c) New wells penetrating the intermediate system or Floridan aquifer producing zones shall be constructed in the following manner:

1. A minimum 6-inch exterior casing shall be installed and grouted to no less than five feet into the top of the confining unit immediately below the shallow rock zone of the surficial aquifer system.

2. A minimum 2-inch interior casing within the 6-inch casing shall be installed and grouted to the producing zone. For wells constructed into the intermediate system, the intermediate aquifer shall be screened unless the entire producing zone is consolidated.

3. The top casing diameters shall allow a minimum nominal grouting annulus of two inches.

4. For telescoped wells constructed in reliance on the criteria of paragraph 40C-3.517(4)(c), F.A.C., in addition to the overlap created by the telescope, a fifty foot minimum length of internal casing shall be grouted below the telescoped joint.

5. The internal casing of all wells shall be completed to a minimum of twelve inches above grade.

(d) In Zone A, each existing well in the surficial aquifer system shall be abandoned when public supply lines are installed adjacent to the property served by the well.

(e) All Chapter 62-524, F.A.C., construction standards shall be met in both Zone A and Zone B.

(10) In addition to the other applicable standards contained in this chapter, wells constructed in the Fairbanks Special Construction Criteria Area shall meet the following minimum criteria:

(a) In Zone A, new wells which are completed into the Surficial Aquifer System or into the Intermediate Aquifer System, are prohibited. This prohibition of new wells does not

apply to monitor wells, recovery wells or piezometers which may be used for assessment or cleanup of contaminated sites.

(b) In Zone A, new wells penetrating the Floridan Aquifer producing zones must be constructed in the following manner:

1. A minimum 12-inch exterior casing shall be installed and grouted to no less than five feet into the upper confining unit of the intermediate aquifer system.

2. A minimum 8-inch interior casing within the 12-inch casing shall be installed and grouted to no less than five feet into the lower confining unit of the Intermediate Aquifer System.

3. A maximum 4-inch permanent water bearing casing within the 8-inch casing must be installed into the Floridan Aquifer System to a depth of at least one full casing lengths below the formation contact.

4. The casing diameters shall allow a minimum nominal grouting annulus of two inches.

5. The internal casing of all wells shall be completed to a minimum of twelve inches above grade.

6. In Zone A, all new wells shall be logged using gamma, caliper or video equipment.

(c) In Zone A, each existing well in the Surficial and Intermediate Aquifer System shall be abandoned when public supply lines are installed adjacent to the property served by the well.

(d) In Zone A, water quality samples must be taken and analyzed by Environmental Protection Agency methods 601, 602 and 610 where the casing is set in the Floridan Aquifer System. Water quality results from the Floridan Aquifer System shall reveal no contaminants before well construction is completed. In the event that water quality testing indicates that there is contamination in the groundwater, the well shall be plugged and abandoned pursuant to Chapter 40C-3, F.A.C.

(e) In Zone B, new wells shall be logged, sampled and analyzed by Environmental Protection Agency methods 601, 602 and 610 for groundwater contaminants.

(f) Prior to any well construction in the Fairbanks Special Construction Criteria Area identified in 40C-3.502(3), F.A.C., all persons shall obtain a well construction permit from the St. Johns River Water Management District. Construction standards as provided in Chapter 62-524, F.A.C., shall be applicable to all well construction in the Fairbanks Special Construction Criteria Area.

(g) In Zone A and Zone B, all unused wells must be capped and locked or plugged and abandoned. In Zone A, wells connecting separate aquifer systems must be plugged and abandoned.

*Specific Authority 373.044, 373.309 FS. Law Implemented 373.306, 373.308, 373.309, 373.113 FS. History--New 10-14-84, Amended 4- 23-85, Formerly 40C-3.512, 40C-3.0512. Amended 9-17-89, 9-16-93, 8-30-94.*

**40C-3.517 Grouting and Sealing.** Wells shall be grouted and sealed to protect the water resource from degradation caused by movement of waters along the well annulus either from the surface to the aquifer or between aquifers, and to prevent loss of pressure in artesian aquifers. All

wells shall be constructed and sealed using a method which insures that an open or unnaturally permeable annular space does not remain when a well is completed.

(1) All wells that are constructed in a manner which creates an annular space between the casing and the naturally occurring geologic formations will be grouted and sealed in accordance with the methodologies listed in this section.

(2) Wells obtaining water from a formation and having a casing less than four inches in outside diameter shall have a nominal one inch thickness of grout sealing the annular space to ensure that an open or unnaturally permeable annular space does not remain when the well is completed.

(3) Wells having a nominal casing size equal to or greater than four inches in outside diameter and obtaining water from a formation shall have a nominal two inch thickness of grout sealing the annular space for the entire length of casing.

(4) Wells obtaining water from a consolidated formation and which are constructed using telescoping casings shall meet the following conditions:

(a) The annular space between the casings shall be sealed by grout, by packers or both as described in subsection 40C-3.512(5).

(b) The annular space between each casing and the bore-hole shall be grouted in accordance with the provision of subsections (1) - (3) above.

(c) For wells in which the largest external nominal casing size is four inches or less and the annular space between the internal casing and the borehole wall is less than one inch, the provision of subsections (1) - (3) above will not apply, provided that the clay formation through which the internal casing passes is of such a caving nature so as to naturally seal the annular space. If such caving nature is not present, the provisions in subsections 1-3 above must be met. In all circumstances the external casing must be grouted and sealed into a consolidated unit within the intermediate confining unit.

(5) For wells constructed using a jetting method and obtaining water from an unconsolidated formation of a naturally caving nature in which the annular space is completely filled with formation material, then only the upper three feet shall be grouted to provide protection from contaminated surface water.

(6) Wells obtaining water from an unconsolidated formation using a method other than jetting or driving a casing, shall be grouted from the filter pack plug to the upper terminus with a grout allowed in subsection 40C-3.517(8).

(7) Cuttings shall not be reintroduced into the annular space. Wells which breach confining units and special monitor well installations will be grouted as outlined below.

(a) When confining units are breached and the guidelines in subsection 40C-3.512(2) are not met, the following practices will be acceptable: 1. Seating of a casing into the confining unit and grouting as required, or 2. Placing of grout in the annular space to meet subsection 40C-3.512(2) requirements. When caving materials are present above and below the confining unit, temporary casing or drilling fluids will be placed in the borehole to maintain an opening to the confining unit. In all circumstances, the annular space shall be maintained by use of either drilling fluids or temporary surface casing until the confining unit breach is plugged.

(b) Monitor wells required to comply with Chapter 62-761, F.A.C. shall be grouted in the following manner:

1. The terminal box in traffic areas and well casing shall be sealed to a depth of eighteen inches below land surface with cement grout.

2. The well casing or outside protective casing in high water table areas shall be grouted to a depth of eighteen inches in a non-traffic area.

(8) Unless a variance has been granted by the District, grouting and sealing of water wells shall be accomplished in the following manner:

(a) The grout mixture shall consist of either Portland Cement or a natural Bentonite slurry for wells and boreholes meeting the requirements in subsection 40C-3.512(8).

1. A mixture consisting of 5.5 to 6.0 gallons of water per sack of Portland Cement or a mixture of 6.5 gallons of water per sack of Portland Cement with 3 to 5 pounds of Bentonite not to exceed 5% by weight will meet minimum requirements.

2. A mixture of 8-20-mesh granular Bentonite, water, and an approved liquid polymer viscosifer or untreated 200-mesh Bentonite and water is acceptable. In all circumstances, the manufacturer's mixing instructions shall be followed.

(b) The minimum set time for grouting of casing using either Portland Cement or Bentonite before drilling operations may continue is 12 hours. The minimum set time for grouting of casing using Portland Cement and 2% calcium chloride by weight as an accelerator will vary with depth. Set times are listed in Table 3 below. The addition of Bentonite as specified in subsection 40C-3.517(7)(a) does not change the set times listed in Table 3.



TABLE 3

INITIAL SET TIMES FOR SPECIFIED  
DEPTH RANGES WHEN 2% CALCIUM  
CHLORIDE IS MIXED BY WEIGHT  
WITH PORTLAND CEMENT

Depth (in feet)	Set Time (in hours)
0-200	4
201-400	3.5
401-600	3
601-800	2
801 & greater	1

(c) Special application grout mixtures or depth of grout placement may require adjustments in water per sack of cement, cement types, or additives. All adjustments shall be approved by the District prior to use and will be based on industry standards or recommendations.

(d) The casing shall be centered in the borehole prior to grouting and sealing.

(e) In all cases grout will be introduced into the annular space from bottom to top unless conditions in paragraph 40C- 3.517(9)(e) for abandonments are met. To assure that the grout will satisfactorily seal the annular space, the contractor must employ one or a combination of the following procedures:

1. The "Casing method" by which a calculated volume of grout slightly greater than the volume of the annular space of the entire length of casing is forced under pressure down the inside of the casing, which is followed by a volume of water or mud necessary to clear the grout from all but the last ten to fifteen feet of casing. This should continue until a return of cement is observed in the annular space at the upper terminus. If, after the set time has elapsed an open annular space still exists, the remaining void must be filled with grout.

2. The "Tremie method" in which a grout pipe is lowered into the annular space to slightly above the bottom casing and grout pumped through the pipe. As the pumping begins the tremie is gradually raised, keeping the discharge end of the pipe submerged in the grout, until the grout has been brought to the upper terminus. This procedure may be done in one continuous operation or in stages. If, after the set time has elapsed, an open annular space still exists the remaining void is to be filled with grout.

3. The "Packer method" in which a grout pipe is attached to a drillable packer and positioned at the bottom inside the casing. The casing is then suspended above the bottom of the borehole, and the grout is forced upward into the annular space either by pumps or pneumatic pressure. Once the grout has reached land surface, the grout pipe is disconnected. After the set

time has elapsed, the operation is continued by drilling out the packer and continuing into the next formation.

4. The "Halliburton method" in which the grout is forced through the casing, preceded and followed by a "spacer" or "piston". A calculated volume of grout is used to seal the annular space. A measured amount of water equal to the volume of the entire length of casing, is used to force the second "spacer" to the end of the casing. After the set time has elapsed the construction may continue by drilling out the "spacers."

(f) In those cases where, during grouting operations, circulation of the grout is lost so that the annular space being grouted cannot be filled in one continuous operation, a tremie pipe shall be installed in the annular space to a point immediately above the zone of lost circulation. The annulus shall be bridged at that point by sand and other suitable material introduced through the pipe until a level is reached at which grouting can be continued.

(9) Abandonment procedures for water wells shall be undertaken in the following manner:

(a) Portland Cement or natural Bentonite slurry mixed as required in paragraph 40C-3.517(8)(a) shall be pressure injected either from bottom to top by the methods listed in paragraph 40C-3.517(8)(e) or from top to bottom at the well head if the conditions in paragraph 40C-3.517(9)(e) are met.

(b) Use of clean aggregate to bridge cavernous or lost circulation zones may be allowed if measurements indicate loss of grout and the borehole or screened portion does not connect two or more producing units. Grouting of confining units is required to segregate producing units of significantly differing water quality as set forth in subsection 40C-3.512(2).

(c) Proper sealing of the casing seat must be accomplished by injecting grout where appropriate from a point twenty feet below the seat to the upper terminus of the well. This depth will be the minimum allowable in order to abandon a water well no matter what cavity development is encountered below the casing seat unless the open hole is less than twenty feet deep. In that case, the entire open hole will be grouted.

(d) An abandonment plan may be approved prior to the commencement of grouting if geophysical logs are provided. The minimum logs required are caliper and natural gamma. Other logs may be required or recommended based on individual well problems. The Contractor must notify the District at least 24 hours prior to commencement of a District approved abandonment plan so that a District representative may be on site to monitor the abandonment procedure.

(e) Abandonment by pressure injection of Portland Cement or Bentonite from top to bottom at the well head will be acceptable to the District if one of the following criteria are met:

1. Access to the site near the well head is difficult as determined by District staff and will cause the contractor excessive economic hardship;

2. Overhead safety such as power lines or trees is of concern to the contractor or District staff; or

3. Surface stability is of concern around the well site due to collapse or cavity development.

(10) Obstructions must be cleared in all wells prior to grouting unless an alternate plan is approved by the District. If a reasonable attempt cannot be made to clear the entire length of casing and borehole or screen an alternative plan may be considered. A contractor must supply

the following minimum information to the District prior to abandonment: well diameter, total depth, casing depth, and grout volume required. A District representative may be on site to monitor the clearing of obstructions or to observe the grouting. The contractor must notify the District at least 24 hours prior to commencement of the abandonment.

(11) Wells constructed by methods which require driven well casing are exempt from grouting and sealing guidelines set forth in previous sections, provided that the following conditions are met:

(a) Casing is driven from land surface to its final depth in a borehole smaller in diameter than the nominal outside diameter of the casing used, or is driven from land surface to its final depth ahead of the drill bit; and

(b) A drive shoe in consolidated materials, or coupling in unconsolidated materials, is used; and

(c) All annular space created while the casing is being driven shall be sealed by adding dry bentonite to the casing string at land surface and allowing that material to be carried down the borehole as the casing is driven. In all circumstances, dry bentonite shall be added at the full rate required to maintain an envelope of grout around the casing; and

(d) Wells permitted under Chapters 62-555 and 10D-4, F.A.C. shall have the bottom five feet underreamed using either a commercially manufactured underreamer bit or an underreamer bit constructed by a contractor and approved by the District in the following manner: An underreamed borehole will be tested using a downhole caliper tool to determine if the required two inch annular space has been achieved; and

(e) All other requirements are met.

*Specific Authority 373.044, 373.113, 373.171, FS. Law Implemented 373.306, 373.308, 373.309, 373.113, FS. History--New 10-14-84, Amended 4-23-85, 12-5-85, Formerly 40C-3.517, 40C-3.0517. Amended 9-17-89.*

#### **40C-3.521 Well Seals.**

(1) Temporary Well Seals.

(a) Whenever there is a temporary interruption during construction, repair, or abandonment the well opening shall be sealed with a reasonably watertight cover.

(b) Except in areas designated by the District, any well in which pumping equipment is installed seasonally or periodically shall, whenever pumping equipment is not installed, be capped with a watertight cap or valve.

(c) If a temporary well seal is installed, an unobstructed inspection port must be provided. Inspection ports shall be sealed with a threaded, temporarily removable, watertight plug or locking cap.

(2) Permanent Well Seals.

(a) Wells shall be properly sealed to prevent the movement of contaminants and surface water into the well.

(b) The upper terminus of the well casing shall include a watertight seal. Any vent must be located above the 100-year flood level.

1. Well heads for Chapter 62-761, F.A.C., monitoring wells shall be secured by installing a locking cap or other security device meeting Department specifications.

(c) Pumping equipment and any necessary pipe or electrical connections shall be installed to prevent inadvertent introduction of contaminants into the well.

(d) Pumping equipment and any necessary piping or electrical connections installed within the casing shall be installed through a well seal.

(e) For those wells with an inside casing diameter greater than or equal to six inches, an unobstructed inspection port threaded with a temporarily removable watertight plug or locking cap may be required.

*Specific Authority 373.044, 373.309, FS. Law Implemented 373.306, 373.308, 373.309, 373.113, FS. History--New 10-14-84, Formerly 40C-3.521, 40C-3.0521. Amended 9-17-89.*

**40C-3.525 Explosives.** The use of explosives in well construction or development is prohibited unless specifically approved by the District with the concurrence of the Department pursuant to Rule 62-21.040, F.A.C., in effect on July 1, 1989.

*Specific Authority 373.044, 373.309 FS. Law Implemented 373.306, 373.308, 373.309, 373.113 FS. History--New 10-14-84. Formerly 40C-3.525, 40C-3.0525. Amended 8-1-89.*

**40C-3.529 Flowing Wells.** If the well flows at or below land surface, a valve shall be provided and maintained to control the discharge from the well.

*Specific Authority 373.044, 373.309, FS. Law Implemented 373.206, 373.306, 373.308, 373.309, 373.113, FS. History--New 10-14-84, Formerly 40C-3.529. Amended 9-17-89.*

**40C-3.531 Abandoned Well Plugging.**

(1) Any well which is an abandoned artesian well under subsection 373.203(1), F.S., shall be plugged in accordance with this section.

(2) All abandoned wells shall be plugged as set forth in subsection 40C-3.517(8) unless otherwise specified by the District. The work shall be accomplished by a licensed water well contractor.

(3) Request to abandon a well shall be submitted on application form 41.10-410(1), provided by the District unless the well is exempt from permitting under Rule 40C-3.051.

*Specific Authority 373.044, 373.309, FS. Law Implemented 373.306, 373.308, 373.309, 373.113, FS. History--New 10-14-84, Formerly 40C-3.531, 40C-3.0531. Amended 9-17-89, 11-11-03.*

**40C-3.532 Violations of Well Construction Standards.**

(1) Actions, omissions, or conduct which may be considered as violations for the purposes of this part shall include, but are not limited to, the following:

(a) Failure to comply with any of the construction standards outlined in this part, or Chapters 62-532 and 62-555, F.A.C.

(b) Failure to comply with any instructions for corrective work, including properly sealing abandoned wells, or any other lawful order issued by the District.

(2) Actions which may be taken by District staff once a violation is determined to have occurred are outlined in Chapter 40C-1, F.A.C.

*Specific Authority 373.044, 373.113, 373.171 FS. Law Implemented 373.306, 373.308, 373.309, 373.319 FS. History--New 10-14-84, Formerly 40C-3.532, 40C-3.0532. Amended 8-1-89, 11-11-03.*

**40C-3.900 Forms and Instructions.** The following forms and instructions incorporated by reference have been approved the Governing Board and are available upon request from: District Headquarters, St. Johns River Water Management District, 4049 Reid Street, Palatka, FL 32177-2529.

Water Well Construction Permit Application, form number 41.10-410(1) and Water Well Completion Reports, form number 41.10-410(2), adopted November 8, 1995.

*Specific Authority 120.53(1), 373.044, 373.113, 373.118 FS. Law Implemented 120.52(16), 120.53(1), 373.085, 373.116, 373.118, 373.103, 373.106, 373.229, 373.413 FS. History--New 5-30-90. Amended 1-8-96.*