Chapter 15.55 WATER WELLS*

15.55.010 Intent. ~~Purpose.~~

The ~~purpose~~ intent of this chapter is to establish minimum requirements to safeguard ~~the~~ public health by protecting ~~the~~ aquifers from contamination. ~~ensure sources utilized for potable water within the Municipality of Anchorage are constructed and maintained in such a manner as to provide a safe supply of water for domestic use.~~

15.55.020 Scope.

The provisions of this chapter shall apply to the construction, maintenance, operation and decommissioning of non-public water well~~s~~ systems and their associated appurtenances, including ~~and~~ water storage facilities. ~~providing domestic water for up to two dwelling units, including minimum standards for new subdivisions that are to be served by these wells. This chapter applies to all sources of potable water used by single-family residences within the municipality that are not licensed and/or regulated by the State of Alaska.~~

15.55.030 Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

18 AAC 80 - State of Alaska drinking water regulations [Title 18, Alaska Administrative Code, Chapter 80 Drinking Water].

AAC - Alaska Administrative Code.

ADEC - Alaska Department of Environmental Conservation.

Abandoned well ~~means -~~ a well whose use has been permanently discontinued and has not been properly decommissioned.

Animal containment area ~~means --~~ any outdoor enclosure or group of enclosures containing one or more horse, mule, cow, lama, or similar sized animal; four or more dogs, sheep, goats, or swine, or similar sized animals; ten or more rabbits, fowl, ferrets, or other domesticated small animals.

Approved tank manufacturer ~~means -~~ a firm manufacturing tanks approved by the ~~development services~~ department and holding a valid water and wastewater equipment manufacturer certificate issued by the same department.

Aquifer ~~means -~~ a formation, group of formations or part of a formation that contains sufficient saturated permeable material to yield water to wells and springs.

Aquifer - Confined ~~means -~~ a formation in which the groundwater is isolated from the atmosphere, at the point of discharge, by impermeable geologic formations. Confined groundwater is generally subject to pressure greater than atmospheric and rises to a level above the upper limit of its aquifer.

Aquifer - Unconfined - a zone of water saturation where atmospheric pressure is freely communicated to the zone. Its upper limit is at atmospheric pressure and it has no upper confining layer.

Artesian well ~~means -~~ a well in which the water from the confined source aquifer rises above the upper limit of the aquifer.

Bentonite - an NSF approved montmorillonite aluminum silicate clay. Bentonite comes in the form of powder, granules, or chips.
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Bentonite chips ~~means -~~ ¼-inch to ¾-inch sized chips of bentonite approved by the NSF for the purpose of water well construction and decommissioning.

Bentonite granules ~~means -~~ an eight to 20 mesh size bentonite clay approved by the NSF for the purpose of water well construction.

Bentonite slurry ~~means -~~ a high solids mixture of bentonite particles and water with a consistency of 18 percent solids or greater. ~~to 22 percent solids as measured with a marsh funnel.~~

Casing ~~means -~~ the pipe made of material herein specified or otherwise

approved by the ~~development services~~ department, installed in a well bore hole to prevent sidewall caving, to provide access to an aquifer, and provide protection from up-hole or surface contamination of the aquifer.

Certificate of on-Site systems approval ***(COSA)*** ~~means -~~ a written confirmation signed by an engineer and the ~~development services~~ department certifying the on-site wastewater disposal system and/or well ~~serving a single-family dwelling~~ as regulated by this code are functional and comply with all state and local regulations and codes. ~~In the event of inconsistency among these regulations and codes, the most restrictive shall apply.~~

Certified groundwater professional ~~means -~~ a groundwater professional certified by a nationally recognized organization.

Certified laboratory ~~means -~~ a laboratory certified by the State of Alaska, 18 AAC 80.1100.

Certified pump installer ~~means -~~ a person or firm holding a valid state contractor's license, business license, and a current pump installer's certificate issued by the ~~development services~~ department.

Certified well driller ~~means~~ a person or firm holding a valid state contractors license, business license, and a current well driller's certificate issued by the ~~development services~~ department.

Community Water System - a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents;

Contaminant ~~means~~ any substance which, if introduced into a potable water source, would render the water unsafe for human or animal consumption.

Cross connection the mixing of water from one distinct aquifer into another by completing a water well in more than one aquifer.

Department - Municipality of Anchorage On-site Water and Wastewater Section.

Director - the director or designee of the department unless otherwise indicated in the text of the code.

Domestic use - water used for residential and noncommercial use, to include activities such as washing vehicles and watering landscaping and gardens.

Disinfection ~~means -~~ a chemical or physical process utilized to eliminate pathogenic organisms from a potable water source or storage facility.

Domestic use ~~means -~~ water used for residential and noncommercial use.

Domestic Wastewater - waterborne human wastes or graywater derived from dwellings, commercial buildings, institutions, or similar structures.

Drawdown ~~means -~~ the distance between the static water level and the pumping water level in a well or an aquifer.

Drive shoe ~~means -~~ a forged or tempered steel collar with a cutting edge, attached to the lower end of a casing string by threading or welding, to protect the bottom end of the casing as it is driven or otherwise forced into the bored hole.

Engineer ~~means -~~ a professional ~~civil~~ engineer registered ~~pursuant~~ in the State ~~to Alaska Statute 8.08.~~

Flowing artesian well ~~means -~~ a water well in which the water from the confined source aquifer flows naturally to the ground surface without benefit of mechanical lift equipment.

Geotechnical groundwater monitoring wells - an existing or abandoned water well, or a newly cased excavation or opening into the ground constructed by digging, boring, drilling, driving, jetting or other methods for the purpose of determining the physical, chemical, biological, or radiological properties of groundwater.

Groundwater ~~means -~~ subsurface water permanently or seasonally occupying a zone of saturation.

Grout ~~means -~~ a stable bentonite clay material that is NSF approved, in a slurry or granular form impervious to and capable of preventing the vertical movement or migration of water.

Hazardous substance ~~means -~~ those substances which, because of quantity, concentration, or physical/chemical/infectious characteristics, may pose a threat to human health or to the environment when improperly treated, handled, stored and transported, and disposed of. Hazardous substances include those defined as hazardous under federal, state and municipal laws.

Holding tank ~~means -~~ a watertight covered receptacle as required by AMC chapter 15.65 designed and built to receive and store domestic wastewater for disposal at another location.

Hydrogeologist means a certified professional geologist, licensed by the State

of Alaska who ~~practices -~~ groundwater science or a nationally certified groundwater professional.

Manure/animal excreta ~~means -~~ solid waste from domesticated animals, and for the purposes of this chapter, shall also mean bedding or other materials contaminated by animal liquid or solid wastes.

Manure/animal excreta storage area ~~means -~~ any area where such material is being stored temporarily or permanently or being composted.

Municipality - Municipality of Anchorage.

Nondomestic wastewater – liquid or water-carried wastes other than domestic wastewater, including wastes resulting from manufacturing enterprise, industrial establishment, development of natural resources, construction, and stormwater runoff.

Non-public water well system — a water well that does not meet the definition of a public water system. This includes but is not limited to wells used for the following purposes: *private water system*; livestock or irrigation; recreational purposes; ground source heat pump. Groundwater monitoring wells will be regulated by this chapter unless otherwise regulated by another regulatory agency. Geotechnical Groundwater Monitoring Wells are not regulated by this chapter.

NSF ~~means -~~ National Sanitation Foundation.

On-site wastewater disposal system ~~means -~~ any wastewater storage, treatment, or disposal system which serves a facility located on a lot which is not connected to a public sewer.

Out of service ~~means -~~ has not been functional for 90 or more consecutive days. An example of non-functional wells includes wells without pumps, electrical power or appurtenances (including a surface discharge point).

Outer annular space ~~means -~~ the void space between the side wall of the drilled bore hole and the outside casing wall.

Owner - the person responsible for control of the property on which an on-site water well exists or for which one is proposed.

Permit ~~means -~~ a written document issued by the ~~development services~~ department permitting the construction and/or development of a subsurface potable water source.

Pitless adapter ~~means -~~ a device attached to the well casing below ground level, constructed to permit the flow of water from the well casing.

Potable water ~~means -~~ water which is satisfactory for drinking and culinary purposes.

Private water system - a water system as defined under 18 AAC 80.1990.

Protective well radius ~~means -~~ a prescribed horizontal distance between the well head and potential source of contaminants.

Public sewer ~~means -~~ a sewage collection system operated by a public utility as defined in Alaska Statute 42.05.701.

~~*Public water* means a water distribution system which is operated by a public utility as defined in Alaska Statute 46.03.020.~~

Public water system - a water system as defined under 18 AAC 80.1990.

Pump ~~means -~~ a mechanical device used to recover water from a well or water collection system.

Recovery ~~means -~~ the ability of the water in a well to return to its static level after being drawn down during a period of pumping.

Sanitary well seal ~~means -~~ a mechanical seal installed on the top of the well which has been approved by the ~~development services~~ department.

~~**Screen** means a filtering device used to keep sediment from entering a water well.~~

Sealing or sealed ~~means -~~ the act of providing a water tight seal between the casing and the well bore by means of an impervious material.

Septic disposal field ~~means -~~ an absorption bed, deep or shallow absorption trench, seepage pit or mound system.

Septic tank ~~means -~~ the water tight receptacle designed to receive domestic wastewater and allow the clarified liquids to be discharged into a subsurface soil absorption system.

Setback ~~means -~~ distance from a water well to a defined object, point or location.

Sewer - a sewer that is operated by a public utility as defined in 18 AAC 72.

Sewer line – pipeline, conduit, or other constructed conveyance that carries domestic or nondomestic wastewater. This does not include a private sewer line or sewer service line or an open ended culvert or unlined ditch that conveys stormwater only.

Sewer main – a sewer line that is used as a common receiver of sewage from more than one sewer service line and carries wastewater to a treatment works.

Sewer service line – a pipeline or conduit that services a single service connection and carries sewage to a sewer main

Sewage - domestic or nondomestic wastewater

State – State of Alaska

Static water level ~~means -~~ the water level in a well has not been affected by withdrawal of groundwater.

Stick up ~~means -~~ the portion of a well's casing extending above the surface of the ground.

Stormwater – stormwater runoff, snow melt runoff, and surface runoff and drainage.

Subsurface Drain – an subsurface drainage structure which intercepts or diverts underground water flows.

Surface water ~~means -~~ any ~~persistent natural or man-made source of water, which is not directly attributable to a single rainfall or snowmelt event. Surface waters include all lakes, ponds, streams, springs, intermittent or seasonal flows, natural and artificial bodies of water and all of the water of the State of Alaska as defined in Alaska Statute 5.25.100(5).~~ water visually observable on the ground surface for a period of at least sixty consecutive days.
Exception:
A. Wetlands with no visually observable water on the ground surface.
B. Frozen water including glaciation.

~~**Wastewater** means water containing human excreta, food waste, wash water and other wastes commonly discharged into a water-carried sewage disposal system, and such diluting water as may have entered the waste disposal system. Wastewater does not mean liquids containing hazardous wastes as defined by federal, state or municipal law.~~

Water-carried sewage disposal system ~~means -~~ a wastewater disposal system

through which wastes are conveyed with the aid of water.

Water producing zone ~~means -~~ a subsurface zone producing water and separated from another water bearing layer by at least five feet of silt or clay.

Water storage facilities ~~means -~~ and shall include all water storage tank(s), pumps and piping used in the storage of potable water.

Water table ~~means -~~ a groundwater surface within an aquifer where pressure is equal to the atmosphere.

Water well ~~means -~~ a bored, drilled, or driven excavation utilized for the purpose of extracting groundwater from an aquifer for domestic use.

Well cap ~~means -~~ a mechanical cover installed on the top of a well casing which may or may not be water tight.

Well decommissioning ~~means -~~ the process or procedure by which production from a well has been discontinued and the well properly removed from service.

Well depth ~~means -~~ the depth of the well as measured from ground surface.

Well drilling contractor ~~means -~~ a certified well driller, as defined above.

Well log ~~means -~~ a written report showing the property owner, location, and all pertinent information and data relative to the drilling and completion of the well.

Well pit ~~means -~~ an excavation, opening, shaft or hole surrounding a well that is large enough for human entrance and temporary occupation and is intended for that purpose.

Well rehabilitation ~~means -~~ subsurface improvements designed to alter well yield or the physical characteristics of an existing well.

Well Screen - a filtering device used to keep sediment from entering a water well.

Well test ~~means -~~ a test conducted by a licensed well driller, a certified pump installer, a hydrogeologist, or an engineer to determine the sustained producing capability of the well and the recovery rate of the well.

Well vault ~~means~~ an excavation, opening, shaft or hole surrounding a well, that is not large enough for human entrance or temporary occupation and is intended to only be accessed from the ground surface with hands and arms.

Well yield ~~means -~~ the sustained producing rate of a well determined by a well test.

15.55.031 – Powers and Duties of the Director.

A. **Director.** The director is hereby authorized and directed to enforce the provisions of this chapter. The director is authorized to render interpretations of this chapter and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies, and procedures shall be in compliance with the intent and purpose of this chapter. Such interpretations, policies, and procedures shall not have the effect of waiving requirements specifically provided for in this chapter.

B. **Modifications.** Whenever there are practical difficulties involved in carrying out the provisions of this chapter, the director has the authority to grant modifications for individual cases, upon application of the owner or owner's representative, provided the director shall first find a special individual reason making the strict letter of this chapter impractical, the modification is in compliance with the intent and purpose of this chapter, and such modification does not lessen health, life and fire safety, or structural requirements. The details of action granting modifications shall be entered in the files of the department.

C. **Alternative materials, design, and methods of construction and equipment.** The provisions of this chapter are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this chapter, provided any such alternative has been approved. An alternative material, design or method of construction shall be approved where the director finds the proposed design is satisfactory and complies with the intent of the provisions of this chapter, and the material, method or work offered is, for the purpose intended, at least the equivalent prescribed in this chapter in quality, strength, effectiveness, durability and safety.

15.55.032 – On-site Water and Wastewater Technical Review Board.

Decisions made by the director may be appealed to the On-site Water and Wastewater Technical Review Board.

15.55.040 Prohibited actions.

A. No person shall cause or permit the construction of a surface or subsurface water source for domestic purposes without holding a valid permit issued by the ~~development services~~ department in the name of the property owner for the specific property and construction proposed. The well drilling contractor shall have a copy of the valid permit at the site of

the drilling operation.

B. No person shall cause or allow the placement of any refuse, trash, waste, or contaminated or hazardous substance into any existing or abandoned well or domestic water source.

C. The location of a well, on-site wastewater disposal system or subsurface drain, either separately or in combination with each other and other wells, on-site wastewater disposal systems or subsurface drains in the vicinity, shall not have the effect of prohibiting future residential use of an adjacent lot or parcel. The department may require an agreement and necessary easements with the owner of the affected property for the sharing of a well or other resolution of the problem. The agreement shall be recorded.

D. No person shall cause or allow the construction of a domestic water source violating the laws or regulations of the state or the municipality.

E. No person may cause the construction, installation or use of a cross connection between a domestic, active or decommissioned water well and a public water system.

F. No property owner shall allow an unmaintained well to remain. A well that is not being properly maintained shall be decommissioned. Maintenance shall include a properly installed sanitary seal, positive grading around the well casing or otherwise protected from ponding, and adequate separation to potential sources of contamination. ~~No person shall allow a water supply well to remain out of service for more than 90 days without permanently decommissioning the well.~~

G. No property owner ~~person~~ shall allow the waste of water by free-flowing wells, whether by surface discharge or into the lower strata underground, without putting it to beneficial use. Flow shall be sealed within a reasonable amount of time to the satisfaction of the ~~development services~~ department.

15.55.050 Permit for domestic water system.

A. *Permit to drill.* An application to drill a new or replacement well shall be submitted to the ~~development services~~ department by the property owner or his/her authorized agent prior to the commencement of drilling operations.

1. A permit issued under the terms of this chapter shall only be applicable for single-family residential wells.
2. A permit for domestic water source shall not be issued if there is no existing or permitted on-site wastewater disposal system or connection to public sewer service for the property available, scheduled and approved. A variance may be issued for the purposes of groundwater exploration wells constructed in accordance with the standards of this chapter.
3. A permit for a domestic water system shall expire one year from the date of issuance, but may be renewed for one additional year at the current renewal fee.

B. *Application.* The application shall be on a form provided by the

~~development services~~ department, and shall be signed by the property owner or property owner's agent attesting the well shall be sited, drilled and completed in accordance with standards and provisions in chapters 15.55 and 15.65 and State of Alaska, 18 AAC 80 and 72.

1. The applicant shall submit a site plan signed by the property owner or property owner's agent drawn on an 8 1/2 by 11 inch sheet (or larger if necessary to comply with this chapter) to a scale not smaller than one inch to 50 feet. The site plan shall show the:
   a. Legal description of the lot or parcel;
   b. Location of the proposed well;
   c. Lot lines, roads, rights-of-way and easements on or adjacent to the lot;
   d. Location of all existing structures on the lot;
   e. ~~Measured distance to all existing water supply wells within 50 feet of the proposed well site and~~Show the location of all wells within ~~200~~ 100 feet on the subject and adjacent properties;
   f. All applicable protective well radii; and
   g. The location or proposed location of all components shown in Table A-1, and areas containing hazardous waste or other potential pollutants within 150 feet of the proposed well.

2. *Expiration of permit application.* A permit application to drill a well shall expire one year from the date of submittal.

C. *Revocation, suspension and restriction of permits.* The director may revoke, suspend, or otherwise restrict a permit, issued under this chapter upon any of the following grounds:

1. Any false statements set forth in the application;
2. Any violation of the express terms or provisions of the permit;
3. The commission of any act or omission violating the requirements of chapter 15.55; or
4. Failure to comply with state and federal regulations.

D. *Fees.* Fees shall be assessed in accordance with chapter 23.10.

15.65.052 - Waivers for Wells.

A. Departmental authority.
1. The department may issue waivers for the separation distances in Table A-1.
2. The department may issue waivers if the issuance of such waivers will not adversely affect achievement of the intent of this chapter.

B. Content of waiver application. A written request for a waiver must be submitted by an engineer and must contain, but is not limited to:
1. Waiver description. A description of the waiver being requested.
2. Technical information in support of waiver request. Information on soil, topography, lot size, and other technical information relevant to the request.

3. Proposed mitigating measures. Any measures which are proposed to mitigate adverse effects associated with the waiver.

4. Narrative. A narrative signed and dated by the engineer identifying adverse impacts associated with granting the waiver request.

C. Departmental review and decision. The department must review each waiver request and must issue a written decision. A denial of a waiver request must include reasons for the denial. A record of the request, review and analysis procedure, and approval or denial shall be maintained by the department for public inspection.

15.55.055 Certificate of on-site systems approval (COSA).

A. Prior to the transfer by gift, deed or contract of ~~any~~ ownership or use interest in ~~a privately owned~~ an on-site water ~~well~~ system regulated by this chapter, the transferor shall obtain a COSA ~~certificate of on-site systems approval~~ from the ~~development services~~ department. If a COSA is not obtained prior to transfer of title, the water system shall be deemed out of compliance with this chapter until such time as a certificate is obtained.

Exception: ~~1.~~ The requirements of this subsection A. do not apply to transfers between spouses, or to a family trust.

B. ~~Upon request and subject to the provisions of this section, the development services department may issue or deny the issuance of a certificate of on-site systems approval for any dwelling or site served by a privately owned well.~~ The department shall issue a COSA if the department finds information provided by an engineer demonstrates the system for which the certificate is sought conforms to the applicable provisions of chapter 15.55 and state statutes in effect at the time of original installation or at the time of any subsequent modification and does not presently create a health hazard.

C. ~~Where an on-site well does not conform to state and/or municipal laws, but no material health hazard is posed by postponing correction of the well's defects, the development services department may issue a conditional certificate of on-site systems approval to extend the period of time for corrective action until weather conditions allow. This conditional certificate may be issued with conditions necessary to ensure the public health and safety are not endangered.~~ When the system for which the certificate is sought does not conform to applicable state or municipal code, the department may deny the issuance of a COSA approval.

D. ~~The development services department shall issue a certificate of on-site systems approval if the department finds information provided by an engineer demonstrates the system for which the certificate is sought conforms to all applicable provisions of chapter 15.55, regulations promulgated hereunder and applicable state statutes and regulations in~~

~~effect at the time of original installation or at the time of any subsequent modification and does not presently create a health hazard.~~ If no health hazard is posed by postponing correction of the well's defects, the department may issue a conditional COSA to extend the period of time for corrective action. This conditional certificate may be issued with conditions necessary to ensure the public health and safety are not endangered. The specific requirements for a conditional COSA approval shall be:

1. The conditional COSA fee has been paid.
2. If required, an approved design and permit for the required upgrades and/or repairs has been issued.
3. Three estimates for the related construction shall be submitted to the department.
4. A letter from an established escrow agency, stating 1.5 times the highest construction estimate is being held in escrow for the specific purpose of funding the proposed construction, shall be submitted to the department.

Exception: 3. and 4. are not required for upgrades and/or repairs that are less than $2,000.

E. The ~~development services department may require a~~ request for a ~~certificate of on-site systems approval~~ COSA shall be on forms provided by the department~~.~~ and address the following items:

1. **Separation distances.** Verification that separation distances identified on the COSA forms are in compliance with the code in effect when the water system was installed.

2. **As-built survey.** An as-built property survey drawn to a standard engineering scale not smaller than 1" =100'. The as-built survey shall include all structures, driveways, parking areas, septic system standpipes and water wells.

F. All test procedures used to collect the information necessary to meet the requirements of this section shall be developed and modified jointly by the Anchorage Health Department and the ~~development services~~ department.

G. 1. Before a COSA is ~~certificate of on-site systems approval may be~~ issued, ~~drinking~~ water from the well(s) on the property shall be ~~properly~~ sampled by a certified well driller, certified pump installer, or an engineer and analyzed by a certified laboratory for levels of total coliform bacteria, ~~other bacteria,~~ arsenic and nitrate. The level~~s~~ of total coliform ~~and other bacteria~~ shall conform to drinking water limits established in section 15.55.060K. For other contaminants, including arsenic and nitrate, the departments shall use current USEPA public drinking water standards as a guideline to trigger actions deemed necessary to protect the public health. ~~If nitrates are present greater than 10.0 mg/l, the applicant shall comply with subsection H., below.~~

2. When a COSA well water sample indicates a nitrate concentration

greater than 5.0 mg/L and a well log is not available, inspect the well casing for the correct minimum depth and perforations. If perforations are found above minimum allowable depth, the casing is to be lined to 40 feet.

H. ~~If sampling results from a well on a property requesting a certificate of on-site systems approval show the nitrate concentration in the well water is greater than 10.0 mg/l, the following steps shall be taken:~~

1. ~~A visual inspection of the well bore, using a down hole camera, performed by a certified well driller or pump installer, or engineer shall be used to evaluate the integrity of the casing and the well is cased, without perforations, to the required depth.~~
2. ~~An evaluation of the annular seal around the well casing shall be performed by a certified well driller, pump installer, or engineer in accordance with procedures established under subsection F. Fluorometric dye and water shall be introduced into a temporary basin dug into the ground surface surrounding the well casing stick up. Well water samples for laboratory analysis shall be collected for a minimum of 48 hours after dye is introduced and analyzed by a certified laboratory for the presence of the dye. Presence of the dye within 48 hours is evidence of an inadequate annular seal around the well casing. The annular seal shall be deemed satisfactory if dye cannot be detected within the first 48 hours of introduction.~~
3. ~~If the annular seal around the casing is determined satisfactory through dye testing, the development services department may issue a certificate of on-site systems approval provided the well is cased and un-perforated to a minimum depth of 40 feet and meets all other well code construction standards in place at the time the well was originally constructed. If the well does not meet the minimum 40 feet casing depth, at the time approval is requested from the development services department, a certificate of on-site systems approval may be issued if the well is retrofitted with a pressure-grouted well liner installed to a minimum depth of 40 feet.~~
4. ~~If water producing zones with greater than ten mg/l nitrates are found below the well casing and there are also other water producing zones with less than ten mg/l nitrates, the well shall be retrofitted to eliminate cross connection between the water producing zones.~~
5. ~~If the well casing or annular seal around the casing are determined to be inadequate or unsatisfactory, or if cross connections between water producing zones are found, the well shall be repaired or modified to meet current well construction standards outlined in section 15.55.060 or the well shall be decommissioned in accordance with section 15.55.060L. After the well is brought up to applicable standards, the development services department may issue a certificate of on-site systems approval. The development services department may require additional monitoring.~~
6. ~~Upon completion of any rehabilitative well work, the temporary basin created around the well casing for the dye test shall be filled with a bentonite slurry and re-graded to meet the standards in~~

~~section 15.55.060C.2. The well shall also be disinfected in accordance with section 15.55.060G.1. and retested for nitrates.~~

When a COSA well water sample indicates a nitrate concentration greater than 10.0 mg/L, an investigation shall be conducted to determine if the well is a source of contamination. If the well is determined to be a source of contamination, the contamination source shall be abated. In determining whether a well is the source of contamination, the following minimum steps shall be completed:

1. Review nitrate levels of neighboring wells.
2. Review nitrate history for the well and neighboring wells for trends.
3. Review the soil profile for the well and neighboring wells with the objective to determine:
    a. Whether the aquifer is subject to contamination from loose, gravel type soils extending from grade to the aquifer.
    b. Whether the aquifer is subject to contamination from shallow, fractured bedrock.
4. Review the subject and neighboring properties for sources of contamination, both past and present.
5. Inspect the well casing for correct minimum depth and perforations. If perforations found, the casing is to be lined to 40 feet.
6. Provide a written narrative discussing the investigation process, findings, summary of remediation efforts and conclusion.

I. A well flow test shall be completed by an engineer, a certified well driller or a certified pump installer within two years of the COSA issue date. The flow test shall demonstrate that the minimum sustained rate of production and recovery is at least 150 gallons per day per bedroom.

J. The department shall compile and make available to the public comprehensive guidelines regarding the procedures to be followed in applying for and obtaining a COSA.

15.55.060 General standards for domestic wells.

A. *Prohibited wells.*

1. Well pit construction is ~~are~~ prohibited. At time of COSA, all existing well pits are to be backfilled and the well retrofitted to meet current code. ~~The development services department may, at its discretion, allow an existing well pit to remain in use if it is shown that the pit construction provides adequate protection of public health and safety and adequate protection against flooding. Any drainage piping shall be installed to prevent entrance of vermin. A warning sign shall be posted at the access point of the pit regarding the potential dangers of entering a confined space.~~
2. Well vaults are discouraged but will be allowed if the well casing is susceptible to vehicle damage and it is shown to provide adequate protection against flooding and no reasonable alternative exists. The vault cover shall be water-tight and rated for traffic. Any

drainage piping shall be installed to prevent entrance of vermin.

B. *Well location and minimum setbacks.* The location of a well shall be at a site readily accessible year round for testing, repair or maintenance purposes. The well casing shall be protected from vehicular impact. The minimum separation requirements between wells and other specified facilities or areas shall be:

TABLE A-1

SEPARATION OF WELL FROM:	MINIMUM HORIZONTAL SEPARATION ~~DISTANCE IN~~ (FEET)
Private sewer line/ Sewer service line (including stormwater service line)	25
Subsurface ~~Curtain~~ drain	25
Petroleum Hydrocarbon storage tank	25
Sewer ~~trunk~~ line/sewer main (including stormwater)	~~75~~100
Any other source of potential contamination	~~75~~100
Holding tank	100~~75~~
Septic absorption field	100
Sewer manhole or cleanout	100
Septic tank	100
Animal containment areas	50
Manure/animal excreta storage areas	100
Wastewater Sump/lift station inside building	25

C. *Well drilling.* ~~The commercial drilling of a well and subsequent rehabilitation or deepening operation shall be performed by a licensed well driller.~~ Any drilling method used in the construction of a well shall meet the following requirements:

1. The well driller shall notify the ~~development services~~ department of the proposed date of commencement of any drilling or rehabilitation or deepening or decommissioning operation prior to the start of operation.
2. The ground surface surrounding the well for at least ten feet shall be sloped or contoured to allow surface water to drain away from the well.
3. The well driller shall exercise reasonable care during excavation or drilling operation to prevent contamination to any aquifer.
4. Organic drilling fluid may be used only if the fluid is approved for such use by the National Sanitation Foundation (NSF) or by an equivalent organization; these fluids are listed in NSF Standard 60 and NSF Standard 61 and in associated product listings described in these two standards.
5. Water used in the drilling process shall be obtained from a source providing potable water.

6. Water wells shall be drilled and cased with non-perforated pipe to a minimum depth of 40 feet, in unconsolidated materials and in bedrock. If bedrock is encountered at a depth greater than 20 feet and less than 40 feet, then the ~~easing~~ casing shall extend a minimum of 20 feet into the bedrock. Where it is necessary to case bedrock to meet these requirements, an oversized borehole shall be drilled from surface to the required depth into the bedrock. The resulting oversized borehole shall be grouted in accordance with section 15.55.060D.2.
7. A well completed in unconsolidated formations shall be constructed so water only enters the well from a single water producing zone.

D. *Well casing and liners*. ~~All c~~Casing and liners shall be installed with ~~NSF approved~~ potable water materials in new or like new condition, free of pits or breaks. Steel piping shall comply with ASTM A53 Grade B. Polyvinyl chloride (PVC) and high-density polyethylene (HDPE) piping shall be NSF approved for potable water. The following minimum wall thickness or rating shall apply. ~~be used, except all c~~Casing greater than the nominal size of six inches shall have a wall thickness of at least 0.250 inches:

TABLE A-2

Material	NOMINAL SIZE (INSIDE DIAMETER) (INCHES)	OUTSIDE DIAMETER (INCHES)	WALL THICKNESS (INCHES)	Rating
Steel	4	4.50	0.237	
Steel	5	~~5.50~~5.563	0.244	
	~~5.5~~	~~6.00~~	~~0.245~~	
Steel	~~6.125 (6 1/8")~~6	6.625 ~~(6 5/8")~~	0.250	
PVC	4	4.5	0.237	Schedule 40
PVC	4.5	4.95	0.248	Schedule 40
HDPE	4	4.5	0.265	125 psi

1. *Joints.* All casing joints shall be screw-coupled or welded and shall be water tight. If welded joints are used, the weld shall be at least as thick as the thickness of the well casing.
2. *Grouting.* ~~Grouting~~ The ~~outer~~ annular space shall be sealed in a bridge-free manner~~is necessary~~ to prevent shallow non-potable water or surface waters from entering into a potable water aquifer. All wells shall be ~~ground~~ sealed with bentonite slurry or granules as follows:
   a. From the pitless adapter level to at least ten feet below the pitless adapter or, from the surface to a minimum 20 feet below the surface;
   b. If bedrock is encountered as described in

section 15.55.060C.6., the following grouting procedures shall be followed:

i. Oversize borehole method:

(A) ~~i.~~ The permanent well casing shall be grouted from the bottom of the borehole up using high solids bentonite slurry (minimum 20 percent solids content). The oversized bore shall be stabilized to eliminate caving and sloughing.

(B) ~~ii.~~ If the permanent casing is used as a tremie to place the grout by circulating from the bottom up, a minimum one-inch annulus spacing from the bottom of the bore to surface shall be required.

(C) ~~iii.~~ If a temporary casing is used to stabilize the oversized bore, it shall be removed upon completion of grouting procedures.

ii. Two section casing method: The well driller may elect to install the permanent casing in two sections, consisting of an outer surface casing and an inner (liner) section. The outer surface casing shall meet the requirements for well casing stick up. The liner shall extend a minimum of 10 feet into the surface casing (overlap), and extend a minimum of 20 feet below the casing into bedrock. The 10-foot overlap and 20-foot liner extension into bedrock shall be grouted in accordance with this section.

3. *Pitless adapters.* Pitless adapters shall be installed by a certified pump installer, a certified well driller or by an excavator under the supervision of a certified pump installer or well driller. The burial depth and type of pitless adapter installed shall be recorded on the pump installation log pursuant to section 15.55.060J. When installed, pitless adapters shall be one of the types approved by ~~the development services department~~ the Water Systems Council. Clamp-on pitless adapters are prohibited. The pitless adapter shall be sealed with grout prior to backfilling.

4. *Well casing stick up.* All well casing shall extend a minimum of 18 inches above the finished grade, with the ground sloped to drain away from the casing.

5. *Well seal.* The top of the casing shall be closed with a sanitary well cap or watertight well seal of a type approved by the Water Systems Council. ~~development services department.~~

6. *Drive shoe.* When the casing is driven or otherwise forced into the well bore, the bottom of the casing shall be protected from damage by the use of a drive shoe or mechanical device.

7. *Perforating or slotting.* Perforating or slotting of the casing utilized

for the purpose of allowing water to enter the well from water producing zones encountered above the bottom of the casing shall not extend higher than 40 feet below the ground surface, unless it meets the requirements of section 15.55.060C.6.

E. *Well Accessories*. The commercial installation of well accessories shall be performed by a certified well driller or certified pump installer.

F. *Minimum water well production and testing.* If the minimum sustained rate of production and recovery of a well is less than 150 gallons per day per bedroom, as determined by a well yield test and/or recovery test, water storage facilities shall be installed.

1. *Well yield testing.* Upon completion of a well, a well yield test shall be performed by a certified well driller or pump installer or a certified civil engineer or a hydrogeologist. The well yield test shall be performed by bailing, air lifting or by pumping. The well yield test shall accurately determine the well's sustained productivity from test data including, but not limited to, static water level, pumping water level, drawdown rate, recovery rate or any other information useful in determining the sustained producing rate. If the well's initial sustained production rate is less than one gallon per minute, the ~~development services~~ department may require additional testing by alternative methods.

2. *Water quality testing*. ~~Drinking w~~Water from the well shall be ~~properly~~ sampled by a certified well driller, a certified pump installer or an engineer and analyzed by a certified laboratory for levels of total coliform bacteria, ~~other bacteria,~~ arsenic and nitrate. The results of this sampling shall be submitted to the ~~development services~~ department within 30 days of the completion of the well. The level~~s~~ of total coliform ~~and other bacteria~~ shall conform to drinking water limits established in section 15.55.060K. For other contaminants, including arsenic and nitrate, the departments shall use the current USEPA public drinking water standards as a guideline to trigger actions deemed necessary to protect the public health. Such actions ~~shall be taken in partnership by the Anchorage Health Department and the development services department and~~ may include, but are not limited to, issuing a health advisory, discontinuation of the use of water from the well for drinking water, decommissioning of the well, or requiring water treatment. The ~~above~~ department~~s~~ may require other contaminants to be analyzed if deemed necessary for the protection of public health.

G. *Well disinfection.* Wells shall be disinfected as follows:

1. *New or deepened wells.* Immediately after completion of drilling or deepening wells, the well shall be disinfected. After the well is flushed of drill cuttings, apply a chlorine compound proportioned to provide a concentration of at least 50 ppm as free chlorine to the entire volume of water in the well bore. The chlorine shall be

introduced into the well in a manner which shall distribute it throughout the entire water depth. Allow the chlorinated water to remain in the well undisturbed for at least 24 hours.

2. *Hydrofractured or redeveloped wells.* While redeveloping or hydrofracturing wells ~~and when possible,~~ a free chlorine residual in the well of at least five ppm shall be maintained.
3. *Pump work.* On completion of pump installation work, a chlorine compound proportioned to provide a concentration of at least 50 ppm as free chlorine to the entire volume of water in the well bore shall be applied. After chlorine is introduced, water shall be circulated in the well so it reaches all parts of the pumping equipment, inside and out. The chlorinated water shall remain in the well for at least one hour.
4. *Flushing.* After the required disinfection time has expired, the well shall be flushed of all chlorinated water before being placed in service.

H. *Well identification.* All wells shall be labeled with a durable form of construction information upon completion. The construction information source shall be secured to the well casing and contain the following information (measured from top of casing):

1. The name of the drilling contractor;
2. The date the well was completed;
3. The total depth;
4. The total depth of casing;
5. ~~The location and type of well completion;~~
6. Static water level below the top of the casing;
7. Yield; and
8. ~~Height of casing above finished grade.~~

I. *Well logs and as-built.* The certified well driller shall provide a well log to the ~~development services~~ department within 30 days of completion of the well. The well log shall include at least the following pertinent information:

1. The property owner's name;
2. The legal description and street address;
3. The method of drilling (rotary, cable tool, etc.);
4. A description, relative depth, and thickness of each soil stratum penetrated from the ground surface to the total depth. All depths should be logged from the top of casing;
5. The relative depth and thickness of each water bearing stratum (aquifer) penetrated;
6. The total depth drilled;
7. The length, diameter, wall thickness and type of casing used;
8. A description of the liner (if used) and the length and setting depth;
9. The depth and number of perforations, (if any) in the ~~easing~~ casing and/or liner;
10. The type and location of any well screen~~s~~ used;
11. The static water level and drawdown level;

12. The well production test results including the method of testing;
13. The dates of commencement and completion of drilling operations;
14. The number and date of the well drilling permit issued by the ~~development services~~ department;
15. The name and address of the certified well driller; and
16. A description of the method of disinfection process used upon completion of the well.

J. *Pump installation log*. The certified pump installer ~~or well driller~~ shall provide a pump installation log to the ~~development services~~ department within 30 days of completion of the installation of a pump ~~into a water well~~ for a new well.

1. The pump installation log shall include at least the following pertinent information:
   a. The property owner's name and address;
   b. The legal description ~~and street address~~ of the property;
   c. The date of the pump installation;
   d. The manufacturer~~'s name~~, model and size of the pump ~~installed~~;
   e. The depth from top of casing that the pump is installed;
   f. Well depth
   ~~e.~~g. Static Water Level
   f. The well permit number and date of the well drilling permit issued by the ~~development services~~ department;
   g. The name and address of the certified pump installer~~, or certified well driller or excavator; and~~
   h. A description of the method of disinfection used.
   i. The manufacturer ~~and model number~~ of the pitless adapter;
   j. The depth from top of casing that the pitless adapter is installed;
   k. The name of the pitless adapter installer; and
   l. Was the pitless grouted?

K. *Water quality standards.* Water used for domestic purposes shall not contain concentrations exceeding the following ratios:

1. Total coliform bacteria - 0 colonies per 100 ml (absent or negative).
~~2. Other bacteria - 10 colonies per 100 ml.~~

L. *Well decommissioning.* Wells shall be decommissioned by a certified well driller or a certified pump installer in accordance with this subsection:

1. *Permanent decommissioning.* A well may be permanently decommissioned by one of the following methods:
   a. Perforate the casing from the bottom to within ~~five~~ two feet of the land surface, remove the top ~~five~~ two feet of well casing, then ~~pressure~~ grout the entire length of the well. The top of the cut off casing shall be sealed with a minimum 0.25-inch thick plate welded completely around the circumference of the casing. At least one fifty-pound sack of bentonite

granules shall be poured around and over the sealed casing prior to backfilling with local soil or fill to finished grade.

b. Withdraw the casing and fill the borehole with grout~~, or bentonite~~ as the casing is being withdrawn.

c. Cut off the casing at a point two feet below ground level and fill the casing with a bentonite slurry pumped from the bottom up or filled in a bridge-free manner with dry bentonite ~~chips poured in a bridge free manner~~. The top of the cut off casing shall ~~then~~ be sealed with a minimum 0.25 ~~-~~inch thick ~~(or thicker)~~ plate ~~firmly~~ welded ~~to the top~~ completely around the circumference of the casing. At least one fifty-pound sack of bentonite granules shall be poured around and over the sealed casing prior to backfilling with local soil or fill to finished grade.

d. A well decommissioning log shall be submitted to the department within thirty days of completion of the work.

15.55.070 General standards for potable water ~~hauling and~~ storage ~~facilities~~.

A. When well ~~productivity~~ production is less than the requirements of section 15.55.060FE., water storage ~~facilities shall be installed~~ may be necessary to provide an adequate supply of potable water

B. Permit required. Installation of water storage within the Anchorage Building Safety Service Area (ABSSA) requires a Retro Plumbing Permit in accordance with AMC Title 23.

1. ~~A permit to install water storage facilities shall be obtained from the development services department prior to installation. The permit application shall include:~~

~~a. The legal description of the property;~~

~~b. An as-built site plan or proposed site plan meeting the requirements of subsection 15.55.050B.1. and including the location of the water storage facilities; and~~

~~c. The number of bedrooms served by the well and/or water storage facilities.~~

~~B. *Location of buried water storage facilities.* The location of buried water storage facilities shall be at a site readily accessible year round for testing, repair or maintenance purposes. The minimum separation requirement between buried water storage facilities and other specified facilities and areas shall be in accordance with Table A-1.~~

~~1. The ground surrounding the access of the storage tank shall be sloped or contoured to allow surface water to drain away.~~

C. *Water storage ~~facility specifications~~requirements*. ~~Specifications and requirements for water storage tanks and facilities, for both interior and exterior applications are as follows:~~

1. Water storage tanks shall have National Sanitation Foundation

(NSF-61) or equivalent approval; or

~~2. Water storage tanks~~ shall be designed by an engineer and manufactured by an approved tank manufacturer. Materials and coating used in construction shall be either U.S. Food and Drug Administration (FDA) or NSF-61 approved food grade;

3. Piping and ~~All~~ components associated with the ~~of~~ water storage ~~facilities~~ tanks shall comply with the latest adopted edition of the Uniform Plumbing Code, as amended where applicable; ~~and~~

~~4. Water storage tanks shall have a minimum capacity of:~~

~~a. One thousand gallons for homes up to and including three bedrooms without wells or having a well producing less than 150 gallons per day. Each bedroom above three bedrooms shall add 250 gallons to the required capacity of the tank.~~

~~b. Five hundred gallons for homes with wells producing 150 gallons or more of water meeting the requirements of section 15.55.060K. per day but less than the requirement of section 15.55.060E.~~

~~5. An exterior water storage tank shall have a minimum of four feet of cover, or insulated to protect from freezing. Tanks buried with less than two feet of cover shall have calculations submitted by an engineer showing adequate measures have been taken to prevent the tank from freezing.~~

6. ~~Access to~~ Wwater storage tanks shall be clearly and permanently marked "potable water."

7. Water delivery ~~to water storage facilities~~ shall be ~~accomplished only~~ done by water haulers certified by the State of Alaska Department of Environmental Conservation (ADEC).

8. Homeowners may haul ~~water to~~ their own water ~~storage facilities~~ provided they obtain the water from a source approved by ADEC and use an NSF-61 approved tank ~~approved by the development services department~~.

15.55.080 Well driller and pump installer certification.

A. It shall be unlawful for any person or company to engage in the business of drilling ~~or~~ deepening, or rehabilitating a ~~water~~ well ~~for domestic use~~ regulated under this chapter unless the person or company is certified by the department as a ~~holds a~~ well driller~~'s~~ or pump installer. ~~certificate issued by the development services department.~~

B. It shall be unlawful for a person or company to engage in the business of installing, removing, or repairing a water well pump, ~~or engage in any other subsurface activity on a water well for domestic use~~ regulated under this chapter unless the person or company is certified by the department as a ~~holds a valid~~ pump installer. ~~certificate issued by the development services department.~~

Exception: An owner may install a water well pump in a well that serves up to two dwellings units if the owner occupies one of these dwelling units.

C. It shall be unlawful for a person or company to engage in the business of decommissioning a well regulated under this chapter unless the person or company is certified by the department as a well driller or pump installer.

D~~C~~. A well driller's or pump installer's certificate shall be valid for a period of one calendar year and shall be renewed each subsequent year thereafter.

1. A certificate shall be issued by the ~~development services~~ department annually only when the well driller or pump installer has completed a training class conducted by the department within the past 24 months.
2. The certificate may be revoked by the ~~development services~~ department if the certificate holder is found guilty of or pleads guilty to an offense under this chapter. The period of revocation shall be according to the following schedule:
   a. One offense within the previous five years shall result in a revocation of the certificate of one month.
   b. Two offenses within the previous five years shall result in a revocation of the certificate of two months.
   c. Three offenses within the previous five years shall result in a revocation of the certificate of six months.
   d. More than three offenses within the previous five years shall result in permanent revocation of the certificate.

15.55.090 Subdivision Submittal Requirements

The submittal shall contain plans and engineering reports required to substantiate the probability of developing proposed lots that are to be served by wells.

A. **Plans.** The plans shall contain, but need not be limited to, the following information:

1. The location of existing potable water sources, on-site wastewater disposal systems including both initial and replacement subsurface disposal field sites, public sewage systems and bodies of water in the proposed subdivision and within 200 feet of the proposed subdivision.

2. The location of possible well and wastewater disposal system reserve areas for each lot in the proposed subdivision.

3. The location of permitted well and wastewater disposal systems, including both initial and replacement subsurface disposal field sites, within 200 feet of the proposed subdivision.

4. The required separation distances of each well or water source as shown in Table 1.

Community Water System. A proposed subdivision that will be served by a community water system shall submit an Approval to Construct a community water system from the State of Alaska Department of Environmental Conservation (ADEC) prior to final plat approval.