Minnesota Well Management News

A Minnesota Department of Health Publication

Volume 29, No. 2 **Fall 2009/Winter 2010**

Geologic Atlas Maps Being Developed for Anoka, Wright, Renville, and Clay Counties

The Minnesota Geological Survey (MGS) has started County Geologic Atlas mapping projects for Anoka, Wright, Renville, and Clay Counties. The MGS is requesting that well contractors collect cutting samples and make wells available for gamma-logging in these areas to assist with creating the maps. The MGS will be working on these atlas projects for the next three years.

The MGS is interested in having well contractors collect drill cuttings at 5-foot depth intervals from deeper glacial drift wells, and especially from wells that penetrate bedrock. It is also helpful if access is provided so that the MGS can geophysically log the wells with geophysical tools, especially the gamma-logging tool. Deep wells without cuttings (new wells, pump service, or well sealings) are also good candidates for gamma logging. Information generated from cuttings and geophysical logs, combined with well contractor's drilling logs, are very helpful in advancing our knowledge of the geology and creating geologic maps.

There are very few drill cutting sets available in Clay and Renville Counties. The MGS is especially interested in obtaining cuttings, and gamma-logging any deep glacial drift or bedrock wells in these counties. In Anoka County the MGS needs additional drill cutting sets from bedrock wells in the western and northern parts of the county. In Wright County the MGS is looking for more drill cuttings from bedrock wells from the southern, western, and northwestern parts of the county.

The MGS will provide sample bags for collecting drill cuttings. Well contractors can contact Emily Bauer or Bruce Bloomgren at 612-627-4780, to place requests for drill cutting sample bags.

INSIDE:

Arsenic Occurrence in Minnesota Wells
e-Well Disclosure Certificate
Vertical Heat Loop Construction in Bedrock Without Surface Casing: Risky
Enforcement Update
Near Miss with Buried Electric Wires
Obituaries
Continuing Education
New Contractors
Sewer and Sewage Sump Testing

Arsenic Occurrence in Minnesota Wells

On August 4, 2008, Minnesota's newly revised well rules went into effect and included a new requirement to test every new water-supply well for arsenic. Since August 4, 2008, sample results for 4,637 new wells have been reported to Minnesota Department of Health (MDH). The arsenic results are summarized as follows:

2,642 samples (57 percent) did not contain detectable arsenic,
1,582 samples (34 percent) had arsenic levels between 0 and 10 micrograms per liter (µg/L),
413 samples (9 percent) exceeded 10 µg/L*

(*The federal "Maximum Contaminant Level" for arsenic in community water supply systems is 10 µg/L and the recommended limit for private wells in Minnesota is 10 µg/L.)

The map following this article on page 4 shows the amounts of arsenic detected in new wells constructed in Minnesota since August 4, 2008.

Arsenic is a naturally-occurring element found widely in glacial deposits, some rock formations, and groundwater in Minnesota. It is often found adsorbed with iron and manganese as coatings on the surface of mineral grains, and in the structure of certain minerals such as "arsenopyrite." Under certain geochemical conditions, arsenic readily dissolves in groundwater. The Des Moines lobe till in west central Minnesota is one geologic stratum that is known to have elevated levels of natural arsenic.

Long-term consumption of drinking water with elevated arsenic levels can cause a number of harmful effects on the human body. Studies show that people who consume drinking water with arsenic levels over 100 µg/L, for many years, can have health problems including nervous system problems, diabetes, and several circulatory diseases. Some studies have now shown that arsenic levels below 100 µg/L may also cause some health problems, including nervous system problems, skin problems, high blood pressure, and reduced intelligence in children. Studies have linked long-term exposure to arsenic in drinking water to increased risk of cancer of the bladder, lungs, liver, and other organs. Arsenic is not significantly absorbed through the skin, so activities including dishwashing and bathing/showering, are not significant exposure routes.

The national drinking water standard, or "Maximum Contaminant Level," for arsenic is 10 µg/L. This standard applies to community water-supply systems. There is not an enforceable standard for arsenic in private wells in Minnesota; however, the MDH recommends that people not consume water with arsenic levels that exceed 10 µg/L. Water with more than 10 µg/L of arsenic should not be used long term for drinking or cooking without treatment to reduce the arsenic level below 10 µg/L.

Arsenic levels vary between different aquifers, and can vary at different depths within the same aquifer. In some cases, it has been shown that completing a well just below a geologic confining layer produces higher arsenic levels than completing the same well 20 or 30 feet deeper. If the first aquifer available produces water with high arsenic, you may find water with lower arsenic levels by drilling deeper. If the aquifer has sufficient thickness, you may want to try completing the well closer to the bottom of the aquifer.

If the arsenic level in a well exceeds 10 µg/L, the well owner is encouraged to look at options for reducing arsenic exposure, including water treatment, connection to a public water-supply system, or construction of a new well completed in a different aquifer. There are several types of water treatment systems that can effectively reduce arsenic levels in drinking water. These include specialty media, reverse osmosis with pre-oxidation, and distillation systems. Special arsenic-removal media have now been developed by many water treatment companies to specifically remove arsenic from water. They typically use "ferric (iron) hydroxide," "ferric oxide," or iron-enhanced ion exchange resins.

Reverse Osmosis (RO) is a water treatment process that removes most dissolved, inorganic contaminants from water by forcing the water through a cellophane-like plastic sheet known as a "semi-permeable membrane." A pre-oxidation step is usually necessary to convert all arsenic in the water to a removable form. Reverse osmosis membranes can deteriorate over time and should be checked and replaced regularly.

Distillation treatment systems boil water and then cool the steam until it condenses, as clean water, into a separate container. The dissolved contaminants are left behind in the boiling pot. Distillation units require approximately four hours to produce 1 gallon of clean water. This type of water treatment uses a considerable amount of energy in its operation and does not produce large quantities of treated water.

Conventional water softeners and activated carbon filters do not effectively remove arsenic. Boiling water does not remove or destroy arsenic. Boiling water simply concentrates, or increases the arsenic concentration, due to evaporation of some of the water.

Well owners should work with reputable water treatment equipment dealers in the area, and should learn how the different treatment systems work. The MDH recommends choosing a treatment system that is certified by an independent certification organization, such as NSF International, Underwriter's Laboratory (UL), or the Water Quality Association (WQA), which tests water treatment systems to assure they live up to their manufacturer's claims. In Minnesota, water treatment systems must be installed by a licensed and bonded plumbing or water conditioning contractor, although homeowners may install equipment in homes they own and occupy. After a treatment system is installed, it is important to follow the manufacturer's recommendations for maintaining the system. Treated water should be tested periodically to make sure that the treatment system is working properly.

For more information on arsenic in drinking water, you may visit our Web site at: www.health.state.mn.us/divs/eh/wells/waterquality/arsenic.html.

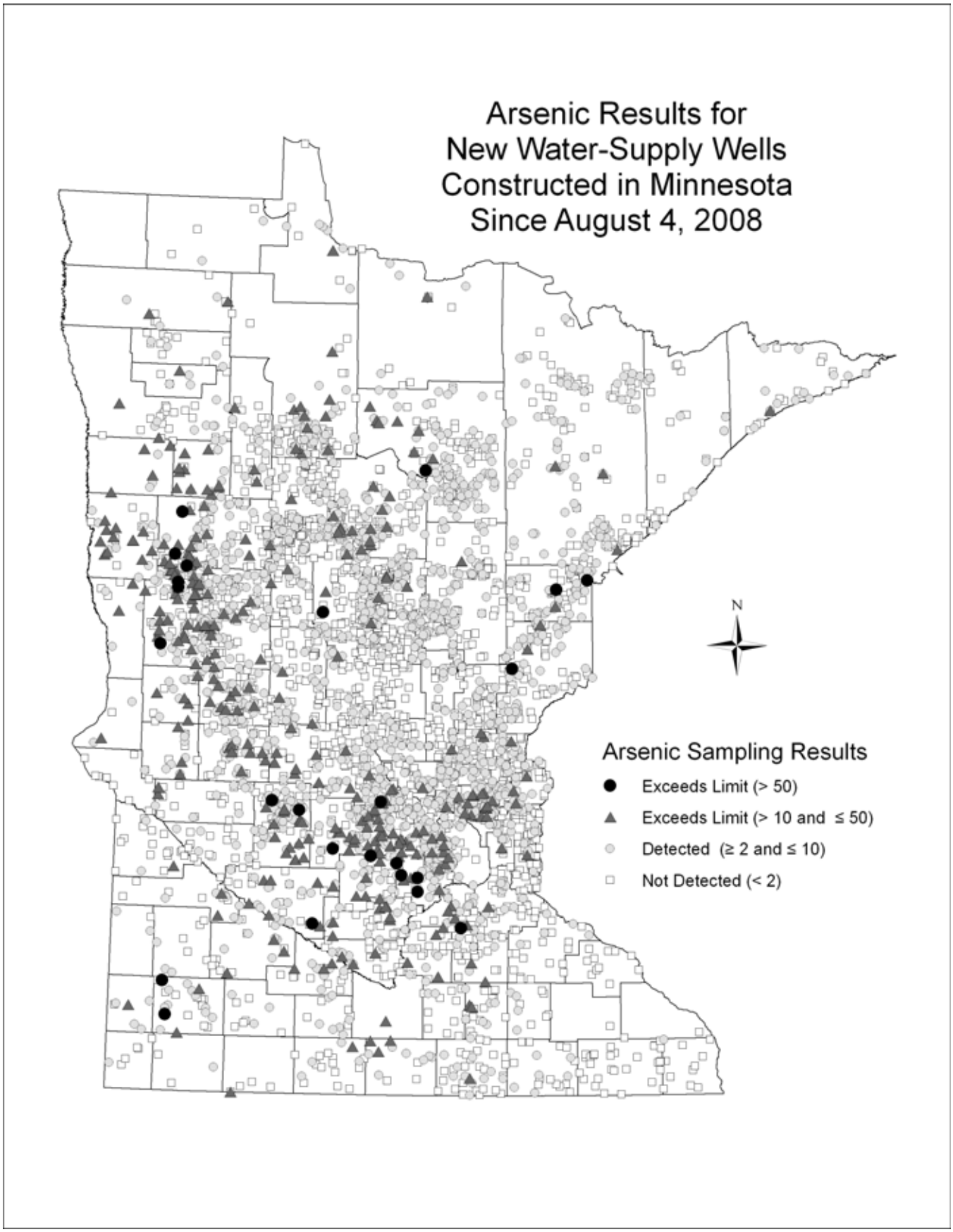
MINNESOTA MDH DEPARTMENT OF HEALTH

MINNESOTA WELL MANAGEMENT NEWS

Published twice per year by the Well Management Section, Minnesota Department of Health
www.health.state.mn.us/divs/eh/wells
Editor: Patrick Sarafolean, 651-643-2110
Contributors: Well Management Section Staff unless otherwise noted.

To request this document in another format, call 651-201-4600
Deaf and hard-of-hearing: TTY 651-201-5797

Reprinting of articles in this newsletter is encouraged. Please give credit to the Minnesota Department of Health or noted source.


Arsenic Results for
New Water-Supply Wells
Constructed in Minnesota
Since August 4, 2008
N
Arsenic Sampling Results
Exceeds Limit (> 50)
Exceeds Limit (> 10 and ≤ 50)
Detected (≥ 2 and ≤ 10)
Not Detected (< 2)

e-Well Disclosure Certificate
Now Available from the Minnesota Department of Health

Effective July 1, 2009, the Minnesota Department of Health (MDH), Well Management Section, is now accepting Well Disclosure Certificates filed electronically (online). This service is one part of the framework for electronic real estate recording and reflects nearly two years of effort by county recorders and MDH staff in the design, development, and testing of *e-Well Disclosure Certificate (e-WDC).*

The MDH Web site for well disclosure is: www.health.state.mn.us/divs/eh/wells/disclosures.

Persons filing a well disclosure certificate select the option "*Filers"* from the menu bar. The "*County Recorder"* selection is reserved for recorder functions in processing and tracking *e-WDCs*. First-time filers must initially register an account (username and password). The filing process is as follows:

- Complete the *e-WDC* online. Mandatory fields for completing the *e-WDC* are identified with an asterisk. When submitted, the filer is issued a Well Disclosure Certificate (WDC) number for this *e-WDC.*
- The *e-WDC* remains "pending" for up to 120 days, during which time the filer can edit or add information. If the deed has not been recorded within 120 days, the filer must complete a new *e-WDC.*
- When preparing the deed for recording, the WDC number is noted on the deed.
- When the deed is filed, the county recorder checks the pending *e-WDC* and compares the ownership and property information to that on the deed. If they match, the recorder then "validates" the *e-WDC*, which automatically files the *e-WDC* with MDH. The county recorder still collects the $45 filing fee at the time of recording.
- After county validation, the *e-WDC* is added to the data system and MDH staff review submittals. Staff will contact the filer if there are any questions or problems.
- After review, the *e-WDC* is posted on the MDH Web site, as are all Well Disclosure Certificates filed since November 1, 1990.

For *"Filers,"* the MDH Web site includes a checklist "What You Need to Know Before You Begin" and a more detailed publication (user manual) on filing instructions. The checklist identifies the information that is needed to complete the *e-WDC.* There is a comparable user manual for county recorders. MDH contact information is also available on the MDH Web site.

In order to properly complete either a paper WDC or the *e-WDC,* realtors should provide complete information on property identification; buyers and sellers; and the location, number, and status of all wells on the property (including a sketch map) to the person preparing the WDC document/filing. Too often, some of this information is missing, causing unnecessary delays in the closing and recording.

The MDH will continue to accept paper WDCs. The *e-WDC* is simply another option for filing.

If you have any questions on well disclosure, please contact:

Kathy Dunaway	651-201-4587	kathy.dunaway@state.mn.us
Norm Mofjeld	651-201-4593	norman.mofjeld@state.mn.us
Mike Convery	651-201-4586	michael.convery@state.mn.us

Drilling Vertical Heat Loop Borings in Bedrock, Without Surface Casing, can be Risky…

A Minnesota licensed well contracting company was recently hired to construct two vertical heat exchanger/loop borings in St. Paul, Minnesota. The plan called for drilling two borings; each 330 feet deep and finished in bedrock. The first boring went as planned. The driller advanced a 5 1/8-inch diameter bit by the mud rotary drilling method, to a depth of 330 feet. He did not use an outer surface casing to case-off the unconsolidated glacial deposits above the bedrock. The bore hole penetrated 40 feet of glacial deposits, Decorah shale from 40-136 feet, Platteville limestone from 136-170 feet, Glenwood shale from 170-175 feet, St. Peter sandstone from 175-330 feet, and just touched the top of the Prairie du Chien limestone at 330 feet. The driller was able to set and grout his loop into this boring.

After the first boring was completed, the driller moved the rig and began drilling the second boring. Again, he was drilling without an outer surface casing. On the second boring, the driller lost mud circulation at a depth of 270 feet. When the mud circulation was lost, the 5 1/8-inch diameter drill bit, the 4 1/2-inch diameter stabilizer (which was 20 feet long), and the 3 1/2-inch diameter drill rods became stuck in the bore hole. The driller rotated the rods and pulled them up and down for hours until the tools were completely stuck, with the bit resting at a depth of 250 feet.

After weighing all options and consulting with the Minnesota Department of Health (MDH) Well Management Section, the well contracting company decided to pursue using an explosive charge to attempt to break off the drill rods above the stabilizer. The drilling contractor had to first get approval from the client, and the St. Paul Police and Fire Departments. Obtaining these approvals took several days. The well contractor used 2.75 pounds of Pentex booster charges. The booster charges come in 1/4 pound, cylindrical sticks that look similar to a stick of dynamite. The driller lowered the string of charges down the inside of the drilling rods to the depth of 233 feet. After stopping traffic on nearby city streets, the charges were detonated. As you can see from the picture, the charges shattered the drill rods, but surprisingly, they did not break all the way off. The driller had to rotate the drill rods to actually twist them off and separate them from the stabilizer.

Well contractor assembling string of booster charges.

Once the rods were removed from the bore hole, the driller cleaned out the boring to the depth of 233 feet and sealed it with neat-cement grout. He then moved the rig a short distance away and tried to drill another boring; this time with 6-inch diameter surface casing, set into the bedrock. He was able to drill the bore hole down to 270 feet; but, lost mud circulation again. This time, the surface casing prevented the upper bore hole from sloughing into the bore hole and burying the drilling tools. The driller removed the drill tools and tried cementing off the area of lost circulation. After the cement had set up, he came back and tried to drill the hole deeper. He lost circulation again at 270 feet. He ended up removing his tools and permanently sealing the boring.

Drill rods being removed from heat loop boring after blasting with booster charges and being twisted off.

Many heat loop projects that call for bore holes into the bedrock, or through one or more bedrock formations, are being designed and/or bid without including the use of surface casing. This is a risky practice, as was the case with this project. If circumstances were a little different, and the bit and stabilizer were stuck in a confining layer, the MDH may have required the well contractor to over drill the drill rods and tools, in order to remove them from the boring, so that it could be properly sealed. That would be a very expensive undertaking!

In order to minimize risk, well drilling contractors should consider including surface casing in their bids for wells or borings that will pass through one or more fractured or creviced bedrock formations; especially when it's a geothermal project that includes multiple borings.

Enforcement Update

Persons Injured or Suffering Financial Loss Due to Noncompliance

Minnesota Statutes, Chapter 103I requires as a condition of licensure or registration, the licensee or registrant must submit a corporate surety bond. The bond must be conditioned to pay the state of Minnesota on performance of work in this state that is not in compliance with Minnesota Statutes, Chapter 103I or Minnesota Rules, Chapter 4725. The commissioner of health may compensate, from proceeds of the bond, persons injured or suffering financial loss because of a failure of the licensee or registrant to perform work or duties in compliance with Minnesota Statutes, Chapter 103I or Minnesota Rules, Chapter 4725.

The Minnesota Department of Health (MDH) tries to work with responsible parties to resolve violations without the need to initiate bond actions. In most instances the MDH does not need to initiate a bond claim because the responsible party completes corrective actions by the specified deadline. To put this issue into perspective, the MDH initiated only five bond claims between 1992 and 2007, against three different contractors.

Since July 2008, there have been three cases that resulted in the MDH initiating bond claims against two contractors, who are no longer licensed.

Case 1: In the spring 2004, during the construction of a new well, a licensed well contractor improperly grouted the well, which was a flowing well, with drill cuttings and bentonite grout. (The rules require neat-cement grout.) The MDH issued the contractor a Notice of Violation (NOV). The contractor failed to correct the violation. The MDH then issued the contractor a forgivable Administrative Penalty Order, which he did not comply with. The MDH then sent the contractor a determination of noncompliance letter. Still the contractor did not correct the violation. The MDH ended up initiating a bond claim against the contractor's bond and was able to provide the property owner with a check from the surety company in the amount of $1,900, to help cover the cost to hire a contractor to complete corrective work. The well was eventually sealed by another licensed well contractor.

Case 2: In June 2004, the same well contractor in "Case 1" completed construction of a new water-supply well. After inspection, it was determined that the well was constructed too close to a septic tank, a subsurface disposal field, a buried sewer pipe, and an unused, unsealed well. The MDH issued the contractor a Notice of Violation letter. The contractor failed to make the correction. The MDH then issued the contractor a forgivable Administrative Penalty Order, which he did not comply with. The MDH then issued the contractor a determination of noncompliance letter. Correction was still not made. Finally, the MDH initiated a bond claim and was able to send the property owner a check from the surety company in the amount of $5,982.50, to help cover the cost to hire a contractor to remove the contamination sources that were located too close to the well.

Case 3: In October 2004, another licensed well contractor completed the construction of a new water-supply well. After inspection, it was determined that the flow control valve was improperly attached to the casing, less than 12 inches above the ground surface. In addition, the contractor had improperly grouted the flowing well with high-solids bentonite grout (the rules require neat-cement grout). The contractor failed to comply with a Notice of Violation letter, a forgivable Administrative Penalty Order, and a determination of noncompliance letter. The MDH initiated a claim against the contractor's bond and was able to send the property owner a check from the surety company in the amount of $4,032, to help cover the cost to hire another contractor to complete the corrections to the well.

Public Water-Supply Well Construction

The Minnesota Department of Health (MDH) Well Management Section staff has reported that many licensed well contractors are having common administrative problems related to the construction of public water-supply wells. The first problem involves contractors failing to check the correct box on the well construction notification form, designating the well as a public water-supply well. The second problem involves contractors not contacting the MDH and providing 24-hour notice before beginning construction of a public water-supply well.

Minnesota Rules, part 4725.5825, subpart 2 states: *"The licensee must notify the commissioner of the proposed construction starting time of a community or noncommunity public water-supply well 24 hours in advance of beginning construction. The information may be placed on the notification form required in part 4725.1820 or may be reported by telephone, facsimile, or in person. The notification must be made between the hours of 8:00 a.m. and 4:30 p.m. Monday through Friday, excluding holidays."*

The MDH has documented a number of instances where a licensed well contractor has checked the wrong box on the well notification form incorrectly identifying a well as a "domestic water-supply well," when in fact, the well was actually a public water-supply well. In many of these cases, 24-hour notice was not given, and the wells were not grouted properly.

Community and noncommunity public water-supply wells must be grouted to within 10 feet of the bottom of the casing. Failure to observe this provision results in a violation of Minnesota Rules, part 4725.5825, subpart 4. There are two options for correcting the grouting violation: seal the well and construct a complying well, or reconstruct the well by cleaning out the annular space and grouting the well as required.

In order to prevent these types of violations, well contractors should ask their clients about the intended use of all proposed wells and determine if they will, or will not be used as community, or noncommunity public water-supply wells. Please contact the Well Management Section district staff when additional assistance is needed in determining if a proposed well meets the criteria of a public water-supply well.

Well Contractor has Near Miss with Buried Electric Wires

On July 13, 2009, Skip Torgerson, with Art Torgerson and Son Well Company, and his employee Lyle Hafften, were working on a property in Scandia, Minnesota. The old well, located next to the existing home, had failed and was not repairable. After calling Gopher State One Call and having the utilities marked on the property, they set up their cable-tool drilling rig 50 feet away from the home and more than 10 feet from the marked, buried electric wires and natural gas pipe. They completed a screened well in glacial deposits that was 96 feet deep. Lyle went to work digging a trench from the old well to the new well to prepare for installing the new water distribution pipe, while Skip was busy connecting the new pressure tank in the house. When Lyle dug next to the new well, he saw sparks come from the backhoe bucket. Just after that, Skip came out of the house asking why the electricity in the house went out?

They both were amazed to find that Lyle had severed three electrical cables that were buried in the ground, within 6-inches of the well casing. Those wires were never located and were not marked by the utility company. Fortunately, Lyle was not injured when the backhoe contacted the live wires. The backhoe bucket suffered a couple of burn marks. Skip and Lyle felt very fortunate that they did not contact the electric wires while drilling or driving the steel well casing. If they had, they might not be around today to talk about it.

Unmarked, "live" buried electric wires next to casing for new well in Scandia, Minnesota.

Electrical burn marks on backhoe bucket.

Skip immediately called the utility company to report that the wires had been severed. The utility company sent out a crew right away to investigate. The utility company crew could not explain why the live, buried electrical wires were not identified and marked during the initial utility locate. The well inspector from the Minnesota Department of Health informed the utility company crew that they would have to move the wires at least 10 feet from the well to comply with well code requirements.

This incident was reported to the Minnesota Office of Pipeline Safety, which has inspection and enforcement jurisdiction over intra-state pipelines and facilities, and also has federal agent status for the inspection and incident/accident investigation for interstate pipelines and facilities. Their investigation was not complete at the time this newsletter was printed. An investigation report is expected in the near future.

The Office of Pipeline Safety's Web site, which is www.dps.state.mn.us/pipeline, states that all emergency releases and incidents should be reported to: Minnesota Duty Officer 651-649-5451, or Division Emergency Management 800-422-0798.

Obituaries

Theodore Waskosky, age 93, former owner and operator of Waskosky and Sons Well Company, Erdahl, Minnesota; passed away on August 17, 2009.

Theodore "Ted" Waskosky was born in Faribault, Minnesota, on July 7, 1916, to Theodore and Lulu (Eggelston) Waskosky. He attended school in Henning until age 13, then went to work in his father's well drilling business. Ted married Helen Christine Anderson on August 25, 1941, in Brownton, Minnesota. They had four children; three sons and one daughter.

Ted joined the U.S. Army on July 10, 1942, and belonged to Company A of the 97th Signal Battalion. During his military tour, he served in central Europe in Rhineland, Germany, and the Ardennes region of France as a cable splicer during World War II. He was awarded the Bronze Star and the Army Good Conduct Medal.

Ted served on the Minnesota Water Well Association Board, the Par Region Telephone Company Board, and was an active member of the American Legion. Ted was a strong man and could climb a rope, hand over hand without using his feet and could do several one handed pushups into his 40s. Ted loved to water ski, fish, hunt, play "Whist," square dance, throw horseshoes, and play the fiddle for family and friends.

Ted was preceded in death by his wife Helen, his parents and four brothers. Ted is survived by his daughter, three sons and their families including 13 grandchildren and 13 great-grandchildren; and three sisters.

Ted's son, Theodore, continues to operate Waskosky Well Drilling Contractors, Inc., in Erdahl, Minnesota.

Daniel L. Donabauer, age 81, former owner and operator of Fischer Well and Pump Company in Kimball, Minnesota; passed away on September 14, 2009.

Danny was born on January 10, 1928, in St. Joseph, Minnesota, to Leopold and Margaretha (Reisinger) Donabauer. He grew up in St. Joseph and entered the U.S. Army in 1950 where he served in Company B, 511th Airborne Infantry Regiment. He was honorably discharged in 1952 and lived in Rhode Island for a short time before returning to central Minnesota. He married Ramona Skaja on June 11, 1955, and they lived in Waite Park and St. Cloud before moving to Kimball in 1977. Danny was self employed with Fischer Well and Pump Company, and then went to work with his son-in-law at Rollie Werner Well Drilling Company.

Danny was a member of Holy Cross Catholic Church in Marty, Minnesota and also was a member of the American Legion Post 0026.

Danny is survived by his wife, Mona; four children; 12 grandchildren; 6 great-grandchildren, four sisters and one brother. Danny was preceded in death by his parents, six brothers and one sister.

Danny's son, Keith Donabauer, is a Well Inspector with the Minnesota Department of Health, Well Management Section. Keith works out of the St. Cloud district office.

Continuing Education Calendar

*Beginning January 1, 2010, the maximum number of continuing education contact hours for a program that does not include Minnesota Department of Health (MDH)-presented or MDH-sponsored credits will be four credits. Certified representatives for well contractors and monitoring well contractors must obtain a total of six hours of continuing education annually, including two hours of continuing education provided or sponsored by MDH. Certified representatives for all other license types are required to obtain two hours of continuing education annually, and they must be provided or sponsored by MDH.

The Internet link to the Minnesota Department of Health (MDH), Well Management Section's, Continuing Education Calendar is: www.health.state.mn.us/divs/eh/wells/lwcinfo/training.html.

This calendar lists the upcoming continuing education courses that have been approved for renewal of certification for representatives of Minnesota licensed and registered well and boring contractors. The calendar also lists the number of credits available for each course. The calendar is updated monthly and, if you subscribe, you will be notified by e-mail when this page changes (new classes added, changes to existing classes).

For additional information about any of these training opportunities, call the contact person listed for the program of interest. For general information about continuing education, more current CEU listings, or to request approval for other continuing education activities not listed, contact Mike Convery, Minnesota Department of Health, Well Management Section Operations Unit Supervisor, at 651/201-4586, or michael.convery@state.mn.us.

New Contractors

The following individuals have become certified representatives or responsible individuals since the last issue of this newsletter was published.

Well Contractor
David D. Anderson
Otter Tail Well Drilling and Repairing
Fergus Falls, Minnesota

Explorer
John Storie
Kennecott Exploration Company
Tamarack, Minnesota

Individual Contractor
David F. Sampson
Minneapolis, Minnesota

Minnesota
Well Management News

MINNESOTA DEPARTMENT OF HEALTH
WELL MANAGEMENT SECTION
625 ROBERT ST N
PO BOX 64975
ST PAUL MN 55164-0975
651-201-4600 or 800-383-9808

Sewer and Sewage Sump Testing

The well rules require a 50-foot separation between a water-supply well and a sewer or sewage sump. The distance may be reduced to 20 feet for certain sewers and sumps that are constructed of approved materials and have been successfully tested according to the Minnesota Plumbing Code. Only a licensed plumber, licensed restricted plumber (outside of cities over 5,000 population), person with a pipe layer's card (outside plumbing only), or a homeowner (only on plumbing installed by the homeowner at their residence) may test a sewer or sump.

The Plumbing Code allows three different tests: an air test, which is acceptable for all sewers and sumps; a hydrostatic test, acceptable only for sewers made of plastic pipe; and a manometer test, acceptable only for sumps and finished plumbing.

The most common sewer testing method is the "air test." It involves plugging both ends of the sewer to be tested, usually with a cap if it is accessible or a test ball if it is not, and pressurizing the sewer pipe with air to a pressure of 5 pounds per square inch (psi). In order to pass the test, the sewer pipe must hold 5 psi for 15 minutes with no pressure loss.

The hydrostatic test is acceptable only for plastic pipe. The test is conducted by plugging the downstream end of the pipe and then filling it with water so that there is at least 10 feet of head (4.3 psi) above the pipes to be tested. The test is run for 15 minutes while the pipe is visually inspected for leaks.

The manometer test is typically done after all plumbing fixtures (sinks, toilets, etc.) are set. The fixture traps are filled with water and all vents are plugged. Air is introduced, and the system passes if a one-inch water column in the manometer tube is maintained.