Minnesota Well Management News

A Minnesota Department of Health Publication

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New Well Management Section
Fee Schedule - Effective July 1, 2008

Effective July 1, 2008, new state fees for well construction notifications, well sealing notifications, permits, variance requests, and well disclosures will be implemented by the Minnesota Department of Health (MDH), Well Management Section. License and registration fees and pump hoist and drilling machine registration fees are not changing. The fee schedule will be as follows:

Well Construction Notifications

Water-Supply Well	$215
Dewatering Well	$215
Dewatering Project (5 or more wells)	$1,075

Permits

Elevator Boring	$215
Ground Water Thermal Exchange Device	$215
Vertical Heat Exchanger (Heat Loop)	$215
Monitoring Well	$215
Well Maintenance	$175
Dewatering Project (5 or more wells) Maintenance Permit	$875

Well Sealing Notification $50

Variance Application $215

Monitoring Well Site Permits

Motor Fuel Retail Outlet	$215
Petroleum Bulk Storage Site	$215
Agricultural Chemical Facility	$215

License Fees (not changed)

Qualification Application	$75
Renewal Late Fee	$75
Elevator Shaft Contractor	$75
Monitoring Well Contractor	$75
Limited Well/Boring Contractor	$75
Explorer	$75
Well Contractor	$250
Pump Hoist/Drill Rig Registration	$75

Well Disclosure Certificate $45

INSIDE:

Any payments received prior to July 1, 2008, will be accepted at the current rates. Insufficient fee payments for notifications, permits, variances, or licenses on or after July 1, 2008, will be returned to the contractor or the individual making payment. Permits and variance requests will not be reviewed, and notifications and license applications will not be processed, until sufficient funds are submitted to the MDH. County recorders will not accept submittal of well disclosure certificates without the appropriate fee.

Federal, state, and local government entities are exempt from payment of fees, but are not exempt from other requirements, including well disclosure, licensing, notification, and permitting requirements.

Well fees in jurisdictions of delegated well programs are established by the delegated program. Individuals should check with the delegated program for fee amounts and any other administrative requirements.

Proposed Amendment to the "Rules Relating to Wells and Borings" Minnesota Rules, Chapter 4725

The Minnesota Department of Health (MDH) is proposing amendments to the Rules Relating to Wells and Borings, Minnesota Rules, Chapter 4725. The amendments pertain to general provisions of the rule; licensing, registration and certification; permits and notifications; construction and use; water-supply wells; dewatering wells; monitoring wells; vertical heat exchangers; elevator borings; and environmental bore holes.

The Notice of Intent to Adopt Rules was published in the State Register on Monday, November 19, 2007. The Notice explained the nature of the proposed rule amendments, and the procedures to make official comments or to request a public hearing. Comments were received from 12 persons or organizations. Sufficient requests for hearing were received so that a hearing was held on January 9, 2008. Three persons spoke at the hearing. Administrative Law Judge Barbara Neilson held the written comment period open until February 5, 2008. Three persons submitted comments. The Administrative Law Judge's report and Chief Law Judge's report were completed on March 14, 2008, and March 24, 2008, respectively.

Roger Renner, with E.H. Renner and Sons well company, provides testimony at rules hearing which was held on January 9, 2008. Pictured from left to right, Daniel Wilson, MDH; Ronald Thompson, MDH; Greg Shafer, MN Attorney General's Office; Roger Renner; and Barbara Nielson, Administrative Law Judge.

The MDH has completed the necessary steps to implement the rule except for publishing the Notice of Adoption in the State Register. In order to provide some advance notice, we are proposing to publish the Notice of Adoption in the State Register on Monday, July 28, 2008, making the rule effective Monday, August 4, 2008.

Information concerning the rulemaking is available on the MDH Well Management Section Web site at www.health.state.mn.us/divs/eh/wells/rules/propamend.html. When completed, copies of the rule will be available on the Revisor of Statutes Web site at: www.revisor.leg.state.mn.us/rules/?id=4725. A paper copy of the rules will be mailed to all licensed and registered contractors when available.

Comments or questions may be directed to: Ronald D. Thompson, P.G., Environmental Health Division, Minnesota Department of Health, P.O. Box 64975, St. Paul, Minnesota 55164-0975, Phone: 651/643-2108, FAX: 651/643-2153, ronald.thompson@health.state.mn.us.
Deaf and hard-of-hearing: TTY 651/201-5797.

The new rules will:

- Combine the definitions of "bentonite grout" and "high solids bentonite grout" into a single definition of "bentonite grout," and require the product be designed as a grout and that label instructions be followed.
- Reduce the continuing education requirement for representatives of limited licensees from six to two hours per year, but require the two hours be obtained at an MDH provided or sponsored program, and require two of the six hours for representatives of well contractors and monitoring contractors be obtained at an MDH provided or sponsored program.
- Require that notifications must be received with valid payment during normal business hours of the commissioner. Notifications faxed after business hours are not valid until the next business day.
- Remove the 25-foot distance to an electric line over 50kV, reference the OSHA standard, and exempt portable LP tanks, low voltage electric lines, and some repair or sealing from the 5-foot/10-foot setbacks when OSHA requirements are followed.
- Increase the maximum screen riser or leader length from 10 feet to 21 feet, and allow a maximum 10-foot screen sump as long as the total riser and sump do not exceed 21 feet.
- Allow cement-sand grout anywhere neat-cement grout is allowed.
- Increase the 30-foot minimum grouting requirement for new wells to 50 feet.
- Allow alternative welded or threaded casing connections and bolted sleeve-type (Dresser-type) couplings under some circumstances.
- Require well or boring treatment chemicals to meet NSF Standard 60, allow chlorine that meets FIFRA standards, and require removal of treatment chemicals.
- Require that bentonite drilling fluid used to construct or repair a water-supply well must have a chlorine residual at all times during drilling or repair.
- Reduce the isolation distance between a water-supply well and a lake, stream, pond, or water body from 50 to 35 feet.
- Establish standards for hydrofracturing.
- Require a water sample be collected from a new potable water-supply well and be tested for arsenic.
- Require full length grouting of all public water-supply wells that do not have driven casing.

Continuing Education and 2009 License Renewal
Changes to Minnesota Rules, Chapter 4725

The revisions to Minnesota Rules, Chapter 4725, are anticipated to become effective on **August 4, 2008**. Two changes in continuing education requirements for certification and license renewal will also take effect at that time:

- The number of continuing education credits required annually for certified representatives of limited well/boring contractors and elevator boring contractors is reduced from six hours to two hours. Those two hours must be from an approved Minnesota Department of Health (MDH) presentation or MDH sponsored program. (Limited well/boring contractors - include pump installers, pitless/screen contractors, dewatering well contractors, dug well/drive point contractors, well sealing contractors, and vertical heat exchanger contractors.)

- Certified representatives for well contractors, individual contractors, and monitoring well contractors must still obtain six hours of MDH-approved continuing education annually. Two of the six hours must be from an MDH presentation or MDH sponsored program.

2009 License/Registration Renewal: Due to the mid-year rule change, the MDH will accept continuing education hours in accordance with the existing (old) rule or the new rule requirements.

2010 License/Registration Renewal: For the 2010 license and registration renewal, the new rules will be in effect as indicated above.

Calendars announcing continuing education opportunities will be provided in the Minnesota Well Management News newsletter and on the MDH Well Management Section Web site at: www.health.state.mn.us/divs/eh/wells/lwcinfo/training.html.

New Contractors

The following persons have become certified representatives for licensed contractors since the last issue of this newsletter was published.

Explorer
Marcella A. Hartman
Duluth Metals Corporation
Oakdale, Minnesota

James E. Stubblefield
Foraco Corporation
Hibbing, Minnesota

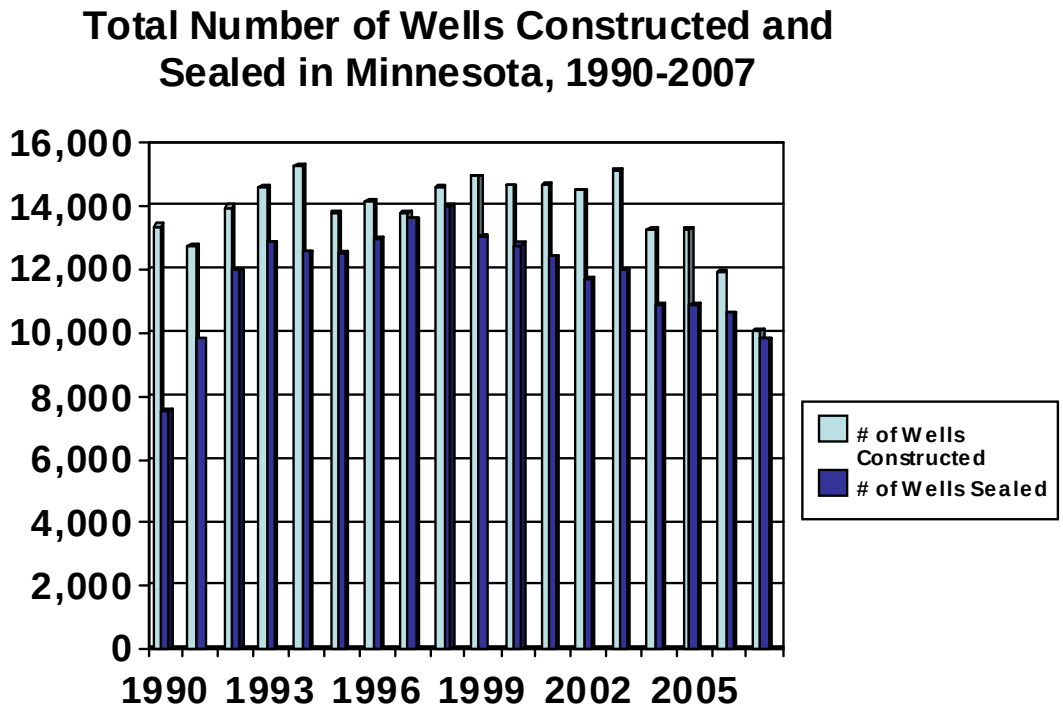
Monitoring Well Contractor
Myron H. Berry
Coleman Engineering Company
Ironwood, Michigan

Richard H. Crum
Northeast Technical Services, Inc.
Virginia, Minnesota

Pump Installer
John J. Fahey
Hydro-Engineering, Inc.
Norwood-Young America, Minnesota

Well Construction and Well Sealing Statistics in Minnesota, 2007

The Minnesota Department of Health Well Management Section received 10,070 Well and Boring Construction Records, and 9,835 Well and Boring Sealing Records for the year 2007. New well and boring construction totals decreased 14 percent in Minnesota since 2006, and well sealing totals decreased almost 6 percent during the same period. A comparison of the number of wells and borings constructed and sealed in Minnesota from 1990 to 2007 is provided below, along with a listing of the top five counties for well construction and well sealing in Minnesota in 2007.



Well and Boring Construction in Minnesota Top 5 Counties for Year 2007

County	Number of Wells and Borings Constructed in 2007
Crow Wing	676
Otter Tail	553
St. Louis	534
Cass	520
Anoka	354

Well and Boring Sealing in Minnesota Top 5 Counties for Year 2007

County	Number of Wells and Borings Sealed in 2007
Hennepin	1,572
Crow Wing	430
Ramsey	427
Washington	401
Anoka	395

Minnesota Mineral Exploration

Exploration for minerals of economic importance in Minnesota has a long and varied history. It was the exploration for gold in the mid-1800s that led to the discovery of the valuable source of high grade iron ore in northern Minnesota and to the opening of the Soudan mine near Tower, Minnesota in 1882. Although the high grade iron ore was mined out by the 1960s, taconite iron ore mining and exploration continues today, making Minnesota the largest producer of iron in the United States.

Mineral exploration rig in northern Minnesota, January 2008.

In 1894, exploration led to the discovery of a small gold deposit on Little American Island on Rainy Lake, which was mined out in two years. During the late 1970s and early 1980s, exploration for uranium occurred in both northeast and southwest Minnesota, although no commercial deposits were ever discovered.

In 1981, Minnesota adopted the first set of rules to regulate the drilling of exploratory borings, in part because of environmental concerns associated with exploration for radioactive minerals. Today, exploratory drilling is regulated under Minnesota Rules, Chapter 4727, and Minnesota Statutes, Chapter 103I. The rule and statute define the meaning of an exploratory boring and identifies minerals or materials that are regulated. The rules detail requirements for both licensing of explorers and registration of drilling machines and the need for written notification to both the Minnesota Department of Health (MDH) and the Minnesota Department of Natural Resources (DNR), prior to drilling. The rule also regulates the construction and sealing (either permanent or temporary) of exploratory borings and includes the requirement to submit sealing records to the MDH.

Minerals of economic importance can be divided into two groups, metallic and industrial. Metallic minerals include both ferrous and the nonferrous, such as copper, nickel, gold, platinum, titanium, and zinc; which are all regulated under Minnesota Rule, Chapter 4727. Industrial minerals include aggregate, peat, kaolin clay, dimension stone, and silica sand. Of these, only kaolin clay is regulated under the exploratory law.

Mineral rights may be held by the property owner, or by another person (severed rights) such as a mining company. The state of Minnesota is the largest single owner of mineral rights in the state, owning 24 percent. The DNR, Division of Lands and Minerals manages state mineral rights and leases. In 1849, a trust fund was established for the benefit of education. Money that the state receives from the mineral rights is put into the fund. Interest earned from the fund is distributed to school districts across the state and is used to offset property taxes. In addition, the money is distributed to state universities. Approximately 20 percent of all resident, University of Minnesota freshmen receive scholarships from the trust.

What is the present status of exploratory drilling in Minnesota?

In 2007 the MDH, licensed 12 explorers. Over 150 exploratory borings were drilled to depths between 500 feet and 5,000 feet. The majority of the 2007 exploration occurred in the north-central and northeast Minnesota regions within the Precambrian Duluth Complex, exploring for copper, nickel, gold, and platinum. Ferrous metal exploration in 2007 also continued, mainly as infill-drilling on DNR permitted mines.

Mineral exploration rig on barge on Birch Lake near Ely, Minnesota, August 2007.

The driving economic forces of rising metal prices, especially that of copper, combined with advanced technologies in the mining industry, have brought renewed interest in exploration in Minnesota. Significant quantities of ore have now been discovered and have become economically feasible to mine. One mining company, Polymet Mining, has applied for both state and federal permits to open a nonferrous metal mine near Babbitt, Minnesota. The mine is tentatively scheduled to open in 2009 and is anticipated to employ nearly 400 full-time workers for 20 years or more. Other companies continue the exploration process and may also propose mines in the future.

It is interesting to note that DNR rules require that explorers submit a portion of all core samples to the state. The DNR, Division of Lands and Minerals maintains a library of the core samples in Hibbing, Minnesota. It contains over 2 million feet of mineral samples that are available for public inspection.

Restricted Plumbing Licenses

Legislation passed in 2007 requires statewide licensing of plumbers. Previously, licensing was required only in cities with a population over 5,000. The 2007 legislation also established a restricted license for persons doing plumbing in rural areas outside of cites with a population over 5,000. The license application period ended in December 2007.

On May 8, 2008, Governor Pawlenty signed a bill, (Senate File 2786, Laws of Minnesota 2008, Chapter 282), which extends the restricted license application period through September 30, 2008. The law indicates that the commissioner of Labor and Industry shall grant a restricted journeyman or restricted master plumber license to an individual if the individual completes an application, pays a $30 fee, submits the application by September 30, 2008, and demonstrates that the applicant has experience: two years of practical plumbing experience for a restricted journeyman plumber license; and four years of practical plumbing experience or two years of practical plumbing experience as a plumbing contractor for a restricted master plumber license.

It should be noted that plumbing contractors are required to have liability insurance and a $25,000 plumbing code compliance bond. Licenses expire each year and must be renewed with a $120 fee for the Master license, and a $55 fee for the Journeyman license.

For more information, visit the Minnesota Department of Labor and Industry, Plumbing Plan Review and Inspection Web site at: www.doli.state.mn.us/plumbing.html, or call 651/284-5067.

City of New Munich Seals Old, Large Diameter, Brewery Well

In 2007, the city of New Munich, in Stearns County, Minnesota, became aware of an old, large diameter, unused water-supply well at the former Pitzl Brewing Company. The abandoned well posed a serious threat to municipal wells in the city, and also to the public health and safety of local residents.

Abandoned, unsealed Pitzl Brewery Well, New Munich, Stearns County, Minnesota. Well was located underneath the parking lot.

The brewery, originally established in 1875 by John Froehler and Son, was shut down during the prohibition era and has been abandoned ever since. The water used to produce Pitzl beer was collected from a hand dug well that was 12 feet wide and 18 feet deep. The well, located underneath the existing parking lot, was connected by a tunnel system that once led to other buildings on the site. The geological conditions of the area and the vulnerability assessment of the drinking water supply management area (DWSMA) indicated that an effective confining layer of clay-rich till does not exist between the land surface and the aquifer.

The brewery well was located within the wellhead protection area of the city water-supply wells and although it was not as deep, it was completed in the same aquifer, and posed a contamination threat to the aquifer and the city's wells.

Urban Conservationist Carrie Raber from Stearns County Soil and Water Conservation District (SWCD) applied for grants on behalf of the city to help fund the permanent sealing of the well. Cost share assistance was received from the Stearns County SWCD and the Stearns County Local Water Management funds as a result of the grant applications.

The well was sealed with the cooperation and assistance of the New Munich Mayor Harold Klaphake, the Stearns County SWCD, Atkinson Well and Pump, LTD, and the Minnesota Department of Health. The well was accessed by the removal of a reinforced concrete cover. The water level was pumped down to within 4 feet of the bottom of the well and a track-hoe excavator was used to remove debris from the bottom of the well. Atkinson Well and Pump, LTD, permanently sealed the well with clay in November 2007.

Stearns County is planning to have a similarly constructed well sealed in the city of New Munich in 2008. The well is on former railroad property that was transferred to the county. This well is visible at the surface, has a cement cover and a steel manhole lid over it, is 29 feet deep, and is 10 to 12 feet in diameter.

Case Study of a Salt Contaminated Well

(Written by James Walsh and Scott Longanecker, MDH)

In Spring 2005, the Minnesota Department of Health (MDH) was notified by the owners of a residential housing development in Crow Wing County that their existing well had become contaminated with salt (sodium chloride). A water sample from the well had been taken for analysis after several complaints that the water had a salty taste. The lab analysis showed that chloride was present at a concentration of 837 milligrams per liter (mg/L), more than three times the secondary drinking water standard of 250 mg/L. (The typical background concentration of chloride in Minnesota wells is generally less than 20 mg/l.)

The contaminated well had been constructed in 1997 to a depth of 62 feet with a 10-foot well screen. The geology at the well site consists of sand from the land surface to the bottom of the well, with a static water level approximately 11 feet below the land surface (Figure 1). Possible sources of chloride contamination that were identified in the vicinity of the well included water softener discharge located approximately 35 feet from the well, a sewage lift station located approximately 60 feet from the well, buried sewer pipes located 50 feet from the well, a residential road located approximately 70 feet from the well, and a pond located 85 feet away.

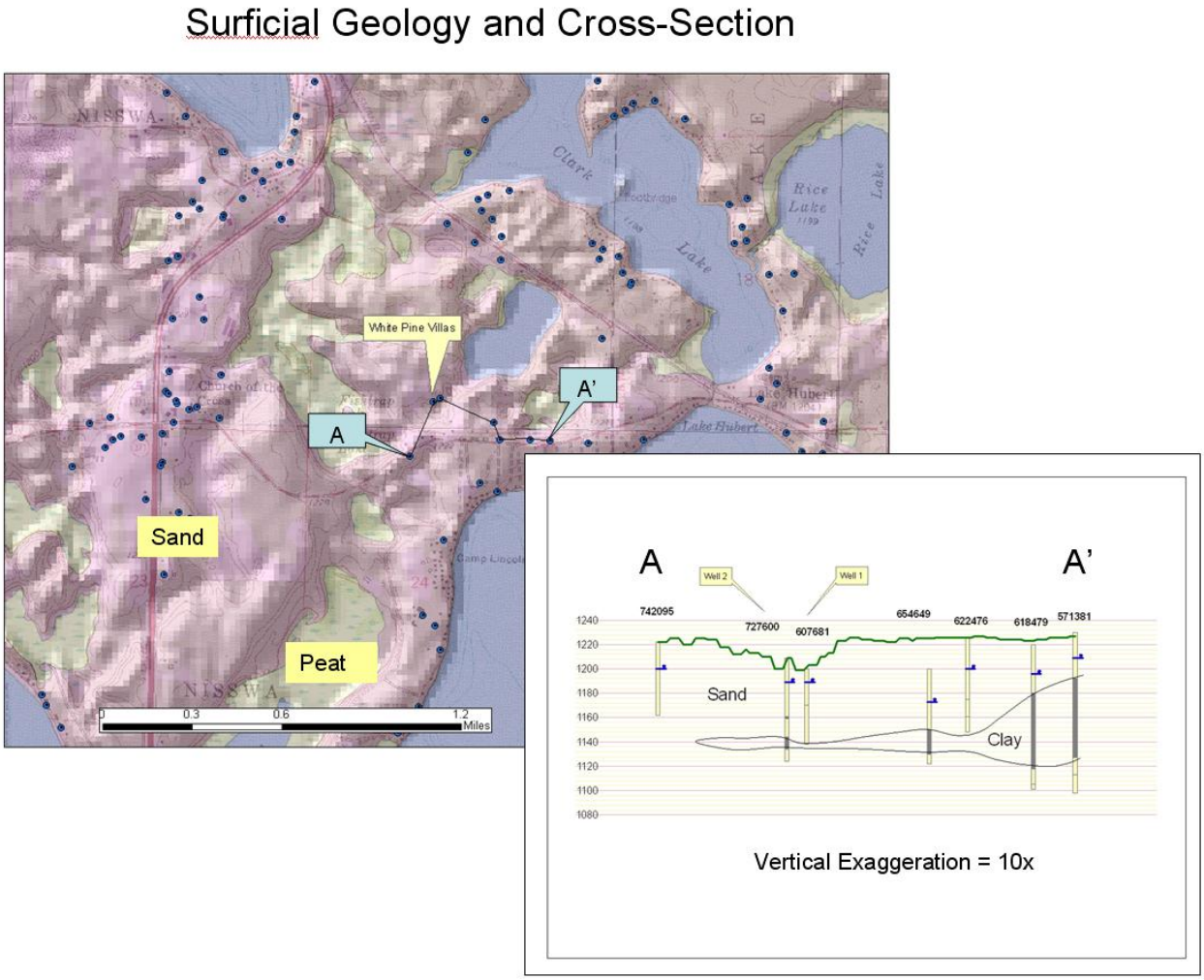


Figure 1. Surficial geology (after MGS, 2004) and geologic cross-section.

The management of the housing development reported that in July of 2003 they hired a local company to install a commercial water softener. The regeneration discharge from the water softener was estimated to be 400 gallons per day at peak water demand. The regeneration discharge was piped to a French drain located 35 feet from the well.

In December 2004 residents of the development began reporting a salty taste in the drinking water. The water treatment discharge was relocated 85 feet from the well; however, the contamination continued to increase. In March 2005 an analysis of a water sample reported chloride was present at a concentration of 837 milligrams per liter (mg/l).

After going through the site inspection and plan review process, a new community well was installed in May 2005 to replace the salt-contaminated well. Considerations involved in the plan review process for the new well included: (1) constructing the well in a geologically protected sand aquifer below the aquifer impacted by the salt plume, and (2) placing the well a sufficient distance away and up-gradient from the plume. The direction of groundwater flow at the site is not well known, but is regionally thought to be southeasterly towards a major lake chain. In May 2005 the replacement well (Well Number 2) was completed at 85 feet deep and penetrated a clay confining unit.

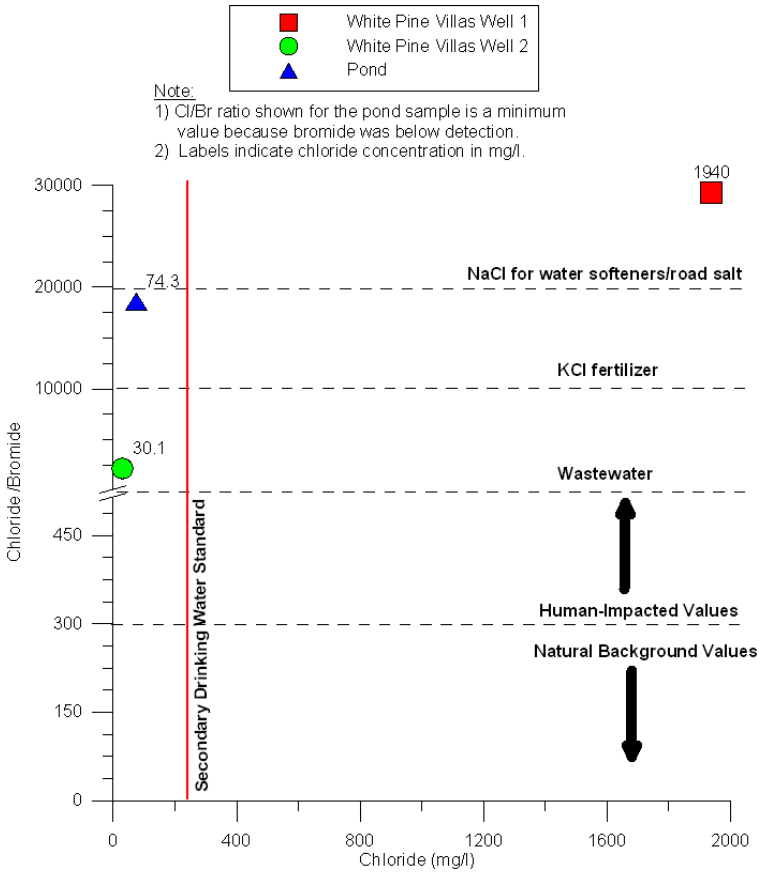


Figure 2. Chloride and bromide data.

A water sampling study was conducted on July 18, 2007, to assess the chloride concentration at both Well Number 1, Well Number 2, and at a wetland pond near the location where the softener waste is currently discharged. Water samples were collected and analyzed for chloride and bromide. (*The ratio of chloride to bromide has been found to be useful for determining when groundwater has been impacted from anthropogenic [human or animal] activities, and even for pinpointing particular sources of salinity such as road salt, fertilizer, or wastewater [Alexander, et al., 2005*]). The results showed that water from Well Number 1 had a high chloride level of 1,940 mg/L and had a high chloride/bromide ratio of 29,305 which is a clear indication of contamination by sodium chloride used in water softeners or on roadways (Figure 2). Although a residential road does go through the development, it is situated to the east (downgradient) and is not heavily salted. The most likely source of contamination for Well Number 1 is the water softener effluent that was discharged

near the well. This is corroborated by the sample collected from the pond which is currently receiving discharge from the softener. The chloride level in the pond was 74.3 mg/L. Bromide was not detected in the water sample from the pond. However, if one assumes that bromide is present at some minute concentration, then a minimum chloride/bromide ratio of approximately 18,575 would be indicated, which would be consistent with sodium chloride derived from the softener. Finally, Well Number 2 had a chloride value of 30 mg/L and a chloride/bromide ratio of 2,213. Although these values exceed those one would expect for pristine groundwater, the chloride value is well within drinking water standards and the ratio is significantly different than that indicated by the softener effluent. Apparently the location and construction measures employed for Well Number 2 succeeded in avoiding the salt plume.

As a final check on whether the wells might be receiving recharge from the pond, samples from all three sources were analyzed for the stable isotopes of oxygen and hydrogen (Figure 3). The results showed that the pond water plots far off the global meteoric water line, indicating significant evaporative fractionation. Both well samples plot on the line, showing no evidence of pond water capture. Apparently the contamination observed at Well Number 1 resulted from direct infiltration of water softener effluent into the ground.

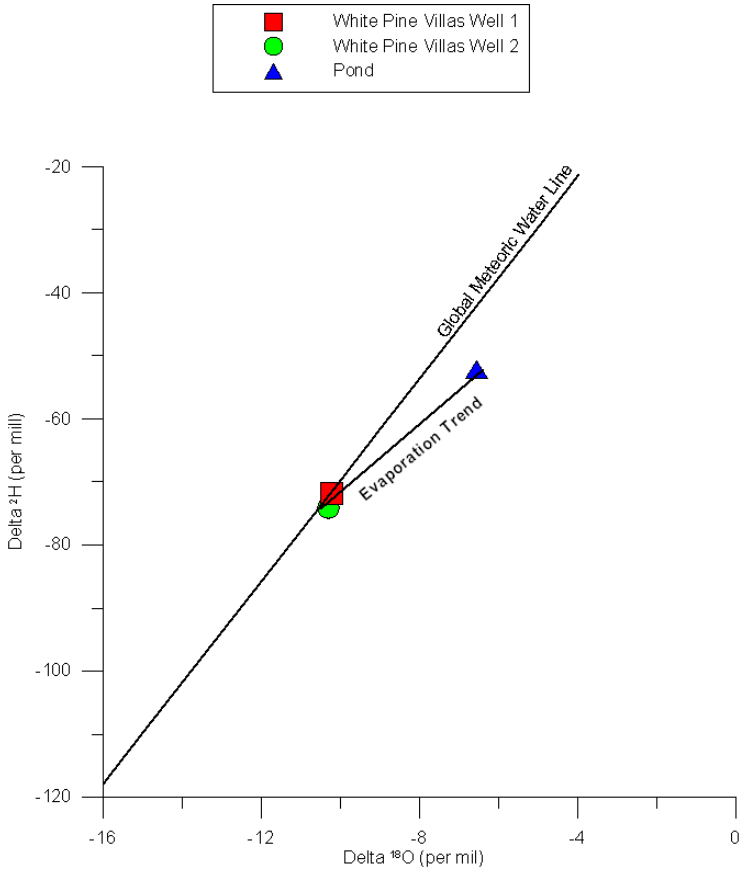


Figure 3. Stable isotope data.

References:

Alexander, S.C., Alexander, E.C., Jr., and Pfannkuch, H., 2005, *Hydrogeology of the St. Paul Campus*.

Minnesota Geological Survey, 2004, Geologic Atlas of Crow Wing County, *Plate 3 - Surficial Geology*.

Two Oil Exploration Borings Found and Sealed in Denmark Township, Washington County

Over the past two years, the Minnesota Department of Health (MDH) Well Management Section has been working to investigate information received from a retired well drilling contractor, who reported that he helped construct two "Oil Exploration Borings" on what was referred to as "the old Scharr farm site," in Denmark Township, Washington County, in 1952. The MDH did not have any records indicating that the borings were ever permanently sealed. The well contractor reported that he ran into trouble on the first boring, and had to terminate construction and move over and start a second boring approximately 20 feet away. He reported that the borings were 6-inches in diameter and that the deeper boring was approximately 900 feet deep. He also reported that oil was never found as a result of this project.

In Fall 2006, Mr. Patrick Sarafolean, MDH metro district hydrologist, contacted the property owners of the farm where the borings were reportedly located. The owners were quite surprised to hear that there might be oil exploration borings on their property. They claimed to know nothing of their existence or location. The property owners granted permission to search the area of the farm where the well contractor recalled drilling the borings.

First abandoned, unsealed oil exploration boring, as found by MDH in 2007, Denmark Township, Washington County, Minnesota

Second abandoned, unsealed oil exploration boring, as found by MDH in 2007, Denmark Township, Washington County, Minnesota.

In December 2006, Mr. Sarafolean conducted a search of the area with a magnetometer. (*Magnetometers are electronic devices that measure magnetic field strength and are valuable tools that can be used to locate buried wells and borings that are constructed with steel casings.*) It did not take long to find the borings. High magnetic readings, consistent with buried steel well casings, were detected in a brushy area in the middle of a corn field, where the farmer had piled up field stones. Two 6-inch diameter casings were found, approximately 20 feet apart. The casings were wide open, without any type of cap or cover on top of them. The casings were flush with the ground surface.

The MDH immediately hired a local, Minnesota licensed well contractor, to weld on casing extensions to each boring so that they terminated 12-inches above grade. The contractor also installed an overlapping, locking cap on each boring. Both borings were measured and each was found to be obstructed; one at a depth of 68 feet and the other at a depth of 89 feet. The MDH inspected the borings with a downhole, well inspection camera in March 2007 in an attempt to identify the obstructions. Sand, gravel, and grass were visible in both borings. Animal fur was also found on the camera when it was removed from one of the borings.

A newspaper article from August 1952 reported that "***Persons unknown - or almost unknown- have taken leases on the oil rights on several farms in the area…for 10 cents an acre for 10 years.***" Apparently, when oil was not discovered, these unknown persons walked away from the exploration borings leaving them flush with the ground surface and wide open. The current property owners felt that they should not be responsible for the cost to have the borings sealed because they were never told the borings were on the property when they bought it. They never used the borings and did not know they were there until the MDH brought them to their attention.

The MDH consulted with Mr. John Freitag, with the Washington County Department of Public Health, to determine if the county had any cost share money, or if he knew of any other funding sources to help pay to clear the obstructions from the borings and have them permanently sealed. Mr. Freitag was able to locate a matching grant through the Minnesota Board of Water and Soil Resources (BWSR).

In December 2007, Washington County sent out a request for bids to three Minnesota licensed well contractors, to clear the obstructions from the borings, clean them out to the bottom, collect water samples, and permanently seal them. Washington County selected Hartmann Well Company, from New Prague, Minnesota, to do the work.

Hartmann Well Company began drilling out the obstructions from the borings in early February 2008. They started work on the shallow boring and drilled out soil, rocks, and animal bones obstructing the boring intermittently between the depths of 68 feet and 140 feet. Mr. Brian Hartmann later remarked that "the odor that came from the boring when the obstructions were drilled out was terrible." Mr. Hartmann reported that this boring had 19 feet of 6-inch diameter casing and turned out to be 280 feet deep. Then they moved over and began drilling the obstructions out of the deeper boring. Again, they encountered soil, rocks, animal remains, and a terrible odor. There was 104 feet of 6-inch diameter casing in this boring and it was 850 feet deep.

Brian Hartmann drilling obstructions out of oil exploration boring, Denmark Township, Washington County, Minnesota. February 2008.

The MDH televised both borings with a downhole well inspection camera, and the Minnesota Geological Survey (MGS) gamma-logged both borings. The MGS reported the following geologic formations:

Interval	Geologic Formation
0-20’	Glacial Drift
20-96’	Prairie du Chien Limestone
96-192’	Jordan Sandstone
192-240’	St. Lawrence (confining layer)
240-405’	Franconia Sandstone
405-467’	Ironton-Galesville Sandstone
467-560’	Eau Claire (confining layer)
560-805+’	Mount Simon Sandstone

Both borings were constructed so that they were open to more than one aquifer. This type of construction made them both serious threats to groundwater quality due to the fact that if contaminants entered either boring, they could migrate downward, across confining layers, and pollute all of the aquifers that were interconnected by the borings.

Over the past couple years; groundwater contamination has been detected in southern Washington County. The contaminants of concern are a family of chemicals known as “Perfluorochemicals (PFCs).” They are heat and stain resistant chemicals that were used as coatings on nonstick cookware, stain resistant carpets and fabrics, film products, and in fire fighting foams. PFCs were manufactured by the 3M Company starting in the 1950s and wastes from the production process were placed in several local disposal sites. PFCs have since leached into the groundwater under the disposal sites, and have migrated away from the sites and have affected approximately 769 water-supply wells in southern Washington County. Knowing this, the MDH felt it was necessary to sample these borings before they were sealed. Nitrate-nitrogen was detected as high as 11 milligrams per liter (mg/L). Total coliform bacteria was detected in one of the borings. And one PFC chemical, Perfluorobutanoic Acid (PFBA) was detected in both borings, the highest detection being 0.6 micrograms per liter (ug/L). (The Health Based Value for PFBA has been set at 7.0 ug/L.)

After water sampling was completed, Hartmann Well Company sealed the shallow boring on February 27, 2008, with neat-cement grout. On February 28, 2008, they returned to the site, perforated the steel casing for the deeper boring, then sealed it with neat-cement grout. A total of 16 cubic yards of neat-cement grout was needed to permanently seal both borings. The total cost to clean out both borings, develop them so that water samples could be collected, perforate, and seal them was $14,037.50.

The MDH would like to take this opportunity to thank Washington County and the Minnesota Board of Water and Soil Resources for providing leadership, and grant money, that allowed these abandoned, oil exploration borings to be permanently sealed. Serious public health and safety threats have been eliminated with the permanent sealing of these borings!

Continuing Education Calendar

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 Group Supervisor, at 651/201-4581, or michael.convery@health.state.mn.us.

Earwigs in Your Well?

Earwigs are reddish brown to black insects that are about 1-inch long, ¼-inch wide, and have a ferocious-looking tail pincer. Earwigs have been found inside water wells in Wisconsin for the past decade or so and have recently been reported to have infested wells in Winona and Scott Counties in southeastern Minnesota. Earwigs are not directly harmful to humans but can introduce bacteria into wells or become a food source for bacteria if they die in a well.

Common Earwig - *Forficula auricularia*

Earwigs prefer living in cool, damp areas, under vegetation, woodpiles, or inside water-supply wells. Earwigs and other insects such as Asian beetles (which look similar to lady bugs), can carry bacteria, including coliform bacteria, and viruses into a well and contaminate the water.

In order to prevent earwigs, Asian beetles, and other insects from entering a well, the immediate area surrounding the well should be kept clear of debris and the well casing should be fitted with an insect-proof well cap. It is also important to assure that all access points through the well cap, including vents and the port for the pump wire, are sealed with a conduit, gasket, screen, or properly fitted plug.

Wells that have become infested with insects should be thoroughly disinfected with chlorine. If a well is severely infested with insects, it may be necessary to physically remove them from the well by bailing or airlifting with an air compressor. In addition, the pressure tank and water heater should be drained and flushed and all faucet aerators and sprayers and shower heads should be removed and cleaned.

Appointments to Advisory Council on Wells and Borings

On April 25, 2008, the commissioner of the Minnesota Department of Health (MDH) Sanne Magnan, M.D., Ph.D., appointed one new member and reappointed four members to the Advisory Council on Wells and Borings. The new well contractor member is Mr. Michael Steffl, Steffl Drilling and Pump, Inc., of Willmar, Minnesota. The representatives reappointed to the advisory council are:

- Mr. Dennis Born, Born Well Drilling, Inc., Waseca, Minnesota – well contractor representative.
- Mr. Roger McKeever, McKeever Well Drilling, Inc., Schroeder, Minnesota – well contractor representative.
- Mr. Greg Scallon, Braun Intertec Corp., Bloomington, Minnesota – monitoring well contractor representative.
- Mr. Brian Stangret, Midwest Elevator and Drilling, Inc., Waconia, Minnesota – elevator contractor representative.

The MDH has not received any applications for the vacant public member position. If you know any individual who may be interested in this vacancy, please contact Michael Convery at 651/201-4586.

Enforcement Summary

Signature on Records

Minnesota Statutes, Chapter 103I, and Minnesota Rules, Chapter 4725, require that a licensed or registered contractor must submit a verified report (construction or sealing) containing information specified by rules. The certified representative is responsible for the accuracy and completeness of the record. For this reason, the signature on the report must be the legal signature of the representative. When well records are signed by someone other than a certified representative, the Minnesota Department of Health (MDH) may take an administrative enforcement action against the licensee for providing false information, the Attorney General or the owner may begin a civil action for consumer fraud, and/or the county attorney may begin a criminal enforcement action (forgery) against the individual.

All Plastic Pipe is Not Created Equal

District staff from the MDH's Marshall District Office recently used a downhole video camera to inspect a well and confirm that it was improperly constructed with 4-inch diameter sewer pipe in violation of Minnesota Rules, part 4725.2550. During the inspection, it was also determined that the annular space surrounding the well casing was not filled with grout in violation of Minnesota Rules, part 4725.3050; and that the well was constructed with more than 10 feet of gravel pack above the top of the well screen in violation of Minnesota Rules, part 4725.2850.

The MDH assessed the well contractor a forgivable administrative penalty (fine) of $1,000, and required him to reconstruct the well. The MDH also assessed the contractor a nonforgivable penalty of $2,000 for the violations.

The well contractor has completed the corrective work, but has failed to pay the nonforgivable penalty. As a result, the well contractor no longer holds a valid Minnesota well contracting license.

Definition of Exploratory Boring Revised

The 2006 Legislature amended the definition of an exploratory boring to include apatite, diamond, graphite, and gemstones to the listing of minerals or resource materials targeted by exploratory drilling (see Minnesota Statutes, section 103I.005, subdivision 9). Other target minerals or materials include a number of metallic minerals, such as gold, iron, manganese, uranium; kaolin clay; and natural gas, oil, and petroleum. Exploratory borings can only be installed by a Minnesota Department of Health licensed explorer and are regulated under Minnesota Rules, Chapter 4727 - Explorers and Exploratory Borings.

Testing New Water-Supply Wells for Arsenic

The new well code rules will go into effect on August 4, 2008. The revised rules will require all well contractors licensed by the Minnesota Department of Health (MDH), and any other person constructing a water-supply well for personal use on their own property, to collect a water sample and have it tested for arsenic by an MDH "certified" laboratory. The testing results must be submitted to the MDH Well Management Section and to the well owner within 30 days of analysis. Laboratories may use any method approved under the federal Safe Drinking Water Act for arsenic analysis in drinking water as long as the laboratory's reporting limit is 2.0 micrograms per liter (ug/L) or lower.

It is recommended that water samples for arsenic should be collected after the pump has been installed in the well and after several well volumes of water have been pumped from the well. Water samples should not be collected during well development or air lifting. The water sample for arsenic may be collected and transported un-acidified and un-iced, as long as the sample is collected in a bottle approved for containment of metals, and is received and acidified by the laboratory within 14 days after the time of collection. The laboratory must then acidify and hold the sample for a minimum of 24 hours in the original sample bottle prior to analysis.

The MDH Well Management Section expects that over the next couple years, the results of the arsenic testing will generate considerable interest, especially when arsenic is found in areas where it was previously not reported. Approximately 50 percent of the wells tested in previous well testing studies in Minnesota have shown some level of arsenic; with approximately 15 percent of those wells exceeding the federal Maximum Contaminant Level (MCL) of 10 ug/L. (*The MCL is the enforceable drinking water standard for community public water systems and "non-transient," non-community public water supply systems.)* The MDH recommends that private well owners do not consume water with arsenic levels that exceed 10 ug/L.

Private well owners who have arsenic in their well water at levels exceeding 10 ug/L should consult with a water treatment professional to discuss water treatment options to remove the arsenic.

For more information on arsenic in drinking water, you may visit our website at:

www.health.state.mn.us/divs/eh/wells/waterquality/arsenic

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Obituaries

Raymond C. Baer, 84, Baer Well Drilling Company, Pemberton, Minnesota, passed away on May 11, 2008, at the Janesville Nursing Home.

Raymond was born on April 27, 1924, to Carl and Esther (Geisler) Baer in St. Mary's Township in Waseca County. He attended a Janesville country school, Trinity Lutheran School and Janesville High School. Ray went on to study agriculture in Minneapolis, Minnesota. Raymond married Gertrude E. Bluhm on October 26, 1943, at Immanuel Lutheran Church in Freedom Township. He lived most of his adult life in the Pemberton area and farmed in the Pemberton Waldorf area from 1960–2000. Raymond owned and operated Baer Well Drilling for over 60 years and the business currently is operated by second generation family members. Raymond was the Mayor of Pemberton for 35 years, served on the Waldorf-Pemberton School Board, held various offices on the Immanuel Lutheran Church Board, and was one of the original founders of the Pemberton Fire Department. Ray enjoyed spending time with family and friends. His favorite hobbies included fishing, hunting, playing cards, watching Band Wagon, and listening to polka music.

Raymond is survived by his wife Gertrude of Pemberton; his sons Dennis Baer and his special friend of Janesville; James (Linda) Baer of Pemberton; Douglas (Candi) Baer of Pemberton; his daughters Sharlou Quiram of Pemberton; Betty (Glen) Henderson of Westminster, Colorado; Heidi (Mark) Hummer of Pemberton; 21 grandchildren, 18 great grandchildren, many step grandchildren and step great grandchildren; one sister Bonita Clark of Dallas, Texas; one sister-in-law Bea Baer of Excelsior, Minnesota; and many nieces, great nieces, and nephews. Raymond was preceded in death by his parents, by his father-in-law and mother-in-law August and Lydia Bluhm, a brother George Baer, and his son-in-law Dale Quiram, and a daughter-in-law Janet Baer.

Donn P. Johnson, 53, of Johnson and Sons Well Drilling and Repair, passed away as the result of a tragic automobile accident in Soldotna, Alaska, on May 24, 2008.

Donn Phillip Johnson was born on June 27, 1954, in Springfield, Minnesota. His family moved to Minneapolis five days later and that is where he grew up. Donn's first job was as a gas station attendant with his best friend at the time, a German Shepherd named Sarge. Don later worked at Wagon Wheel Stables, a horse ranch where he met several of his lifelong friends. Donn joined the US Army at age 17 and served for three years, which included time spent in Germany. Donn Received his GED while in the Army. After returning from the service, Donn attended well drilling school at Staples, Minnesota, and went on to work for various well drilling companies before starting his own business, Johnson and Sons Well Drilling and Repair. His business was initially based in Minneapolis and he later moved it to Lakeville, Minnesota. In 2004, Donn moved to Cass Lake, Minnesota, to work for, and represent the Leech Lake Band of Ojibwe in their well construction, repair, and sealing endeavors. One of Donn's primary responsibilities was to teach and mentor band members so that they could become proficient in the well trade and become licensed contractors themselves.

Donn's favorite movie was the 1972 movie *Jeremiah Johnson*, starring Robert Redford. The movie was the inspiration for Donn's lifelong dream of moving to Alaska. Donn was on a 2 week vacation to Alaska, when he passed away. He had planned to move up to Alaska, later in 2008.

Donn is survived by his two sons, Tyler and Mason; two grandchildren; two brothers Mark and John; his twin sister Donna; his mother Eulalie; his nephew that he mentored, Jeremy; and many nieces and nephews.

Cost Share and Loan Availability for Well Construction, Repair, and Sealing

A list of cost-share grant or loan programs for well sealing, organized by county, is available from the Minnesota Department of Health Well Management Section Web site at: www.health.state.mn.us/divs/eh/wells/sealing/costshare.html. Preapproval is required to qualify for these programs so the arrangements for cost-share grants or loans must be made before a well is sealed. Please contact the program directly for application information. State law requires that a licensed well contractor do well sealing work.

Several federal and state loan and grant programs for well construction, repair, and sealing are listed on the Well Management Section Web site at: www.health.state.mn.us/divs/eh/wells/sealing/loans.html.

To find a licensed well contractor, look in the Yellow Pages under "Well Drilling and Services" or visit the MDH Well Management Section's Web site at: www.health.state.mn.us/divs/eh/wells/lwc, for a directory of currently licensed or registered contractors.

The information on cost share and loan availability for well construction, repair, and sealing is also available on a fact sheet. To request a printed copy, please contact the Well Management Section at: 651/201-4600 or 800/383-9808.

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