Protecting, maintaining and improving the health of all Minnesotans

MEMORANDUM

DATE: March 21, 2005

TO: Licensed and Registered Well Contractors
City of Minneapolis

FROM: Patricia A. Bloomgren, Director
Division of Environmental Health
P.O. Box 64975
St. Paul, Minnesota 55164-0975

SUBJECT: Notice of Designation of a Special Well Construction Area in the Vicinity of the CMC Heartland Lite Yard Site in Minneapolis, Minnesota

The Minnesota Department of Health (MDH) is designating a SPECIAL WELL CONSTRUCTION AREA (SWCA) which includes a portion of the city of Minneapolis, in Hennepin County, as shown on the attached map (Figure 1). The SWCA designation, which becomes effective April 1, 2005, applies to the construction, repair, and sealing of all wells and will remain in effect until further notice.

The former Reade Manufacturing Company five-acre site is located at the northwest intersection of Hiawatha Avenue and East 28th Street in Minneapolis. The site is currently owned by CMC Heartland and is identified as the CMC Heartland Lite Yard Site. The property is now vacant. Groundwater in the designated area is contaminated as a result of previous operations of Reade Manufacturing Company, which manufactured and packaged arsenical pesticides during 1938-63. U.S. Borax stored sodium arsenate at the site during 1963-68. Soils on the site were contaminated by these activities. Soils in the surrounding neighborhood, primarily to the northwest, have also been impacted by airborne deposition of dust blown from the site.

SITE HYDROGEOLOGY

The site geology consists of fill and coarse-grained terrace deposits to depths of 18-30 feet, underlain by 25-30 feet of glacial till. The uppermost bedrock under the site is the Platteville limestone, although the most southwestern corner of the site is underlain by a north-south trending bedrock valley, where the uppermost St. Peter sandstone is the first bedrock present, at a depth of 95 feet. Remnants of the Decorah shale may also be present above the Platteville limestone, but it is not continuous.

Groundwater flow in the unconsolidated deposits is to the west-southwest, estimated to be 34-81 feet per year. Groundwater flow in the St. Peter sandstone is to the northeast, estimated to be 150 feet per year. Flow in the St. Peter sandstone appears to be controlled by the Mississippi River.

Contamination is extensive in the site soils, with arsenic levels as high as 5000 mg/kg in the surface soils. One "hot spot" on the site showed high arsenic levels down to the groundwater, approximately 25 feet deep. The highest reported concentration in groundwater was 320,000 micrograms/liter in monitoring well MW-9. In the Fall of 2004, the Minnesota Department of Agriculture (MDA) excavated the "hot spot" to a depth of 27 feet (approximately the watertable), removing more than 18,000 cubic yards of contaminated soil. Additional excavation of shallow soil will occur in 2005 to ensure that there is 4 feet of clean soil covering the site.

The U.S. Environmental Protection Agency (U.S.EPA), MDA, MDH, and the city of Minneapolis have been working together to identify and remediate arsenic impacted areas off-site. This off-site contamination, stemming from past airborne deposition, does not appear to threaten groundwater quality. The U.S.EPA removed contaminated soil from 29 residential properties and refilled the excavations with clean soil. Additional soil sampling and cleanup of residential yards will be conducted by the U.S.EPA over the next few years.

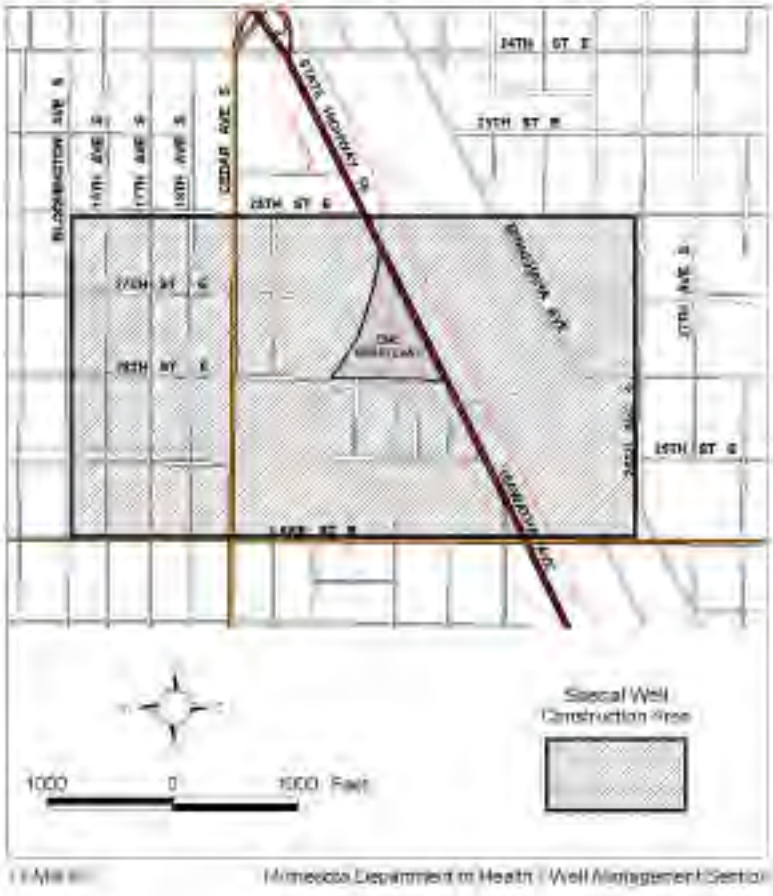
Groundwater contamination is found in the terrace deposits and glacial till under the site and extending approximately 1500 feet southwest of the site, to near the vicinity of 17th Avenue South and East 29th Street. Plume dimensions are approximately 1800 feet long and 600-800 feet wide. The plume is confined to the terrace and glacial till deposits. Groundwater quality will be monitored by the MDA from the existing monitoring well network.

There are concerns for use of water for potable uses as well as other uses that may involve contact or incidental consumption, such as for garden/lawn irrigation, filling swimming pools, and similar uses. Arsenic concentrations in these aquifers may be at levels that can produce severe acute health effects.

BOUNDARIES OF THE SPECIAL WELL CONSTRUCTION AREA

The location of the SWCA is shown on the attached map (Figure 1). This area includes the area bounded by East 26th Street on the north, 26th Avenue on the east, Lake Street on the south, and Bloomington Avenue South on the west, within the city of Minneapolis. This area includes the southeast quartile of Section 35 and the southwest quartile of Section 36 of Township 29, Range 24, Hennepin County.

Figure 1. Special Well Construction Area
CMC Heartland Lite Yard Site



REQUIREMENTS IN THE SPECIAL WELL CONSTRUCTION AREA

1. All wells regulated by the MDH and the city of Minneapolis are subject to the requirements of this SWCA. These include water-supply wells (domestic, public, irrigation, commercial/ industrial, heating/cooling, remedial), monitoring wells, and dewatering wells. Permit applications and plans for water-supply wells and monitoring wells must be submitted to the city of Minneapolis, which will then consult with MDH. Notifications and plans for dewatering wells must be submitted to the MDH, which will then consult with the city of Minneapolis. Both the city of Minneapolis and the MDH will consult with the MDA.

2. Construction of a new well, or modification of the depth of an existing well, may not take place until plans have been reviewed and approved. In addition to the normally required notification or permit application, the plan must include the following information: street address; well depth; casing type, diameter, and depth; construction method, including grout materials and grout method; pumping rate; and well use.

3. Special well construction and/or monitoring requirements may be imposed depending on well location and use in order to protect public health and groundwater quality and to prevent contaminant migration. These requirements will be based on available knowledge of groundwater contamination and movement near the well site and the proposed use and pumping rate of the well.

4. Water-supply wells will not be approved for completion in the terrace deposits, glacial drift, Platteville limestone, or St. Peter sandstone in the SWCA for any consumptive uses or other uses involving human contact, including drinking, cooking, bathing, manufacturing or processing of food, drink, or pharmaceuticals, or to supply water to plumbing fixtures accessible to humans.

5. For all water-supply wells (including remedial wells), dewatering wells, and monitoring wells, a sampling plan and schedule to monitor arsenic concentrations must be submitted and approved prior to start of well construction. Approvals must be obtained from the appropriate local and/or state agencies for any discharge of water from these wells.

6. Well construction or reconstruction will not be approved if the MDH, in consultation with the MDA, concludes that the proposed construction or reconstruction may interfere with remediation efforts, cause further spread of contamination, or result in human exposure to contaminants at concentrations exceeding U.S.EPA Maximum Contaminant Levels (MCLs) or Minnesota Health Risk Limits (HRLs).

7. The permanent sealing of a well completed in bedrock may not take place until after the MDH and the city of Minneapolis (water-supply wells and monitoring wells) have reviewed and approved the plans for the proposed sealing. In addition to the required notification or permit, the plan must include the following information: street address; original well depth; current well depth; casing type(s), diameter(s), depth(s); methods for identifying and sealing any open annular space; methods for identifying and removing any obstructions; and grout materials and methods.

PERSONS TO CONTACT:

For additional information regarding this Special Well Construction Area, please contact Michael Convery of the MDH at 651/215-0818.

Well Construction for water-supply and monitoring wells must be submitted to:

City of Minneapolis
Alison Fong (water-supply and monitoring wells only)
City of Minneapolis - Environmental Management
250 South Fourth Street, Room 414
Minneapolis, Minnesota 55415
612/673-3179 (office)
alison.fong@ci.minneapolis.mn.us

Minnesota Department of Health
Douglas Edson (water-supply, monitoring wells, and dewatering wells)
Minnesota Department of Health
Well Management Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975
651/643-2109
doug.edson@health.state.mn.us

For information regarding health effects, please contact:

Daniel Peña
Minnesota Department of Health
Site Assessment and Consultation Unit
P.O. Box 64975
St. Paul, Minnesota 55164-0975
651/215-0774
daniel.pena@state.mn.us

For information regarding the investigation, monitoring, and remediation of the CMC Heartland Lite Yard Site and of the surrounding neighborhood, please contact:

Cathy Villas-Horns/Robert Anderson
Minnesota Department of Agriculture
Agronomy and Plant Protection Division
90 West Plato Boulevard
St. Paul, Minnesota 55107-2094
651/297-5293 or 651/297-5731
cathy.villas-horns@state.mn.us or robert.anderson@mda.state.mn.us

REFERENCES

Exponent, 2004, Groundwater Modeling Report: CMC Heartland Partners, Lite Yard Site, Minneapolis, Minnesota.

Mackedanz, R., Villas-Horns, C., and Anderson R., 2004, Request for Special Well Construction Area for the Arsenic Contamination in South Minneapolis, 19p.

Peer Engineering, 2004, Annual Groundwater Monitoring Report - Lite Yard Property, CMC Heartland Properties, 133p.

PAB:MPC:jmw
cc: Advisory Council on Wells and Borings
Cathy Villas-Horns, MDA
Robert Anderson, MDA