

Minutes: Submerged Closed Loop Heat Exchangers Advisory Committee

Date June 2, 2025, 1:00 – 3:30 p.m.

Location Hybrid Teams Meeting; Minnesota Department of Health, Freeman Building, 625 Robert St. N., Saint Paul, MN 55164

Attendees **In Person:** Anneka Munsell (alternate - Professional Association), Danny Nubbe (Certified Representative), David Henrich (Advisory Council on Wells and Borings), Jeremy McConkey (Professional Association), Jim Lubratt (Geothermal Professional), Ryan SanCartier (Professional Association), Willy Miley (Geothermal Professional)

Virtual: Don VanKeulen (Delegated Well Program), Dave Traut (Certified Representative), Izzy Ballet (alternate - City Representative), Jay Egg (Geothermal Professional), Jeff Luehrs (Delegated Well Program), Todd Bloomstrom (City Representative)

MDH: Jon Olson (WMS Technical Unit Supervisor), Jennifer Weier (WMS Hydrologist Supervisor), Mark Malmanger (WMS Hydrologist Supervisor), Avery Guertin (WMS Regulatory Coordinator), Kara Dennis (WMS Hydrologist)

Acronyms and Terms

IMC – International Mechanical Code

SCLHE – Submerged Closed Loop Heat Exchangers

WMS – Well Management Section

Welcome and updates

Members briefly introduced themselves. Izzy Ballet is serving as an alternate for Luke Hollenkamp, representing a city. Anneka Munsell is serving as an alternate for Aaron Meyer, representing a professional association.

Guertin shared that the rule addressing the permitting and installation of Submerged Closed Loop Heat Exchangers (SCLHE) was adopted and took effect on May 26, 2025.

Guertin provided a summary of the rulemaking options for a potential ‘second phase’ approach for SCLHE. Minnesota Statutes, chapter 103I, provides authority to utilize an expedited process to amend

the adopted rules. The notice must be published in the State Register by December 31, 2025. If an expedited rulemaking process is selected, it will apply only to SCLHE and cannot be extended to other topics. However, a regular rulemaking process may be used to address SCLHE and other subjects. MDH could choose to define a more broad or narrow approach to this type of rulemaking. The magnitude of the scoping of a rulemaking project could affect the timing of when a rule may be adopted.

If there is an intention to modify Minnesota Rules, part 4725, affecting all wells and borings, that process must follow regular rulemaking procedures. The regular process allows for defining the scope of rulemaking changes.

Miley advocated for using the authorized expedited process to make revision to the adopted SCLHE rule.

SCLHE variance data

Guertin provided an overview of the SCLHE system permits and variance data. Approximately 35% of these permits had an approved variance from rule parts 4725.2750, 4725.3050, and or 4725.4450.

Committee member discussion

Topic: SCLHE system application requirements

Miley proposed removing Minnesota Rules, Part 4725.1834, subpart 1(B) from the current rule language, stating that requiring Minnesota unique well numbers for proposed wells in a SCLHE system permit would delay the application process. Henrich added that applicants often do not yet know who the well contractor will be at the time of permit application. Weier clarified that the existing rule language does not mandate submission of Minnesota unique well numbers at the time of permit application—the numbers must be provided prior to construction. Miley asserted that the rule language is misleading, while Henrich noted that it simply adds an extra communication step.

Weier explained that MDH requires notification before construction of a water-supply well associated with an SCLHE system. Miley identified an inconsistency between requirements for existing wells and those constructed after permit issuance. Weier clarified that for similar permits (like Groundwater Thermal Exchange Device permits) there is a permit condition requiring MDH notification before well construction. Henrich emphasized the need for process consistency, while Weier assured that this notification allows for inspection but does not delay projects.

Miley questioned why water-supply well construction is relevant to the permit process, since the SCLHE system permit is considered a separate component. Weier clarified that SCLHE system permit application review includes examining well records and proposed well information to verify depth and aquifer, so water-supply well construction is relevant to the permit. The notice of unique well numbers by the system owner is needed to connect water-supply wells to the SCLHE permit. Miley argued that providing the unique numbers is requiring two notifications and places an undue burden on applicants, suggesting that notification should occur after wells are constructed.

Weier stressed the need for an enforceable timeframe to connect water-supply wells with the SCLHE permit. Munsell asked if providing the unique numbers could be as simple as an onsite phone call before construction, and Weier confirmed that this approach would be acceptable. Weier emphasized the need for a mechanism to link water-supply wells to the SCLHE permit.

Topic: Potential for dual use or conversion to another type of use

Olson stated that the expedited rulemaking process cannot be applied to well conversion. Olson clarified that the variance process remains an available option for potential well conversion cases. Henrich advocated for a dual-use option for SCLHE wells that do not meet rule requirements to also be used as non-potable wells, emphasizing the potential benefits of such an approach.

Topic: Screen Configurations – grouting requirements

Weier provided an overview of grout materials requested and approved for SCLHE well screen configurations allowed via variance. The variances have allowed bentonite chips or pellets in the annular space surrounding the blank between screen sections, in addition to approved bentonite and cement grouts. These approvals were made in response to concerns from licensed well contractors about cement grout plugging screens.

Henrich clarified that the material filling the annular space around the blank section should be considered backfill, not grout. Grout is used to separate aquifers, whereas these blank sections do not separate different aquifers. He noted cement migration observed in downhole well video and images, with cement reaching the upper screen due to insufficient density for accurate placement. Traut agreed, suggesting that coated bentonite pellets could be a better solution, offering easier placement.

Weier asked for committee input on the best way to place bentonite chips or pellets without bridging, given the variable blank section lengths ranging from 10 to 65 feet in variance requests received so far. Henrich recommended bentonite pellets, which he noted could be easily placed using a tremie line and would still require a seal for proper well function. Nubbe suggested using bentonite grout, as it sets quickly. Miley noted that this is not about aquifer protection, since the screens remain within the same aquifer, meaning bridging with bentonite chips or pellets would not be an issue. Weier noted that it would be an issue for SCLHE system efficiency, though, if the annular space surrounding the blank section were open. In addition, chips or pellets could bridge above the screens during placement, causing aquifer protection issues.

Luehrs expressed no concerns about the potential change and supported the use of bentonite pellets. Malmanger emphasized that bridging should not occur above the upper screen. Traut agreed that bentonite grout or pellets would be a good solution, though he was less in favor of using bentonite chips. Henrich added that if bentonite plugs a screen, it can be washed away, unlike cement grout.

Topic: Materials – coupling

Miley noted that geothermal systems with collapsible pipes do not meet International Mechanical Code (IMC) requirements and would require a variance from Minnesota Rules. Henrich emphasized the difficulty of applying existing standards to a small industry with unique and novel applications. He suggested that performance standards exist for components not meeting IMC, American Society for Testing and Materials, or National Sanitation Foundation standards.

McConkey stated that IMC standards are used for underground geothermal piping. Weier highlighted that the rulemaking process included extensive discussions with the Department of Labor and Industry. McConkey added that new materials can be approved if they demonstrate superior performance.

Topic: Isolation distances

Miley proposed reducing minimum isolation distances in Minnesota Rules, part 4725.4450 by half for SCLHE wells meeting heightened construction standards:

- Driven wells must have 100 feet of casing.
- Grouted/annular space wells require at least 75 feet of casing in unconsolidated materials, if 100 feet of unconsolidated material is present, and the casing must extend at least 5 feet into bedrock.

Miley stated that upgraded well construction mitigates contamination risks. Nubbe noted that even cement-grouted wells can sometimes be susceptible to contamination. Luehrs questioned whether the reduced isolation distance would apply to non-pressure-tested sewer lines and expressed opposition to a blanket reduction in isolation distances.

Olson pointed out that only one variance has been granted for an SCLHE well isolation distance, suggesting that the variance process may be more appropriate for these rare cases after Minnesota Statutes, section 103I.210, subdivision 2, paragraph g, sunsets. Miley countered that while only one variance has been submitted, determining well locations that meet setback distances is a common challenge.

Luehrs noted that many residential wells are full-length neat-cement grouted, and variances are not granted unless they comply with Well Code location requirements. Traut added that multiple-cased wells with cement grout generally offer greater protection than single-cased wells.

Olson stated that heightened standards for water-supply wells fall outside the scope of the expedited rulemaking process, but SCLHE isolation distances remain within scope. Henrich emphasized the effectiveness of modern grouting compared to pre-code wells, citing lower nitrate levels in newly constructed water-supply wells in southeastern Minnesota. He advocated for reducing isolation standards by half.

Weier stressed the importance of making the rule change simple for both regulators and well contractors, requesting clarification on protections for driven casing wells. SanCartier urged a smaller-

scale approach focused on SCLHE wells, warning that the optics of reducing isolation distances could spark public opposition, as people generally prefer contamination sources to be kept farther from water-supply wells.

Miley argued that environmental wells do not have isolation distance requirements because they need to be close to contamination sources for monitoring. Munsell countered that most environmental wells, except remedial wells, do not require significant pumping, whereas SCLHE wells pump far more water. Miley stated that remedial wells used for groundwater pump-and-treat systems do have high pumping rates. Weier agreed that environmental wells do not have isolation distances because by design they are used to monitor and remediate contamination. She noted that they have additional construction requirements that are not in place for water-supply wells, specifically a requirement for full-length grout. Weier also pointed out that remedial wells in groundwater pump-and-treat systems are designed to pull contaminated groundwater toward the well and remove contaminated water from an aquifer, while an SCLHE well could potentially move contamination in an aquifer.

Henrich stated that most contamination sources tend to be relatively shallow and expressed hope that more full-length grouted wells will be constructed in the future.

Open Forum

There were no members of the public in attendance of this meeting.

Adjournment

Next meeting: TBD

6/2/2025

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