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# Memorandum

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| To | Eric Hjellen, Madison Metropolitan Sewerage District<br>Lisa Coleman, Madison Metropolitan Sewerage District | Page | 1 |
| CC | Tim Barbeau, raSmith; Chris Tippery, raSmith; Rick Eilertson, AECOM | | |
| Subject | Private Well Review for the Lower Badger Mill Creek Interceptor Project, Phase 6, Town of Verona, Wisconsin – AECOM Project No. 60694467 | | |
| From | Leo Linnemanstons, PG, AECOM | | |
| Date | June 4, 2024 (updated 7/3/2024)[1] | | |

AECOM is presenting this technical memorandum of potential concerns or impacts for nearby private wells that may be affected by construction activities along the Phase 6 Segment of the Lower Badger Mill Creek Interceptor (LBMCI) project.

**Background Review**

The project team gathered and reviewed available subsurface information along the planned Phase 5 and 6 LBMCI corridors from the following sources: Wisconsin Geologic and Natural History Survey (WGNHS), Wisconsin Department of Natural Resources (WDNR), United States Geologic Survey (USGS), Dane County, and the Cities of Madison and Verona. The information included published regional geology and hydrogeology, public and private well records, geotechnical borings, and geophysical surveys. The project team prepared a 3D visualization model of the area along the interceptor corridor using the available data sources to illustrate subsurface site conditions, private wells, and sewer interceptor. Significant examination was focused on the karst formation because of the potential impact on the sewer design and on private wells. Based on the review of the site and project information, the project team formed the following conclusions:

- **PHASE 5** – The Phase 5 corridor was not anticipated to have potential issues with karst features underlying the selected interceptor route. Most of the Phase 5 corridor traverses through undeveloped agricultural land; therefore, no private wells were identified that were of concern for impacts from construction of the interceptor. Although bedrock was not expected to be encountered during construction of the interceptor, saturated groundwater conditions were expected at depths above the anticipated invert elevation of the interceptor that required construction dewatering.

[1] The original memorandum (dated June 4, 2024) was updated to include well construction information (Well ID: AT761) provided by the private well owner, which was used to update the private well classification.

- **PHASE 6** – Karst features were identified near the proposed Phase 6 alignment. Almost half of the Phase 6 corridor traverses along a narrow, steep, flood-prone ravine where previous geotechnical borings (performed in 2005) indicated the presence of bedrock approaching the planned invert elevation of the interceptor. The upland area above the ravine is occupied by residential properties that have private water supply wells and septic systems. The available well construction forms indicate the presence of karst features in the shallow bedrock underlying the unconsolidated glacial soils. Using the currently available geotechnical exploration results, the project team is designing the interceptor to avoid bedrock as much as possible during construction; however, the vertical proximity to karst features may also present construction challenges (e.g. subsurface voids, sinkholes, water impacts, etc.).

  The only specific karst feature identified at the surface presently is Richardson's Cave, which is located approximately 235 feet from the proposed interceptor alignment. Based on the location of private wells on properties along the interceptor alignment, these wells are generally not expected to be impacted by construction of the interceptor. However, the presence of karst features may result in unintended and unanticipated impacts if shallow interconnected fractures and solution cavities in the bedrock intersect a private well. Mitigation (e.g., well replacement) may be necessary if construction activities result in a permanent unacceptable impact to a private well along the corridor.

Based on these findings, special attention and planning along Phase 6 is being undertaken by the project team to address potential issues identified for construction adjacent to the waterway and over the underlying karst formation, especially given the proximity to private wells along the corridor.

**Regional Geology and Hydrogeology**

Based on published reports and well construction forms, the geology in the project area consists of a sequence of sedimentary sandstones, dolomites, and shales of Cambrian and Ordovician ages that are overlain by glacial and fluvial deposits of Quaternary age. These sedimentary rocks are underlain by crystalline igneous and metamorphic rocks of Precambrian age. Dolomite of the Prairie du Chien Group of Ordovician age was deposited on the rocks of Cambrian age.

In the project area above the sedimentary rocks, the unconsolidated formation consists of glacial and fluvial deposits. The largest feature is the Johnstown End Moraine that forms a ridge parallel to Shady Oak Lane and that has a creek valley cutting through the area. The moraine deposit provides a deposit of glacial till on which a number of homes are constructed.

Of keen interest for the project is the occurrence of karst features that are associated with the dissolution of carbonate rocks like limestone or dolomite. In Dane County there are three carbonate bedrock units, including the Prairie du Chien Group. Karst areas are characterized by distinctive landforms (like springs, caves, sinkholes) and a unique hydrogeology caused by the interconnected network of dissolution features, which results in aquifers that are highly productive but extremely vulnerable to contamination. Most major karst features in Dane County such as Richardson's Cave and Cave of the Mounds are found in the Sinnipee and Prairie du Chien groups.

Currently, homes in the project area have private wells and septic systems. Because of the occurrence of shallow bedrock, the glacial till is not used for water supply, and private wells are cased through the entire unconsolidated formation. Therefore, groundwater for household use is obtained from the aforementioned bedrock formations. These private wells are classified into one of two groups based on the specific rock formation from which water is produced, as follows:

- Shallow karst wells: These wells were generally installed before the 1990s. Their well casings usually only extend to the top of the bedrock surface or to the minimum required depth at the time of construction (often less than 100 feet below ground surface). These wells have open boreholes in the karst formation (Prairie du Chien Group) and some are already known to have a history of water quality issues.

- Deep sandstone wells: These wells were generally installed after the 1990s. Their well casings usually extend through the karst bedrock and into the underlying sandstone formation (Trempealeau Formation) at a depth of greater than 180 feet below ground surface. These wells have open boreholes in the sandstone formations to depths greater than 200 feet below ground surface and generally have not been found to have water quality issues. These newer wells (some as replacements) were installed to deeper depths in recognition of the susceptibility to contamination in the overlying shallow karst formation.

WDNR and WGNHS have conducted and authored several studies addressing private well susceptibility to water quality issues. WGNHS published the Southwest Wisconsin Groundwater and Geology Study (SWIGG) report that explains the understanding of groundwater quality in southwest Wisconsin and how local hydrogeology and well construction characteristics affect groundwater quality. The SWIGG presentation provides an excellent overview of how well construction and types of geologic conditions can result in water quality issues for private well owners. In addition, WDNR Bureau of Drinking Water and Groundwater provides a large number of guidance documents and publications that inform private well owners of potential water quality risks and best practices for well maintenance. WDNR also regulates well construction contractors and provides them with information such as special well casing depths in specific areas to avoid susceptibility to contaminants.

**Potential Private Well Risks**

Based on experience with similar projects and concerns expressed by private well owners, the project team developed the following list of potential risks:

Construction-related risks (short-term, during construction):

1. Heavy construction/excavation: Heavy equipment can cause ground vibrations (to a lesser degree than blasting) which may cause temporary cloudy water. In addition, open excavations remove material that currently separates surface water from the karst formation where some nearby private wells may have open boreholes (i.e., uncased).
2. Construction Water Management: While the excavations are open, surface water from precipitation or flooding of the creek (or conveyed in the excavation or along the granular backfill of the installed pipe) poses a risk to impacting groundwater and nearby wells. If bedrock excavation is necessary, this concern becomes elevated.
3. Blasting: Blasting has the potential to temporarily disturb fine-grained sediments in nearby (and occasionally distant) wells because of their associated ground vibrations (similar to shaking a home's foundation). This impact is temporary and passes quickly. Another potential impact is additional fracturing of the rock that can lead to greater surface water infiltration, which can lead to a permanent impact in nearby wells.
4. Stream erosion over the karst: Either as a result of the ground disturbance from construction or from greater runoff from upstream development, stream erosion in the ravine may cause issues similar to open excavation. The erosion of material decreases the separation between the ground surface and the underlying bedrock, which may allow surface water to more quickly infiltrate into the karst formation.

Existing risks (long-term, regardless of construction):

5. Surface water entering Richardson's Cave: Residents reported this type of event has happened in the past, and a berm has been constructed to reduce the probability of flood waters entering the cave. Because the cave is a feature within the same karst formation that several of the wells have open boreholes, surface water entering the cave can impact the formation and wells directly. Given that the proposed alignment is located more than 200 feet from the cave and berm, construction activities are not expected to have any impact at this location. Regardless of the construction project, a previous modeling study indicated that a storm exceeding the 10-year, 24-hour design storm event (10% chance) would currently lead to overtopping of the berm allowing floodwater to enter the cave entrance.
6. Septic systems: Septic systems are an existing risk for private well owners. Septic fields discharge water that infiltrates into the underlying ground. Wells with open boreholes in the karst formation are especially at risk. The WDNR recognizes the potential for groundwater contamination in shallow karst formations and has special well casing requirements for new wells in areas where those situations are identified.
7. Agricultural fertilization and land spreading: Over-application of fertilizer or land spreading of manure, sludge, or sediment can impact underlying groundwater, which can impact nearby wells.
8. Urban Development: New development can bring additional potential contamination sources (e.g. gas stations, dry cleaners, etc.) to the area and lead to reduced infiltration and increased runoff. Additional surface water runoff generated by new development may result in changes to stormwater flows; however, current WDNR and local stormwater standards are in place to help address pollutant loading and peak stormwater runoff.

**Private Well Identification and Screening**

To address concerns for private wells within the project area, the project team reviewed available information to identify private wells that could be impacted by construction along the project corridor. Private wells for additional consideration were identified using the following criteria:

- Private wells located within 500 ft of the interceptor alignment (i.e. total 1,000-foot wide corridor). have been identified (19 private wells). This distance was selected based on the WDNR calculated fixed radius (CFR) for transient non-community wells of 200 feet and applying a safety factor of 150% (2.5x). For reference, a transient non-community well serves at least 25 people at least 60 days of the year, such as churches, restaurants, and hotels. Because private wells typically serve significantly fewer people (albeit on a daily basis), this assumption was considered conservative. The following information was used to determine if a well location is present in the corridor:
    - Available existing well construction record from WDNR database, and
    - Identified residential home assuming a private well for water supply. The project team reached out to homeowners to attempt to confirm well construction information.

Using this information, a total of 19 private wells were identified within the 1,000-foot corridor. Based on the available well construction information, these private wells were classified as follows:

- Shallow karst wells (10 private wells): Private wells with casing only to the top of bedrock or with open boreholes in the karst formation. These wells are at higher risk for impacts from the ground surface because of the karst formation.

- Deep sandstone wells (7 private wells): Private wells with casing through the karst formation and open only in the underlying sandstone formation. These wells are at lower risk for impacts because of the greater vertical separation. The casing through the karst formation affords protection from impacts that may affect karst wells.
- Unknown construction wells (2 private wells): Private wells that are known to exist but that no construction information is available.

**Figure 1** shows the location of the shallow karst formation wells and the deep sandstone wells identified within the project corridor. **Figures 2A** and **2B** are detailed location maps that include the property owner names and well record identification. **Table 1** lists the private wells that were identified in the project corridor and summarizes their construction information.

**Private Well Monitoring**

Based on their proximity to the project, seven of the nine private wells with open boreholes in the karst formation are recommended to participate in water quality monitoring to identify water quality concerns before, during, and after construction activities. In addition, one of the unknown wells is recommended to be monitored because of its close proximity (~200 ft) to the project. The other two karst wells and two unknown wells are located at greater distances or hydraulically upgradient of the closer wells that are planned for monitoring. Because potential impacts would be discovered in the closer wells first, monitoring of these other two karst and two unknown wells is not considered necessary at this time. Finally, monitoring of the seven private wells located in the sandstone aquifer is also not considered necessary at this time because of their low risk for impacts given their steel casing through the karst formation and vertical separation from construction activities.

In addition, several of the private wells identified in the project corridor have already been participating in a water quality monitoring program with MMSD. A total of seven of the 19 private wells in the project corridor have been monitored previously, including 5 of the eight private wells recommended for water quality monitoring during the current project. The existing monitoring data from these private wells can be summarized as follows:

| Well Aquifer | Number of Wells Monitored | Years Monitored | Average Chloride Concentration (ppm) | Average Nitrate Concentration (ppm) | Number of Coliform Detections | Number of Fecal Coliform Detections |
|---|---|---|---|---|---|---|
| Shallow Karst | 5 | 2006-2023 (18 years) | 31.8 | 1.78 | 30 of 84 | 20 of 47 |
| Deep Sandstone | 2 | | 4.86 | 0.45 | 4 of 25 | 0 of 8 |

Note: Not all of the private wells were sampled every year, and a few private wells were sampled more than once in a given year.

These results suggest that all seven of the private wells in the project corridor have already had some indication of a water quality issue in the past 18 years. Most prevalent is the occurrence of fecal coliform in the shallow karst wells. In addition, elevated chloride concentrations (greater than 10 ppm) may also indicate a potential existing issue.

Water quality samples are recommended to be collected as follows:

Pre-construction: Two events are recommended once prior to September 1, 2024 and again prior to the start of construction to establish a baseline for existing water quality. Samples are not necessary for private wells that are already monitored by MMSD.
During construction: At least one sample is recommended to be collected for the following reasons:

- A well owner notifies the project team of an unexplained change in water quality,
- A weather event causes flooding of the excavation within 500 ft of a monitored private well, or
- Excavation reveals a large karst feature (e.g. open sink hole).

Post-construction: Two events are recommended after the completion of construction in the following year, separated by approximately 3 to 6 months, to confirm no lingering effects to water quality.

Water quality samples are proposed to be tested for the following parameters: coliform bacteria, nitrate, chloride, and total suspended solids (TSS). These parameters were selected to provide an indication if water quality may be affected by surface or near-surface contamination.

- Coliform bacteria are naturally occurring in soil and are found on vegetation and in surface waters. Uncontaminated groundwater will not have coliform bacteria, so its presence may indicate an impact from the surface. Bacterial contamination is likely from a local source and is often associated with poorly constructed or located wells. The presence of Escherichia coli (E. coli) indicates fecal contamination of the water. The presence of fecal coliform bacteria may indicate possible contamination from septic systems or manure.
- Nitrate is naturally found in plants and is often consumed as part of a healthy diet. Water containing less than 2 milligrams per liter (mg/L) of nitrate is generally not considered a health concern. Significantly higher nitrate concentrations can indicate that the drinking water has been contaminated and may pose a serious health concern. Common sources of nitrate include nitrogen fertilizers, manure, septic systems and sewage treatment practices. The maximum contaminant level (MCL), set by USEPA, is the level of a contaminant at which no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety. The USEPA MCL for nitrate-nitrogen is 10 mg/L – the same as Wisconsin's enforcement standard (ES). In Wisconsin, a preventive action limit (PAL) of 2 mg/L has also been established to serve as an indicator of potential groundwater contamination problems.
- Chloride is naturally present in surface water, groundwater, geologic formations, and animal waste streams. Chloride at levels greater than 10 mg/L usually indicates contamination by de-icers, onsite wastewater treatment systems, fertilizer, animal waste, or other wastes. Chloride is not toxic in concentrations typically found in groundwater, but some people can detect a salty taste at 250 mg/L. Unlike other contaminants in drinking water, this element can be detected at levels well below the point at which it can pose a direct health risk.
- Total Suspended Solids (TSS) or turbidity is commonly used as an indicator for the general condition of the drinking water. Turbidity in water is caused by suspended matter such as clay, silt, and organic matter that interferes with the passage of light through the water (American Public Health Association, 1998). Unlike many contaminants in drinking water, the turbidity itself is not potentially hazardous. An elevated water turbidity is used as an indicator of a water-quality-related problem that could include the presence of settleable and non-

settable materials like sand, silt, or clay, iron, manganese, rust, biofilms, chemical scale or precipitates, or corrosion by-products.

The analyses are proposed to be performed by Madison Metropolitan Sewerage District's water quality laboratory for a rapid and consistent screening of water quality during the project. Water quality results will be compared to State of Wisconsin drinking water standards and will be reported to each private well owner. If an exceedance of a drinking water standard is detected during construction, an additional sample will be collected and submitted to a State of Wisconsin drinking water certified laboratory (e.g. State Laboratory of Hygiene) for confirmation.

**Contingency Plan for Private Wells**

In the event that confirmation testing (i.e. State of Wisconsin certified laboratory) indicates that water quality is impacted in a private well, the following contingencies and triggers will be planned:

Cloudy (turbid) water or elevated TSS results: Provide bottled water for drinking and cooking. Take water quality sample to confirm no other impacts. Turbid water alone is not generally a health concern, and it may only be a temporary condition. Perform daily extended purging of the well to flush suspended solids until turbidity is no longer an issue.

Water quality testing indicates impacts: Provide bottled water for drinking and cooking. Assess if water is safe for other household uses (e.g. washing, watering, flushing, etc.). Determine if source of impact can be corrected and take necessary action, if warranted.

Well failure due to LBMCI construction: Provide bottled water for drinking and cooking. A private well will be considered failing if water of sufficient quality or quantity cannot be produced to provide for safe use by the owner either directly or through treatment. If the well failure is due to construction activities, provide funding for the installation of a replacement well. Determine appropriate replacement cost sharing with well owner based on original well construction, replacement well construction, and type of failure experienced.

Other contingencies may be developed or implemented depending on the specific condition that needs to be addressed. The overall goal is that an affected well owner be provided safe drinking water until the nature of the condition that is affecting the well is understood and remedied.

**Information Sources**

The following sources of information were used:

- Wisconsin Department of Natural Resources (WDNR) Redevelopment and Remediation Registry of Closed and Contaminated Sites, accessed on multiple dates; https://dnrmaps.wi.gov/H5/?viewer=rrsites
- WDNR Bureau of Redevelopment and Remediation Tracking System (BRRTS), accessed on multiple dates; https://dnr.wi.gov/botw/SetUpSearchAction.do
- WDNR Drinking Water & Groundwater Program webpage and publications; accessed on multiple dates; https://dnr.wisconsin.gov/topic/Wells

- WDNR Well Construction Information System accessed on multiple dates; https://dnr.wi.gov/WellConstructionSearch/#!/PublicSearch/Index
- WDNR Drinking Water System Well Construction Report for Wells Constructed Since 1987 for Private Home Owners, accessed on multiple dates, https://prodoasext.dnr.wi.gov/inter1/watr$.startup
- WDNR Surface Water Data Viewer (surface water and wetland area identification), accessed on multiple dates; https://dnrmaps.wi.gov/H5/?Viewer=SWDV
- WDNR State Natural Areas Interactive Map used to identify areas with natural springs, accessed on multiple dates; https://dnr.wisconsin.gov/topic/Lands/NaturalAreas/county.html with https://dnrmaps.wi.gov/H5/?Viewer=Public_Access_Lands
- Wisconsin Geological and Natural History Survey (WGNHS) – Open File Report 2007-03, Inventory of Wisconsin's Springs, dated August 2007. https://wgnhs.wisc.edu/pubs/000968/
- Wisconsin Geological and Natural History Survey (WGNHS) – Southwest Wisconsin Groundwater and Geology Study, dated May 2023. https://home.wgnhs.wisc.edu/southwest-wisconsin-groundwater-geology-study-swigg/
- The Landfills and Historic Waste GIS file was obtained though ESRI's ArcGIS Online data portal from data provided by the WDNR. https://dnrmaps.wi.gov/arcgis2/rest/services/WA_Waste/WA_SW_Management_Facility_Ext/MapServer
- The Private Well Construction Report GIS file was obtained though ESRI's ArcGIS Online data portal from data provided by the WDNR – Bureau of Drinking Water and Groundwater. https://dnrmaps.wi.gov/arcgis/rest/services/DG_Well_Driller/DG_Well_Driller_WTM_Ext/MapServer

**Attachments:**

**Figure 1** – Private Wells Located within Project Corridor
**Figures 2A and 2B** – Detailed Private Well Location Maps
**Table 1** - Summary of Private Wells within 500 ft of Proposed Interceptor

# FIGURE 1
# PRIVATE WELLS LOCATED WITHIN PROJECT CORRIDOR

Phase 6
Lower Badger Mill Creek Interceptor (LBMCI) Project
Verona, Wisconsin

## Legend

- Open Borehole in Shallow Karst Formation
- Open Borehole in Shallow Karst Formation (recommended for sampling)
- Open Borehole In Deep Sandstone Formation
- Open Borehole Formation Unknown or Undetermined
- Phase 5 Alignment (April 2023)
- Phase 6 Alignment (April 2023)
- 500 foot Buffer
- Parcels (2022)

N
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0 600 1,200 2,400 Feet

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# FIGURE 2A
# DETAILED PRIVATE WELL LOCATION MAP

Phase 6
Lower Badger Mill Creek
Interceptor (LBMCI) Project
Verona, Wisconsin

## Legend

- Open Borehole in Shallow Karst Formation
- Open Borehole in Shallow Karst Formation (recommended for sampling)
- Open Borehole In Deep Sandstone Formation
- Open Borehole Formation Unknown or Undetermined
- Phase 6 Alignment (April 2023)
- 500 foot Buffer
- Parcels (2022)
- A Private Well Map ID

N
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0 75 150 300 Feet

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# FIGURE 2B
# DETAILED PRIVATE WELL LOCATION MAP

Phase 6
Lower Badger Mill Creek
Interceptor (LBMCI) Project
Verona, Wisconsin

8LP068_WCR
H
3131 SHADY OAK LN
(RAPHAEL W WAGNER)
3111 SHADY OAK LN
(MATTHEW SWITZLER)
7510 ROLLING MEADOW RD
(LEGREID REV TR, BRADLEY
A & MARCYLINE M)
7492 SHADY HILL DR
(EUGENE J ESSER)
7459 ROLLING
MEADOW RD
(BENJAMIN V SIMONI)
7447 ROLLING
MEADOW RD
(FRANK WESTPHAL)
EUGENE J
ESSER)
7474 OAK HILL CT
(JOHN A CASHMAN)
7460 OAK HILL CT
(HOWARD H BAILEY)
SCHUTZ REV
TR, DAVID A)
7480 OAK HILL CT
(DANA J OSTROM)
8AI924_WCR
L
RX363_WCR
O
7445 OAK HILL CT
(SCHUTZ REV
TR, DAVID A)
7459 OAK HILL CT
(NOT AVAILABLE)
NOT
AVAILABLE)
N
RX078_WCR
B
SCHWENN REV
LIVING TR, MARVIN
O & DIXIE L)
3050 SHADY OAK LN
(JOSEPH A
STOEBNER)
7475 OAK HILL CT
(KEVIN J
PATTERSON)
3040 SHADY OAK LN
(MARTY CENTURY
FARM FAMILY LLP)
NOT
AVAILABLE)
3040 SHADY OAK LN
(MARTY CENTURY
FARM FAMILY LLP)
YP333_WCR
A
3034 SHADY OAK LN
(GREGORY R
WILCOXROGERS)
SCHWENN REV
LIVING TR, MARVIN
O & DIXIE L)
MARTY CENTURY
FARM FAMILY LLP)
MARTY CENTURY
FARM FAMILY LLP)

## Legend

- Open Borehole in Shallow Karst Formation
- Open Borehole in Shallow Karst Formation (recommended for sampling)
- Open Borehole In Deep Sandstone Formation
- Open Borehole Formation Unknown or Undetermined
- Phase 5 Alignment (April 2023)
- Phase 6 Alignment (April 2023)
- 500 foot Buffer
- Parcels (2022)
- A — Private Well Map ID

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0 75 150 300 Feet

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**TABLE 1**
**Summary of Private Wells within 500 ft of Proposed Interceptor**
**Lower Badger Mill Creek Interceptor Project**
**Madison Metropolitan Sewerage District**

| MAP ID | Well Address | Owner(s) Name | Well ID | Ground Surface Elevation (ft) | Bottom of Casing Depth (ft) | Bottom of Soil (ft) | Bottom of Karst (ft) | Total Well Depth (ft) | Well Classification | Previous MMSD Testing | Recommend Water Testing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 3040 SHADY OAK LN | MARTY CENTURY FARM FAMILY LLP | YP333_WCR | 1032.24 | 208 | 87 | 162 | 262 | Sandstone | Yes | No |
| B | 3050 SHADY OAK LN | JOSEPH A STOEBNER & TERI L STOEBNER | RX078_WCR | 1033.68 | 126 | 52 | 110 | 202 | Sandstone | | No |
| C | 3106 SHADY OAK LN | SCOTT A CALLAGHAN & KATHRYN S CALLAGHAN | 8AL774_WCR | 1024.59 | 212 | 151 | 200 | 366 | Sandstone | | No |
| D | 3111 SHADY OAK LN | MATTHEW SWITZLER | 8AL769_WCR | 1030.79 | 123 | 122 | 150 | 150 | Karst | | Yes |
| E | 3121 NOR-DEL HILL RD | Tom Mathies (formerly owned by Roger Kubly) | Paper Copy | | 143 | 33 | 175 | 200 | Karst | Yes | Yes |
| F | 3126 NOR-DEL HILL RD | WILLIAM & PATRICIA SUICK | AT761_WCR | | 105 | 35 | 180 | 230 | Karst(1) | Yes | Yes |
| G | 3127 NOR-DEL HILL RD | JAN L WESTEMEIER | DE168_WCR | 1076.03 | 160 | 55 | 190 | 223 | Karst | | Yes |
| H | 3131 SHADY OAK LN | RAPHAEL W WAGNER & SHARON K WAGNER | 8LP068_WCR | 1058.24 | 200 | 7 | 315 | 382 | Karst | | Yes |
| I | 3132 NOR-DEL HILL RD | LORRAINE E GEDYE | OR806_WCR | 1083.69 | 252 | 51 | 163 | 351 | Sandstone | | No |
| J | 3137 NOR-DEL HILL RD | Steven Siehr | | | | | | | Unknown | | No |
| K | 7462 ROLLING MEADOW RD | Ryan R Berndt (formerly owned by Harold Mattison) | Paper Copy | | 103 | 90 | 128 | 128 | Karst | Yes | Yes |
| L | 7474 OAK HILL CT | JOHN A CASHMAN | 8AI924_WCR | 1068.73 | 147 | 52 | 188 | 204 | Karst | | No |
| M | 7474 ROLLING MEADOW RD | Reed A Bollig | Paper Copy | 1031.91 | 62 | 61 | 133 | 133 | Karst | Yes | Yes |
| N | 7475 OAK HILL CT | Kevin J Patterson & Andrea Buisker | | | | | | | Unknown | | No |
| O | 7480 OAK HILL CT | DANA J OSTROM & JEANINE A LARSEN | RX363_WCR | 1033.57 | 250 | 59 | 188 | 284 | Sandstone | | No |
| P | 7486 ROLLING MEADOW RD | RAPHAEL L ESSER & MARY E ESSER | EL187_WCR | 1053.11 | 57 | 55 | unknown | 266 | Karst | Yes | Yes |
| Q | 7492 SHADY HILL DR | EUGENE J ESSER | 8AL772_WCR | 1070.07 | 137 | 73 | 188 | 188 | Karst | | No |
| R | 7500 ROLLING MEADOW RD | HEATHCLIFFE RIDAY & JENNIFER D RIDAY | OO696_WCR | 1024.98 | 210 | 55 | 180 | 273 | Sandstone | Yes | No |
| S | 7510 ROLLING MEADOW RD | LEGREID REV TR, BRADLEY A & MARCYLINE M | YR117_WCR | 1058.18 | 210 | 90 | 175 | 242 | Sandstone | | No |

Notes: Yellow highlighted listings are recommended to be included in the private well monitoring program.
"Unknown" well classification indicates that well construction information was not found in the accessed WDNR or WGNHS data records.
(1) Private well AT761 (3126 Nor-Del Rd) was initially installed in 1988 to a total well depth of 180 ft and reconstructed in 1993, which included well grouting and re-drilling below the original well casing to the current total well depth (230 ft).