### Appendix C

MDH Well Log Reports

| Minnesota Unique Well N | Number |
|-------------------------|--------|
|-------------------------|--------|

340357

# CountySt. LouisQuadDuluthQuad ID244D

#### MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

 Entry Date
 08/02/2018

 Update Date
 09/04/2018

 Received Date

| Well Name             |         | Township       | Range       | Dir Sect   |             | section<br>DACC | Well Depth<br>20 ft.         |                               | Depth Completed              | <b>I Date V</b><br>06/04/2 | Vell Complete | d               |
|-----------------------|---------|----------------|-------------|------------|-------------|-----------------|------------------------------|-------------------------------|------------------------------|----------------------------|---------------|-----------------|
| Elevation             | 1243    | 50<br>Elev. Me | 14<br>othod | W 21       |             |                 | 20 It.<br>Drill Method       | 2                             | 20 ft.                       | 06/04/2<br>Drill Fluid     | 2018          |                 |
| Address               | 1245    | Elev. Me       | tilou       | LIDAR IM I | DEM (MNDN   | NK)             |                              | on. bore hole                 |                              |                            | Status        | Sealed          |
|                       |         | (01 N. 000     |             |            | 1 5 5 0 1 1 |                 |                              |                               |                              |                            |               |                 |
| Well                  | 1       | 421 N. 3RD     | AV W DU     | LUTH MP    | 55811       |                 | Well Hydrofr                 |                               | Yes No                       |                            | То            |                 |
| Stratigraph           | v Infor | mation         |             |            |             |                 | Casing Type<br>Drive Shoe?   |                               | No                           | Joint<br>Above/Below       |               |                 |
| Geological I          |         |                | From        | To (ft.)   | Color       | Hardness        |                              | 103                           |                              | ADOVE/DEIOW                |               |                 |
| CLAYEY S              |         |                | 0           | 15         | BROWN       | MEDIUM          |                              |                               |                              |                            |               |                 |
| SILTY SAN             | ١D      |                | 15          | 20         | BROWN       | MEDIUM          |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 | Open Hole                    | From                          | ft.                          | То                         | ft.           |                 |
|                       |         |                |             |            |             |                 | Screen?                      |                               | Туре                         | Make                       |               |                 |
|                       |         |                |             |            |             |                 |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 | Static Water                 | r Level                       |                              |                            |               |                 |
|                       |         |                |             |            |             |                 |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 | Pumping Le                   | vel (below la                 | nd surface)                  |                            |               |                 |
|                       |         |                |             |            |             |                 |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 | Wellhead C                   | ompletion                     |                              |                            |               |                 |
|                       |         |                |             |            |             |                 |                              | r manufacturer                |                              | Ν                          | Model         |                 |
|                       |         |                |             |            |             |                 |                              | Protection                    |                              | n. above grade             |               |                 |
|                       |         |                |             |            |             |                 | Grouting In                  |                               | well Grouted?                | -                          | No 🗌 Not      | Specified       |
|                       |         |                |             |            |             |                 | Material                     | lormation                     |                              | Nount                      |               | То              |
|                       |         |                |             |            |             |                 | bentonite                    |                               | 2                            | Sacks                      | ft. 2         |                 |
|                       |         |                |             |            |             |                 |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 |                              | own Source o<br>eet           | f Contamination<br>Direction |                            |               | Tuna            |
|                       |         |                |             |            |             |                 |                              | ected upon coi                |                              | Yes                        | No            | Туре            |
|                       |         |                |             |            |             |                 | Pump                         | Not                           | Installed I                  | Date Installed             |               |                 |
|                       |         |                |             |            |             |                 | Manufacture                  |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 | Model Numb                   |                               | HP<br>Generality             |                            | olt           |                 |
|                       |         |                |             |            |             |                 | Length of dro<br>Abandoned   | op pipe                       | ft Capacity                  | g.p.                       | Тур           |                 |
|                       |         |                |             |            |             |                 |                              | y have any not i              | n use and not sealed         | well(s)?                   | Yes           | s 🗴 No          |
|                       |         |                |             |            |             |                 | Variance                     |                               |                              |                            |               | _               |
|                       |         |                |             |            |             |                 |                              | -                             | the MDH for this w           | ell?                       | Yes           | No              |
|                       |         |                |             |            |             |                 | Miscellaneo<br>First Bedrock |                               |                              | A :C                       |               |                 |
|                       |         |                |             |            |             |                 | Last Strat                   | sand+silt                     | -brown                       | Aquifer<br>Depth to B      |               | ft              |
|                       |         |                |             |            |             |                 | Located by                   |                               | esota Geological             | -                          |               |                 |
| Remarks<br>SEALED 6-4 | 2018 BY | 7 3704         |             |            |             |                 | Locate Metho                 | od Digit                      | ization (Screen) -           | Map (1:24,000) (           |               |                 |
| SEALED 0-4            | -2018 D | 5704.          |             |            |             |                 | System                       | UTM - NAI<br>ber Verification | D83, Zone 15, Meter          |                            |               | 182649          |
|                       |         |                |             |            |             |                 | Angled Dril                  |                               | Site Plan                    |                            |               | 8/02/2018       |
|                       |         |                |             |            |             |                 |                              | 11010                         |                              |                            |               |                 |
|                       |         |                |             |            |             |                 |                              |                               |                              |                            |               |                 |
|                       |         |                |             |            |             |                 | Well Contra                  | actor                         |                              |                            |               |                 |
|                       |         |                |             |            |             |                 |                              | s Testing II, Ir              | IC.                          | 3704                       | HALVOR        | SON, M.         |
|                       |         |                |             |            |             |                 | Licensee H                   | -                             |                              | . or Reg. No.              | Name of 1     |                 |
|                       |         |                |             |            |             | 1               |                              | 1                             |                              |                            |               |                 |
| Minneso               | nta W   | ell Index      | Renor       | t          |             | 34              | 40357                        |                               |                              |                            | Printed       | 1 on 11/06/2023 |
| 1viiiies(             | na 11   | en muez        | rehor       | L          |             |                 |                              |                               |                              |                            |               | HE-01205-15     |

745808

County St. Louis

Quad Duluth

Quad ID 244D

### MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING REPORT

| Entry Date           | 07/28/2009 |
|----------------------|------------|
| Update Date          | 12/05/2019 |
| <b>Received Date</b> | 03/01/2007 |

| Well Name                | Township         | Range     | Dir Secti      |                |                    | Well Depth               | Depth Complet  |                   | Vell Completed  |
|--------------------------|------------------|-----------|----------------|----------------|--------------------|--------------------------|--|-------------------|---|
| RAPPANA,                 |                  | 14        | W 21           | CDDA           |                    | 189 ft.                  | 189 ft.  | 03/01/2           |   |
| Elevation                | 1241 Elev. Me    | thod      | LiDAR 1m D     | EM (MNDNR      | .)                 | Drill Method             | Multiple methods used                                | Drill Fluid Wa    |   |
| Address                  |                  |           |                |                |                    | Use dome:                | stic   |                   | Status Active   |
| C/W                      | 615 BLACKN       | MAN AV S  | S DULUTH       | MN 55811       |                    | Well Hydrofra            | ctured? Yes  | No X From         | То  |
|                          |                  |           |                |                |                    | Casing Type              |  | Joint             | Welded  |
|                          | y Information    | F         | T (6.)         | <b>C</b> 1     | TT 1               | Drive Shoe?              | Yes X No   | Above/Below       |   |
| Geological N<br>SANDY CL |                  | From<br>0 | To (ft.)<br>18 | Color<br>BROWN | Hardness<br>MEDIUM | Casing Diam              | -  |                   | Hole Diameter   |
| ROCK                     | AI               | 18        | 18             | GRAY           | HARD               | 6 in. To                 | 26 ft. 19 lbs./ft.                                   |                   | 6 in. To 189 ft.<br>0 in. To ft.                              |
| ROCK                     |                  | 10        | 109            | 01011          |                    |                          |  |                   | 0 m. 10 m.  |
|                          |                  |           |                |                |                    | Open Hole                | From 26 ft.  | To 18             | 9 ft.   |
|                          |                  |           |                |                |                    | Screen?                  | Туре   | Make              |   |
|                          |                  |           |                |                |                    | Static Water             | Level  |                   |   |
|                          |                  |           |                |                |                    | 23 ft.                   | land surface   | Measure           | 03/01/2007  |
|                          |                  |           |                |                |                    | Pumping Le               | vel (below land surface)                             |                   |   |
|                          |                  |           |                |                |                    | 160 ft.                  | 2 hrs. Pumping at                                    | 2                 | g.p.m.  |
|                          |                  |           |                |                |                    | Wellhead C               | ompletion  |                   |   |
|                          |                  |           |                |                |                    |                          | manufacturer BAKEF                                   | <b>x</b> 1        | Model BULLDOG   |
|                          |                  |           |                |                |                    |                          |  | 2 in. above grade |   |
|                          |                  |           |                |                |                    | Grouting In              | e (Environmental Wells and<br>Formation Well Grouted | -                 | No Not Specified  |
|                          |                  |           |                |                |                    | Material                 |  | Amount            | From To   |
|                          |                  |           |                |                |                    | bentonite                | Γ  | Amount            | ft. ft.   |
|                          |                  |           |                |                |                    |                          |  |                   |   |
|                          |                  |           |                |                |                    | Nearest Kno              | wn Source of Contamination                           | on                |   |
|                          |                  |           |                |                |                    |                          | eet <u>East</u> Direction<br>cted upon completion?   | X Yes             | Sewer Type  |
|                          |                  |           |                |                |                    | Pump<br>Manufacturer     | Not Installed<br>'s name STA-RITE                    | Date Installed    | 06/01/2007  |
|                          |                  |           |                |                |                    | Model Numb               |  | <u>0.75</u> V     | olt <u>220</u>  |
|                          |                  |           |                |                |                    | Length of dro            |  | ty <u>10</u> g.p. | Typ Submersible   |
|                          |                  |           |                |                |                    | Abandoned                |  |                   |   |
|                          |                  |           |                |                |                    |                          | have any not in use and not seal                     | led well(s)?      | Yes X No  |
|                          |                  |           |                |                |                    | Variance<br>Was a varian | ce granted from the MDH for this                     | s well?           | Yes X No  |
|                          |                  |           |                |                |                    | Miscellaneo              |  |                   |   |
|                          |                  |           |                |                |                    | First Bedrock            |  | es Aquifer        | Duluth Cplx-  |
|                          |                  |           |                |                |                    | Last Strat               | Duluth Cplx-anorth.serie                             |                   |   |
| Remarks                  |                  |           |                |                |                    | Located by               | Minnesota Geologic                                   | •                 |   |
|                          | 1ETHOD= DRIVEN R | OTARY.    |                |                |                    | Locate Metho             | d Digitization (Screen)<br>UTM - NAD83, Zone 15, Me  | -                 |   |
|                          | INFORMATION: DRI |           | 8 MESH.        |                |                    | System<br>Unique Numl    | ** 10  | 200               | 974         Y 5182707           Input Date         04/28/2016 |
|                          |                  |           |                |                |                    | Angled Dril              | i idui e.  |                   | 01/20/2010  |
|                          |                  |           |                |                |                    | Well Contra              | etor   |                   |   |
|                          |                  |           |                |                |                    | Dennys Dr                |  | 1779              | KOEPP, D.   |
|                          |                  |           |                |                |                    | Licensee E               |  | ic. or Reg. No.   | Name of Driller   |
|                          |                  |           |                |                |                    | <b>5</b> 000             |  |                   |   |
| Minneso                  | ota Well Index   | Repor     | t              |                | 74                 | 5808                     |  |                   | Printed on 11/06/2023<br>HF-01205-15                          |

754614

# CountySt. LouisQuadDuluthQuad ID244D

### MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING REPORT

| Entry Date           | 07/28/2009 |
|----------------------|------------|
| Update Date          | 12/05/2019 |
| <b>Received Date</b> | 01/11/2008 |

| Well Name Township Range Dir Section Subsectio    | -  | Depth Completed Date Well Completed  |
|---|--|--|
| VUKELICH, 50 14 W 28 ABBABB                       | B 264 ft.<br>Drill Method                                | 264 ft. 10/03/2007   |
| Elevation 1248 Elev. Method LiDAR 1m DEM (MNDNR)  |  |  |
| Address   | Use dome   |  |
| C/W 413 15TH ST W DULUTH MN 55811                 | Well Hydrofr   |  |
| Stratigraphy Information                          | Casing Typ<br>Drive Shoe                                 |  |
|   | lardness Casing Diam                                     |  |
| SANDY CLAY 0 4 BROWN M                            | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~                   | 19 ft. 19 lbs./ft. 10 in. To 19 ft.  |
| ROCK 4 264 GRAY H                                 | IARD   | 6 in. To 264 ft.   |
|   | Open Hole  | From 19 ft. To 264 ft.   |
|   | Screen? [  | Type Make  |
|   | Static Wate<br>36 ft.                                    | r Level<br>land surface Measure 10/04/2007   |
|   |  |  |
|   |  | evel (below land surface)  |
|   | 250 ft.  | 2 hrs. Pumping at g.p.m.   |
|   | Wellhead C   |  |
|   | Casing   | er manufacturer     BAKER     Model     BULLDOG       Protection     I 2 in. above grade       de (Environmental Wells and Borings ONLY)   |
|   | Grouting In  | formation Well Grouted? X Yes No Not Specified   |
|   | Material   | Amount From To   |
|   | neat cemen   | t 8 Sacks 6 ft. 19 ft.   |
|   | <u>90</u> f  | West Direction     Sewer Type       Sected upon completion?     X     Yes     No   |
|   | Pump<br>Manufacture<br>Model Num<br>Length of dr         | ber <u>J</u> HP <u>1</u> Volt <u>220</u>   |
|   | Abandoned<br>Does proper                                 |  |
|   | <b>Variance</b><br>Was a variar                          | ace granted from the MDH for this well? Yes X No   |
|   | Miscellaned<br>First Bedrock<br>Last Strat<br>Located by | <ul> <li><sup>k</sup> Duluth Cplx-anorth.series Aquifer Duluth Complex</li> <li>Duluth Complex Depth to Bedrock 4 ft</li> <li>Minnesota Geological Survey</li> </ul>   |
| <b>Remarks</b><br>DRILLING METHOD= DRIVEN ROTARY. | Locate Meth<br>System<br>Unique Num                      | od         GPS SA Off (averaged) (15 meters)           UTM - NAD83, Zone 15, Meters         X 567136         Y 5182534           ber Verification         Address verification         Input Date         07/05/2017 |
|   | Angled Dri   | l Hole   |
|   | Well Contr   |  |
|   | Dennys D<br>Licensee                                     | rilling, Inc. 1779 NELSON, C.<br>Business Lic. or Reg. No. Name of Driller   |
|   |  | -  |
| Minnesota Well Index Report                       | 754614   | Printed on 11/06/202<br>HE-01205-  |

778106

# CountySt. LouisQuadDuluthQuad ID244D

### MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING REPORT

| Entry Date           | 03/31/2011 |
|----------------------|------------|
| Update Date          | 12/05/2019 |
| <b>Received Date</b> | 09/24/2010 |

| Well Name           | Township   | Range    | Dir Secti  | ion Subsec       | tion             | Well Depth                   | Depth Comp  | oleted Date V        | Vell Completed    |               |
|---------------------|------------|----------|------------|------------------|------------------|------------------------------|---|----------------------|-------------------|---------------|
| COLE, EITHAN        | 50         | 14       | W 28       | AABB             | BA               | 405 ft.                      | 405 ft.   | 09/24/2              | 2010              |               |
| Elevation 1196      | Elev. Me   | thod     | LiDAR 1m D | EM (MNDNR        | )                | Drill Method                 | Multiple methods used   | Drill Fluid          |                   |               |
| Address             |            |          |            |                  |                  | Use domes                    | stic  |                      | Status            | Active        |
| Well 2              | 24 13TH ST | W DULU   | TH MN 55   | 806              |                  | Well Hydrofra                | ctured? Yes X   | No From              | 120 ft. <b>To</b> | 405 ft.       |
| Contact 2           | 857 EXETE  | R ST DUI | UTH MN 5   | 5806             |                  | Casing Type                  |   | Joint                | Other             |               |
| Stratigraphy Infor  |            |          |            |                  |                  | Drive Shoe?                  | Yes X No  | Above/Below          |                   |               |
| Geological Material | l          | From     | To (ft.)   | Color            | Hardness         | Casing Diame                 | -   |                      | Hole Diamete      | r             |
| DIRTY GRAVEL        |            | 0        | 9          | BROWN            | SOFT             | 6 in. To                     | 24 ft. 19.4 lbs./ft.  |                      | 6 in. To          | 405 ft.       |
| CLAY/GRAVEL<br>CLAY |            | 9<br>11  | 11<br>24   | BROWN<br>RED/BRN | MEDIUM<br>MEDIUM |                              |   |                      |                   |               |
| GRANITE             |            | 24       | 405        | GRAY             | HARD             |                              |   |                      |                   |               |
| GIGHNIL             |            | 24       | 405        | 01011            | TH IND           |                              |   |                      |                   |               |
|                     |            |          |            |                  |                  | Open Hole                    | From 24 ft.   | To 40                | 5 ft.             |               |
|                     |            |          |            |                  |                  | Screen?                      | Туре  | Make                 |                   |               |
|                     |            |          |            |                  |                  |                              |   |                      |                   |               |
|                     |            |          |            |                  |                  | Static Water                 | Level   |                      |                   |               |
|                     |            |          |            |                  |                  | Pumping Le                   | vel (below land surface)  |                      |                   |               |
|                     |            |          |            |                  |                  | Wellhead Co                  | ompletion   |                      |                   |               |
|                     |            |          |            |                  |                  | Pitless adapter              |   |                      | Model             |               |
|                     |            |          |            |                  |                  |                              | Protection X<br>e (Environmental Wells ar                         |                      |                   |               |
|                     |            |          |            |                  |                  | Grouting Inf                 | Cormation Well Grou   | ted? X Yes           | No Not S          | pecified      |
|                     |            |          |            |                  |                  | Material                     |   | Amount               | From T            | 0             |
|                     |            |          |            |                  |                  | driven casin                 | g seal  |                      | ft. 24            | ft.           |
|                     |            |          |            |                  |                  | <u>100</u> fe                | wen Source of Contamina<br>eet Direction<br>cted upon completion? | ation                | No                | Туре          |
|                     |            |          |            |                  |                  | Pump<br>Manufacturer         | Not Installed   | Date Installed       |                   |               |
|                     |            |          |            |                  |                  | Model Numb                   |   |                      | olt               |               |
|                     |            |          |            |                  |                  | Length of dro                | p pipe ft Cap   | acity g.p.           | Тур               |               |
|                     |            |          |            |                  |                  | Abandoned<br>Does property   | whave any not in use and not s                                    | sealed well(s)?      | Yes               | X No          |
|                     |            |          |            |                  |                  | Variance                     |   |                      |                   |               |
|                     |            |          |            |                  |                  | -                            | ce granted from the MDH for                                       | uns well?            | Yes               | X No          |
|                     |            |          |            |                  |                  | Miscellaneo<br>First Bedrock | us<br>M.Prot.mafic intr.und                                       | if Aquifer           | Duluth Compl      | ex            |
|                     |            |          |            |                  |                  | Last Strat                   | Duluth Complex  | Depth to E           |                   | ft            |
| Damasika            |            |          |            |                  |                  | Located by                   | Minnesota Geolog  | gical Survey         |                   |               |
| Remarks             |            |          |            |                  |                  | Locate Metho                 | Digitization (Sere  | en) - Map (1:12,000) |                   |               |
|                     |            |          |            |                  |                  | System                       | UTM - NAD83, Zone 15, 1<br>per Verification Add                   | 501                  |                   |               |
|                     |            |          |            |                  |                  | Angled Drill                 | 1100  | ress verification    | par Date 04       | /28/2016      |
|                     |            |          |            |                  |                  |                              | 11010   |                      |                   |               |
|                     |            |          |            |                  |                  | Well Contra                  | ctor  |                      |                   |               |
|                     |            |          |            |                  |                  |                              | Well Drilling   | 1886                 | KENT              | . В.          |
|                     |            |          |            |                  |                  | Licensee B                   | -   | Lic. or Reg. No.     | Name of D         | riller        |
| Minnesota W         | ell Index  | Repor    | t          |                  | 77               | 8106                         |   |                      | Printed           | on 11/06/2023 |
|                     |            | . 1      |            |                  |                  |                              |   |                      |                   | HE-01205-15   |

821830

### CountySt. LouisQuadDuluthQuad ID244D

#### MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

 Entry Date
 04/26/2017

 Update Date
 09/17/2020

 Received Date
 04/17/2017

| Well NameTownshipRangeDir SectionSubsectionDULUTH MW5014W21DBBBCB | <b>Well Depth</b> 17.5 ft. | Depth Completed         Date Well Completed           17.5 ft.         04/04/2017  |
|---|----------------------------|--|
| Elevation 1227 Elev. Method LiDAR 1m DEM (MNDNR)                  | Drill Method               | Auger (non-specified) Drill Fluid  |
| Address   | Use moni                   |  |
| Contact 411 FIRST ST W DULUTH MN 55802                            | Well Hydrofi               |  |
|   | Casing Typ                 |  |
| Stratigraphy Information  | Drive Shoe                 | Yes No X Above/Below   |
|   | ardness Casing Diam        |  |
| TOP SOIL 0 2 BROWN  | 2 in. To                   | 7.5 ft. lbs./ft. 10 in. To 17.5 ft.  |
| SANDY CLAY 2 10 BROWN   |                            |  |
| CLAYEY SAND 10 18 BROWN   |                            |  |
|   | Open Hole                  | From ft. To ft.  |
|   |                            | <b>K</b> Type plastic Make JOHNSON   |
|   | Diameter<br>2 in.          | Slot/Gauze         Length         Set           10         10         ft.         7.5         ft.         17.5         ft. |
|   | Static Wate                |  |
|   | 10.5 ft.                   | land surface Measure 04/04/2017  |
|   | Pumping Lo                 | vel (below land surface)   |
|   | Wellhead C                 |  |
|   |                            | r manufacturer PRO TOP Model   |
|   |                            | Protection I2 in. above grade<br>le (Environmental Wells and Borings ONLY)   |
|   | Grouting Ir                |  |
|   | Material                   | Amount From To   |
|   | bentonite                  | 1 Sacks ft. 5.5 ft.  |
|   | Nearest Kn                 | own Source of Contamination  |
|   |                            | Direction     Type       betted upon completion?     Yes       X     No  |
|   | Pump<br>Manufacture        | X Not Installed Date Installed   |
|   | Model Num                  |  |
|   | Length of dr               | pp pipe ft Capacity g.p. Typ   |
|   | Abandoned<br>Does proper   | y have any not in use and not sealed well(s)? Yes X No   |
|   | Variance                   |  |
|   |                            | ce granted from the MDH for this well? $\Box$ Yes $X$ No   |
|   | Miscellaneo                |  |
|   | First Bedroc               | Addition Qual. Water   |
|   | Last Strat                 | clay+sand-brown Depth to Bedrock ft  |
| Remarks   | Located by<br>Locate Meth  | Minnesota Geological Survey  |
| LICENSEE BUSINESS: DAKOTA TECHNOLOGIES.                           | System                     | <sup>d</sup> Digitization (Screen) - Map (1:12,000) (>15 meters)<br>UTM - NAD83, Zone 15, Meters X 567038 Y 5183292        |
|   |                            | ber Verification Site Plan Input Date 05/01/2017   |
|   | Angled Dri                 | Hole   |
|   | Well Contr                 | ator   |
|   |                            | chnologies 3553 EYSTAD, C.   |
|   | Licensee                   | 0  |
|   | 001000                     |  |
| Minnesota Well Index Report                                       | 821830                     | Printed on 11/06/202<br>HE-01205-  |

835884

# CountySt. LouisQuadDuluthQuad ID244D

### MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING REPORT

| Entry Date           | 12/04/2018 |
|----------------------|------------|
| Update Date          | 12/05/2019 |
| <b>Received Date</b> | 10/31/2018 |

| Well Name            |           | Fownship  | Range     | Dir Secti      |              |                    | Well Depth                  | Depth Completed  |                        | ell Completed                    |
|----------------------|-----------|-----------|-----------|----------------|--------------|--------------------|-----------------------------|--|------------------------|----------------------------------|
| DRCC                 |           | 50        | 14        | W 21           | CDBD         |                    | 340 ft.                     | 340 ft.  | 10/19/2                |                                  |
| Elevation            | 1299      | Elev. Me  | ethod     | LiDAR 1m D     | EM (MNDNR    | )                  | Drill Method                | Non-specified Rotary                                     | Drill Fluid Wat        |                                  |
| Address              |           |           |           |                |              |                    | Use domes                   | stic   |                        | Status Active                    |
| Contact              | 56        | 529 GRANI | D AV DUI  | LUTH MN 5      | 5807         |                    | Well Hydrofra               | ctured? Yes No   | X From                 | То                               |
| Well                 | 32        | 0 ORANG   | E ST E DI | JLUTH MN       | 55811        |                    | Casing Type                 |  | Joint                  | Welded                           |
| Stratigraph          |           | nation    |           | <b>T</b> (0)   |              |                    | Drive Shoe?                 | Yes X No   | Above/Below            |                                  |
| Geological N<br>CLAY | viateriai |           | From<br>0 | To (ft.)<br>12 | Color<br>RED | Hardness<br>MEDIUM | Casing Diamo                | -  |                        | Hole Diameter                    |
| GRANITE              |           |           | 12        | 12             | GRAY         | MEDIUM<br>MED-HRD  | 6 in. To                    | 17 ft. lbs./ft.  |                        | 10 in. To 17 f<br>6 in. To 340 f |
| GRANITE              |           |           | 12        | 340            | GRAY         | SFT-MED            |                             |  |                        | 0 111. 10 340 1                  |
|                      |           |           |           |                |              |                    |                             |  |                        |                                  |
|                      |           |           |           |                |              |                    | Open Hole<br>Screen?        | From 17 ft.<br>Type                                      | To 340<br><b>Make</b>  | ft.                              |
|                      |           |           |           |                |              |                    |                             |  |                        |                                  |
|                      |           |           |           |                |              |                    | Static Water                |  |                        | 10/10/2010                       |
|                      |           |           |           |                |              |                    | 30 ft.                      | land surface   | Measure                | 10/19/2018                       |
|                      |           |           |           |                |              |                    | 330 ft.                     | vel (below land surface) 1 hrs. Pumping at               | 1.5 g                  | .p.m.                            |
|                      |           |           |           |                |              |                    | Wellhead Co                 | -  | _                      | ,                                |
|                      |           |           |           |                |              |                    |                             | Protection 12 i  | n. above grade         | Iodel                            |
|                      |           |           |           |                |              |                    | Grouting Inf                | e (Environmental Wells and Bo<br>formation Well Grouted? | X Yes N                | o Not Specified                  |
|                      |           |           |           |                |              |                    | Material                    |  | iount                  | From To                          |
|                      |           |           |           |                |              |                    | neat cement                 | 2  | Sacks                  | 12 ft. 17 ft.                    |
|                      |           |           |           |                |              |                    | bentonite                   | 2  | Sacks                  | ft. 12 ft.                       |
|                      |           |           |           |                |              |                    |                             | own Source of Contamination                              |                        |                                  |
|                      |           |           |           |                |              |                    |                             | eet <u>Southwes</u> Direction<br>cted upon completion?   | X Yes                  | <u>Sewer</u> Typ<br>No           |
|                      |           |           |           |                |              |                    | Pump<br>Manufacturer        |  | Date Installed         |                                  |
|                      |           |           |           |                |              |                    | Model Numb                  | er HP  | Vo                     | lt                               |
|                      |           |           |           |                |              |                    | Length of dro               | p pipe ft Capacity                                       | g.p.                   | Тур                              |
|                      |           |           |           |                |              |                    | Abandoned<br>Does property  | w have any not in use and not sealed                     | well(s)?               | Yes X N                          |
|                      |           |           |           |                |              |                    | Variance<br>Was a varian    | ce granted from the MDH for this w                       | ell?                   | Yes X N                          |
|                      |           |           |           |                |              |                    | Miscellaneo                 |  |                        |                                  |
|                      |           |           |           |                |              |                    | First Bedrock<br>Last Strat | Duluth Cplx-anorth.series                                | Aquifer<br>Depth to Be | Duluth Complex                   |
|                      |           |           |           |                |              |                    | Located by                  | Duluth Complex<br>Minnesota Geological                   |                        | edrock 17 ft                     |
| Remarks              |           |           |           |                |              |                    | Locate Metho                | -  |                        |                                  |
| DRILLERS: 0          | URAIG &   | HEATH SU  | NNARBOF   | tG.            |              |                    | System                      | UTM - NAD83, Zone 15, Meter                              | s X 5667               |                                  |
|                      |           |           |           |                |              |                    |                             | er Verification Tax Reco                                 | ords Ir                | nput Date 02/14/2019             |
|                      |           |           |           |                |              |                    | Angled Drill                | Hole   |                        |                                  |
|                      |           |           |           |                |              |                    | Well Contra                 |  |                        |                                  |
|                      |           |           |           |                |              |                    | Sunnarbor<br>Licensee E     | g Well Drilling Inc.<br>usiness Lic                      | 1295<br>. or Reg. No.  | SEE REMARKS<br>Name of Driller   |
| Minneso              | ota Wo    | ell Index | k Repor   | ť              |              | 83                 | 5884                        |  |                        | Printed on 11/06/                |
|                      |           |           | -         |                |              |                    |                             |  |                        | HE-0120                          |