# WATER WELL RECORD (WWC-5)

Constructed

KOLAR DOC ID 1676919 WELL ID Well 6R

✓ Original Record ☐ Correction ☐ Change in Well Use

## LOCATION OF WATER WELL

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Latitude | 38.981716 | Longitude | -94.925006 | Section | 25 | Township | 12 | Range | 22 ✓E ☐W | Fraction | NE ¼ SW ¼ NW ¼ |
| Datum | WGS84 | Elevation | 786 | County | Johnson | | | | | | |

## WATER WELL OWNER

| | |
|---|---|
| Name | |
| Business | City of Olathe, KS |
| Address | 1385 S Robinson Drive<br>Olathe KS 66061 |
| Well location<br>☐ at owner's address | Olathe's well field located north of intersection of W 83rd St and Gardner road approximate 2200 feet, well |

## WELL WATER USE

Public Water Supply / Muncipal

## COMPLETION

Depth of completed well: 74 ft.

Depth(s) groundwater encountered:

(1) _____ ft.; (2) _____ ft.;

(3) _____ ft.; (4) ☐ dry well

Static water level in well: 30 ft.

✓ measured below land surface on (mm/dd/yy): 02/04/2021

☐ measured above land surface on (mm/dd/yy): _____

Estimated yield: 1000 gpm

Water level was: _____ ft. after _____ hours pumping _____ gpm

Pump installed? ✓ Yes ☐ No

Water well disinfected? ✓ Yes ☐ No

Date disinfected (mm/dd/yy): 02/04/2021

Aquifer, if known:

## NEAREST SOURCE OF POTENTIAL CONTAMINATION

Source: _____

Distance from well: _____ Direction from well: _____

Source description: _____

Source: _____

Distance from well: _____ Direction from well: _____

Source description: _____

✓ No potential source of contamination within 100 feet.

## PERMIT & ID NUMBERS (AS REQUIRED)

DWR Application No.: PW007206

KDHE / EPA Project Code: _____

Site Name: _____

KDHE UIC Class V Form Completed: ☐ Yes ☐ No

County Permit: ☐ Yes ☐ No Permit ID: _____

Lease Name & Well #: _____

# of boreholes: _____ # of dewatering wells: _____

## CONSTRUCTION

Borehole interval: from 0 to 64 ft.

from _____ to _____ ft.

Borehole diameter: 60 in.

_____ in.

Casing height above land surface: 36 in.

If casing height is less than 12 in. has a variance been approved?* ☐ Yes ✓ No

*variance not required for monitoring or environmental remediation wells

Casing type: Steel

Blank casing interval: 0 ft. to 56 ft.

Blank casing diameter: 36 in.

Casing joints: Welded

Weight: _____ lbs/ft.

Wall thickness or gauge no.: 0.375

Blank casing interval: _____ ft. to _____ ft.

Blank casing diameter: _____ in.

Casing joints: _____

Weight: _____ lbs/ft.

Wall thickness or gauge no.: _____

Grout interval: 0 ft. to 30 ft.

Grout material: Cement

Grout interval: 30 ft. to 35 ft.

Grout material: Bentonite

Screen / perforation material: Steel

Screen / perforation openings: Wire wrapped

Screen / perforation intervals:

From 56 ft. to 64 ft.

Slot size .09 unit inches

From _____ ft. to _____ ft.

Slot size _____ unit _____

Gravel pack intervals:

Gravel pack not used: ☐ Gravel size _____ in

From 35 ft. to 64 ft.

Gravel pack not used: ☐ Gravel size _____ in

From _____ ft. to _____ ft.

## LITHOLOGIC LOG

| FROM | TO | LITHOLOGY INTERVALS |
|---|---|---|
| Attache | Attache | Attached |
| | | |
| | | |
| | | |
| | | |
| | | |

## COMMENTS

## CONTRACTOR'S OR LANDOWNERS CERTIFICATION

This water well was constructed ✓ reconstructed ☐ pursuant to the stated water well contractor's license and was completed on 02/04/2021. I certify that this record is true to the best of my knowledge and belief. This water well record was completed on 12/19/2022 under the business name of Layne Christensen Company #102, Kansas Water Well Contractor's License No. 102 under the authority of the designated person as defined in K.A.R. 28-30-2(j) and signed and certified by the electronic signature of the designated person at its submittal: Logan Wartick.

Send one copy to WATER WELL OWNER and retain one for your records. Fee of $5.00 for each constructed well.

| | |
|---|---|
| Form | WWC5.2 - Water Well Record |
| Doc ID | 1676919 |
| Well Owner | City of Olathe, KS |
| Contractor | Layne Christensen Company #102 |

Lithology

| From | To | Lithology Intervals |
|---|---|---|
| 0 | 1 | topsoil |
| 1 | 7 | clay,brown |
| 7 | 16 | clay,light,tan |
| 16 | 26 | sand,very fine |
| 26 | 33 | sand,fine to medium,with coarse |
| 33 | 36 | sand,fine to medium,clayey,cobbles |
| 36 | 39 | sand,fine,clayey |
| 39 | 44 | sand,medium to coarse,clayey,brown,with fines |
| 44 | 48 | sand,fine to medium,clayey,gray,with fines |
| 48 | 59 | sand,medium to coarse,gravelly,gray |
| 59 | 64 | sand,medium to coarse,gravelly,gray,with boulders |
| 64 | 67 | shale,unweathered,grayish,olive |

*Layne Christensen Company*
*620 South 38th Street*
*Kansas City, KS 66106*
*913-321-5000*

# TEST HOLE REPORT

**OWNER:** City of Olathe, KS

**JOB NO:** 1101528 **DATE:** 02/05/21

**CITY:** Olathe **STATE:** KS

**TEST HOLE NO:** VW-6R

**DRILLER:** R. Bowles

**TEST HOLE LOCATION:** 38.9817161°, -094.9252006°

Northing 250984.000 Easting 2186241.000

*Distance and direction from permanent landmark or previous test hole.*

**APPROXIMATE STATIC WATER LEVEL:**

| FROM (FEET) | TO (FEET) | MARSH FUNNEL VISCOSITY (SEC) | MUD PIT LOSS (INCHES) | FORMATION LOG |
|---|---|---|---|---|
| 0 | 1 | | | Topsoil |
| 1 | 7 | | | Brown clay |
| 7 | 16 | | | Light tan clay |
| 16 | 26 | | | Very fine sand |
| 26 | 33 | 30 | 3” | Medium/fine sand with coarse |
| 33 | 36 | | | Same, trace clay, cobbles |
| 36 | 39 | | | Fine sand with clay |
| 39 | 44 | 31 | 5” | Medium/coarse brown sand with fines, cobbles 43-44 |
| 44 | 48 | | | Medium/fine gray sand with coarse, cobbles and clay |
| 48 | 59 | 31 | 6” | Medium/coarse gray sand with fines, coarse and gravel |
| 59 | 64 | | | Same with boulders |
| 64 | 67 | | | Olive gray shale |
| 67 | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**SIZE MUD PIT:** **LENGTH:** 10’ **WIDTH:** 3’ **DEPTH:**

**COMMENTS:**

KANSAS CITY
TESTING & ENGINEERING, LLC

February 10, 2021

Layne
620 S. 38th Street
KC KS 66106

Re:
Project: Olathe Vertical Wells
Description: Well Sand Sample
Sampled By: Client
Project #: C10-16-191
Report #: K39701
Original Dry: 780.3
Location: Well 6R
Depth: 40-45'

## Report Of Test Results

Gradation ASTM C-136/AASHTO T-27

| Sieve size | Opening (mm) | Cumulative Retained | % Retained | % Passing |
|---|---|---|---|---|
| 1/2" | 12.5 | 0 | 0 | 100 |
| 3/8" | 9.5 | 1.3 | 0 | 100 |
| No. 4 | 4.75 | 92.0 | 12 | 88 |
| No. 8 | 2.36 | 291.2 | 37 | 63 |
| No. 16 | 1.180 | 557.1 | 71 | 29 |
| No. 30 | 0.600 | 703.9 | 90 | 10 |
| No. 50 | 0.300 | 723.6 | 93 | 7 |
| No. 100 | 0.150 | 737.4 | 95 | 5 |
| No. 200 | 0.075 | 744.8 | 95.5 | 4.5 |

Thank you for your continued interest in Kansas City Testing & Engineering, LLC

Respectfully Submitted
**Kansas City Testing & Engineering, LLC**

Sam Coulson, PE
Lab Manager

 

KANSAS CITY
TESTING & ENGINEERING, LLC

February 10, 2021

Layne
620 S. 38th Street
KC KS 66106

Re:
Project: Olathe Vertical Wells
Description: Well Sand Sample
Sampled By: Client
Project #: C10-16-191
Report #: K39701
Original Dry: 827.2
Location: Well 6R
Depth: 45-50'

## Report Of Test Results

Gradation ASTM C-136/AASHTO T-27

| Sieve size | Opening (mm) | Cumulative Retained | % Retained | % Passing |
|---|---|---|---|---|
| 1/2" | 12.5 | 0 | 0 | 100 |
| 3/8" | 9.5 | 7.1 | 1 | 99 |
| No. 4 | 4.75 | 196.4 | 24 | 76 |
| No. 8 | 2.36 | 358.0 | 43 | 57 |
| No. 16 | 1.180 | 593.3 | 72 | 28 |
| No. 30 | 0.600 | 722.6 | 87 | 13 |
| No. 50 | 0.300 | 753.7 | 91 | 9 |
| No. 100 | 0.150 | 770.2 | 93 | 7 |
| No. 200 | 0.075 | 779.8 | 94.3 | 5.7 |

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Sam Coulson, PE
Lab Manager

 

KANSAS CITY
TESTING & ENGINEERING, LLC

February 10, 2021

Layne
620 S. 38th Street
KC KS 66106

Re:
Project: Olathe Vertical Wells
Description: Well Sand Sample
Sampled By: Client
Project #: C10-16-191
Report #: K39701
Original Dry: 835.3
Location: Well 6R
Depth: 50-55'

## Report Of Test Results

Gradation ASTM C-136/AASHTO T-27

| Sieve size | Opening (mm) | Cumulative Retained | % Retained | % Passing |
|---|---|---|---|---|
| 1/2" | 12.5 | 0 | 0 | 100 |
| 3/8" | 9.5 | 15.9 | 2 | 98 |
| No. 4 | 4.75 | 157.8 | 19 | 81 |
| No. 8 | 2.36 | 408.2 | 49 | 51 |
| No. 16 | 1.180 | 654.5 | 78 | 22 |
| No. 30 | 0.600 | 774.1 | 93 | 7 |
| No. 50 | 0.300 | 797.2 | 95 | 5 |
| No. 100 | 0.150 | 808.9 | 97 | 3 |
| No. 200 | 0.075 | 814.2 | 97.5 | 2.5 |

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Lab Manager

 

KANSAS CITY
TESTING & ENGINEERING, LLC

February 10, 2021

Layne
620 S. 38th Street
KC KS 66106

Re:
Project: Olathe Vertical Wells
Description: Well Sand Sample
Sampled By: Client
Project #: C10-16-191
Report #: K39701
Original Dry: 770.3
Location: Well 6R
Depth: 55-60'

## Report Of Test Results

Gradation ASTM C-136/AASHTO T-27

| Sieve size | Opening (mm) | Cumulative Retained | % Retained | % Passing |
|---|---|---|---|---|
| 1/2" | 12.5 | 0 | 0 | 100 |
| 3/8" | 9.5 | 10.2 | 1 | 99 |
| No. 4 | 4.75 | 133.9 | 17 | 83 |
| No. 8 | 2.36 | 296.0 | 38 | 62 |
| No. 16 | 1.180 | 565.5 | 73 | 27 |
| No. 30 | 0.600 | 715.3 | 93 | 7 |
| No. 50 | 0.300 | 743.4 | 97 | 3 |
| No. 100 | 0.150 | 753.5 | 98 | 2 |
| No. 200 | 0.075 | 757.5 | 98.3 | 1.7 |

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Sam Coulson, PE
Lab Manager

 

KANSAS CITY
TESTING & ENGINEERING, LLC

February 10, 2021

Layne
620 S. 38th Street
KC KS 66106

Re:

| | |
|---|---|
| Project: | Olathe Vertical Wells |
| Description: | Well Sand Sample |
| Sampled By: | Client |
| Project #: | C10-16-191 |
| Report #: | K39701 |
| Original Dry: | 993.3 |
| Location: | Well 6R |
| Depth: | 60-64' |

## Report Of Test Results

Gradation ASTM C-136/AASHTO T-27

| Sieve size | Opening (mm) | Cumulative Retained | % Retained | % Passing |
|---|---|---|---|---|
| 1/2" | 12.5 | 0 | 0 | 100 |
| 3/8" | 9.5 | 16.9 | 2 | 98 |
| No. 4 | 4.75 | 209.8 | 21 | 79 |
| No. 8 | 2.36 | 450.0 | 45 | 55 |
| No. 16 | 1.180 | 768.8 | 77 | 23 |
| No. 30 | 0.600 | 914.8 | 92 | 8 |
| No. 50 | 0.300 | 951.5 | 96 | 4 |
| No. 100 | 0.150 | 967.6 | 97 | 3 |
| No. 200 | 0.075 | 973.5 | 98.0 | 2.0 |

Thank you for your continued interest in Kansas City Testing & Engineering, LLC

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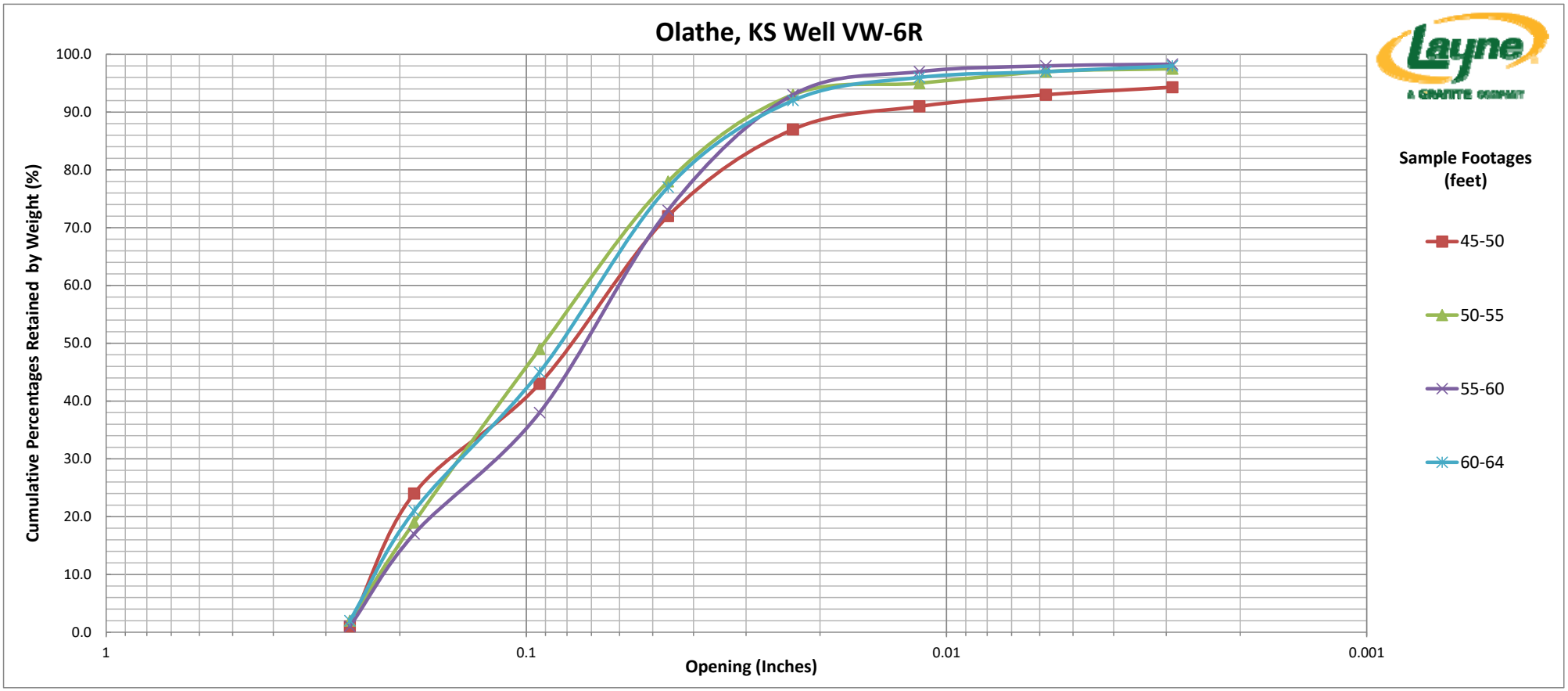
**Kansas City Testing & Engineering, LLC**

Sam Coulson, PE
Lab Manager


Olathe, KS Well VW-6R
Cumulative Percentages Retained by Weight (%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1
0.1
0.01
0.001
Opening (Inches)
Sample Footages (feet)
45-50
50-55
55-60
60-64


Olathe, KS Well VW-6R Finest Formation & Gravel Selection
Cumulative Percentages Retained By Weight (%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1
0.1
0.01
0.001
Opening (inches)
55-60
4X Finest
6X Finest
Northern 3/16 x #10

# WELL SCREEN FLOW CALCULATION
## City of Olathe, KS
## Well VW-6R
## 2/5/2021

**KNOWN PARAMETERS:**

| | | |
|---|---|---|
| 1. Screen Diameter: | 36 | inches |
| 2. Screen Length: | 8 | feet |
| 3. Open Area of Johnson Screen 0.090" Slot Wire Wrap Hi-Q Screen | 548.00 | $in^2/lf$ |
| 4. Maximum Allowable Entrance Velocity of Water Entering Well Screen: | 0.1 | ft/sec |

**ASSUMED PARAMETERS:**

| | | |
|---|---|---|
| 1. Percent Blockage of Open Area by Gravel Pack | 50 | % |

**STANDARD FLOW CALCULATION FORMULA: Q = VA**

**WHERE: Q = FLOW RATE PER FOOT OF SCREEN, GPM**
**$Q_{MAX}$ = MAXIMUM TOTAL ALLOWABLE FLOW RATE, GPM**
**V = VELOCITY OF WATER ENTERING THE SCREEN, FT/SEC**
**A = OPEN AREA OF THE SCREEN, $FT^2$**

$Q = VA$

$Q = (0.1\ ft/sec)(548.0\ in^2/lf)(0.5\ \text{for blockage})$

$Q = (0.1\ ft/sec)(274.0\ in^2/lf)$

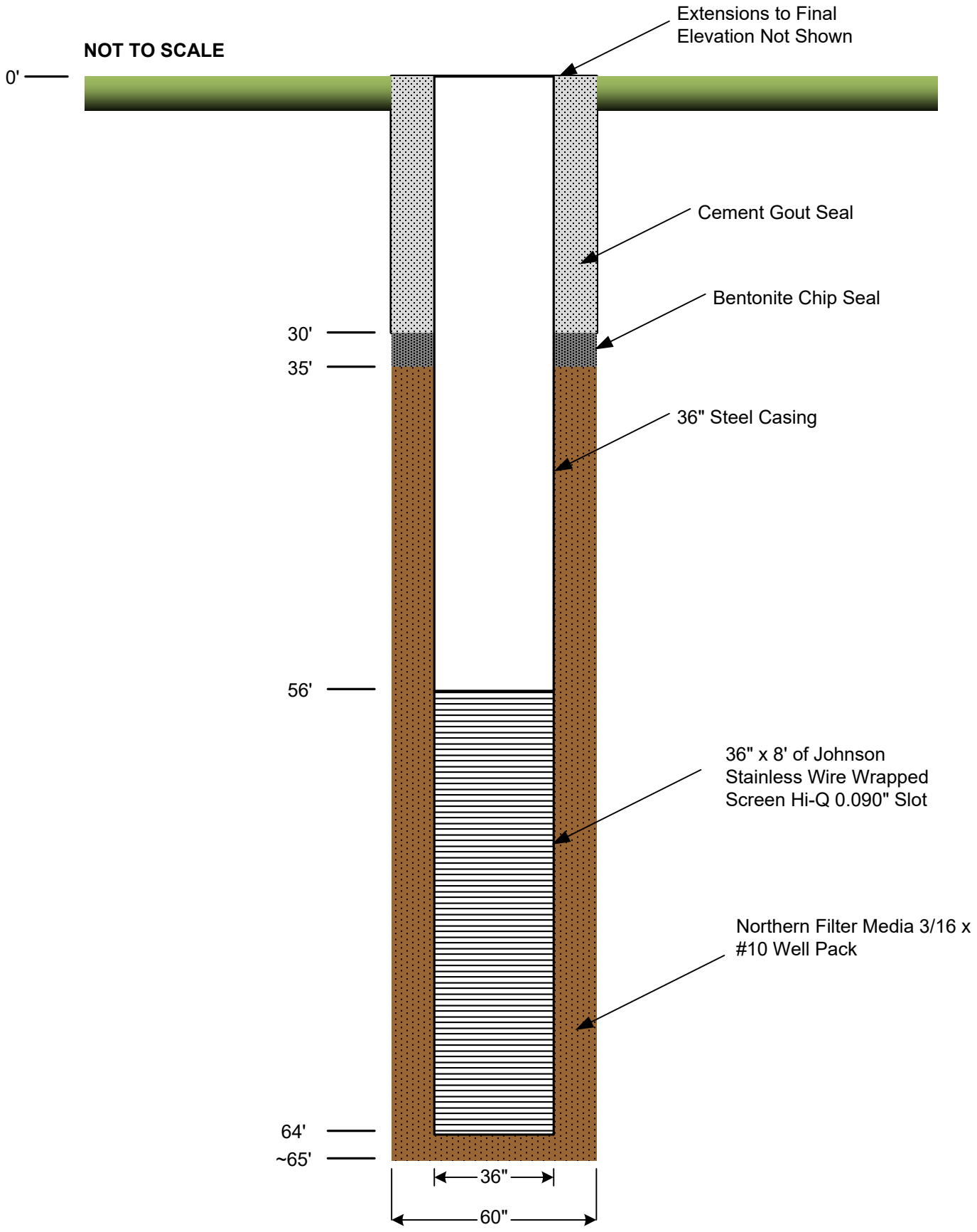
$Q = (0.1\ ft/sec)(60\ sec/min)(274.0\ in^2/lf)(1\ ft^2/144\ in^2)(7.48\ gal/ft^2)$

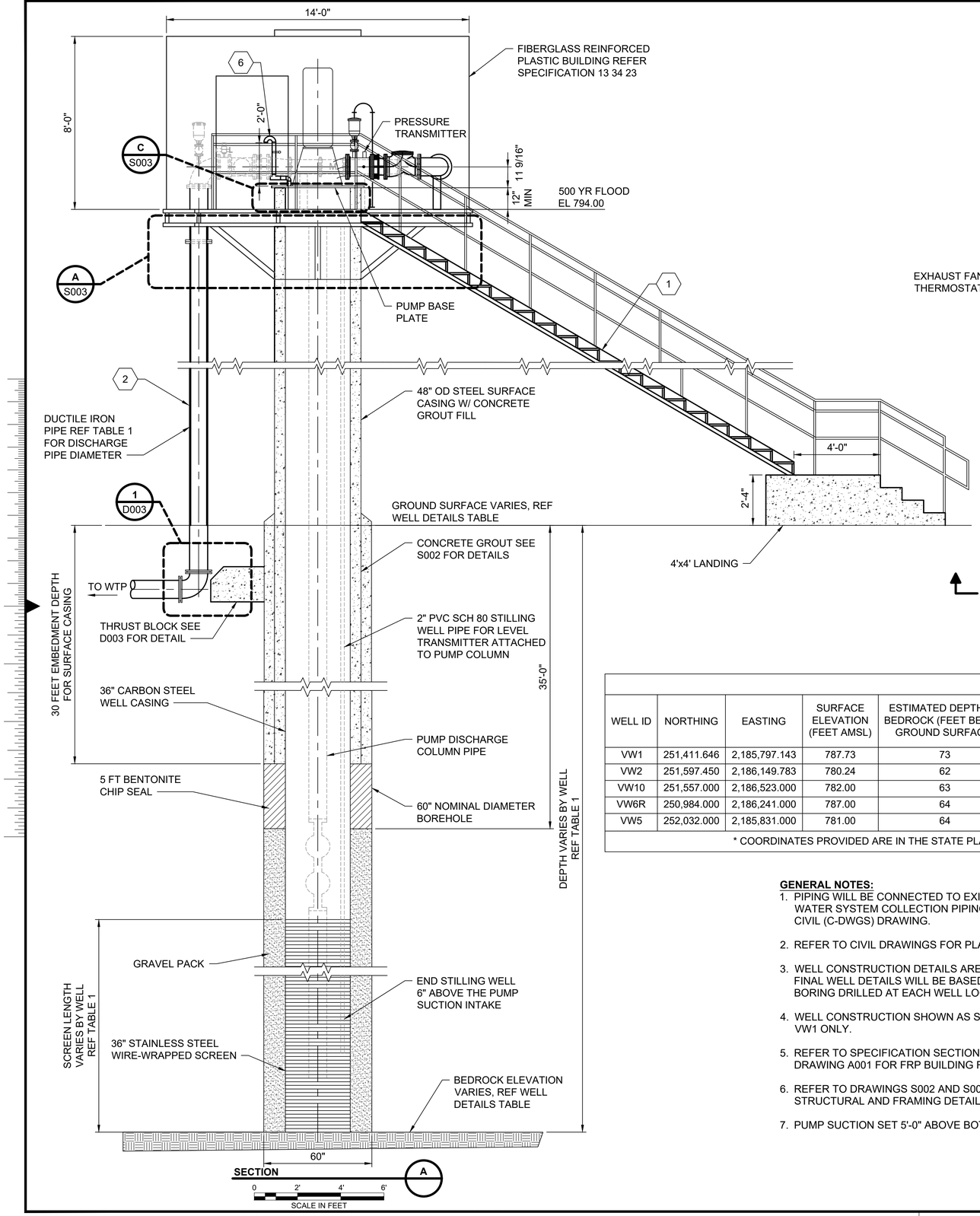
$Q = 85.4\ gpm/lf\ of\ screen$

$Q_{MAX} = (85.4\ gpm/lf\ of\ screen)(8\ lf\ of\ screen)$

**$Q_{MAX}$ = 683.17 GPM**

City of Olathe, KS
Well VW-6R
2/17/2021 Proposed Construction





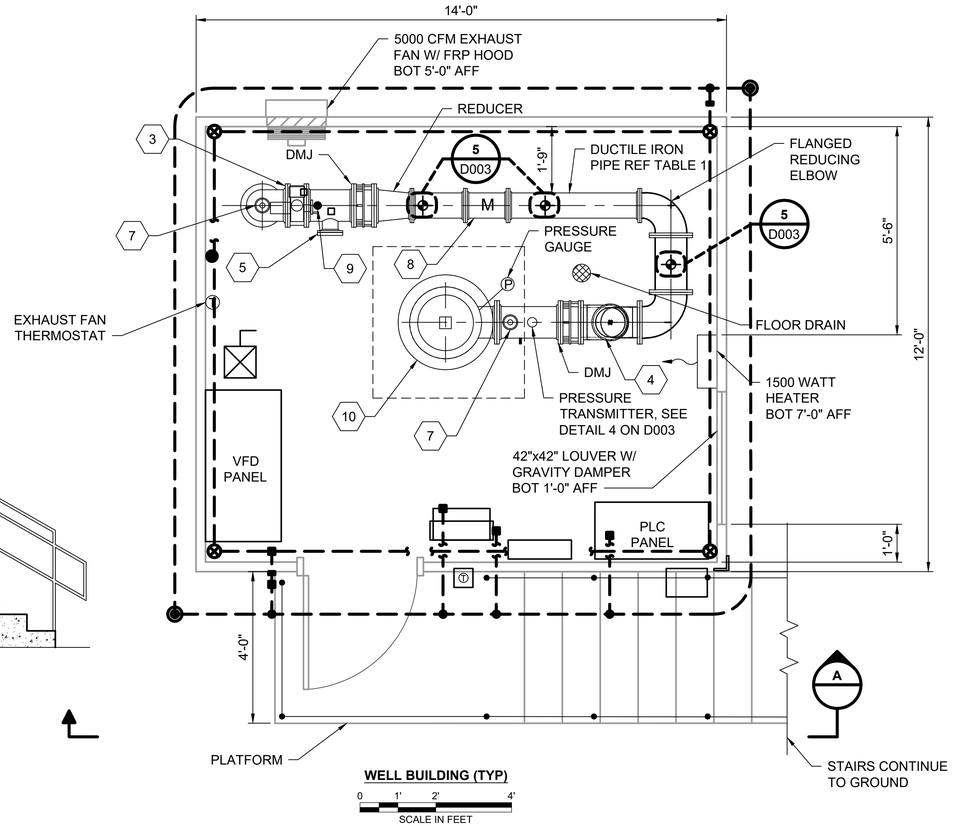




**TABLE 1 - WELL DETAILS**

| WELL ID | NORTHING | EASTING | SURFACE ELEVATION (FEET AMSL) | ESTIMATED DEPTH TO BEDROCK (FEET BELOW GROUND SURFACE) | BOREHOLE DIAMETER (INCHES) | WELL CASING AND SCREEN DIAMETER (INCHES) | WELL SCREEN LENGTH (FEET) | DESIGN MAXIUM PUMPING RATE (GPM) | DISCHARGE PIPING DIAMETER (INCHES) | REDUCER SIZE (INCHES) | FLOW METER DIAMETER (INCHES) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VW1 | 251,411.646 | 2,185,797.143 | 787.73 | 73 | 60.0 | 36.0 | 12.0 | 950.0 | 10.0 | 8 | 8.0 |
| VW2 | 251,597.450 | 2,186,149.783 | 780.24 | 62 | 60.0 | 36.0 | 10.0 | 800.0 | 10.0 | 8 | 8.0 |
| VW10 | 251,557.000 | 2,186,523.000 | 782.00 | 63 | 60.0 | 36.0 | 10.0 | 600.0 | 8.0 | 6 | 6.0 |
| VW6R | 250,984.000 | 2,186,241.000 | 787.00 | 64 | 60.0 | 36.0 | 8.0 | 500.0 | 8.0 | 6 | 6.0 |
| VW5 | 252,032.000 | 2,185,831.000 | 781.00 | 64 | 60.0 | 36.0 | 11.0 | 940.0 | 10.0 | 8 | 8.0 |

* COORDINATES PROVIDED ARE IN THE STATE PLANE COORDINATE SYSTEM, NAD83, KANSAS NORTH, FIPSZONE 1501, WITH UNITS OF US SURVEY FEET

**GENERAL NOTES:**

1. PIPING WILL BE CONNECTED TO EXISTING RAW WATER SYSTEM COLLECTION PIPING AS SHOWN ON CIVIL (C-DWGS) DRAWING.
2. REFER TO CIVIL DRAWINGS FOR PLAN ORIENTATION.
3. WELL CONSTRUCTION DETAILS ARE PRELIMINARY. FINAL WELL DETAILS WILL BE BASED ON THE TEST BORING DRILLED AT EACH WELL LOCATION.
4. WELL CONSTRUCTION SHOWN AS SECTION A FOR VW1 ONLY.
5. REFER TO SPECIFICATION SECTION 13 34 23 AND DRAWING A001 FOR FRP BUILDING REQUIREMENTS.
6. REFER TO DRAWINGS S002 AND S003 FOR STRUCTURAL AND FRAMING DETAILS.
7. PUMP SUCTION SET 5'-0" ABOVE BOTTOM OF WELL.

**KEYED NOTES:**

1. OSHA STAIRS. MINIMUM 36-INCH WIDE. REFER TO A001.
2. HEAT TRACE AND INSULATE ABOVE GRADE PIPING.
3. ELECTRONICALLY ACTUATED BUTTERFLY VALVE W/ VALVE STEM.
4. SWING CHECK VALVE.
5. TEE WITH BLIND FLANGE DIAMETER TO MATCH DISCHARGE PIPING.
6. WELL VENT WITH RETURN BEND AND #16 COPPER SCREEN.
7. 2" BALL VALVE TO 2" COMBINATION AIR RELEASE VALVE W/ MESH COPPER SCREEN. SEE DETAIL 2 ON D003. PIPE DISCHARGE TO FLOOR DRAIN
8. FOXBORO MAGNETIC FLOW METER. SEE TABLE 1 FOR SIZE.
9. SMOOTH NOSE SAMPLE TAP. SEE DETAIL 4 ON D003.
10. CAST-IRON DISCHARGE HEAD WITH MINIMUM 2-INCH THICK BASE PLATE.

| no. | date | by | ckd | description |
|---|---|---|---|---|
| A | 7/31/20 | BDF | LD | ISSUED FOR 60% OWNER REVIEW |
| B | 9/30/20 | BDF | LD | ISSUED FOR 90% OWNER REVIEW |

**PRELIMINARY - NOT FOR CONSTRUCTION**


BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
BMCD LICENSE NO. E-65


date: JUNE 25, 2020 | detailed: B. FIFIELD
designed: L. DEANGELIS | checked:

OLATHE KANSAS
Johnson County, Kansas
CITY PROJECT No 5-C-031-18

**VERTICAL WELL FIELD IMPROVEMENTS PROJECT**
GENERAL WELL ARRANGEMENTS

project: 110372 | contract:
drawing: D002 – B | rev.
sheet: of sheets
file 110372_D002 - GENERAL ARRANGEMENT.DWG

Scale For Microfilming: Millimeters / Inches

Z:\CLIENTS\WTR\OLATHEKS\110372_VERTICALWELLS\DESIGN\CADD\PROC\PROD_DWGS\110372_D002 - GENERAL ARRANGEMENT.DWG