WATER WELL RECORD (WWC-5)

Constructed

KOLAR DOC ID 1676936 WELL ID Well 10

✓ Original Record ☐ Correction ☐ Change in Well Use

LOCATION OF WATER WELL

Latitude	38.983262	Longitude	-94.924141	Section	25	Township	12	Range	22 ✓E ☐W	Fraction	SE ¼ NW ¼ NW ¼
Datum	WGS84	Elevation	784	County	Johnson						

WATER WELL OWNER

Name	
Business	City of Olathe, KS
Address	1385 S Robinson Drive Olathe KS 66061
Well location ☐ 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: 75 ft.

Depth(s) groundwater encountered:

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

(3) _____ ft.; (4) ☐ dry well

Static water level in well: 38 ft.

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

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

Estimated yield: 854 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 54 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 54 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	1676936
Well Owner	City of Olathe, KS
Contractor	Layne Christensen Company #102

Lithology

From	To	Lithology Intervals
0	1	topsoil
1	4	clay,brown
4	15	clay,silty,brown
15	28	sand,very fine
28	37	sand,fine to medium,brown,sand trace coarse
37	44	sand,fine to medium,clayey,grayish,brown
44	45	clay,gray
45	47	sand,fine to medium,gray,coarse
47	52	sand,fine to medium,coarse, trace gravel
52	53	other,boulders
53	64	sand,medium to coarse,trace gravel, rocks cobbles
64	67	limestone,unknown,brown

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:** 02/03/21

CITY: Olathe **STATE:** KS

TEST HOLE NO: VW-10

DRILLER: R. Bowles

TEST HOLE LOCATION: 38.9832622°, -094.9241407°

Northing 251557.000 Easting 2186523.000

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	4			Brown clay
4	15			Brown silty clay
15	28			Very fine sand
28	37	30	2”	Medium/fine brown sand trace coarse
37	44			Same with gray clay
44	45			Gray clay
45	47	31	2”	Fine/medium gray sand with coarse
47	52			Medium/fine with coarse, trace gravel
52	53			Boulders
53	64	31	4”	Medium/coarse with fines trace gravel, rocks, cobbles
64	67			Brown limestone

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

COMMENTS:

KANSAS CITY
TESTING & ENGINEERING, LLC

February 8, 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 #: K39699
Original Dry: 715.2
Location: Well 10
Depth: 30-35'

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	0.0	0	100
No. 4	4.75	26.9	4	96
No. 8	2.36	180.0	25	75
No. 16	1.180	536.6	75	25
No. 30	0.600	660.3	92	8
No. 50	0.300	673.0	94	6
No. 100	0.150	689.7	96	4
No. 200	0.075	695.8	97.3	2.7

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 8, 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 #: K39699
Original Dry: 610.0
Location: Well 10
Depth: 35-40'

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	0.0	0	100
No. 4	4.75	29.1	5	95
No. 8	2.36	206.4	34	66
No. 16	1.180	476.0	78	22
No. 30	0.600	553.2	91	9
No. 50	0.300	568.1	93	7
No. 100	0.150	583.0	96	4
No. 200	0.075	589.1	96.6	3.4

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Sam Coulson, PE
Lab Manager

KANSAS CITY
TESTING & ENGINEERING, LLC

February 8, 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 #: K39699
Original Dry: 1009.1
Location: Well 10
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	0.0	0	100
No. 4	4.75	39.2	4	96
No. 8	2.36	299.6	30	70
No. 16	1.180	756.4	75	25
No. 30	0.600	871.7	86	14
No. 50	0.300	902.1	89	11
No. 100	0.150	937.3	93	7
No. 200	0.075	950.0	94.1	5.9

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Sam Coulson, PE
Lab Manager

KANSAS CITY
TESTING & ENGINEERING, LLC

February 8, 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 #: K39699
Original Dry: 1319.9
Location: Well 10
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	0.0	0	100
No. 4	4.75	6.6	1	99
No. 8	2.36	379.5	29	71
No. 16	1.180	1022.4	77	23
No. 30	0.600	1177.6	89	11
No. 50	0.300	1222.3	93	7
No. 100	0.150	1274.6	97	3
No. 200	0.075	1286.1	97.4	2.6

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Lab Manager

KANSAS CITY
TESTING & ENGINEERING, LLC

February 8, 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 #: K39699
Original Dry: 851.7
Location: Well 10
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	1.4	0	100
No. 4	4.75	187.3	22	78
No. 8	2.36	432.6	51	49
No. 16	1.180	700.3	82	18
No. 30	0.600	779.5	92	8
No. 50	0.300	792.1	93	7
No. 100	0.150	807.4	95	5
No. 200	0.075	815.4	95.7	4.3

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

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Lab Manager

KANSAS CITY
TESTING & ENGINEERING, LLC

February 8, 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 #: K39699
Original Dry: 944.7
Location: Well 10
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	0.7	0	100
No. 4	4.75	100.3	11	89
No. 8	2.36	349.4	37	63
No. 16	1.180	733.1	78	22
No. 30	0.600	868.5	92	8
No. 50	0.300	889.9	94	6
No. 100	0.150	906.4	96	4
No. 200	0.075	914.1	96.8	3.2

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KANSAS CITY
TESTING & ENGINEERING, LLC

February 8, 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 #: K39699
Original Dry: 919.5
Location: Well 10
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	7.0	1	99
No. 4	4.75	172.3	19	81
No. 8	2.36	389.6	42	58
No. 16	1.180	718.3	78	22
No. 30	0.600	856.2	93	7
No. 50	0.300	872.8	95	5
No. 100	0.150	888.5	97	3
No. 200	0.075	895.3	97.4	2.6

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

Respectfully Submitted
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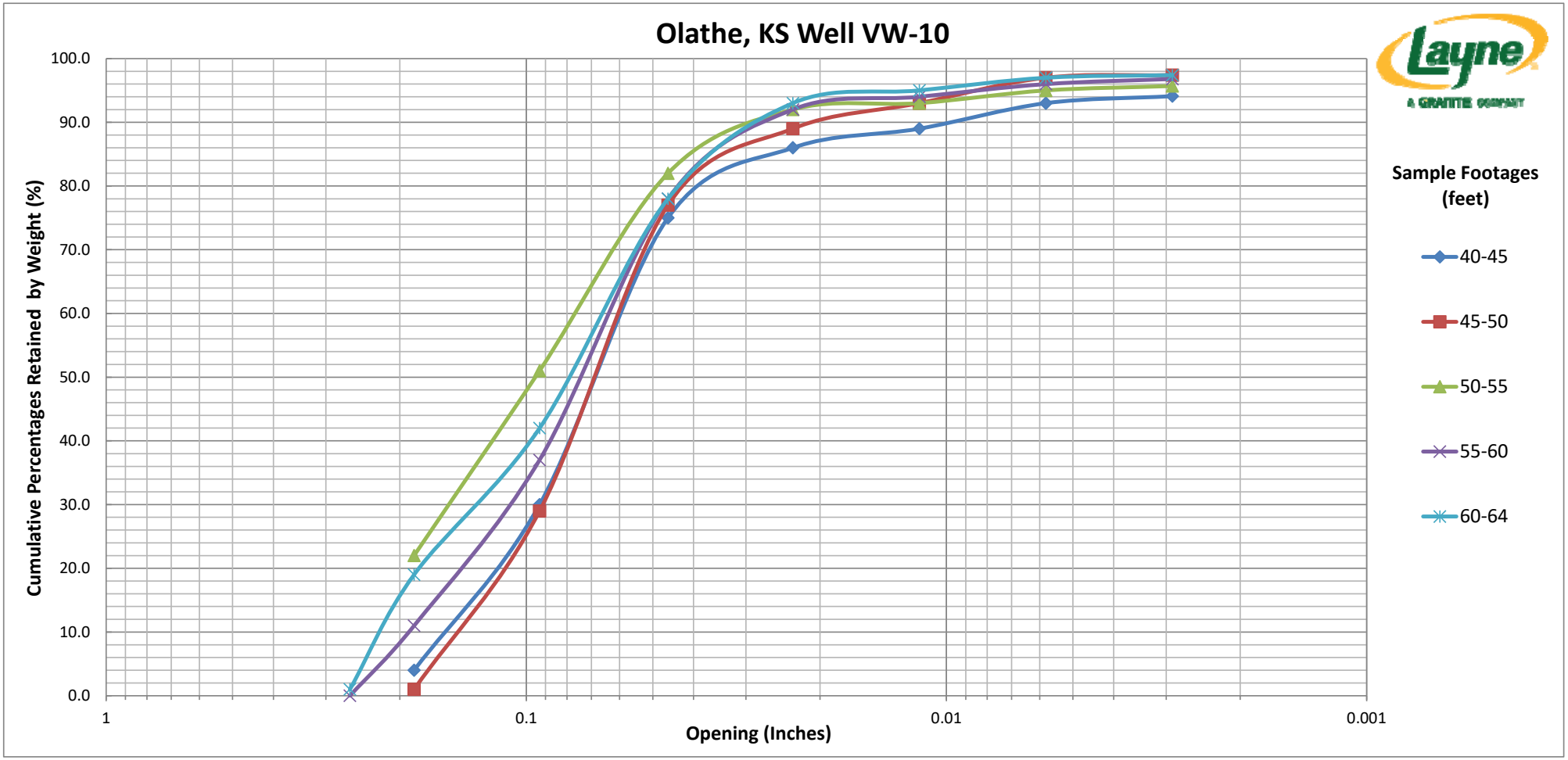
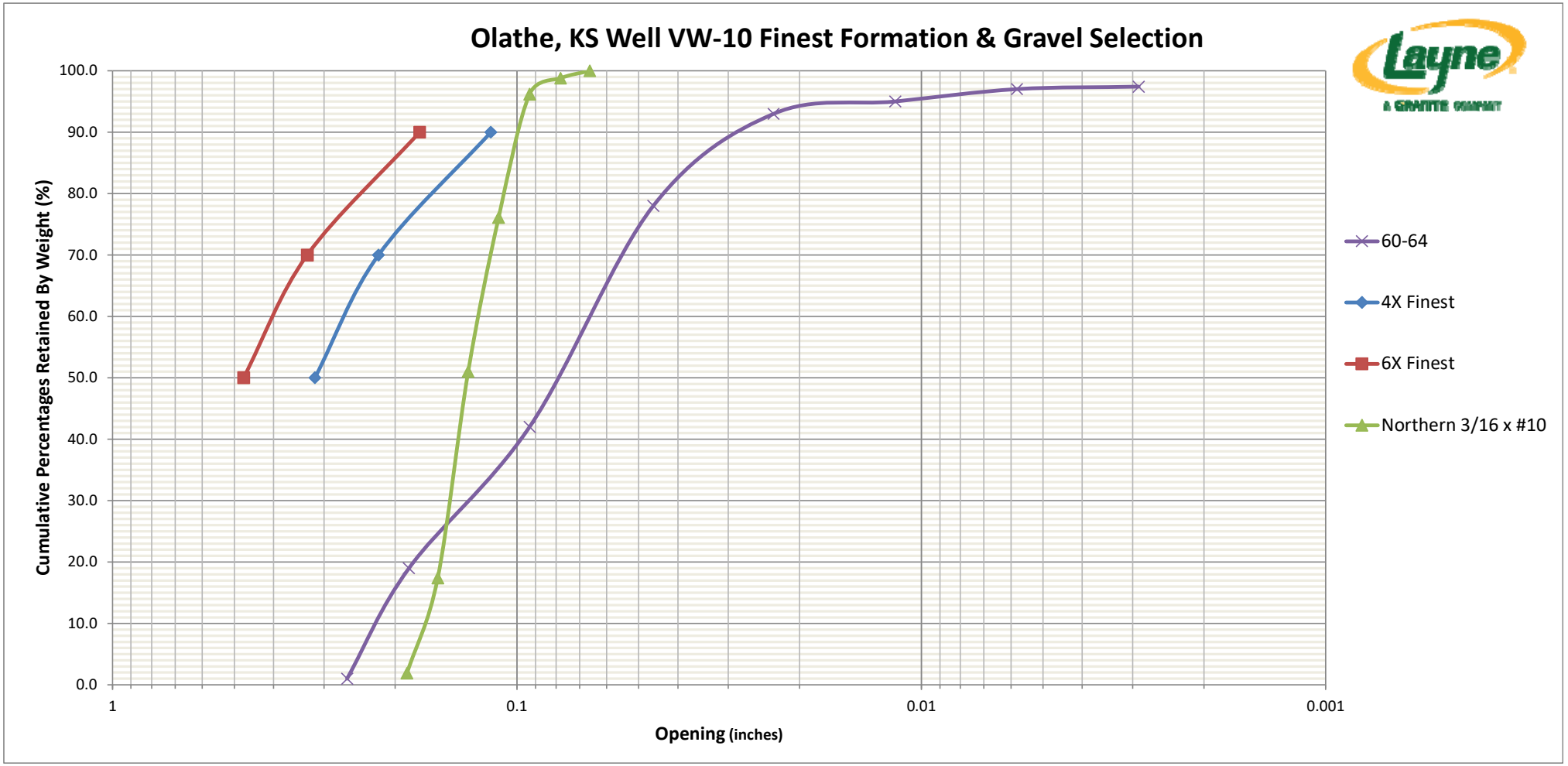
Sam Coulson, PE
Lab Manager


Olathe, KS Well VW-10
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)
40-45
45-50
50-55
55-60
60-64


Olathe, KS Well VW-10 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)
60-64
4X Finest
6X Finest
Northern 3/16 x #10

WELL SCREEN FLOW CALCULATION
City of Olathe, KS
Well VW-10
2/3/2021

KNOWN PARAMETERS:

1. Screen Diameter:	36	inches
2. Screen Length:	10	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 for blockage)

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

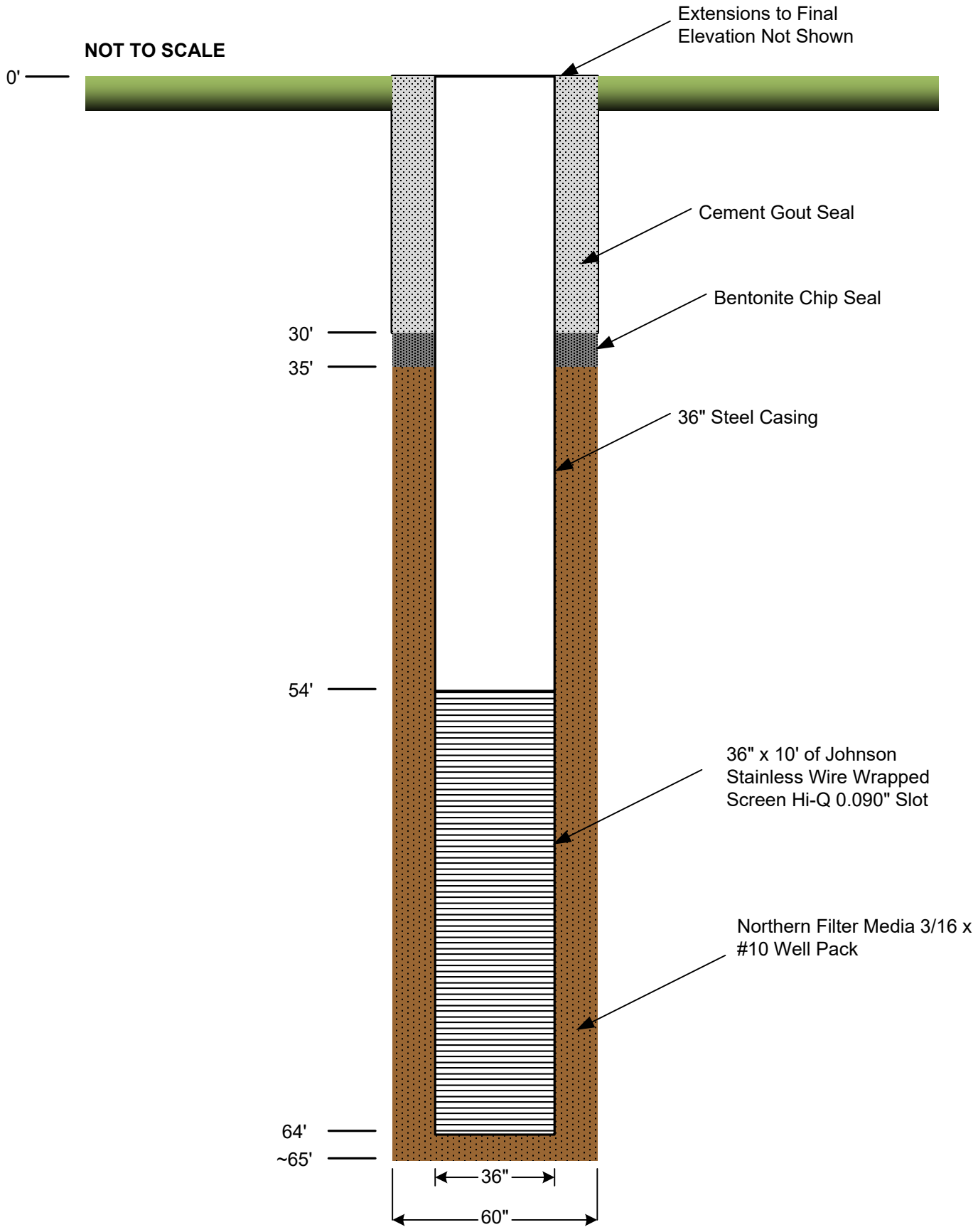
Q = (0.1 ft/sec) (60 sec/min) (274.0 in^2/lf) (1 ft^2/ 144 in^2) (7.48 gal/ft^2)

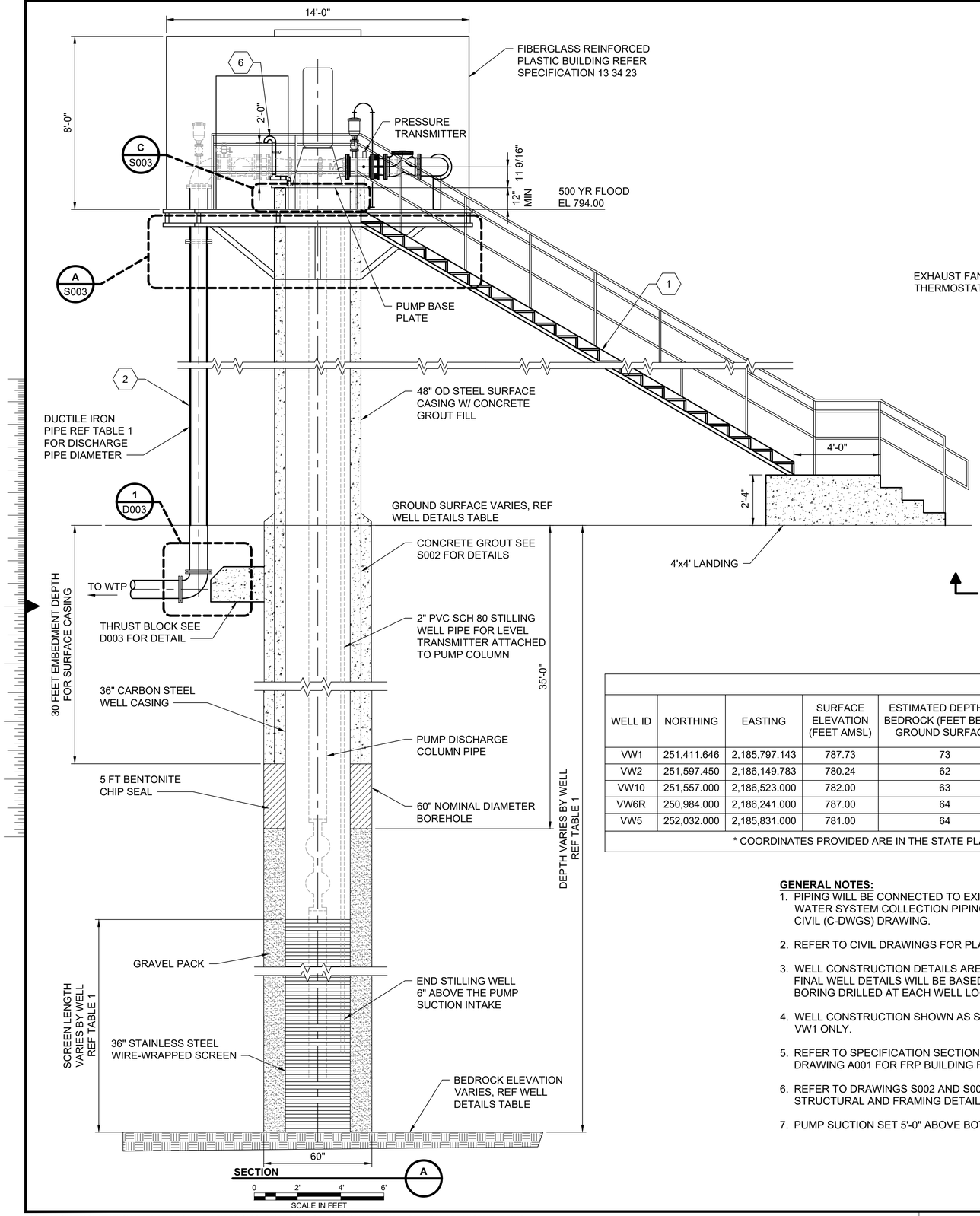
Q = 85.4 gpm/lf of screen

Q_{MAX} = (85.4 gpm/lf of screen) (10 lf of screen)

Q_{MAX} = 853.97 GPM

City of Olathe, KS
Well VW-10
2/17/2021 Proposed Construction





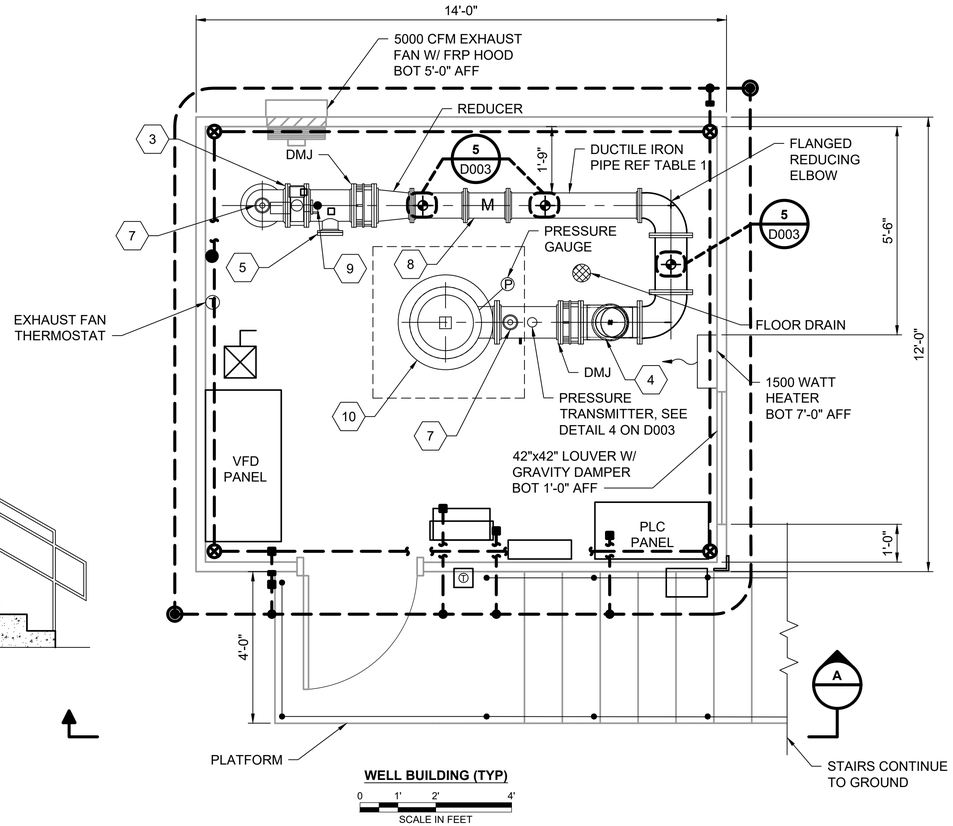


TABLE 1 - WELL DETAILS

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