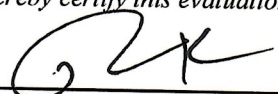


Soil Information

		Evidence of site:	
		Cut	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Filled	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Compacted	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Disturbed	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Original soils	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Soil logs completed and attached	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Perk test completed and attached (if applicable)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Soil loading rate (gpd/ft ²)	<u>0.60</u>	Percolation rate (if applicable)	<u>X</u>
Depth/elev to SHWT	<u>12.00</u>	Flooding or run-on potential (comments)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth to system bottom maximum (or elev minimum)	<u>-24.00</u>	Flood elevation (if applicable)	<u>X</u>
Depth/elev to standing water (if applicable)	<u>X</u>	Elevation of ordinary high water level (if applicable)	<u>X</u>
Depth/elev to bedrock (if applicable)	<u>X</u>	Floodplain designation and elev - 100 yr/10 yr (if applicable)	<u>X</u>
Soil Survey information determined (see attachment)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Differences between soil survey and field evaluation (if applicable)	<hr/> <hr/>		

I hereby certify this evaluation was completed in accordance with MN 7080 and any local req's.


Designer Signature

218 SEPTIC
Company
218-851-2013

29197
License #

Mound Design

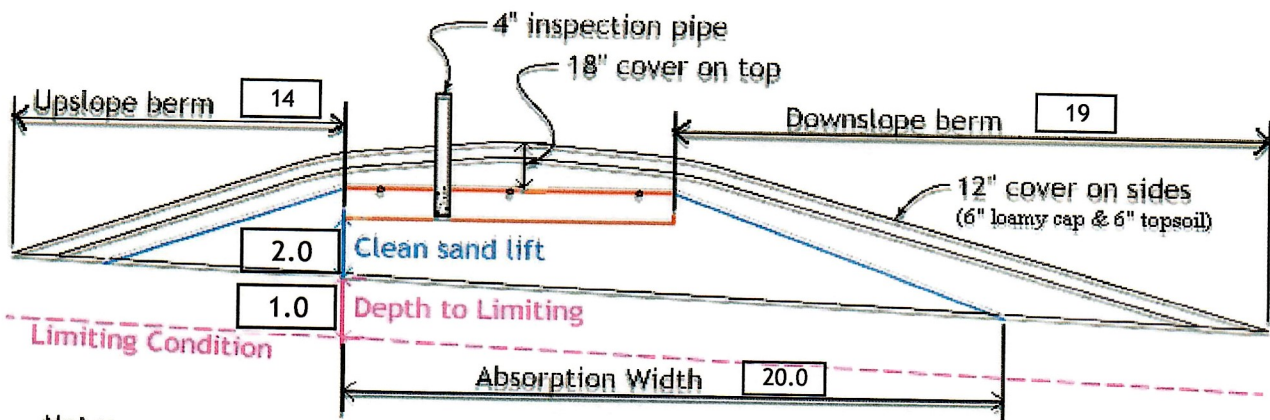
Property Owner: **Kathy Duclos** Date: **10/3/2024**
 Site Address: **41574 265th LN** PID: **11-0-030600**
 Comments: **new 1820 combo or 1500/500 lift 10x38 2ft mound**

Instructions: = enter data = adjust if desired = computer calculated - DO NOT CHANGE!

- 1) 3 bedroom Type I Residential System
- 2) 450 GPD design flow
- 3) No Garbage disposal or pumped to septic
- 4) 1500 Gal Septic tank (code minimum) 1500 Gal Septic tank (design size / LUG req'd)
 Tank options: none
- 5) 1.2 GPD/ft² mound sand loading rate contour loading rate of 12 req's a min 37.5 ft. long rockbed
- 6) 10.0 ft rockbed width 37.5 ft rockbed length
- 7) 3.0 ft lateral spacing 3.0 ft perforation spacing (maximum of 3 for both)
 end feed manifold connection
- 8) 3 laterals 35.5 feet long 12.0 perfs / lateral 36 perfs total
 (1/2 a perf means the first perf starts at the middle feed manifold)
- 9) 1/4" inch perfs at 1 feet residual head gives 0.74 gpm flow rate per perforation
 for this perf size & spacing, & pipe size on line 12, max perfs/lateral = 25, line #8 must be less --> OK
- 10) 4.0 doses per day (4 minimum)
- 11) 113 gallons per dose (treatment volume)
- 12) 2.00 inch diameter laterals must be used to meet "4x pipe volume" requirement
- 13) 100 feet of 2.0 inch supply line leads to 17 gallons of drainback volume
 (Tip: "top feed" manifold to control the drainback)
- 14) 130 gallons TOTAL pump out volume (treatment + drainback)
- 15) 8 feet vertical lift from pump to mound laterals, leads to a:
- 16) 27 GPM @ 16 feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)
- 17) 500 gal Dose tank (code minimum) 500 gal Dose tank (design size / LUG req'd) at 14.00 gpi
 leads to a: Optional Time dosing of:
- 18) 9.3 inch swing on Demand float, (this delivers Average flow, =70% of Peak design flow)
- 19) 12 inches from bottom of tank to "Pump OFF" float 4.8 min ON
- 20) 21 inches from bottom of tank to "Pump ON" float 8.5 hrs OFF
- 21) 24 inches from bottom of tank to "Hi Level" float 12 inches to "Timer ON" float
- 34 inches to "Hi Level" float
- 22) 164 gallons reserve capacity (after High Level Alarm is activated-demand dosed)

23) 0.60 gpd/ft² Absorption area Soil Loading Rate, which gives a mound ratio of 2 (minimum)

- (this must match the soil boring log) desired mound ratio **2.0**
- 24) **3** percent site slope (0-20% range) **3** (% downslope site slope, if different than upslope)
- 25) **12** inches, or **1.0** ft. to Redox or other limiting condition (need at least 12" to be a Type I)
- 26) Treatment zone contains **0** inches of 0% soil credit, and **0** inches of 50% soil credit. Giving a: **24** inch, or **2.0** ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**
- 27) **20.0** ft. Total ABSORPTION width (with sand beyond rockbed as follows:)
- 28) **0.0** ft. upslope and sideslope
10.0 ft. Downslope
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29) **4:1** upslope ratio **14** ft. upslope berm
- 30) **4:1** sideslope **16** ft. sideslope berms
- 31) **4:1** downslope **19** ft. downslope berm
- 32) Overall Dimensions: **10.0** ft. wide by **37.5** ft. long Rock bed
43 ft. wide by **70** ft. long Mound footprint



Note:

For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.
For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

- 33) Rock Bed: **10.0** ft. by **37.5** ft. by **6** inches under pipe, plus 20% gives **13** yd³ or *1.4= **18** ton
- 34) Mound Sand: (note: volume is based on 3:1/4:1 slope from top of rockbed, Exchange sand for loamy cap if desired)
36.6 up + **56.3** downslope + **16.1** ends + **29.9** under rock = **167** yd³ or *1.4= **233** ton plus 20%
- 35) Loamy Cap: **39** ft. by **66** ft. 6" deep, plus 20% gives **57** yd³ or *1.4= **80** ton
- 36) Topsoil: **43** ft. by **70** ft. 6" deep, plus 20% gives **67** yd³ or *1.4= **94** ton

I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

[Signature]
Designer Signature

Z18 SEPTIC
Company

L4197
License#

10/3/2024
Date

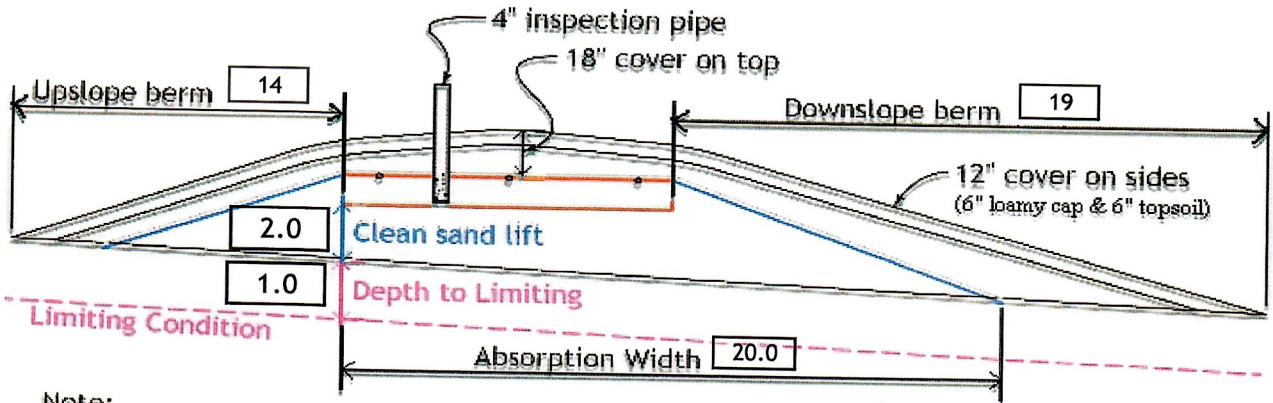
Installer Summary

1500 gallon Septic tank (minimum)

Tank options: none

- 500 gallon Dose tank (minimum) at 14.00 gpi
- 27 GPM @ 16 ft. of head, Pump required
- 9.3 inch swing on Demand float which translates to roughly 5.7 inches of float tether length
- Optional Time dosing of:
 - 4.8 minutes ON
 - 8.5 hours OFF
 - 12 inches to "timer ON" float
 - 34 inches to "Hi level" float
- 21 inches from bottom of tank to "pump ON" float, or
- 24 inches from bottom of tank to "Hi Level Alarm" or
- 100 ft. of 2.0 inch supply line with end feed manifold connection (Tip: "top feed" manifold to control drainback)
- 24 inch, or 2.0 ft. Sand Lift Mound
- 10.0 ft. wide by 37.5 ft. long Rock bed
- 3 laterals 2.00 inch diameter 35.5 ft. long 3.0 ft. lateral spacing
- 1/4" inch perfs 3.0 ft. perforation spacing
- No Effluent filter & alarm
- 3 clean out & valve box assemblies
- 20.0 ft. Total sand ABSORPTION width (minimum)
 - 0.0 ft. upslope and sideslope (sand beyond rockbed, minimum)
 - 10.0 ft. Downslope (sand beyond rockbed, minimum)
- Specific slope ratios give BERM widths (topsoil beyond rockbed) of:

4:1 upslope ratio	14 ft. upslope berm
4:1 sideslope	16 ft. sideslope berms
4:1 downslope	19 ft. downslope berm



Note:
 For 0 to 1% slopes, Absorption Width is measured from the *Bed* equally in both directions.
 For slopes >1%, Absorption Width is measured downhill from the upslope edge of the *Bed*.

Rock Bed:	13.0 yd ³ or *1.4=	18 ton	6 inches under pipe
Mound Sand:	167 yd ³ or *1.4=	233 ton	calculation based on 3:1/4:1 slope from top of rockbe
Loamy Cap:	57 yd ³ or *1.4=	80 ton	6" deep
Topsoil:	67 yd ³ or *1.4=	94 ton	6" deep

INSPECTOR CHECKLIST - mound

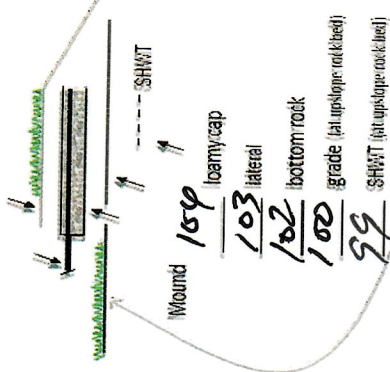
- 415/4 265th LN
- WELL setbacks: 20'- 50' to sewer line req's MDH pressure test form (5 psi for 15 min)
50' to everything 100' to drainfield with shallow well
- PROPERTY LINES setback: 10' to everything
- Road setback: platted: 10' prop line. Metes & bounds: out of road easement, or outer ditch.
- LAKE / BLUFF setback: 20' for bluff. Lakes: GD __, RD __, NE __. Protected wetland __.
- Building setbacks: 10' for everything, 20' for dispersal area.
- WATER LINE under pressure 10' to bed, tank & sewer line. (else sewer line > 12" below)

- Sewer line & tank connection (no hard 90's, long sweep 90 or 2-45's, slope minimum 1" in 8' = 1%)
(no depth req's, clean out every 100', Sch 40 pipe)
- Septic tank and risers (water tight risers, baffles, insulated, proper depth, existing verified by pumping)
mfg _____ 1500 gallons none _____
- Riser over outlet, riser over inlet or center, and 6"+ inspection pipe over any remaining baffles.
- No effluent filter & alarm
- Dose tank, risers and piping (water tight risers, insulated, proper depth, drainback)
mfg _____ 500 gallons
- dose pump _____ 27 gpm 16 head VERIFY PUMP CURVE
- verify that installed "vertical lift from pump to laterals" is no more than design value of 8 feet
- float setting drop 9.3 inches at 14.0 gpi "DESIGNED" 5.7 inches approx float tether length
130.0 gal dose divided by _____ gpi "INSTALLED" = _____ inches float drop (field corrected)
- Optional Time dosing of:
4.8 min ON 8.5 hr OFF
- LABEL pump requirements and drawdown on riser or panel
- Cam lock reachable from grade - 30" max. J-hook weep hole. Supply line access (no hard 90's)
2.0 inch supply pipe: Sch40, sloped 1/8"+, supported by 4" sch40 sleeve or compacted, and buried 6"+.
- splice box / control panel / electrical connections / Hi Level Alarm
- flow measurement: CT, ETM, time dosed, home water meter
- mound absorption area rough up
- mound rock dimensions 10.0 X 37.5
- Sand lift depth 24 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)
- Absorption Sand beyond rock 0.0 upslope 10.0 downslope
- Bermed topsoil beyond rockbed 14 upslope 16 sideslope 19 downslope
- cover depth of 12-18"+ VERIFY
- 3 laterals (1-2' from edge of rock)
- 2.00 inch pipe size (Sch40 pipe & fittings)
- 3.0 ft lateral spacing
- 1/4" inch perforations
- 3.0 ft perforation spacing
- Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- clean outs (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY
- Abandon existing system - if necessary _____ Re-use existing tank certification
- monitoring plan and type _____
- well abandonment form - if necessary _____

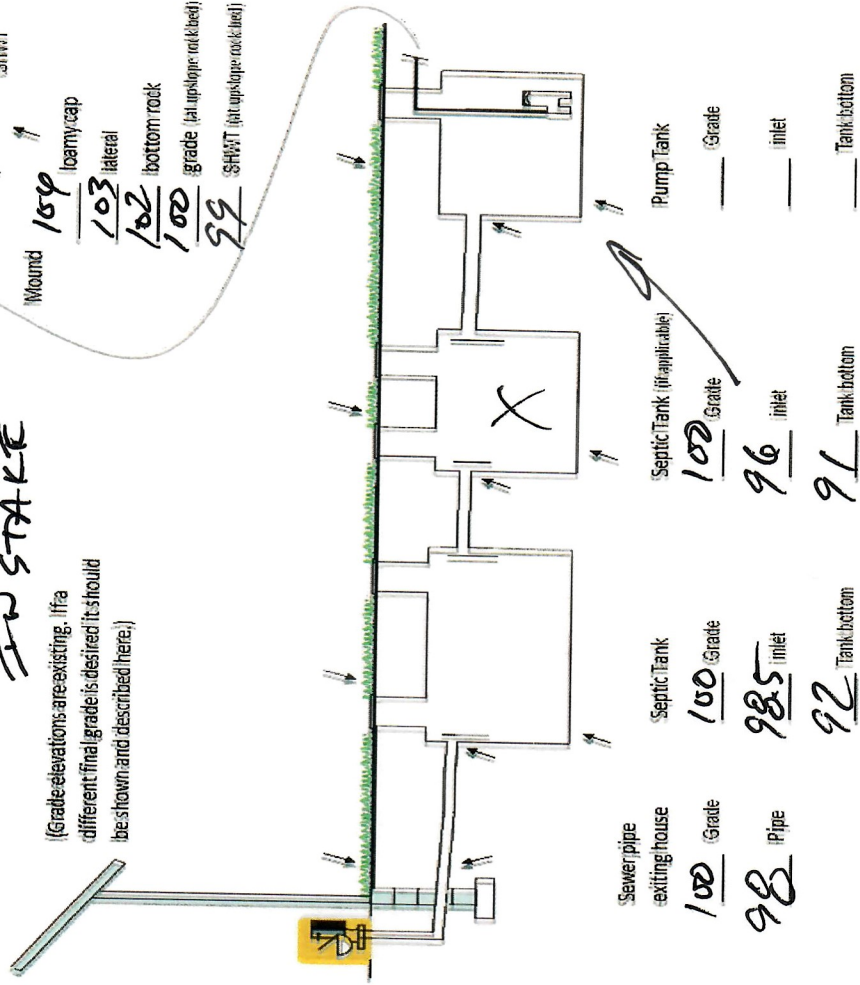
System Elevations

benchmark NATC
FW STAKE

(Grade elevations are existing, if a different final grade is desired it should be shown and described here.)



- Wound 159
- loamy cap 103
- lateral 102
- bottom rock 100
- grade (at upslope rock bed) 99
- SHWT (at upslope rock bed)

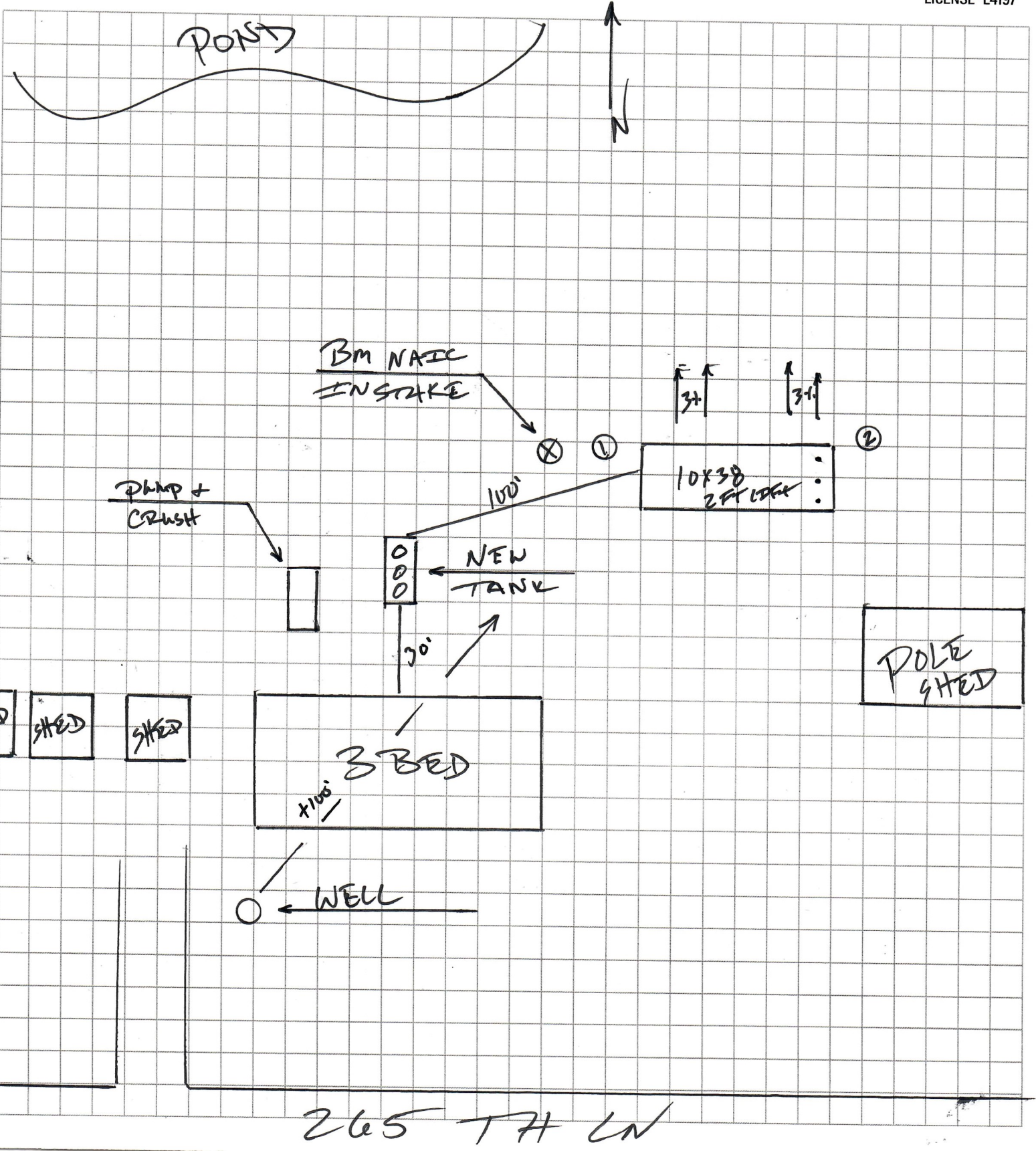


- Sewer pipe exiting house 100 (Grade)
- IPipe 98
- Septic Tank 100 (Grade)
- Septic Tank (if applicable) 100 (Grade)
- Pump Tank (Grade)
- inlet 98.5
- inlet 96
- inlet
- Tank bottom 92
- Tank bottom 91
- Tank bottom



PARCEL #	11-0-030600
DATE	10/3/24

LICENSE -L4197



#1 DEPTH	TEXTURE	HUE/VALUE/CHROMA	ROCK %
0-10	SL	10YR 3/1	0
10-17	LOAM	10YR 5/3	0
17	LOAM	10YR 5/3	
		4/2	

#2 DEPTH	TEXTURE	HUE/VALUE/CHROMA	ROCK%
0-8	SL	10YR 3/1	0
8-12	LOAM	10YR 5/3	0
12	LOAM	10YR 5/3	0
		4/2	0

#3 DEPTH	TEXTURE	HUE/VALUE/CHROMA	ROCK%

<p>NEW DESIGN:</p> <p>MAX DEPTH OF DF- 12 FT</p> <p>MOUND - 1 FT (2 FT) 3 FT 10x38</p> <p>P.BED SIZE- —</p> <p># OF TRENCHES/FT- —</p> <p>RESTRICTIVE DEPTH- 12"</p> <p>SOIL SIZING- NOTES:</p>	<p>INSPECTION:</p> <p>DEPTH TO TOP OF ROCK-</p> <p>DEPTH TO BTM OF ROCK-</p> <p>DEPTH OF SYSTEM-</p> <p>SAND LIFT FT-</p> <p>RESTRICTIVE BORING DEPTH-</p> <p>SYSTEM SEPARATION-</p> <p>NOTES:</p>
---	--

PARCEL#	218 SEPTIC Raini Kohl <i>OK</i>	DATE: 9/26/24
---------	------------------------------------	---------------

Property ID (PIN): 11-0-030600
Tax District: HAZELTON TWP
Taxpayer Name: DUCLOS, KATHLEEN L & BRUCE
Taxpayer Address: 41574 265TH LN
Taxpayer Address 2: AITKIN MN 56431
Taxpayer Address 3:
Taxpayer Address 4:
Owner Name: DUCLOS, KATHLEEN L & BRUCE
Owner Address: 41574 265TH LN
Owner Address 2: AITKIN MN 56431
Owner Address 3:
Owner Address 4:
Township: 45.0
Range: 27
Section: 11
Physical House Number:41574
Physical Address: 41574 265th Ln
Physical City: AITKIN
Physical Zip: 56431

FIELD EVALUATION SHEET

Sewer Site locations

PRELIMINARY EVALUATION DATE May 7, 2021, FIELD EVALUATION DATE May 7, 2021
 PROPERTY OWNER: Bruce + Kathy Duclos PHONE _____
 ADDRESS: 41574 - 265th Lane CITY, STATE, ZIP: Aitkin, Mn. 56431
 LEGAL DESCRIPTION: _____
 PIN# _____ SEC _____ T _____ R _____ TWP NAME Hazleton
 FIRE# _____ LAKE/RIVER _____ LAKE CLASS _____ OHWL _____ F _____

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2	REFERENCE BM ELEV. _____ F
DISTURBED AREAS	YES _____ NO <u>X</u>	YES _____ NO <u>X</u>	REFERENCE BM DESCRIPTION _____
COMPACTED AREAS	YES _____ NO <u>X</u>	YES _____ NO <u>X</u>	_____
FLOODING	YES _____ NO <u>X</u>	YES _____ NO <u>X</u>	_____
RUN ON POTENTIAL	YES _____ NO <u>X</u>	YES _____ NO <u>X</u>	_____
SLOPE %	<u>4</u>	<u>6</u>	_____
DIRECTION OF SLOPE	<u>S-N</u>	<u>S-N</u>	_____
LANDSCAPE POSITION	<u>E-W</u>	<u>E-W</u>	_____
VEGETATION TYPES	<u>Wooded</u>	<u>Wooded</u>	_____

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING# 1 13", 1A 14", 2 17", 2A 17"

BOTTOM ELEVATION--FIRST TRENCH OR BOTTOM OF ROCK BED: #1 _____ FT., #2 _____ FT.

SOIL SIZING FACTOR: SITE #1 2.00, SITE #2 2.00

CONSTRUCTION RELATED ISSUES: There could be other possible sites on this property

LIC# 2132 SITE EVALUATOR SIGNATURE: Tom O'Neil

SITE EVALUATOR NAME: Tom O'Neil TELEPHONE# 218-927-6070

LUG REVIEW _____ DATE _____

Comments: _____

SOIL BORING LOGS ON REVERSE SIDE

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-6	loam	10Yr 3/2
6-12	loam	10Yr 4/3
12-16	Silty loam	10Yr 4/6
mottles at 13"		

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-6	loam	10Yr 3/2
6-13	loam	10Yr 4/3
13-17	Silty loam	10Yr 5/4
mottles at 13"		

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-6	loam	10Yr 3/2
6-12	loam	10Yr 4/3
12-16	Sandy loam	10Yr 4/4
16-18	Silty loam	10Yr 5/4
mottles at 17"		

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-7	loam	10Yr 3/2
7-11	loam	10Yr 4/3
11-17	Sandy loam	10Yr 4/4
17-20	Silty loam	10Yr 5/4