

Mound Design

*2 FT
LIFT*

Property Owner: **Mark and Laura Marron** Date: **4/23/2024**
 Site Address: **40795 Diamond lake ST** PID: **07-0-047712**
 Comments: **10x50 2ft lift 1820 combo tank**

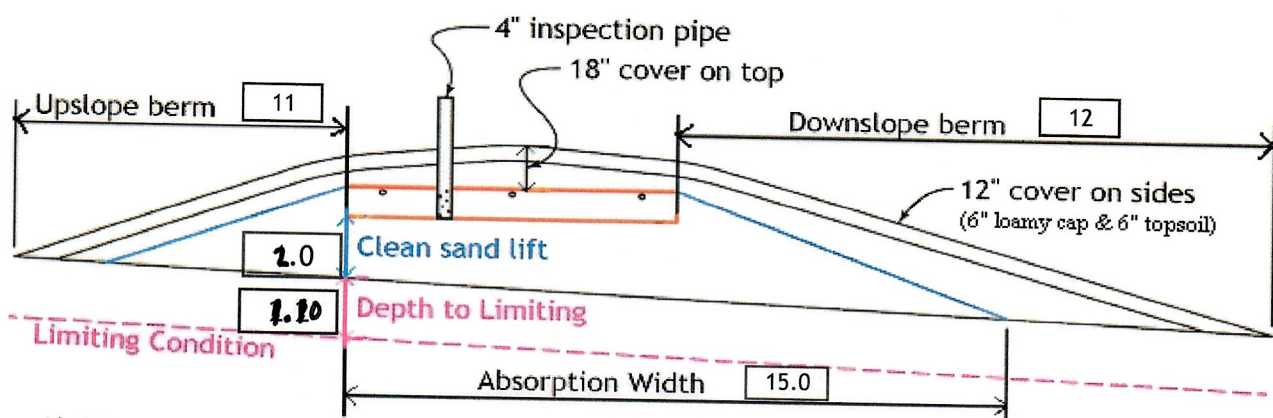
instructions: = enter data = adjust if desired = computer calculated - DO NOT CHANGE!

- 1) 4 bedroom Type I Residential System
- 2) 600 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 50 ft. long rockbed
- 6) 10.0 ft rockbed width 50.0 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 48.0 feet long 17.0 perfs / lateral 51 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) 150 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) 167 gallons TOTAL pump out volume (treatment + drainback)
- 15) 20 feet vertical lift from pump to mound laterals, leads to a:
- 16) 38 GPM @ 30 feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)
- 17) 666 gal Dose tank (code minimum) 666 gal Dose tank (design size / LUG req'd) at 12.00 gpi
leads to a: Optional Time dosing of:
- 18) 13.9 inch swing on Demand float, (this delivers Average flow, =70% of Peak design flow)

4.4	min ON
8.5	hrs OFF
12	inches to "Timer ON" float
39	inches to "Hi Level" float
- 19) 12 inches from bottom of tank to "Pump OFF" float
- 20) 26 inches from bottom of tank to "Pump ON" float
- 21) 29 inches from bottom of tank to "Hi Level" float
- 22) 318 gallons reserve capacity (after High Level Alarm is activated-demand dosed)

23) 0.78 gpd/ft² Absorption area Soil Loading Rate, which gives a mound ratio of 1.5 (minimum)

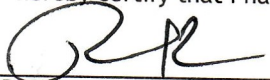
- (this must match the soil boring log) desired mound ratio
- 24) percent site slope (0-20% range) (% downslope site slope, if different than upslope)
- 25) inches, or ft. to Redox or other limiting condition (need at least 12" to be a Type I)
- 26) Treatment zone contains inches of 0% soil credit, and inches of 50% soil credit. Giving a:
 inch, or ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**
- 27) ft. Total ABSORPTION width (with sand beyond rockbed as follows:)
- 28) ft. upslope and sideslope
 ft. Downslope
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29) upslope ratio ft. upslope berm
- 30) sideslope ft. sideslope berms
- 31) downslope ft. downslope berm
- 32) Overall Dimensions: ft. wide by ft. long Rock bed
 ft. wide by 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: ft. by ft. by inches under pipe, plus 20% gives yd³ or *1.4= 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)
 up + downslope + ends + under rock = yd³ or *1.4= ton
 plus 20%
- 35) Loamy Cap: ft. by ft. 6" deep, plus 20% gives yd³ or *1.4= ton
- 36) Topsoil: ft. by ft. 6" deep, plus 20% gives yd³ or *1.4= ton

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


 Designer Signature

218 SEPTIC
 Company

4997
 License#

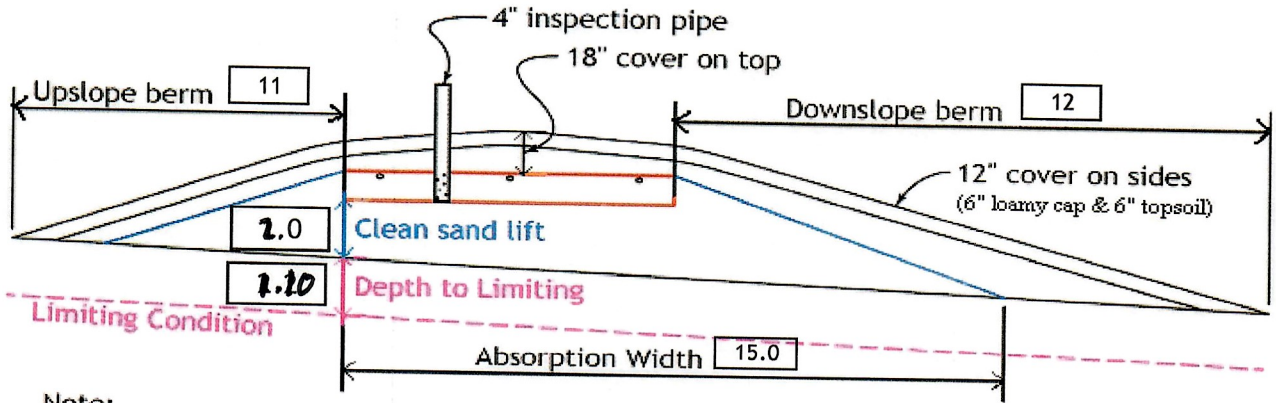
4/23/2024
 Date

218-851-2013
Installer Summary 218SEPTIC@MAEC.com

gallon Septic tank (minimum) Tank options: none

- 666 gallon Dose tank (minimum) at 12.00 gpi
- 38 GPM @ 30 ft. of head, Pump required
- 13.9 inch swing on Demand float which translates to roughly 8.0 inches of float tether length
- Optional Time dosing of:
 - 4.4 minutes ON
 - 8.5 hours OFF
 - 12 inches to "timer ON" float
 - 39 inches to "Hi level" float
- 26 inches from bottom of tank to "pump ON" float, or
- 29 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)
- 12 inch, or 1.0 ft. Sand Lift Mound
- 10.0 ft. wide by 50.0 ft. long Rock bed
- 3 laterals 2.00 inch diameter 48.0 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
- 15.0 ft. Total sand ABSORPTION width (minimum)
 - 2.5 ft. upslope and sideslope (sand beyond rockbed, minimum)
 - 2.5 ft. Downslope (sand beyond rockbed, minimum)
- Specific slope ratios give BERM widths (topsoil beyond rockbed) of:

4:1 upslope ratio	11 ft. upslope berm
4:1 sideslope	12 ft. sideslope berms
4:1 downslope	12 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:	17.0 yd ³ or *1.4=	24 ton	6 inches under pipe
Mound Sand:	81 yd ³ or *1.4=	113 ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	46 yd ³ or *1.4=	64 ton	6" deep
Topsoil:	55 yd ³ or *1.4=	77 ton	6" deep

INSPECTOR CHECKLIST - mound

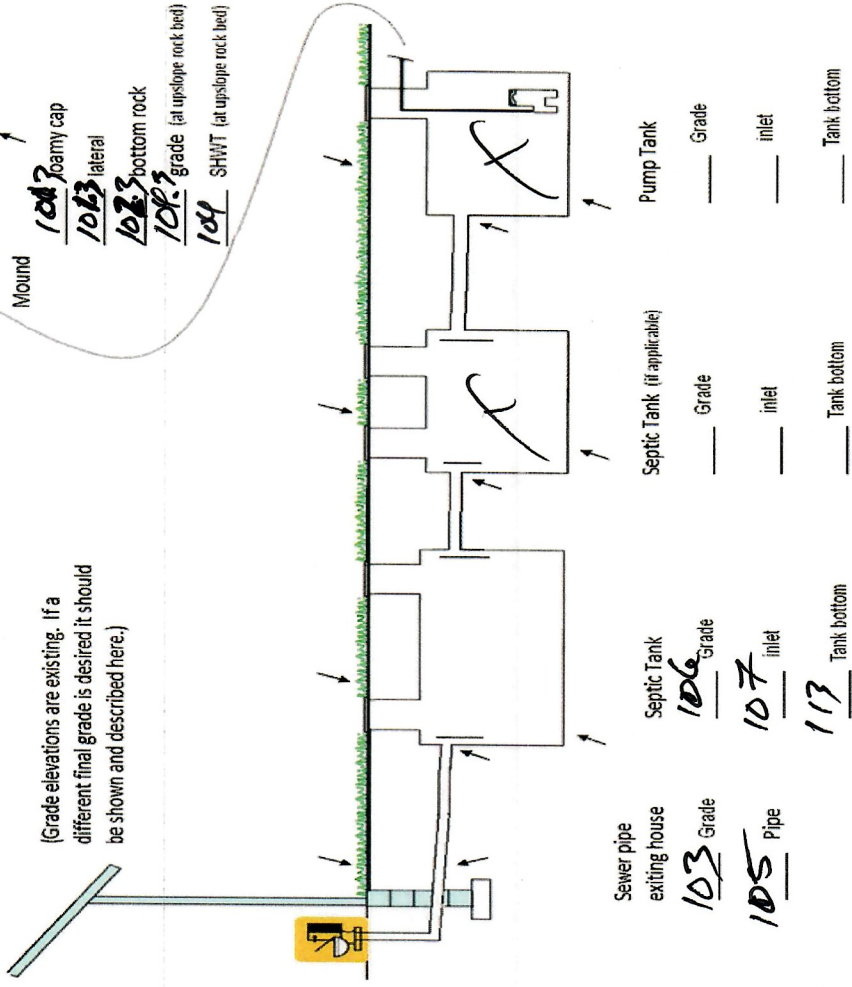
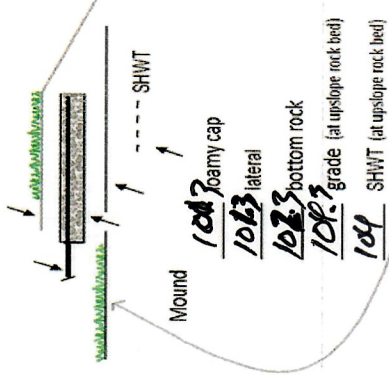
- 40/95 Diamond lake SI
- WELL setbacks:
 - 20'- 50' to sewer line req's MDH pressure test form (5 psi for 15 min)
 - 50' to everything 100' to drainfield with shallow well
- PROPERTY LINES setback: 10' to everything
- Road setback: platted: 10' prop line. Metes & bounds: out of road easement, or outer 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 _____ 666 gallons
- dose pump _____ 38 gpm 30 head VERIFY PUMP CURVE
- verify that installed "vertical lift from pump to laterals" is no more than design value of 20 feet
- float setting drop 13.9 inches at 12.0 gpi "DESIGNED" 8.0 inches approx float tether length
- 167.0 gal dose divided by _____ gpi "INSTALLED" = _____ inches float drop (field corrected)
- Optional Time dosing of:
4.4 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 50.0
- Sand lift depth 24 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)
- Absorption Sand beyond rock 2.5 upslope 2.5 downslope
- Bermed topsoil beyond rockbed 11 upslope 12 sideslope 12 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 102.3

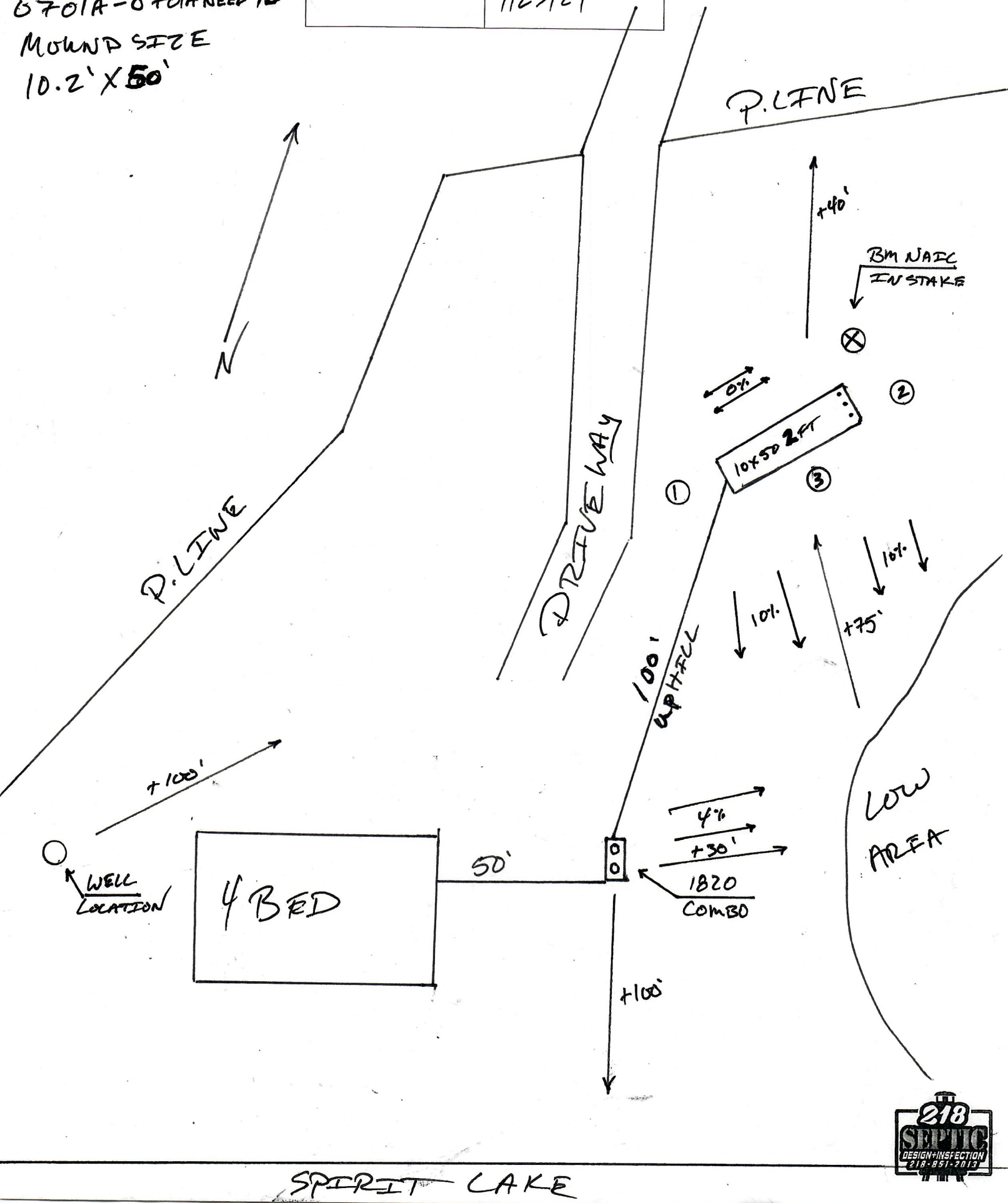
(Grade elevations are existing. If a different final grade is desired it should be shown and described here.)



EZ FLOW

1203/1203H NEED 45
0701A-0701A NEED 10
MOUND SIZE
10.2' X 50'

Parcel #	07-0-047712
DATE	4/23/24

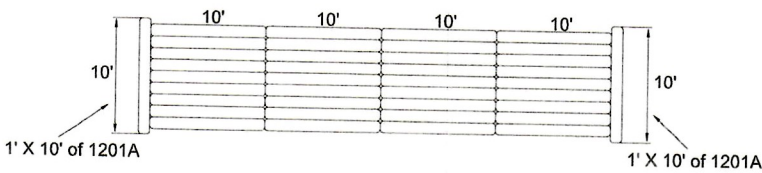
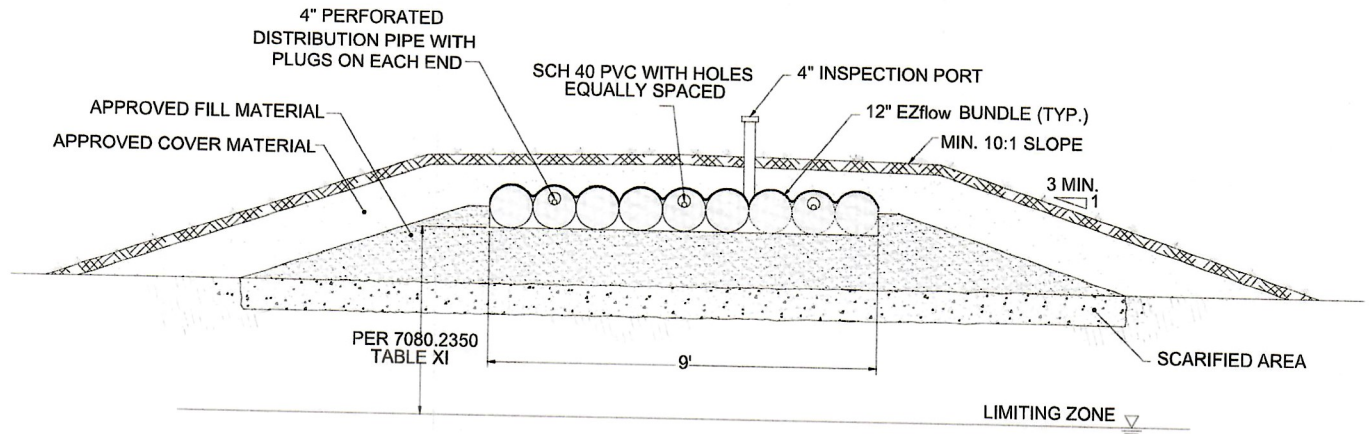


SYSTEM CONFIGURATIONS

Typical Mound Layouts Containing EZflow 1203H/1203-GEO and 0701A/0701A-GEO

Minnesota 3 Bedroom Mound System

Typical (not to scale)



7080 Sizing for a Distribution Cell for a 3 Bedroom Residence:

150 GPD per Bedroom x 3 Bedroom = 450 GPD
 $450 \text{ GPD} \div 1.2 \text{ GPD/SF} = 375 \text{ SF}$

Sizing for the Same Mound with EZflow Product:

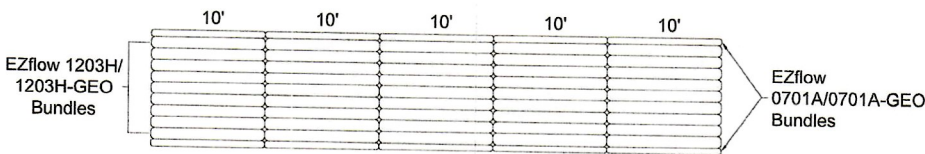
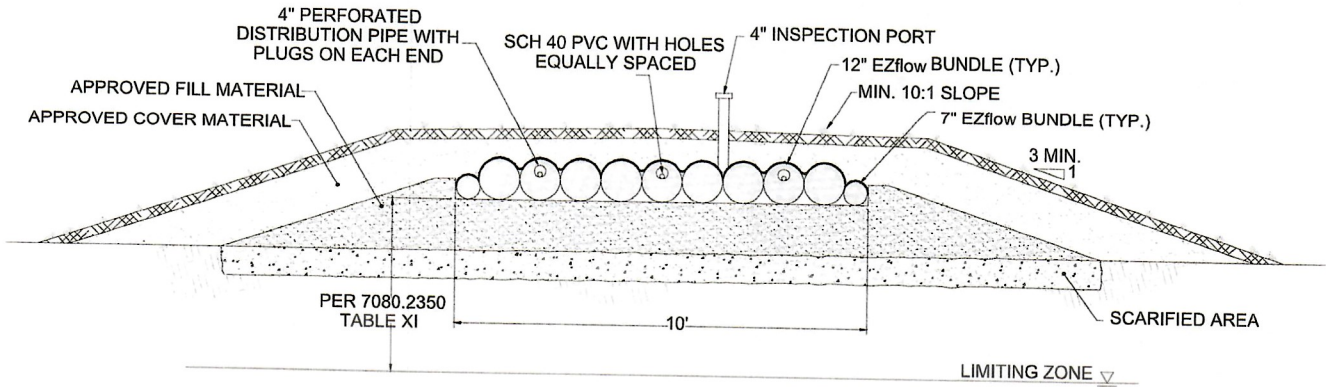
$9' \times 40' = 360 \text{ Sq Ft}$
 $1' \times 10' = 10 \text{ Sq Ft}$
 $1' \times 10' = 10 \text{ Sq Ft}$
 Total Square Footage = 380 Sq Ft

NOTE:

1. Both EZflow configurations with and without "GEO" must be covered with an external non-oven geotextile fabric in mound applications.

Minnesota 4 Bedroom Mound System

Typical (not to scale)



7080 Sizing for a Distribution Cell for a 4 Bedroom Residence:

150 GPD per Bedroom x 4 Bedroom = 600 GPD
 $600 \text{ GPD} \div 1.2 \text{ GPD/SF} = 500 \text{ SF}$

Sizing for the Same Mound with EZflow Product:

$10' \times 50' = 500 \text{ Sq Ft}$
 Total Square Footage = 500 Sq Ft

NOTE:

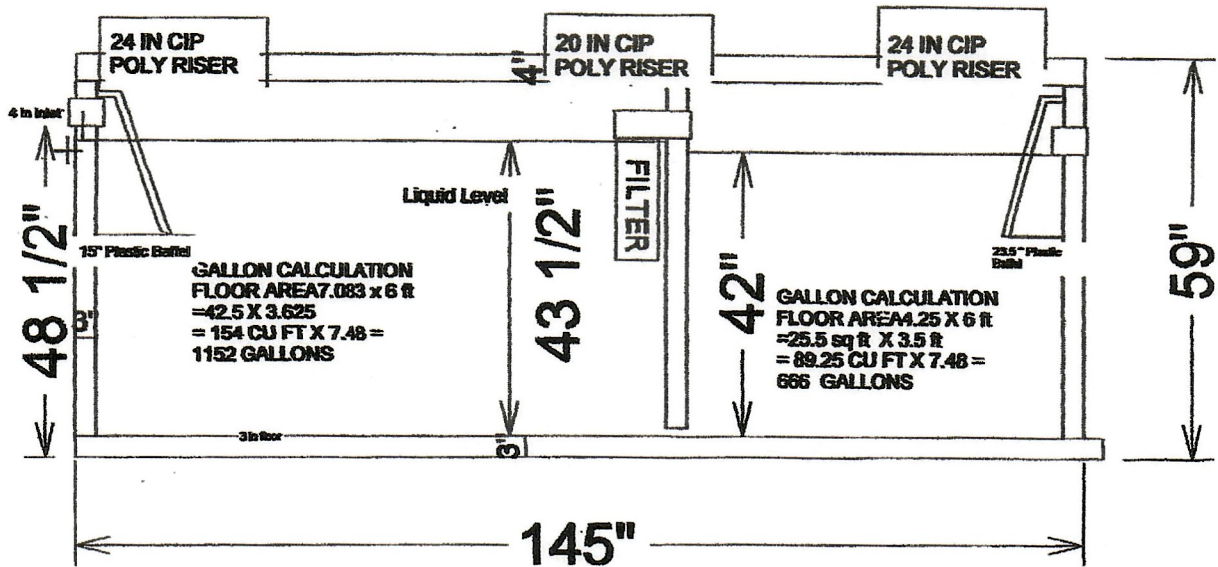
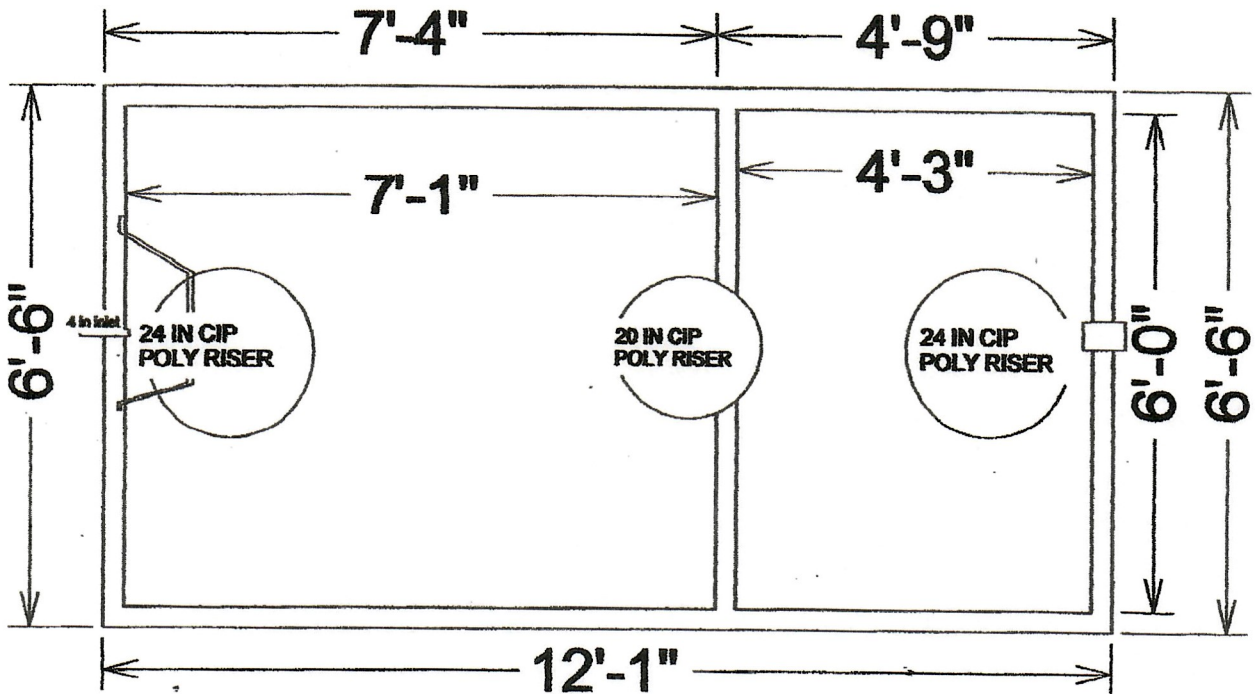
1. Both EZflow configurations with and without "GEO" must be covered with an external non-oven geotextile fabric in mound applications.

Contact Infiltrator's Technical Services Department for assistance at 1-800-221-4436

1820 Gallon 2 Compartment Septic Tank

Weight: 13,780 Lbs

TOP VIEW



SIDE VIEW

Drawings Owned BY Jacobson Precast, Inc.
 36641 HWY 169, Aitkin, Mn 56431



Soil Observation Log

Project ID: **v 03.15.2023**

Client: **Marron** Location / Address: **40795 diamond lake st**

Soil parent material(s): (Check all that apply) Outwash Lacustrine Loess Till Alluvium Bedrock Organic Matter Disturbed/Fill

Landscape Position: **Summit** Slope %: **0.0** Slope shape: **Linear, Linear** Flooding/Run-On potential: **No**

Vegetation: **Grass** Soil survey map units: **2pm** Surface Elevation-Relative to benchmark: **104.3**

Date/Time of Day/Weather Conditions: **4/18/2024** **sunny** Limiting Layer Elevation: **106.9**

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Structure		
							Shape	Grade	Consistence
0-6	Medium Loamy Sand	0	10YR 4/4				Single grain	Weak	Friable
6-30	Medium Loamy Sand	20	10YR 5/4				Single grain	Weak	Friable
30	Loam	20	10YR 5/4	10YR 5/2	Concentrations	52	Single grain	Moderate	Firm

Comments:

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

Raini Kohl 218 SEPTIC **L4197** **4/23/24**
 (Designer/Inspector) (License #) (Date)

Optional Verification: I hereby certify that this soil observation was verified according to Minn. R. 7082.0500 subp. 3 A. The signature below represents an infield verification of the periodically saturated soil or bedrock at the proposed soil treatment and dispersal site.

 (LGU/Designer/Inspector) (Signature) (Cert #) (Date)



Soil Observation Log

Project ID:

v 03.15.2023

Client: Marron Location / Address: 40795 diamond lake st

Soil parent material(s): (Check all that apply) Outwash Lacustrine Loess Till Alluvium Bedrock Organic Matter Disturbed/Fill

Landscape Position: Summit Slope %: 1.0 Slope shape: Linear, Linear Flooding/Run-On potential: No

Vegetation: Grass Soil survey map units: 4/18/2024 sunny Surface Elevation-Relative to benchmark: 104.3

Date/Time of Day/Weather Conditions: 4/18/2024 sunny Limiting Layer Elevation: 106.5

Observation #/Location: #2 Observation Type: Auger

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Structure		
							Shape	Grade	Consistence
0-6	Medium Loamy Sand	0	10YR 4/4				Single grain	Weak	Friable
6-26	Medium Loamy Sand	20	10YR 5/4				Single grain	Weak	Friable
26	Loam	20	10YR 5/4	10YR 5/2	Concentrations	52	Single grain	Moderate	Firm

Comments:

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

Raini Kohl 218 SEPTIC (Designer/Inspector) [Signature] (Signature) L4197 (License #) 4/23/24 (Date)

Optional Verification: I hereby certify that this soil observation was verified according to Minn. R. 7082.0500 subp. 3 A. The signature below represents an infield verification of the periodically saturated soil or bedrock at the proposed soil treatment and dispersal site.

(LGU/Designer/Inspector) _____ (Signature) _____ (Cert #) _____ (Date)



Soil Observation Log

Project ID: v 03.15.2023

Client: Marron Location / Address: 40795 diamond lake st

Soil parent material(s): (Check all that apply) Outwash Lacustrine Loess Till Alluvium Bedrock Organic Matter Disturbed/Fill

Landscape Position: Shoulder Slope %: 2.0 Slope shape: Linear, Concave Flooding/Run-On potential: No

Vegetation: Grass Soil survey map units: 2pm Surface Elevation-Relative to benchmark: 104.5

Date/Time of Day/Weather Conditions: 4/18/2024 sunny Limiting Layer Elevation: 105.3

Observation #/Location: #3 Observation Type: Auger

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Structure		
							Shape	Grade	Consistence
0-6	Medium Loamy Sand	0	10YR 4/4				Single grain	Weak	Friable
6-22	Medium Loamy Sand	20	10YR 5/4				Single grain	Weak	Friable
22	Loam	20	10YR 5/4	10YR 5/2	Concentrations	52	Single grain	Moderate	Friable

Comments:

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

Raini Kohl 218 SEPTIC (Designer/Inspector) [Signature] L4197 (License #) 4/23/24 (Date)

Optional Verification: I hereby certify that this soil observation was verified according to Minn. R. 7082.0500 subp. 3 A. The signature below represents an infield verification of the periodically saturated soil or bedrock at the proposed soil treatment and dispersal site.

(LGU/Designer/Inspector) _____ (Signature) _____ (Cert #) _____ (Date)

07-0-047701

Site Suitability Soil Boring Logs for Proposed Septic System Sites

Property Owner: Eugene Strum

Date: 10-25-18

*Record depths of all horizons.

*Record all Redoximorphic Features, Restricting Layers and Saturated Soils.

*Include all Chroma and Hue values in boring log.

#1 Proposed Site

Depth in Inches	Texture	Munsell Color
6"	Topsoil	10YR 3/3
1"	Loam	7.5YR 4/4
14"	Umottles	7.5YR 4/2

#2 Proposed Site

Depth in Inches	Texture	Munsell Color
7"	Topsoil	10YR 3/3
1"	Loam	7.5YR 4/4
16"	Umottles	7.5YR 4/2

#1 Alternate Site

Depth in Inches	Texture	Munsell Color
8"	Topsoil	10YR 3/3
1"	Loam	7.5YR 4/4
18"	Umottles	7.5YR 4/2

#2 Alternate Site

Depth in Inches	Texture	Munsell Color
8"	Topsoil	10YR 3/3
1"	Loam	7.5YR 4/4
13"	Umottles	7.5YR 4/2

Legal Description: NE SW Lot 4

Parcel Number: 07-0-047701

Designer Signature: Bob Burt

Date: 10-25-18

Revision B 8 February 2012

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-6	Siltyloam	10yr 3/2
6-13	Clay loam	7.5yr 4/4
13-17	Clay	5yr 4/4
Mottles at 13"		

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-8	Siltyloam	10yr 3/2
8-14	Clay loam	7.5yr 4/4
14-18	Clay	5yr 4/4
Mottled at 13"		

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR