



190003000-2024



Becker County Planning & Zoning  
915 Lake Ave  
Detroit Lakes, MN 56501  
(218) 846-7314  
www.co.becker.mn.us

# Certificate of Compliance

## Inspection Report - Permit #: SS2024-2211

### Owner & Property Information

Owner Name:	KEITH FROHMAN	Site Address:	28841 TOWER RD
Mailing Address:	KEITH FROHMAN 28841 TOWER RD DETROIT LAKES MN 56501	Township - Sec/Twp/Rng:	LAKE VIEW - 01/138/041
Parcel #:	190003000	Legal Description:	THAT PT OF NE1/4 OF NE1/4 SE OF TWP RD
Secondary Parcel #:		Designer:	Jennen Construction LLC, L4399 (James Jennen)
		Installer:	Jennen Construction LLC, L4399 (James Jennen)

### Inspector Verified Specifications

Insp- Effluent Screen Installed:	No	Insp- Tank Nbr/Size:	1/1500/2
Insp- Alarm Required:	Yes	Insp- Drainfield Type:	Mound
Insp- Lift Pump in System:	Yes	Insp- Drainfield Size:	10X38 ROCK BED
Insp- Number of Bedrooms:	3	Insp- Soil Verification:	#1:SEE ATTACHED #2:N/A #3:N/A

### Inspector Verified Setbacks

Insp- Tank Dist to Road	10+	Insp- Drainfield Dist to Road	10+
Insp- Tank Dist to Nearest Prop Line	10	Insp- Drainfield Dist to Nearest Prop Line	10
Insp- Tank Dist to Nearest Structure	10	Insp- Drainfield Dist to Nearest Structure	20
Insp- Tank Dist to Well	50+	Insp- Drainfield Dist to Well	50+
Insp- Tank Dist to OHW	NA	Insp- Drainfield Dist to OHW	NA
Insp- Tank Dist to Pond/Wetland	50	Insp- Drainfield Dist to Pond/Wetland	50
Insp- Tank Dist to Pressure Line	NA	Insp- Drainfield Dist to Pressure Line	NA

### Certificate of Compliance

(Yes) Certificate is hereby granted based upon the application, addendum from, plans, specifications and all other supporting data. With proper maintenance, this system can be expected to function satisfactory, however this is not a guarantee.

Certification Date: 10/24/2024

Zoning Office Signature:

Jeff Rusness - ISTS Inspector

\* Certificate of Compliance is not valid unless signed by a Registered Qualified Employee \*

# Field Review Form

Permit # SS2024-2211

## Property and Owner

Owner: KEITH FROHMAN

Parcel Number: 190003000

Site Address: 28841 TOWER RD

Secondary Parcel:

## Home Information

Does the structure contain any of the following elements?

Designer submitted

Inspector verified

Garbage disposal: No  
Dishwasher:  
Grinder pump:  
Lift pump in bsmt:

Garbage disposal? Y  N   
Dishwasher? Y  N   
Grinder pump? Y  N   
Lift pump in basement? Y  N

Number of bedrooms: 3

Review - Number of bedrooms: 3

Effluent screen

Effluent screen installed? Y  N  Mfr:

Alarm: Yes Type: Electronic, Alderon Post alarm

Review - Alarm? Y  N  Type & Mfr: Alderon Power Post

Lift pump in system: Yes

Review - Lift pump in system? Y  N  Mfr: Zoeller Bragg

## Component Information

Tank size: 1500

Review - Tank nbr: 1 size: 1500/2 Mfr: Brown/Wilbert

Drainfield type: Mound

Review - Drainfield type: Mound

Drainfield size: Full size - 375  
Reduced/warr. size -

Review - Drainfield status: none / installed next spring  
Review - Drainfield size: 10x38 Rock Bed

Absorption area size: 12"

Review - Absorption area size:

Chamber type/num:  
Trench sqft/chamber -

Review - Chamber type: MA Num:  
Review - Trench sqft/chamber: MA

Drainfield rock depth: 12"

Review - Rock depth: 9" Rock-

## Soil Verification

Vertical separation verified

Boring #1:  
Boring #2:  
Boring #3:

## Setback Verification

Distance to...	Designer submitted		Inspector verified	
	Tank	Drainfield	Tank	Drainfield
Road	165'	225'	10	10
Nearest prop line	156'	108'	10 +	10 +
Nearest structure	60'	95'	10	20
Well	65	95'	50	50
OHW			MA	MA
Pond/Wetland	50	50	50	50
Pressure line	60'	95'	MA	MA

Date System Installed: 10-17-2024 Installer: Jemmen Const. L4399 Inspector: [Signature]



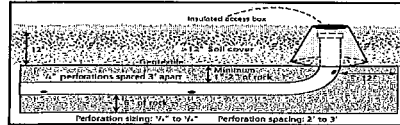
190003000

Parcel #190003000  
3 Bedroom  
No Garbage disposal or dishwasher

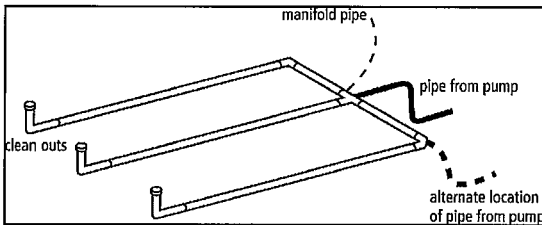
Type I Mound  
10'x37.5' rock bed  
20'x37.5 STA  
24" sand lift  
2" supply line  
3-35.5' laterals 1.5" dia, 12-1/4" perferations  
ALL PROPERTY LINES >50' FROM SYSTEM

*Handwritten signatures and notes:*  
C-531  
[Signature]

- Media Bed Width:  ft
- Minimum Number of Laterals in system/zone = Rounded up number of  $[(\text{Media Bed Width} - 4) \div 3] + 1$ .  
 $[(\text{  } - 4) \div 3] + 1 = \text{  } \text{ laterals}$  *Does not apply to at-grades*
- Designer Selected Number of Laterals:  
*Cannot be less than line 2 (Except in at-grades)*  laterals
- Select Perforation Spacing:  ft
- Select Perforation Diameter Size:  in
- Length of Laterals = Media Bed Length(1.) - 2 Feet.  
 - 2ft =  ft *Perforation can not be closer then 1 foot from edge.*
- Determine the Number of Perforation Spaces. Divide the Length of Laterals(6.) by the Perforation Spacing(4.) and round down to the nearest whole number.  
 Number of Perforation Spaces =  ft  $\div$   ft =  Spaces
- Number of Perforations per Lateral is equal to 1.0 plus the Number of Perforation Spaces(7.). Check table below to verify the number of perforations per lateral guarantees less than a 10% discharge variation. The value is double with a center manifold.  
 Perforations Per Lateral =  Spaces + 1 =  Perfs. Per Lateral

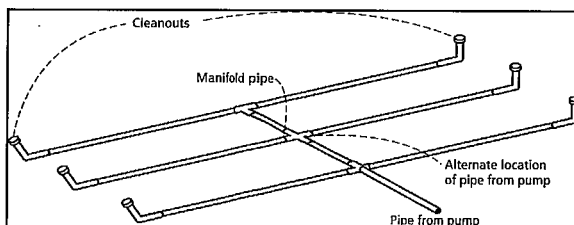


Maximum Number of Perforations Per Lateral to Guarantee <10% Discharge Variation											
1/4 Inch Perforations						7/32 Inch Perforations					
Perforation Spacing (Feet)	Pipe Diameter (Inches)					Perforation Spacing (Feet)	Pipe Diameter (Inches)				
	1	1 1/4	1 1/2	2	3		1	1 1/4	1 1/2	2	3
2	10	13	18	30	60	2	11	16	21	34	68
2 1/2	8	12	16	28	54	2 1/2	10	14	20	32	64
3	8	12	16	25	52	3	9	14	19	30	60
3/16 Inch Perforations						1/8 Inch Perforations					
Perforation Spacing (Feet)	Pipe Diameter (Inches)					Perforation Spacing (Feet)	Pipe Diameter (Inches)				
	1	1 1/4	1 1/2	2	3		1	1 1/4	1 1/2	2	3
2	12	18	26	46	87	2	21	33	44	74	149
2 1/2	12	17	24	40	80	2 1/2	20	30	41	69	135
3	12	16	22	37	75	3	20	29	38	64	128



END Connection

Perf Per Lateral: 12



CENTER Connection

Perf Per Lateral Equal Split: 6 | 6

OPTIONAL Perf Per Lateral Non-Equal Split\*: \_\_\_\_\_ | \_\_\_\_\_

\* must not exceed maximum number perfs per lateral in table

- Total Number of Perforations equals the Number of Perforations per Lateral (8.) multiplied by the Number of Perforated Laterals (3.)

Perf. Per Lat. X  Number of Perf. Lat. =  Total Number of Perf.

- Spacing of laterals; Must be greater than 1 foot and no more than 3 feet:  ft

- Select Type of Manifold Connection (End or Center):  *If Center Manifold Connection the max number of perfs per lateral in the table can be doubled.*

- Select Lateral Diameter (See Table):  in

13. Calculate the *Square Feet per Perforation*.  
*Recommended value is 4-11 ft<sup>2</sup> per perforation, Does not apply to At-Grades*

a. *Bed Area* = Bed Width (ft) X Bed Length (ft)  
 ft X  ft =  sq.ft

b. *Square Foot per Perforation* = Bed Area ÷ by the Total Number of Perfs  
 sqft ÷  perf =  sq.ft/perf

14. Select *Minimum Average Head*:  ft

15. Select *Perforation Discharge* based on Table:  GPM per Perf

16. *Flow Rate* = Total Number of Perfs(9.) X Perforation Discharge(15.)  
 Perfs X  GPM per Perforation =  GPM

17. *Volume of Liquid Per Foot of Distribution Piping (Table II)*:  Gallons/ft

18. *Volume of Distribution Piping* = Number of Perforated Laterals(3.) X Length of Laterals(6.) X Volume of Liquid Per Foot of Distribution Piping (17.)  
 X  ft X  gal/ft =  Gallons

19. *Minimum Delivered Volume* = Volume of Distribution Piping X 4  
 gals X 4 =  Gallons

20. *Maximum Delivered Volume* = Design flow x 25%  
 gpd X 25% =  Gallons

21. *Minimum Delivered vs Maximum Delivered evaluation*:

Perforation Discharge (GPM)				
Head (ft)	Perforation Diameter			
	1/8	3/16	7/32	1/4
1.0'	0.18	0.41	0.56	0.74
1.5	0.22	0.51	0.69	0.9
2.0'	0.26	0.59	0.80	1.04
2.5	0.29	0.65	0.89	1.17
3.0	0.32	0.72	0.98	1.28
4.0	0.37	0.83	1.13	1.47
5.0'	0.41	0.93	1.26	1.65
1 foot	Dwellings with 3/16 inch to 1/4 inch perforations			
2 feet	Dwellings with 1/8 inch perforations			
5 feet	Other establishments and MSTs with 3/16 inch to 1/4 inch perforations			
	Other establishments and MSTs with 1/8 inch perforations			

Pipe Diameter (inches)	Liquid Per Foot (Gallons)
1	0.045
1.25	0.078
1.5	0.110
2	0.170
3	0.380
4	0.661

Comments/Special Design Considerations:

1. SYSTEM SIZING:

Project ID:

v 03.15.2023

- A. Design Flow:  GPD
- B. Soil Loading Rate:  GPD/sqft
- C. Depth to Limiting Condition:  ft
- D. Percent Land Slope:  %
- E. Media (Sand) Loading Rate:  GPD/sqft
- F. Mound Absorption Ratio:

TABLE IXa				
LOADING RATES FOR DETERMINING BOTTOM ABSORPTION AREA AND ABSORPTION RATIOS USING PERCOLATION TESTS				
Percolation Rate (MPI)	Treatment Level C		Treatment Level A, A-2, B,	
	Absorption Area Loading Rate (gpd/ft <sup>2</sup> )	Mound Absorption Ratio	Absorption Area Loading Rate (gpd/ft <sup>2</sup> )	Mound Absorption Ratio
<0.1	-	1	-	1
0.1 to 5	1.2	1	1.6	1
0.1 to 5 (fine sand and loamy fine sand)	0.6	2	1	1.6
6 to 15	0.78	1.5	1	1.6
16 to 30	0.6	2	0.78	2
31 to 45	0.5	2.4	0.78	2
46 to 60	0.45	2.6	0.6	2.6
61 to 120	-	5	0.3	5.3
>120	-	-	-	-

Table 1 MOUND CONTOUR LOADING RATES:			
Measured Perc Rate	OR	Texture-derived mound absorption ratio	Contour Loading Rate:
≤ 6ftmpi		1.0, 1.3, 2.0, 2.4, 2.6	≤ 12
61-120 mpi	OR	5.0	≤ 12
≥ 120 mpi*		>5.0*	≤ 6*

\*Systems with these values are not Type I systems. Contour Loading Rate (linear loading rate) is a recommended value.

2. DISPERSAL MEDIA SIZING

A. Hydraulic Absorption Required Bottom Area: Design Flow (1A) ÷ Design Media Loading Rate(1E)

GPD ÷  GPD/sqft =  sq.ft

Organic Sizing (OPTIONAL)

B. Organic Absorption Bed Area = Organic Loading (Summary 9A) ÷ Organic Soil Loading Rate (Summary 7B)

lbs BOD ÷  lbs BOD/sq.ft =  sq.ft

C. Required Bed Area = Greater of Hydraulic (2A) or Organic Bed Area (2B)

sq.ft

D. Designed Dispersal Media Area:  sq.ft *Optional upsizing of area to be larger than 2C*

E. Enter Dispersal Bed Width:  ft *Can not exceed 10 feet*

F. Calculate Contour Loading Rate: Bed Width(2E) X Design Media Loading Rate(1E)

ft X  GPD/sqft =  gal/ft *Can not exceed Table 1*

G. Calculate Minimum Dispersal Bed Length: Dispersal Bed Area(2D) ÷ Bed Width(2E)

sqft ÷  ft =  ft

If a larger dispersal media Length is desired, enter size:  ft

3. ABSORPTION AREA SIZING

A. Calculate Absorption Width: Bed Width(2E) X Mound Absorption Ratio(1F)

ft X  =  ft

B. For slopes >1%, the Absorption Width is measured downhill from the upslope edge of the Bed.

Calculate Downslope Absorption Width: Absorption Width(3A) - Bed Width(2E)

ft -  ft =  ft

4. DISTRIBUTION MEDIA:

Project ID:

Select Dispersal Media:

Rock

Enter Either 4A or 4B

A. Rock Depth Below Distribution Pipe

9 in

B. Registered Media

Registered Media Depth

12 in

Check registered product information for specific application details and design

Specific Media Comments:

5. MOUND SIZING

Project ID:

A. Clean Sand Lift: Required Separation - Depth to Limiting Condition = Clean Sand Lift (1 ft minimum)

3.0 ft - 1.0 ft = 2.0 ft Design Sand Lift (optional):

B. Upslope Height: Clean Sand Lift(6A) + Depth of Media(4AorB) +Depth to Cover Pipe+ Depth of Cover (1 ft)

2.0 ft + 0.75 ft + ft + 1.0 ft = 3.8 ft

Land Slope %	0	1	2	3	4	5	6	7	8	9	10	11	12	
Upslope Berm Ratio	3:1	3.00	2.91	2.83	2.75	2.68	2.61	2.54	2.48	2.42	2.36	2.31	2.26	2.21
	4:1	4.00	3.85	3.70	3.57	3.45	3.33	3.23	3.12	3.03	2.94	2.86	2.78	2.70

C. Select Upslope Berm Multiplier (based on land slope):

2.68

D. Calculate Upslope Berm Width: Multiplier (5C) X Upslope Mound Height (5B)

2.68 X 3.8 ft = 10.1 ft

E. Calculate Drop in Elevation Under Bed: Bed Width(2B) X Land Slope(1D) ÷ 100 = Drop (ft)

10.0 ft X 4.0 % ÷ 100 = 0.40 ft

F. Calculate Downslope Mound Height: Upslope Height(5B) + Drop in Elevation(5E)

3.8 ft + 0.40 ft = 4.2 ft

Land Slope %	0	1	2	3	4	5	6	7	8	9	10	11	12	
Downslope Berm Ratio	3:1	3.00	3.09	3.19	3.30	3.41	3.53	3.66	3.80	3.95	4.11	4.29	4.48	4.69
	4:1	4.00	4.17	4.35	4.54	4.76	5.00	5.26	5.56	5.88	6.25	6.67	7.14	7.69

G. Select Downslope Berm Multiplier (based on land slope):

3.41

H. Calculate Downslope Berm Width: Downslope Multiplier(5G) X Downslope Height (5F)

3.41 x 4.2 ft = 14.2 ft

I. Calculate Minimum Berm to Cover Absorption Area: Downslope Absorption Width(3B) + 4 feet

10.0 ft + 4 ft = 14.0 ft

J. Design Downslope Berm = greater of 5H and 5I:

14.2 ft

K. Select Endslope Berm Multiplier:

3.00

(usually 3.0 or 4.0)

L. Calculate Endslope Berm Width = Endslope Berm Multiplier(5K) X Downslope Mound Height(5F)

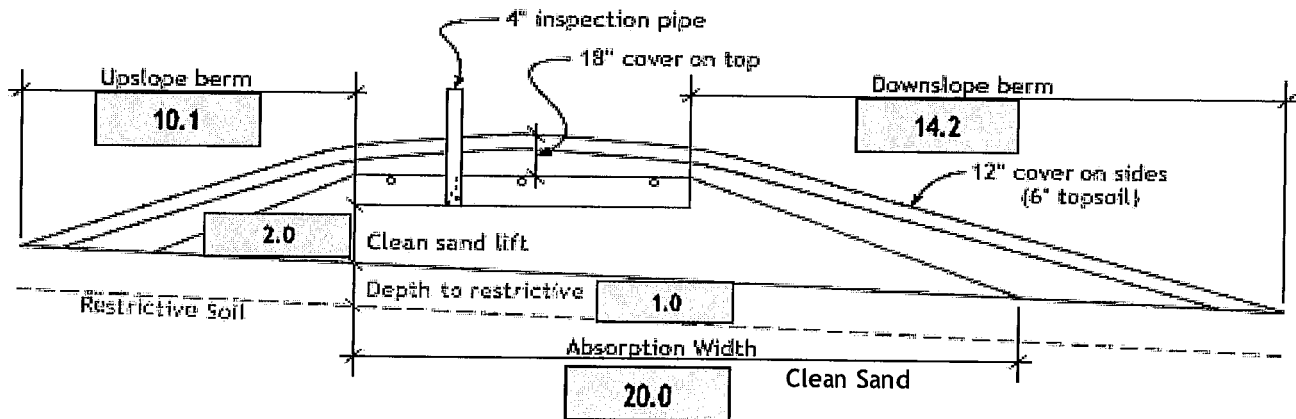
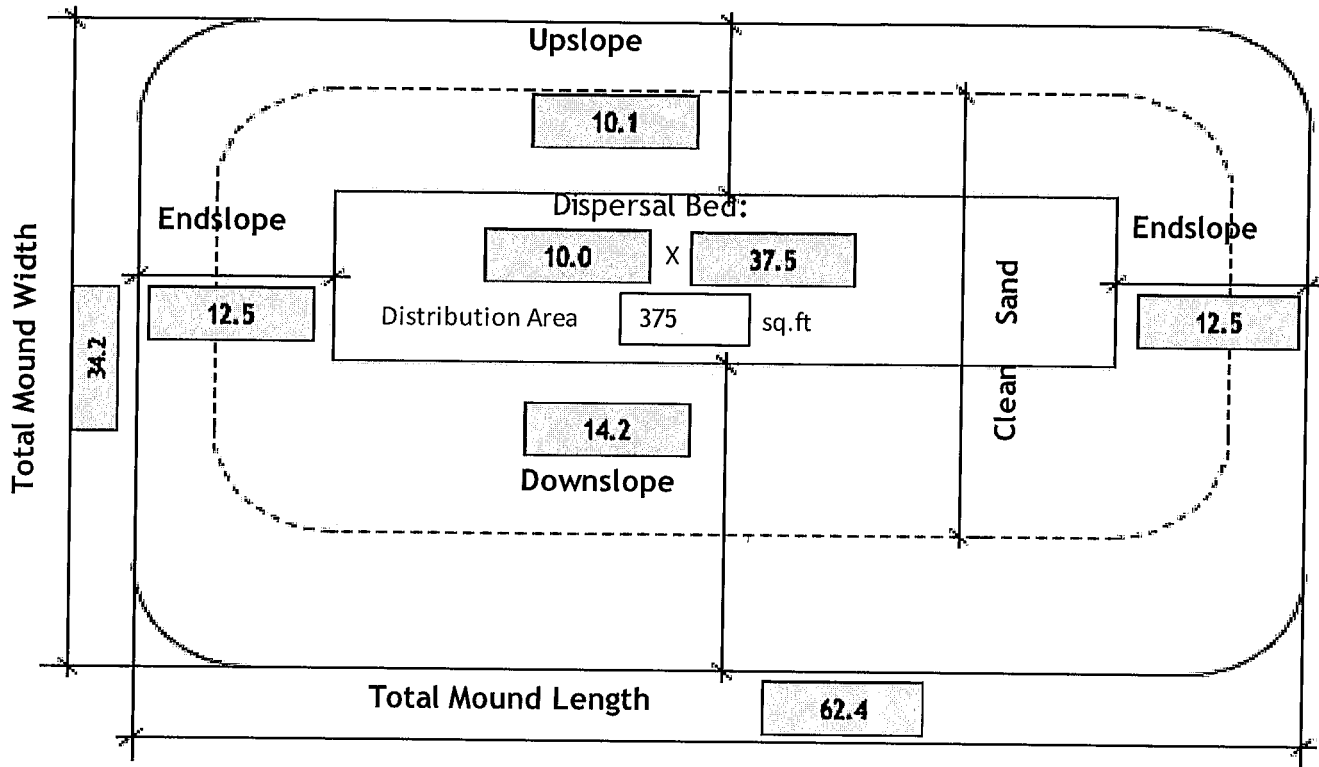
3.00 X 4.2 ft = 12.5 ft

M. Calculate Mound Width: Upslope Berm Width(5D) + Bed Width(2E) + Downslope Berm Width(5J)

10.1 ft + 10.0 ft + 14.2 ft = 34.2 ft

N. Calculate Mound Length: Endslope Berm Width (5L) + Bed Length(2G) + Endslope Berm Width(5L)

12.5 ft + 37.5 ft + 12.5 ft = 62.4 ft



Required Separation:	<input type="text" value="36"/> (in)	Elevation to Benchmark	
Distribution Media:	<input type="text" value="Rock"/>	Elevation Limiting Layer:	<input type="text" value="94.0"/> ft
Media Depth:	<input type="text" value="9.0"/> (in)	Elevation required Separation:	<input type="text" value="97.0"/> ft
Manifold Connection:	<input type="text" value="End"/>	Elevation Distribution Media Bottom:	<input type="text" value="97.0"/> ft
Lateral Pipe Diameter:	<input type="text" value="1.50"/> (in)	Elevation Top of Media(min):	<input type="text" value="97.8"/> ft
Perforation Size:	<input type="text" value="1/4"/> (in)	Elevation Top of System(min):	<input type="text" value="98.8"/> ft
		Perforation Spacing:	<input type="text" value="36.0"/> (in)

If Split and Non-Level Pressure Distribution Used: See Non-Level Pressure Distribution Form

Comments: