

05 0 1.0405.000 24710

Becker County Plannin
835 Lake Ave, P O
Detroit Lakes, MN 56
Phone (218)-846-7314; Fax (218)-846-7266



Onsite Septic System Site Evaluation/Design

1. PROPERTY DATA (as it appears on the tax statement)

Parcel Number(s) of property system will be installed 07-0405-000
(if parcel is a new split and a parcel number has not yet been issued, indicate the main parcel number from which the new parcel has been split from)
Section 34 Township 140 Range 43 Township Name Euba
Lake Name Labelle Lake Classification RD
Legal Description: Blk 1 Lot 5 South Shores

Project Address: 14792 South Shores Cir L.P., MN.

2. PROPERTY OWNER INFORMATION (as it appears on the tax statement, purchase agreement or deed).

Owner's First Name MAX + Stephanie Owner's Last Name Norton
Mailing Address 19299 181st Ave City, State, Zip Big Lake, MN 55309
Phone Number 701-219-5696

3. DESIGNER/INSTALLER INFORMATION

Designer Name Dan Schlanderhoff Company Name Dan Schlanderhoff Services License # 418
Address 20822 322 Ave. Rochert, MN 56578 Phone Number 218-847-6247
Installer Name Todd Boit Company Name Boit Exclau License # 2757
Address 24414 Co #144 D.L. Phone Number 218-847-7509

4. SYSTEM DESIGN INFORMATION

Date of Site Evaluation 9-7-05

EXISTING SYSTEM STATUS - Check One

- No existing system-new structure
- Cesspool/Seepage
- Failing (other than cesspool)
- Undersized
- Replacement or repair to existing

What will new system serve? Check one

- Dwelling
- Resort/Commercial
- Commercial (non resort)
- Other - explain below

Design Flow 430 Gallons Per Day
Number of Bedrooms 3
Garbage Disposal Yes No
Grinder Pump in House Yes No
Lift station in House Yes No

Well Depth Deep well
Depth of other wells within
100 ft of system N/A

Original Soil Compacted Soil
Type of Soil Observation
 Pit Probe Boring
Depth to Restricting Layer 0.3'
Maximum Depth of System MOUND

Septic 05 07.04 05.000

Size of All Tanks to Be installed
1600 gal Septic Tank
500 gal Lift Station
 ___ gal Holding Tank
 ___ gal Other Tanks

Type of Drainfield Medium to be used
 ___ Chamber
 ___ H10 EQ36
 ___ Drainfield Rock
 ___ 12" Rock Depth MOUND
 ___ Gravelless
 ___ Experimental
 ___ No Drainfield

Type of Alarm 14 House Elec.
 Size of Lift Pump 1/3 HP.
 Size of Lift Line 1 1/2"

Type of Drainfield to be installed: Size of Drainfield sq ft to be installed.
 ___ Trench ___ sq ft
 ___ At-grade ___ sq ft
 ___ Pressure Bed ___ sq ft
 ___ Seepage Bed ___ sq ft
X Mound 300 sq ft

SETBACKS
 TANK DRAINFIELD
 Distance to Well 100' 80'
 Distance to Building 30' 40'
 Distance to Property Line >50' 12'
 Distance to OHW 160' 170'
 Distance to Pressure Line N/A N/A

Perc Rate 26 Soil Sizing Factor 1.67 *If SSF other than .83, attach Perc Test Data

Depth	Texture	Color	Structure	Depth	Texture	Color	Structure
0-0	Sandy Loam	TOP Soil		0-6	Sandy Loam	TOP Soil	
0-36	Loam	10YR 5/4	Blocky	6-36	Loam	10YR 5/4	Blocky
37"	Mottling			37"	Mottling		

5. DESIGNER'S CERTIFIED STATEMENT

I, Don Schlander certify that I have completed the preceding design work in accordance with all applicable requirements (including, but not limited to Minnesota Chapter 7080 and the Becker County Individual Sewage Treatment System Ordinance).

Don Schlander Signature of Designer 9-7-05 Date

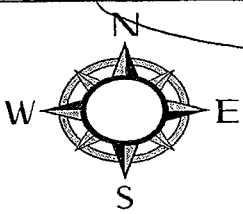
*****FOR OFFICE USE ONLY*****
 Application Approved by: Helen Mottgen Date: 9-23-05
 Amount Paid 100.00 Receipt Number _____ Permit Number 00151
314077

CERTIFICATE OF COMPLIANCE

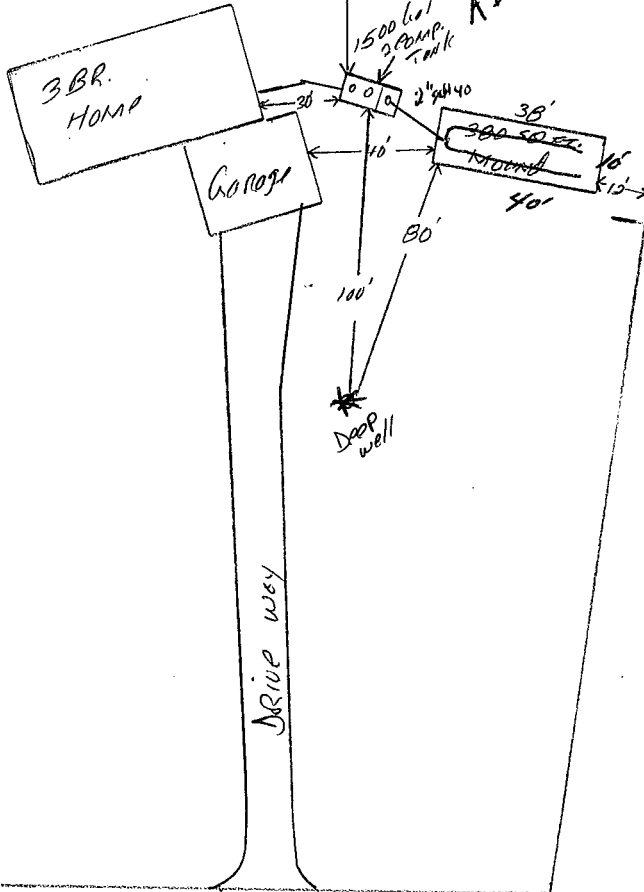
() Certificate Is Hereby Denied
 (X) Certificate is Hereby Granted Based upon the Application, addendum from, plans, specifications and all other supporting data. With property maintenance, this system can be expected to function satisfactory, however, this is not a guarantee.

Jamil A. Hall Signature FSTS inspector Title 9/26/05 Date
 (Certificate of Compliance is not valid unless signed by a Registered Qualified Employee)
 Date System Installed 9/26/05 Inspected by Jamil A. Hall

Septic 05 07.0405.000



Labelle Lk.



1500 Agg. Incl 2/c Tank
 400 sq. ft. drain field
 All setbacks met J.P.S.
 9/26/05

South Shores Cir

I hereby certify and agree that the above sketch accurately represents the work to be done in conjunction with this permit.

Date _____

Applicant or Agent _____

MOUND DESIGN WORKSHEET

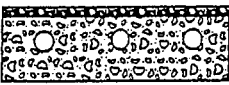
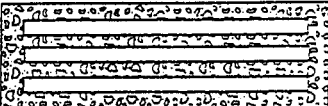
(For Flows up to 1200 gpd)

Septic 05 07.0405.000

<p>A. FLOW Estimated <u>450</u> gpd or measured _____ x 1.5 = _____ gpd.</p> <p>B. SEPTIC TANK LIQUID VOLUMES <u>1000</u> gallons</p> <p>C. SOILS (refer to site evaluation)</p> <ol style="list-style-type: none"> Depth to restricting layer = _____ inches <u>3</u> feet Depth of percolation tests = 24 <u>12</u> inches Texture <u>Loam</u> Percolation rate <u>26</u> mpi Land slope <u>1</u> % 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">Estimated Sewage Flows in Gallons per day (gpd)</th> </tr> <tr> <th>Number of Bedrooms</th> <th>Type I</th> <th>Type II</th> <th>Type III</th> <th>Type IV</th> </tr> </thead> <tbody> <tr><td>2</td><td>300</td><td>225</td><td>180</td><td></td></tr> <tr><td>3</td><td>450</td><td>300</td><td>218</td><td></td></tr> <tr><td>4</td><td>600</td><td>375</td><td>256</td><td></td></tr> <tr><td>5</td><td>750</td><td>450</td><td>294</td><td></td></tr> <tr><td>6</td><td>900</td><td>525</td><td>332</td><td></td></tr> <tr><td>7</td><td>1050</td><td>600</td><td>370</td><td></td></tr> <tr><td>8</td><td>1200</td><td>675</td><td>408</td><td></td></tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Septic Tank Capacities (in gallons)</th> </tr> <tr> <th>Number of Bedrooms</th> <th>Minimum Liquid Capacity</th> <th>Liquid capacity with garbage disposal</th> </tr> </thead> <tbody> <tr><td>2 or less</td><td>750</td><td>1125</td></tr> <tr><td>3 or 4</td><td>1000</td><td>1500</td></tr> <tr><td>5 or 6</td><td>1500</td><td>2250</td></tr> <tr><td>7, 8 or 9</td><td>2000</td><td>3000</td></tr> </tbody> </table>	Estimated Sewage Flows in Gallons per day (gpd)					Number of Bedrooms	Type I	Type II	Type III	Type IV	2	300	225	180		3	450	300	218		4	600	375	256		5	750	450	294		6	900	525	332		7	1050	600	370		8	1200	675	408		Septic Tank Capacities (in gallons)			Number of Bedrooms	Minimum Liquid Capacity	Liquid capacity with garbage disposal	2 or less	750	1125	3 or 4	1000	1500	5 or 6	1500	2250	7, 8 or 9	2000	3000
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D. ROCK LAYER DIMENSIONS

- Multiply flow rate by 0.83 to obtain required area of rock layer: $A \times 0.83 =$
 $\frac{450}{\text{gpd}} \times 0.83 \text{ sq. ft./gpd} = \underline{380} \text{ sq. ft.}$
- Select width of rock layer (max 10' if <120 mpi max 5') = 10 ft.
- Length of rock layer = area ÷ width =
 $\frac{380 \text{ sq. ft.}}{10 \text{ ft.}} = \underline{38} \text{ ft.}$

Width 10 ft
 <120mpi <10'
 >120mpi <5'

E. ROCK VOLUME

- Multiply rock area by rock depth to get cubic feet of rock; $380 \text{ sq. ft.} \times \underline{\hspace{1cm}}$
 ft. = 380 cu. ft.
- Divide cu. ft. by 27 cu. ft./cu. yd. to get cubic yards;
 $\frac{380 \text{ cu. ft.}}{27} = \underline{14} \text{ cu. yd.}$
- Multiply cubic yards by 1.4 to get weight of rock in tons; $14 \text{ cu. yd.} \times 1.4$
 ton/cu. yd. = 22 tons.

F. ABSORPTION WIDTH

- Percolation rate in top 12 inches of soil is 26 mpi
 Texture Loam
- Select allowable soil loading rate from table;
.60 gpd/ft²
- Calculate adsorption width ratio by dividing rock layer
 loading rate of 1.20 gpd/ft² by allowable soil loading rate;
 $1.20 \text{ gpd/ft}^2 \div \underline{.60} \text{ gpd/ft}^2 = \underline{2}$
- Multiply adsorption width ratio by rock layer width to get
 required adsorption width;
2 x 10 ft = 20 ft

Absorption Width Sizing Table			
Percolation Rate in Minutes per Inch (MPI)	Soil Texture	Gallons per day per square foot	Ratio of Absorption width to Rock Layer Width
Faster than 0.1	Coarse Sand	1.20	1.00
0.1 to 5	Sand	1.20	1.00
0.1 to 5	Fine Sand	0.60	2.00
6 to 15	Sandy Loam	0.79	1.52
16 to 30	Loam	0.60	2.00
31 to 45	Silt Loam	0.50	2.40
46 to 60	Clay Loam	0.45	2.67
60 to 120	Clay	0.24	5.00
Slower than 120	Clay	0.20	6.00

G. DOWNSLOPE BERM WIDTH

1. If landslope is 1% or more,
 subtract rock layer width from adsorption width
 to obtain minimum downslope berm toe
10 ft - 20 ft = 10 feet

2. Calculate Minimum mound Size
 a. Determine depth of clean sand fill at
 upslope edge of rock layer:
 Separation 3' - 2 ft = 1 feet

b. Add depth of clean sand for separation (2a)
 at upslope edge, depth of rock layer (1 foot) to depth of cover
 (1 foot) to find the mound height at the upslope edge of rock layer;
1 ft + 1ft + 1ft = 3 feet

c. Enter table with landslope and upslope berm
 ratio. Select berm multiplier of 3.85.
 d. Multiply berm multiplier by upslope mound
 height to find upslope berm width:

3.85 x 3 = 12 feet
 e. Multiply rock layer width by
 landslope to determine drop in elevation;
10 x 1 % ÷ 100 = 1 feet

f. Add depth of clean sand for slope
 difference (2e) at downslope edge, to
 the mound height at the upslope edge
 of rock layer (2b) to find the downslope height;
1 ft + 3 ft = 4 feet

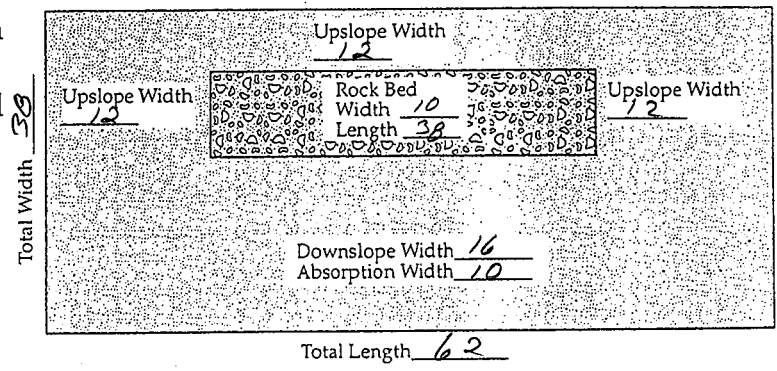
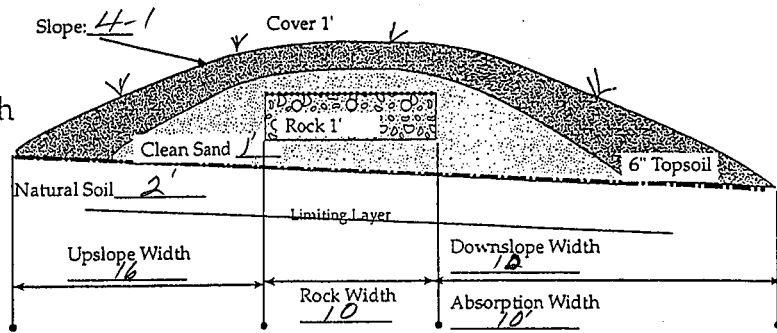
g. Enter table with landslope and downslope berm ratio. Select
 berm multiplier of 4.17.
 h. Multiply berm multiplier by downslope mound height to get
 downslope berm width:

4.17 x 4 = 16 feet
 i. Compare the values of step G.1 10
 and Step G.2h 16

Select the greater of the two values as the
 downslope berm width; 16 feet

j. Total mound width is the sum of
 upslope berm (G.2d)
 width plus rock layer width (D.2)
 plus downslope berm width (G.2i);
12 ft + 10 ft + 16 ft = 38 feet

k. Total mound length is the sum of upslope
 berm width (G.2d) plus rock layer length (D.3)
 plus upslope berm width (G.2d);
12 ft + 38 ft + 12 ft = 62 feet



BERM SLOPE MULTIPLIERS

Land Slope, in %	UPSLOPE berm multipliers for various berm slope ratios						DOWNSLOPE berm multipliers for various berm slope ratios				
	3:1	4:1	5:1	6:1	7:1	8:1	3:1	4:1	5:1	6:1	7:1
0	3.0	4.0	5.0	6.0	7.0	8.0	3.0	4.0	5.0	6.0	7.0
1	2.91	3.85	4.76	5.66	6.54	7.41	3.09	4.17	5.26	6.38	7.53
2	2.83	3.70	4.54	5.36	6.14	6.90	3.19	4.35	5.56	6.82	8.14
3	2.75	3.57	4.35	5.08	5.79	6.45	3.30	4.54	5.88	7.32	8.86
4	2.68	3.45	4.17	4.84	5.46	6.06	3.41	4.76	6.25	7.89	9.72
5	2.61	3.33	4.00	4.62	5.19	5.71	3.53	5.00	6.67	8.57	10.77
6	2.54	3.23	3.85	4.41	4.93	5.41	3.66	5.26	7.14	9.38	12.07
7	2.48	3.12	3.70	4.23	4.70	5.13	3.80	5.56	7.69	10.34	13.73
8	2.42	3.03	3.57	4.05	4.49	4.88	3.95	5.88	8.33	11.54	15.91
9	2.36	2.94	3.45	3.90	4.30	4.65	4.11	6.25	9.09	13.04	18.92
10	2.31	2.86	3.33	3.75	4.12	4.44	4.29	6.67	10.00	15.00	23.33
11	2.26	2.78	3.23	3.61	3.95	4.26	4.48	7.14	11.11	17.65	30.43
12	2.21	2.70	3.12	3.49	3.80	4.08	4.69	7.69	12.50	21.43	43.75

Final Dimensions:

38 x 62

2005 SEPTIC
07.0405.000

- PERCOLATION TEST SHEET -

Test hole location DRN Field Hole # 142 Date test hole was prepared: 9-7-05
 Depth of hole bottom: 12 inches Diameter of hole: 5 inches
 Method of scratching sidewall: BRW/Naits Depth of pea size gravel in bottom of hole: 2 inches
 Date and hour of initial water filling: 8AM 9-7 Depth of initial water filling: 12 above hole bottom
 Method used to maintain 12" of water depth in hole for 4 hours: MANUAL
 Percolation test conducted by: Dan Schlaupert Percolation test started at 12 (am/pm).
 Maximum water depth above hole bottom during test: 0 inches

TIME	INTERVAL (MINUTES)	WATER DEPTH	WATER DROP (fraction)	WATER DROP (decimal)	PERC RATE CALCULATION	conversions
---	START 30	$\frac{12}{10\frac{3}{4}}$	$1\frac{1}{8}$	1.13	$\frac{30}{\text{TIME}} \div \frac{1\frac{1}{8}}{\text{DROP (Decimal)}} = \frac{26.5}{\text{PERC}}$ A	1/16 = .06 1/8 = .13 3/16 = .19
---	REFILL 20	$\frac{11}{10\frac{1}{4}}$	$\frac{3}{4}$.75	$\frac{20}{\text{TIME}} \div \frac{\frac{3}{4}}{\text{DROP (Decimal)}} = \frac{26.6}{\text{PERC}}$ B	1/4 = .25 5/16 = .31
---	REFILL 20	$\frac{11}{10\frac{1}{4}}$	$\frac{3}{4}$.75	$\frac{20}{\text{TIME}} \div \frac{\frac{3}{4}}{\text{DROP (Decimal)}} = \frac{26.6}{\text{PERC}}$ C	3/8 = .38 7/16 = .44
---	REFILL	---	---	---	$\frac{\text{TIME}}{\text{DROP (Decimal)}} = \frac{\text{PERC}}{\text{PERC}}$ D	1/2 = .5
---	REFILL	---	---	---	$\frac{\text{TIME}}{\text{DROP (Decimal)}} = \frac{\text{PERC}}{\text{PERC}}$ E	9/16 = .56 5/8 = .63
---	REFILL 25	$\frac{12}{11}$	1	1	$\frac{25}{\text{TIME}} \div \frac{1}{\text{DROP (Decimal)}} = \frac{25}{\text{PERC}}$ F	11/16 = .69
---	REFILL 30	$\frac{12}{10\frac{19}{16}}$	$1\frac{3}{16}$	1.19	$\frac{30}{\text{TIME}} \div \frac{1\frac{3}{16}}{\text{DROP (Decimal)}} = \frac{25.2}{\text{PERC}}$ G	3/4 = .75 13/16 = .81
---	REFILL 20	$\frac{12}{10\frac{15}{16}}$	$1\frac{1}{16}$	1.06	$\frac{20}{\text{TIME}} \div \frac{1\frac{1}{16}}{\text{DROP (Decimal)}} = \frac{26.2}{\text{PERC}}$ H	7/8 = .88 15/16 = .94

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SOIL BORING LOG

SOIL BORING LOG

DEPTH (INCHES)	TEXTURE	COLOR & MUNSELL NO.	STRUCTURE	DEPTH (INCHES)	TEXTURE	COLOR & MUNSELL NO.	STRUCTURE
			BLOCKY PLATY PRISMATIC NONE				BLOCKY PLATY PRISMATIC NONE
			BLOCKY PLATY PRISMATIC NONE				BLOCKY PLATY PRISMATIC NONE
			BLOCKY PLATY PRISMATIC NONE				BLOCKY PLATY PRISMATIC NONE
			BLOCKY PLATY PRISMATIC NONE				BLOCKY PLATY PRISMATIC NONE

Type of alarm
Device on lift
Station or
Holding tank

Attach perc test
Information if
Required