



080632000

PERMIT MUST BE POSTED AT THE CONSTRUCTION SITE

Becker County Planning 835 Lake Ave, P O Box 787 Detroit Lakes, MN 56502-0787 Phone (218)-846-7314; Fax (218)-846-7266

Onsite Septic System Site Evaluation/Design Tax Parcel Number 911 Address 28372 Lemmon Rd

Legal Description: Section 36 TWP 139 Range 41

Lake Name N/A Lake Classification N/A Township Name Detroit

Owner's Name Duane + Marcella Lemmon Address 28372 Lemmon Rd

City Detroit Lakes, MN State/Zip 56501 Phone Number 218 847-5227

Number of Bedrooms 4 Well Casing Depth 76' Garbage Disposal (Yes) (No) Design Flow 600 GPD Depth of other Wells within 100 ft of system N/A Grinder Pump/Lift Station In House (Yes) (No)

Type of Observation: Probe Pit (Boring) Original Soil (Yes) (No) Compacted Soil (Yes) (No) Proposed Design () Replace Septic Tank (X) Septic Tank/Drainfield () Drainfield Only () Holding Tank () Lift Station Type of Drainfield () Standard (gravelless/chamber) () Standard (rock depth) () Standard Bed () Mound () At Grade (X) Pressurized Bed

Depth to Restricting Layer 60" Maximum of Depth of System 24" Perc Rate .1-5 Soil Sizing Factor .93

SOIL BORING LOG

Table with 4 columns: DEPTH (INCHES), TEXTURE, COLOR & MUNSELL NO., STRUCTURE. Rows include 0-4, 4-30, 30-60 inches.

SOIL BORING LOG

Table with 4 columns: DEPTH (INCHES), TEXTURE, COLOR & MUNSELL NO., STRUCTURE. Rows include 0-6, 6-36, 36-60 inches.

Type of alarm Device on lift Station or Holding tank Etc IN HOUSE

Attach perc test Information if Required

Name and Address of Designer Dan Schlanderoff Phone 847-6247

MPCA Number 418 Date of Site Evaluation 4-20-02 Signature of Designer Dan Schlanderoff

Name of Installer (if different from Designer) Neil Thorsen MPCA Number 47

FOR USE BY BECKER COUNTY ENVIRONMENTAL SERVICES DEPARTMENT ONLY

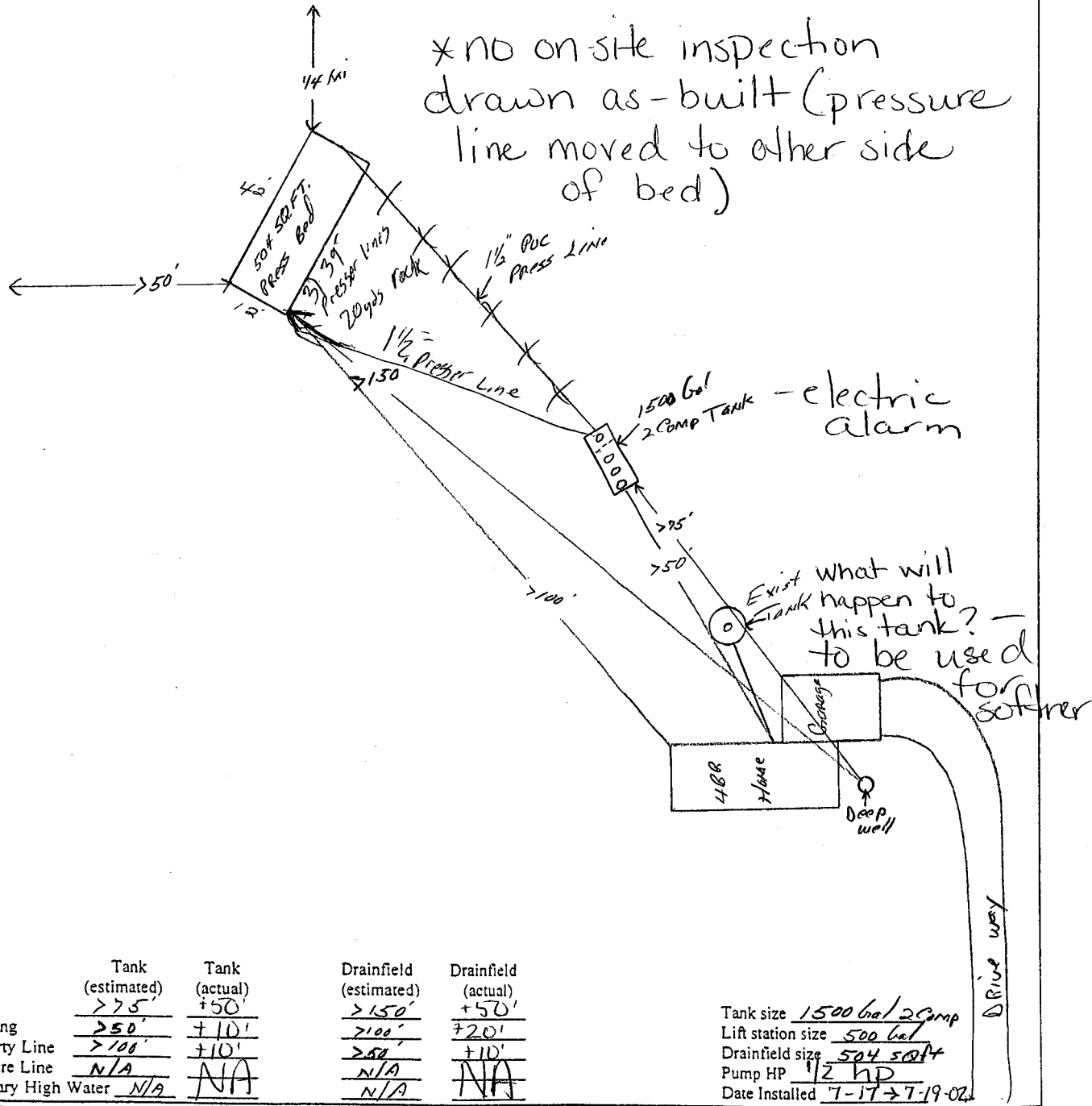
Any changes to the permit must first be approved by Becker County Planning & Zoning. No system shall be covered up without inspection by Becker County Planning & Zoning.

Inspections must be scheduled at least 24 hours prior to time requested.

Permit summary box containing Date Received (5/01/02), Application Fee (paid on permit), State Surcharge, Total (16909 w/), Application status (granted to Duane Lemmon), Signature of Becker County Qualified Employee (Nancy Bung), Date Permit Issued (5/01/02), and Permit Number (16909).

The site plan must be drawn to dimension or to scale:

- *Dimensions of Lot
- *Existing & Proposed Buildings
- *Easements & setbacks
- *Scale - One inch = _____ ft
- *Well & Water Line Locations within 100 ft of System
- *Distance from Property Lines
- *Tank Access Route
- *Location of any Unsuitable Soil
- *Distance from OIWM
- *Distance from buildings
- *Soil Borings & Per Test Locations
- *Alternate Drainfield Location



	Tank (estimated)	Tank (actual)	Drainfield (estimated)	Drainfield (actual)
Distances to Well	> 75'	+ 50'	> 150'	+ 50'
Distance to Building	> 50'	+ 10'	> 100'	+ 20'
Distance to Property Line	> 100'	+ 10'	> 50'	+ 10'
Distance to Pressure Line	N/A	NA	N/A	NA
Distance to Ordinary High Water	N/A	NA	N/A	NA

Tank size 1500 Gal / 2 Comp
 Lift station size 500 Gal
 Drainfield size 50' x 50'
 Pump HP 1/2 HP
 Date Installed 7-17-02 to 7-19-02

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CERTIFICATE OF COMPLIANCE

() Certificate Is Hereby Denied
 (✓) 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.

Signature Nancy Young Title zoning inspector Date 8.13.02
 (Certificate of Compliance is not valid unless signed by a Registered Qualified Employee)

PUMP SELECTION PROCEDURE

A. Determine pump capacity:

Gravity Distribution

1. Minimum suggested is 20 gpm
2. Maximum suggested is 45 gpm

Pressure Distribution

3. a. Select number of perforated laterals 3
- b. Select perforation spacing = 4 feet.
- c. Subtract 2 ft. from the rock layer length.
 $\frac{42}{\text{Rock layer length}} - 2 \text{ ft.} = \underline{40}$ feet.
- d. Determine the number of spaces between perforations.
 Length perf. spacing = $\frac{40 \text{ ft.}}{4 \text{ ft.}} = \underline{10}$ spaces
- e. $\frac{10 \text{ spaces}}{+ 1} = \underline{11}$ perforations/lateral
- f. Multiply perforations per lateral by number of laterals to get total number of perforations. $\frac{3}{\text{laterals}} \times \frac{11}{\text{perfs/lateral}} = \underline{33}$ perforations.
- g. $\frac{33}{\text{perfs}} \times \frac{74}{\text{gpm/perf}} = \underline{25}$ gpm.

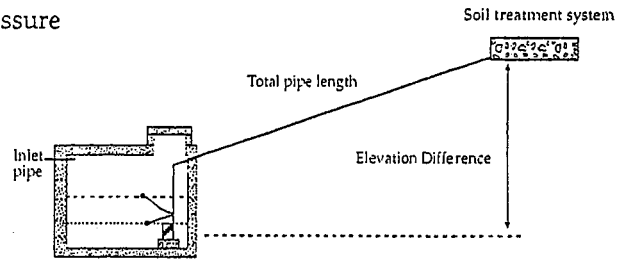
SELECTED PUMP CAPACITY 25 gpm

Perforation Discharges in GPM				
Head (feet)	Perforation diameter (inches)			
	1/8*	3/16*	7/32	1/4
1.0a	0.18	0.42	0.56	0.74
2.0b	0.26	0.59	0.80	1.04
5.0	0.41	0.94	1.26	1.65

a Use 1.0 foot single homes.
 b Use 2.0 feet for anything else.
 * Potential plugging issues

B. Determine head requirements:

1. Elevation difference between pump and point of discharge.
 $\underline{14}$ feet
2. If pumping to a pressure distribution system, five feet for pressure required at manifold if gravity system, zero.
 $\underline{5}$ feet
3. Friction loss
 - a. Enter friction loss table with gpm and pipe diameter. Read friction loss in feet per 100 feet from table (F-19).
 F.L. = $\underline{3.73}$ ft./100 ft of pipe
 - b. Determine total pipe length from pump to discharge point. Estimate by adding 25 percent to pipe length for fitting loss.
 Equivalent pipe length times 1.25 times pipe length =
 $\underline{100} \times 1.25 = \underline{125}$ feet
 - c. Calculate total friction loss by multiplying friction loss in ft/100 ft by equivalent pipe length.
 Total friction loss = $\frac{3.73}{100} \times 125 = \underline{5}$ feet
4. Total head required is the sum of elevation difference, special head requirements, and total friction loss.



$$\frac{14}{(1)} + \frac{5}{(2)} + \frac{5}{(3c)}$$

TOTAL HEAD 24 feet

Flow Rate gpm	Friction Loss in Plastic Pipe		
	Nominal pipe dia.		
	1.5"	2"	3"
20	2.47	0.73	0.11
25	3.73	1.11	0.16
30	5.23	1.55	0.23
35	6.96	2.06	0.30
40	8.91	2.64	0.39
45	11.07	3.28	0.48
50	13.46	3.99	0.58
55		4.76	0.70
60		5.60	0.82
65		6.48	0.95
70		7.44	1.09

C. Pump selection

1. A pump must be selected to deliver at least 25 gpm (Step A) with at least 24 feet of total head (Step B).

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Detroit Lakes, MN 56501

Lake Name N/A Lake Classification N/A Township Name Detroit

Owner's Name Duane & Marcella Lemmon Address 28372 Lemmon Rd

City Detroit Lakes, MN State/Zip 56501 Phone Number 218-847-5227

Number of Bedrooms 4 Well Casing Depth 76' Garbage Disposal (Yes) (No)
Design Flow 600 GPD Depth of other Wells within 100 ft of system N/A Grinder Pump/Lift Station In House (Yes) (No)

Type of Observation: Probe Pit Boring
Original Soil (Yes) (No) Compacted Soil (Yes) (No)
Depth to Restricting Layer 36" Proposed Design Replace Septic Tank ()
Maximum of Depth of System MOUND Septic Tank/Drainfield ()
Perc Rate 6.06 Soil Sizing Factor 1.27 Drainfield Only ()
 Holding Tank Mound () At Grade
 Lift Station () Pressurized Bed

SOIL BORING LOG

DEPTH (INCHES)	TEXTURE	COLOR & MUNSELL NO.	STRUCTURE
0-6	Sandy Loam	Top Soil	BLOCKY PLATY PRISMATIC NONE
6-36	Loam	10YR 5/3	BLOCKY PLATY PRISMATIC NONE
36-60	Mottling		BLOCKY PLATY PRISMATIC NONE
			BLOCKY PLATY PRISMATIC NONE

SOIL BORING LOG

DEPTH (INCHES)	TEXTURE	COLOR & MUNSELL NO.	STRUCTURE
0-8	Sandy Loam	Top Soil	BLOCKY PLATY PRISMATIC NONE
8-34	Loam	10YR 5/3	BLOCKY PLATY PRISMATIC NONE
34-60	Mottling		BLOCKY PLATY PRISMATIC NONE
			BLOCKY PLATY PRISMATIC NONE

Type of alarm Device on lift Station or Holding tank None in house
Attach perc test information if Required

Name and Address of Designer Dan Schlauderaff Phone 218-847-6217

MPCA Number 418 Date of Site Evaluation 10-31-01 Signature of Designer Dan Schlauderaff

Name of Installer (if different from Designer) Nels Thorsen MPCA Number 47

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- *** Inspections must be scheduled at least 24 hours prior to time requested.

Date Received 11/5/01 Application Fee 75 State Surcharge 0 Total 75

[] Application is hereby denied
[X] Application is hereby granted to N. Lemmon to install an individual septic system according to the specifications of the site evaluation and design submitted to the Becker County Environmental Services Office. By Order of: Heidi Metzger 11/5/01 Permit Number 16909
Signature of Becker County Qualified Employee Heidi Metzger Date Permit Issued 11/5/01 This permit expires on 11/5/02

VOID - design changed to pressure bed in different location further from the house

The site plan must be drawn to dimension or to scale:

*Dimensions of Lot

*Existing & Proposed Buildings

*Easements & setbacks

*Scale - One inch = _____ ft

*Well & Water Line Locations
within 100 ft of System

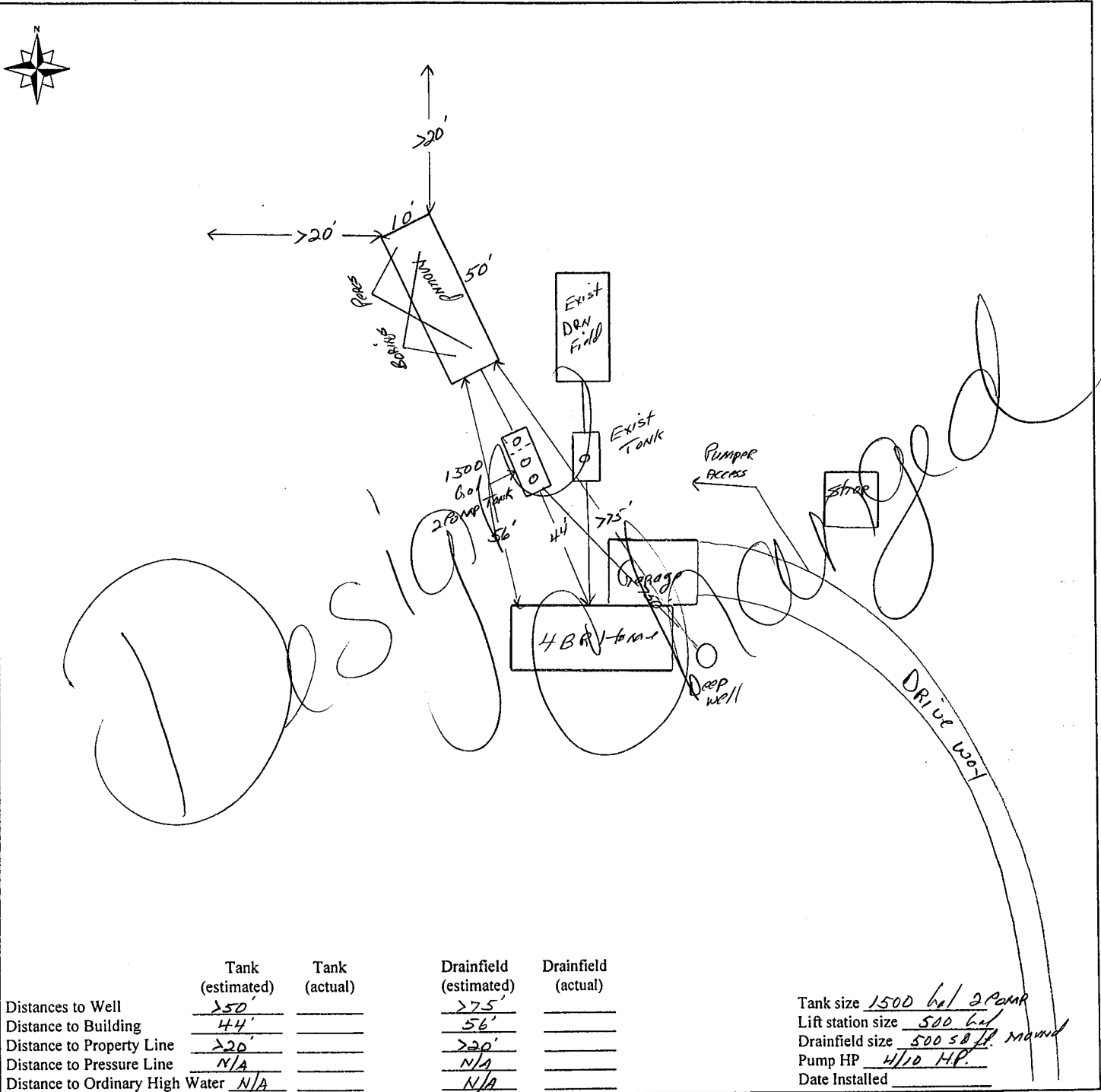
*Distance from Property Lines
*Distance from OHWM

*Tank Access Route
*Distance from buildings

*Location of any Unsuitable Soil

*Soil Borings & Per Test Locations

*Alternate Drainfield Location



	Tank (estimated)	Tank (actual)	Drainfield (estimated)	Drainfield (actual)
Distances to Well	<u>>50'</u>	_____	<u>>75'</u>	_____
Distance to Building	<u>44'</u>	_____	<u>56'</u>	_____
Distance to Property Line	<u>>20'</u>	_____	<u>>20'</u>	_____
Distance to Pressure Line	<u>N/A</u>	_____	<u>N/A</u>	_____
Distance to Ordinary High Water	<u>N/A</u>	_____	<u>N/A</u>	_____

Tank size 1500 Gal / 2 Pump
 Lift station size 500 Gal
 Drainfield size 500 SF Mound
 Pump HP 4/10 H.P.
 Date Installed _____

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Signature _____ Title _____ Date _____
 (Certificate of Compliance is not valid unless signed by a Registered Qualified Employee)

- PERCOLATION TEST SHEET -

Test hole location DRN Field Hole # 112 Date test hole was prepared: 10-31-01

Depth of hole bottom: 26" inches Diameter of hole: 5" inches

Soil Data from test hole:

depth, inches	soil texture:	soil color
_____	_____	_____
_____	_____	_____
_____	_____	_____

Method of scratching sidewall: Brd w/ nails Depth of pea size gravel in bottom of hole: 2 inches

Date and hour of initial water filling: 8 AM 10/31 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 SCHLAUDER Percolation test started at 12 (am/pm)

Maximum water depth above hole bottom during test: 8 inches

TIME	INTERVAL (MINUTES)	WATER DEPTH	WATER DROP (fraction)	WATER DROP (decimal)	PERC RATE CALCULATION	conversions
---	START <u>20</u>	<u>8</u> <u>11/4</u>	<u>3 3/4</u>	<u>3.75</u>	$\frac{20}{\text{TIME}} \div \frac{3.75}{\text{DROP}} = \frac{5.3}{\text{PERC}}$ A	1/16 = .06 1/8 = .13 3/16 = .19
---	REFILL <u>15</u>	<u>8</u> <u>5/4</u>	<u>2 3/4</u>	<u>2.75</u>	$\frac{15}{\text{TIME}} \div \frac{2.75}{\text{DROP}} = \frac{5.4}{\text{PERC}}$ B	1/4 = .25 5/16 = .31
---	REFILL <u>10</u>	<u>8</u> <u>6/4</u>	<u>1 3/4</u>	<u>1.75</u>	$\frac{10}{\text{TIME}} \div \frac{1.75}{\text{DROP}} = \frac{5.7}{\text{PERC}}$ C	3/8 = .36 7/16 = .44
---	REFILL -----	-----	-----	-----	$\frac{\text{TIME}}{\text{DROP}} = \frac{\text{PERC}}{\text{PERC}}$ D	1/2 = .5
---	REFILL <u>20</u>	<u>8</u> <u>4 1/2</u>	<u>3 1/8</u>	<u>3.13</u>	$\frac{20}{\text{TIME}} \div \frac{3.13}{\text{DROP}} = \frac{6.39}{\text{PERC}}$ E	9/16 = .56 5/8 = .63
---	REFILL <u>20</u>	<u>8</u> <u>5</u>	<u>3</u>	<u>3</u>	$\frac{20}{\text{TIME}} \div \frac{3}{\text{DROP}} = \frac{6.67}{\text{PERC}}$ F	11/16 = .69 3/4 = .75
---	REFILL <u>20</u>	<u>8</u> <u>5 1/2</u>	<u>2 7/8</u>	<u>2.88</u>	$\frac{20}{\text{TIME}} \div \frac{2.88}{\text{DROP}} = \frac{6.94}{\text{PERC}}$ G	13/16 = .81 7/8 = .88
---	REFILL -----	-----	-----	-----	$\frac{\text{TIME}}{\text{DROP}} = \frac{\text{PERC}}{\text{PERC}}$ H	15/16 = .94

Ten Percent Calculation *

A, B, C

Largest # of ABC - Smallest # of ABC = _____

Smallest # of ABC x 0.10 = _____

C, D, E

Largest # of CDE - Smallest # of CDE = _____

Smallest # of CDE x 0.10 = _____

E, F, G

Largest # of EFG - Smallest # of EFG = _____

Smallest # of EFG x 0.10 = _____

B, C, D

Largest # of BCD - Smallest # of BCD = _____

Smallest # of BCD x 0.10 = _____

D, E, F

Largest # of DEF - Smallest # of DEF = _____

Smallest # of DEF x 0.10 = _____

F, G, H

Largest # of FGH - Smallest # of FGH = _____

Smallest # of FGH x 0.10 = _____

* If the top number in each set of boxes is larger than the bottom number then take another reading. If the top number is equal or smaller than bottom number, average the three numbers for the perc rate.