

# ZIERKE SOIL TESTING

Erik Nelson  
12971 20<sup>th</sup> St N  
Stillwater, MN 55082

9/21/2023

Dear Erik Nelson,

At your request, I have conducted a septic inspection to determine the compliance status of your septic system pursuant to Minnesota Rules Chapter 7080.1500.

The compliance test set out in 7080.1500 has three main inquiries: 1). Is the system functioning hydraulically (disposing of effluent in a manner that prevents it from coming in contact with people)? 2). Are the septic tanks water tight? 3). Does the system have sufficient vertical separation between the bottom of the septic system and restrictive layers (bedrock, standing water, seasonally wet layers, etc) to provide full treatment of effluent?

Based off of these criteria, your septic system is compliant. A certification of compliance is in effect for three years from the date it is issued. To be clear, this should not be construed as a guarantee of future system function – there are too many factors that influence the lifespan of a septic system for an inspector to predict or even guess how long a septic system will last. A copy of this report will be filed with your local unit of government for their records.

Sincerely,

*Benjamin Zierke*

Benjamin Zierke  
MPCA Lic 119, Cert 9594

ADDRESS:  
28587 Jeffrey Ave  
Chisago City, MN 55013

PHONE 651-249-1346  
EMAIL benzierke@gmail.com

# Compliance inspection report form

## Existing Subsurface Sewage Treatment System (SSTS)

Doc Type: Compliance and Enforcement

**Instructions: Inspector must submit completed form to Local Governmental Unit (LGU) and system owner within 15 days of final determination of compliance or noncompliance.** Instructions for filling out this form are located on the Minnesota Pollution Control Agency (MPCA) website at <https://www.pca.state.mn.us/sites/default/files/wq-wwists4-31a.pdf>.

### Property information

Local tracking number: \_\_\_\_\_

Parcel ID# or Sec/Twp/Range: 3002920110009 Reason for Inspection Sale

Local regulatory authority info: Washington County

Property address: 12971 20<sup>th</sup> St N Stillwater, MN 55082

Owner/representative: Erik Nelson Owner's phone: 612-382-4723

Brief system description: 1500 gallon septic tank, 1000 gallon septic tank, 1500 gallon septic tank, drop box rock trench drainfield.

### System status

System status on date (mm/dd/yyyy): 9/21/2023

**Compliant – Certificate of compliance\***

*(Valid for 3 years from report date unless evidence of an imminent threat to public health or safety requiring removal and abatement under section 145A.04, subdivision 8 is discovered or a shorter time frame exists in Local Ordinance.)*

**\*Note: Compliance indicates conformance with Minn. R. 7080.1500 as of system status date above and does not guarantee future performance.**

**Noncompliant – Notice of noncompliance**

*Systems failing to protect ground water must be upgraded, replaced, or use discontinued within the time required by local ordinance.*

*An imminent threat to public health and safety (ITPHS) must be upgraded, replaced, or its use discontinued within ten months of receipt of this notice or within a shorter period if required by local ordinance or under section 145A.04 subdivision 8.*

#### Reason(s) for noncompliance (check all applicable)

- Impact on public health (Compliance component #1) – *Imminent threat to public health and safety*
- Tank integrity (Compliance component #2) – *Failing to protect groundwater*
- Other Compliance Conditions (Compliance component #3) – *Imminent threat to public health and safety*
- Other Compliance Conditions (Compliance component #3) – *Failing to protect groundwater*
- System not abandoned according to Minn. R. 7080.2500 (Compliance component #3) – *Failing to protect groundwater*
- Soil separation (Compliance component #5) – *Failing to protect groundwater*
- Operating permit/monitoring plan requirements (Compliance component #4) – *Noncompliant - local ordinance applies*

#### Comments or recommendations

Attempted several soil borings during site visit 9/20/2023. Consistently hit medium sized cobbles in the 40-48" range that prevent us from verifying soils to 72". Soils observed were consistent with original design borings and county review boring. This report uses the design borings and county review borings to satisfy the soil portion of the process.

### Certification

*I hereby certify that all the necessary information has been gathered to determine the compliance status of this system. No determination of future system performance has been nor can be made due to unknown conditions during system construction, possible abuse of the system, inadequate maintenance, or future water usage.*

**By typing my name below, I certify the above statements to be true and correct, to the best of my knowledge, and that this information can be used for the purpose of processing this form.**

Business name: Zierke Soil Testing Certification number: 9594

Inspector signature: Benjamin Zierke License number: 119

*(This document has been electronically signed)*

Phone: 651-249-1346

### Necessary or locally required supporting documentation (must be attached)

- Soil observation logs
- System/As-Built
- Locally required forms
- Tank Integrity Assessment
- Operating Permit
- Other information (list): Permit information

## 1. Impact on public health – Compliance component #1 of 5

### Compliance criteria:

System discharges sewage to the ground surface  Yes\*  No

System discharges sewage to drain tile or surface waters.  Yes\*  No

System causes sewage backup into dwelling or establishment.  Yes\*  No

**Any "yes" answer above indicates the system is an imminent threat to public health and safety.**

### Describe verification methods and results:

None of the above observed.

### Attached supporting documentation:

Other: \_\_\_\_\_  
 Not applicable

## 2. Tank integrity – Compliance component #2 of 5

### Compliance criteria:

System consists of a seepage pit, cesspool, drywell, leaching pit, or other pit?  Yes\*  No

Sewage tank(s) leak below their designed operating depth?  Yes\*  No

If yes, which sewage tank(s) leaks:

**Any "yes" answer above indicates the system is failing to protect groundwater.**

### Describe verification methods and results:

Present for pumping by Smilies Sewer 9/20/2023. Tanks water tight and baffles in place.

### Attached supporting documentation:

Empty tank(s) viewed by inspector

Name of maintenance business: Smilies

License number of maintenance business: 2428

Date of maintenance: 9/20/2023

Existing tank integrity assessment (Attach)

Date of maintenance (mm/dd/yyyy): \_\_\_\_\_ (must be within three years)

(See form instructions to ensure assessment complies with Minn. R. 7082.0700 subp. 4 B (1))

Tank is Noncompliant (pumping not necessary – explain below)

Other: \_\_\_\_\_

### 3. Other compliance conditions – Compliance component #3 of 5

3a. Maintenance hole covers appear to be structurally unsound (damaged, cracked, etc.), or unsecured?

Yes\*  No  Unknown

3b. Other issues (*electrical hazards, etc.*) to immediately and adversely impact public health or safety?  Yes\*  No  Unknown

**\*Yes to 3a or 3b - System is an imminent threat to public health and safety.**

3c. System is non-protective of ground water for other conditions as determined by inspector?

Yes\*  No

3d. System not abandoned in accordance with Minn. R. 7080.2500?

Yes\*  No

**\*Yes to 3c or 3d - System is failing to protect groundwater.**

**Describe verification methods and results:**

Attached supporting documentation:  Not applicable

### 4. Operating permit and nitrogen BMP\* – Compliance component #4 of 5 Not applicable

Is the system operated under an Operating Permit?

Yes  No **If “yes”, A below is required**

Is the system required to employ a Nitrogen BMP specified in the system design?  Yes  No

**If “yes”, B below is required**

*BMP = Best Management Practice(s) specified in the system design*

**If the answer to both questions is “no”, this section does not need to be completed.**

**Compliance criteria:**

a. Have the operating permit requirements been met?

Yes  No

b. Is the required nitrogen BMP in place and properly functioning?

Yes  No

**Any “no” answer indicates noncompliance.**

**Describe verification methods and results:**

Attached supporting documentation:  Operating permit (Attach)

## 5. Soil separation – Compliance component #5 of 5

Date of installation 10/4/2007  Unknown  
(mm/dd/yyyy)

Shoreland/Wellhead protection/Food beverage lodging?  Yes  No

**Compliance criteria (select one):**

5a. For systems built prior to April 1, 1996, and not located in Shoreland or Wellhead Protection Area or not serving a food, beverage or lodging establishment:  Yes  No\*  
 Drainfield has at least a two-foot vertical separation distance from periodically saturated soil or bedrock.

5b. Non-performance systems built April 1, 1996, or later or for non-performance systems located in Shoreland or Wellhead Protection Areas or serving a food, beverage, or lodging establishment:  Yes  No\*  
 Drainfield has a three-foot vertical separation distance from periodically saturated soil or bedrock.\*

5c. "Experimental", "Other", or "Performance" systems built under pre-2008 Rules; Type IV or V systems built under 2008 Rules 7080.2350 or 7080.2400 (Intermediate Inspector License required ≤ 2,500 gallons per day; Advanced Inspector License required > 2,500 gallons per day)  Yes  No\*  
 Drainfield meets the designed vertical separation distance from periodically saturated soil or bedrock.

**Attached supporting documentation:**

- Soil observation logs completed for the report
- Two previous verifications of required vertical separation
- Not applicable (No soil treatment area)
- \_\_\_\_\_

**Indicate depths or elevations**

A. Bottom of distribution media	36"
B. Periodically saturated soil/bedrock	72"+
C. System separation	36"+
D. Required compliance separation*	36"

\*May be reduced up to 15 percent if allowed by Local Ordinance.

**\*Any "no" answer above indicates the system is failing to protect groundwater.**

**Describe verification methods and results:**

See attached boring logs - original design borings 17-20 are in drainfield area.

**Upgrade requirements:** (Minn. Stat. § 115.55) An imminent threat to public health and safety (ITPHS) must be upgraded, replaced, or its use discontinued within ten months of receipt of this notice or within a shorter period if required by local ordinance. If the system is failing to protect ground water, the system must be upgraded, replaced, or its use discontinued within the time required by local ordinance. If an existing system is not failing as defined in law, and has at least two feet of design soil separation, then the system need not be upgraded, repaired, replaced, or its use discontinued, notwithstanding any local ordinance that is more strict. This provision does not apply to systems in shoreland areas, Wellhead Protection Areas, or those used in connection with food, beverage, and lodging establishments as defined in law.



Department of Public Health and Environment

14949 62nd Street North PO Box 6
Stillwater MN 55082-0006
Office: 651-430-6655 TTY: 651-430-6246 Fax: 651-430-6730

Table with 2 columns: Fee Type and Amount. Includes Review Fee (\$245.00), Permit Fee (\$255.00), Total Fee (\$500.00), Previous Payment (\$0.00), and Balance Due (\$500.00).

Community: West Lakeland Township
Permit Number: 0017-07-3
Owner: Erik Nelson
6190 Upper Afton CRV
Woodbury MN 55125-
Applicant: Erik Nelson

PERMISSION IS HEREBY GRANTED

To execute the work specified in this permit on the following identified property upon express condition that said persons and their agents, and employees shall conform in all respects to the provisions of Ordinance #128, Washington County Development Code, Chapter Four, Individual Sewage Treatment System Regulations. This permit may be revoked at any time upon violation of any of the provisions of said ordinance.

Project Address: 12971 20th St. N.
Geo Code: 30-029-20-11-0009
Designer: Eklin Soil Testing & Inspections, Inc.

Table with columns: Type of System, Design Criteria, Drainfield Sizing, and Pressure Distribution. Includes details for Standard Drainfield, percolation rate, trench dimensions, and tank sizes.

Authorized Work/Special Conditions

- 1. Area must be re-staked by designer before installation..
2. Building sewer can be no closer than 20' to well and must be pressure tested within 50 feet of well.
3. Domestic strength waste only. Industrial waste and hazardous wastes cannot enter the septic system.
4. Establish a vegetative cover over the soil treatment area within 30 days of the installation. Protect the soil treatment area from erosion until the vegetative cover is established.
5. Maximum trench depth 36 inches into natural soil.
6. Rock only. No chambers. No gravelless.
7. Rope off and protect tested area from all vehicle traffic.
8. This system must be installed by a certified/licensed sewage treatment system installer holding a current license with the Minnesota Pollution Control Agency. (A list of installers is available at your request.)

Handwritten signature of Christopher W. LeClair

Permit Issue Date: 5/30/2007
Permit Expiration Date: 5/29/2008

Christopher W. LeClair, REHS
Senior Environmental Specialist

0017-07-3 (Handwritten in red)

## Individual Sewage Treatment System Inspection Form

Project Address:		Application ID: 0017-07-3
Community: West Lakeland Township		Geo Code: 30-029-20-11-0009
Owner: Erik Nelson		Type of System: Standard Drainfield
Applicant: Erik Nelson		Designer: Eklin Soil Testing & Inspections, Inc.
Type of Installation: <input checked="" type="checkbox"/> New <input type="checkbox"/> Repair <input type="checkbox"/> Replacement <input type="checkbox"/> Other	Type of Inspection: <input type="checkbox"/> Site Review <input checked="" type="checkbox"/> Tank <input type="checkbox"/> Rough-Up <input type="checkbox"/> Treatment Area <input type="checkbox"/> Final	Inspector: <input type="checkbox"/> Pete Ganzel <input checked="" type="checkbox"/> Chris LeClair <input type="checkbox"/> Other
Number of Bedrooms:		Inspection Dates: 4 OCT 2007

Installer: PERRY & SONS

Site Review	Mounds / At-Grade
Date: _____ Conclusions: _____	<input type="checkbox"/> Mound <input type="checkbox"/> At-Grade Absorption Area _____
<input type="checkbox"/> Soil Boring <input type="checkbox"/> Site Suitable	Percent Slope _____ Sand Below Bed _____
<input type="checkbox"/> Soil Pit <input type="checkbox"/> Site Unsuitable	Upslope Width _____ Rock Below Pipe _____
Depth of Pit/Boring _____ <input type="checkbox"/> Additional Tests Required	Downslope Width _____ Perf Size/Spacing _____
Comments _____	Sideslope Width _____ Pipe Size/Spacing _____
_____	Pressure Bed Dimensions: Length _____ Width _____
_____	

Sewage / Holding Tanks	Pump Information
Tank 1 <u>1500</u> <input checked="" type="checkbox"/> New <input type="checkbox"/> Existing	Lift Station Capacity <u>1500</u> Feet of Head _____
Baffle Type <input type="checkbox"/> Plastic <input type="checkbox"/> Fiberglass	Horsepower/GPM _____ Size of Discharge _____
Tank 2 <u>1000</u> <input checked="" type="checkbox"/> New <input type="checkbox"/> Existing	Gallons Per Cycle _____ Type/Location or Alarm _____
<input type="checkbox"/> San-T <input type="checkbox"/> Concrete	Gallons Per Minute _____

Trenches, Bed or Gravelless Drainfield	Setbacks
<input checked="" type="checkbox"/> Drop Box <input type="checkbox"/> Distribution Box <input type="checkbox"/> Gravity <input type="checkbox"/> Pump Trench <input type="checkbox"/> Pressure Bed	Building(s) to tanks <u>&gt;10</u>
<input type="checkbox"/> Serial <input type="checkbox"/> Parallel <input type="checkbox"/> Chambers <input type="checkbox"/> Gravelless <input type="checkbox"/> 8" <input type="checkbox"/> 10"	Building(s) to drainfield <u>720</u>
Trench Depth (in) T1 <u>24"</u> Trench Length (ft) T1 <u>70</u> Trench Width <input type="checkbox"/> 24" <input checked="" type="checkbox"/> 36" <input type="checkbox"/> Other _____	Surface Water _____
T2 _____ T2 <u>70</u> <input type="checkbox"/> 6" <input checked="" type="checkbox"/> 42" <input type="checkbox"/> 18" <input type="checkbox"/> 24"	Property Lines _____
T3 _____ T3 <u>70</u> Trench Spacing _____	Wells <input checked="" type="checkbox"/> 50' <input type="checkbox"/> 100'
T4 _____ T4 <u>70</u>	<b>Pressure Test</b>
T5 _____ T5 <u>70</u>	Time _____ Time _____
Pressure Bed Dimensions: Length _____ Width _____ Absorption Area _____	PSI _____ PSI _____

Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Inspector \_\_\_\_\_


# EKLIN SOIL TESTING AND INSPECTIONS, INC.

1986 Ridgewood Avenue  
 White Bear Lake, MN 55110  
 1-612-429-1090

Owner's Name	ERIC NELSON		
Job Site Address	LOT 1 BLOCK 2 CHERRYKNOLL RIDGE		
City or Township	WEST LAKELAND TWP.	-	20TH ST. NO
Use of Building	HOME - 5 BEDROOMS		

Design Flow Rate	750 GALS PER DAY	Perc Rate	16-18 MPI	Land Slope	12	Percent
Two Required Tank Sizes	1500 Gallons	1000 Gallons	Lift Station Tank Size	1500	Gallons	
Type of System (standard, at grade or bed)	STANDARD					
System Size:	1250 -Square Feet	420 -Lineal Feet	36"	-Trench Width		
Depth of rock below pipe	12"	Depth of Rock Above Pipe	2"			
MINimum Depth of Trench From Existing Grade	24	Inches	MAXimum Depth of Trench From Existing Grade	36	Inches	
Recommended Number of Trenches	6	Recommended Length of Trenches	70 FT			
Trench Spacing Measured Center to Center	7 Feet					
Any Other Special Conditions	ESTABLISH COVER OVER THE TRENCHES TO PREVENT EROSION					

INSTALLER MUST VERIFY ELEVATIONS SO THE PROPER PUMP IS INSTALLED - PUMPING RATE CANNOT EXCEED 45 GALS PER MIN - PUMPING CYCLE 225 GALS

This system has been designed by a Pollution Control Agency (PCA) Certified Professional.			
Designer Name	DALE EKLIN	PCA Certification #	695
Address	1986 RIDGEWOOD AVE WHITE BEAR LAKE MINN 55110	Phone #	429-1090
Signature		Date	10-30-2000



DATE 10-24-00

BORINGS 1-14 WILL  
 NOT BE USED

BOREHOLE DIAMETER 4" 3/4" - 2 1/2" HAND AUGER

DEPTH FEET	HOLE # 1	HOLE # 2	HOLE # 3	HOLE # 4	HOLE # 5	HOLE # 6
1	TOP SOIL - SOIL IS TIGHT	TOP SOIL	TOP SOIL	TOP SOIL	TOP SOIL	TOP SOIL
2	BROWN, SANDY LOAM - SOIL IS TIGHT	BROWN, MEDIUM SAND	BROWN, SANDY LOAM	GRAY LOAM -	GRAY LOAM -	BROWN, SANDY LOAM -
3	BROWN, SANDY LOAM			MOTTLED SOIL	MOTTLED SOIL	MOTTLED SOIL
4	MOTTLED LAYER BROWN, FINE TO MEDIUM SAND	MOTTLED LAYER BROWN, SANDY LOAM	BROWN LOAM WITH LIGHT SAND LAYERS	STOP	STOP	STOP
5						
6					Mottle 18"	Mottle 18"
7	STOP	STOP	STOP	Mottle 18"		
8	OKAY 6'6"	OKAY 6'6"	OKAY 6'6"			Mottle 14"
9						
10						

DATE 10-24-00

BORINGS 1-14 WILL NOT BE USED

BOREHOLE DIAMETER 4" - 3 1/2" - 2 1/2" HAND DRUGGER

DEPTH FEET	HOLE # 7	HOLE # 8	HOLE # 9	HOLE # 10	HOLE # 11	HOLE # 12
1	TOP SOIL	TOP SOIL -	TOP SOIL	TOP SOIL	TOP SOIL	TOP SOIL
1	BROWN, SANDY LOAM -	SOIL IS TIGHT	BROWN, SANDY LOAM	BROWN LOAM	BROWN LOAM -	GRAY LOAM -
2	MOTTLED SOIL	BROWN LOAM	BROWN, FINE SAND WITH LOAM LAYERS	MOTTLED SOIL	MOTTLED SOIL	BROWN, SANDY LOAM
3		MOTTLED SOIL				
4	STOP	STOP	BROWN, SANDY LOAM -	STOP	STOP	BROWN LOAM -
5			FRAINT MOTTLE			LIGHT MOTTLE
6	MOTTLE 12"	MOTTLE 24"		MOTTLE 10"	MOTTLE 12"	
7			STOP			LIGHT MOTTLE 42"
8			GRAY 6'6"			
9						
10						

DATE 10-26-00

TEST SITE

BOREHOLE DIAMETER 4" - 3 1/2" - 2 1/2" HAND AUGER

DEPTH FEET	HOLE # 13	HOLE # 14	HOLE # 15	HOLE # 16	HOLE # 17	HOLE # 18
1	Top Soil	Top Soil	Top Soil	Top Soil	Top Soil	Top Soil
2	Brown loam	Brown loam	Light Brown loam	Brown, sandy loam	Brown loam	Brown, sandy loam
3	Brown, sandy loam	Brown, sandy loam	Rocks		Brown, sandy loam	
4		Mottled soil	Obstruction			
5	STOP	STOP	STOP			
6	OKAY 4'6"	Mottle 30"	OKAY 48"	STOP	STOP	STOP
7				OKAY 5'+	OKAY 6'	OKAY 6'
8						
9						
10						

DATE 10-26-00

TEST SITE

BOREHOLE DIAMETER 4" 3/4" 2 1/2" HAND AUGER

DEPTH FEET	HOLE # 19	HOLE # 20	HOLE #	SOIL CLASSIFICATION	HOLE #	HOLE #
0	TOP SOIL	TOP SOIL		BROWN LOAM 7.5 YR 4/4		
1	BROWN, SANDY LOAM	BROWN, SANDY LOAM		LIGHT BROWN SAND 7.5 YR 4/3		
2	LIGHT BROWN, MEDIUM SAND			BROWN SAND 7.5 YR 4/4		
3	ROCKS	BROWN, FINE SAND		GRAY LOAM 2.5 Y 6/1		
4	OBSTRUCTION STOP			LIGHT BROWN LOAM 7.5 YR. 4/3		
5		BROWN, SANDY LOAM				
6		STOP				
7		OKAY 6'+				
8						
9						
10						

PERCOLATION DATA

BOREHOLE # 1 JOB ERIC NELSON  
LOT 1, BLK 2, CHERRY KNOLL RIDGE  
W. LAKELAND TWP.

BOREHOLE # 2

BOREHOLE DEPTH 24" DATE 10-26-00 SIGNED \_\_\_\_\_

BOREHOLE DEPTH 36"

BOREHOLE DIAMETER 6"

BOREHOLE DIAMETER 6"

DEPTH	SOIL DESCRIPTION
0-10"	TOP SOIL
10"-24"	BROWN LOAM WITH LIGHT SAND LAYERS

DEPTH	SOIL DESCRIPTION
0-10"	TOP SOIL
10"-36"	BROWN, SANDY LOAM

TIME	READING MEASUREMENT	DROP	COMMENTS
10:45	18"		FILL
11:15	20"	2"	15 MPI
11:15	18"		FILL
11:45	19 7/8"	1 7/8"	16 MPI
11:45	18"		FILL
12:15	19 3/4"	1 3/4"	17.1 MPI
12:15	18"		FILL
12:45	19 3/4"	1 3/4"	17.1 MPI
12:45	18"		FILL

TIME	READING MEASUREMENT	DROP	COMMENTS
10:55	30"		FILL
11:25	32 1/8"	2 1/8"	14.1 MPI
11:25	30"		FILL
11:55	32 1/8"	2 1/8"	14.1 MPI
11:55	30"		FILL
12:25	32"	2"	15 MPI
12:25	30"		FILL
12:55	31 7/8"	1 7/8"	16 MPI
12:55	30"		FILL

1:15 19 7/8" 1 5/8" 18.5 MPI

1:25 31 7/8" 1 7/8" 16 MPI

## 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 \_\_\_\_\_
- b. Select perforation spacing = \_\_\_\_\_ feet.
- c. Subtract 2 ft. from the rock layer length.  
Rock layer length - 2 ft = \_\_\_\_\_ feet.
- d. Determine the number of spaces between perforations.  
Length perf. spacing = \_\_\_\_\_ ft. + \_\_\_\_\_ ft. = \_\_\_\_\_ spaces
- e. \_\_\_\_\_ spaces + 1 = \_\_\_\_\_ perforations/lateral
- f. Multiply perforations per lateral by number of laterals to get total number of perforations.  $\frac{\text{laterals}}{\text{perforations}} \times \frac{\text{perforations}}{\text{lateral}} = \text{_____ perforations.}$
- g.  $\frac{\text{perforations}}{\text{perforations}} \times \frac{\text{perforations}}{\text{perforations}} = \text{_____ gpm.}$

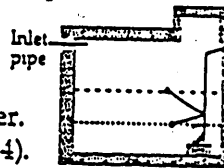
Head (feet)	Perforation diameter (inches)	
	7/32	1/4
1.0a	0.56	0.74
1.5	0.69	0.90
2.0b	0.80	1.04

a Use 1.0 foot single homes.  
b Use 2.0 feet for anything else.

SELECTED PUMP CAPACITY 30 gpm

### B. Determine head requirements:

1. Elevation difference between pump and point of discharge. 45 feet
2. If pumping to a pressure distribution system, five feet for pressure required at manifold if gravity system, zero. 0 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-14). F.L. = 1.55 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, or use a fitting loss chart (F-15 \_\_\_\_\_ feet).  
Equivalent pipe length - 1.25 times pipe length = 400 x 1.25 = 500 feet
  - c. Calculate total friction loss by multiplying friction loss in ft/100 ft by equivalent pipe length.  
Total friction loss = 1.55 x 500 + 100 = 7.75 feet
4. Total head required is the sum of elevation difference, special head requirements, and total friction loss.



$$\frac{45}{(1)} + \frac{0}{(2)} + \frac{7.75}{(3c)}$$

TOTAL HEAD 52.75 feet

Flow Rate gpm	Nominal pipe dia.		
	1.5"	2"	3"
20	2.47	0.73	0.11
25	3.73	1.11	0.16
<u>30</u>	<u>5.23</u>	<u>1.55</u>	<u>0.23</u>
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

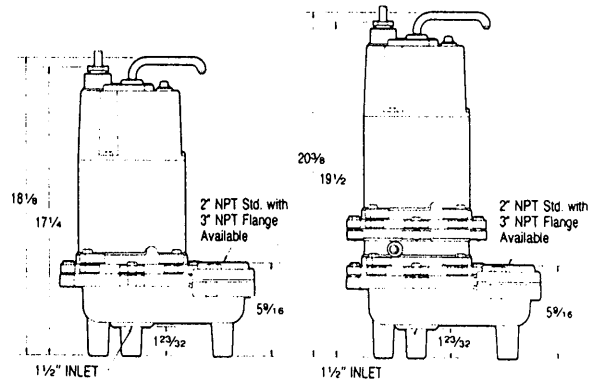
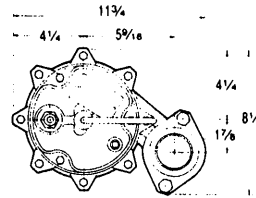
### C. Pump selection

1. A pump must be selected to deliver at least 30 gpm (Step A) with at least 52.75 feet of total head (Step B).

# WHRH and WHRH-DS

1 1/2" Solids Handling Sewage Pumps and Effluent Pumps,  
Single and Double Seal

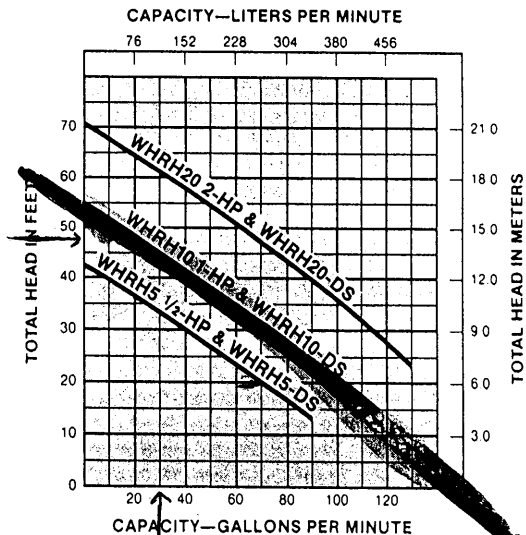
## DIMENSIONS



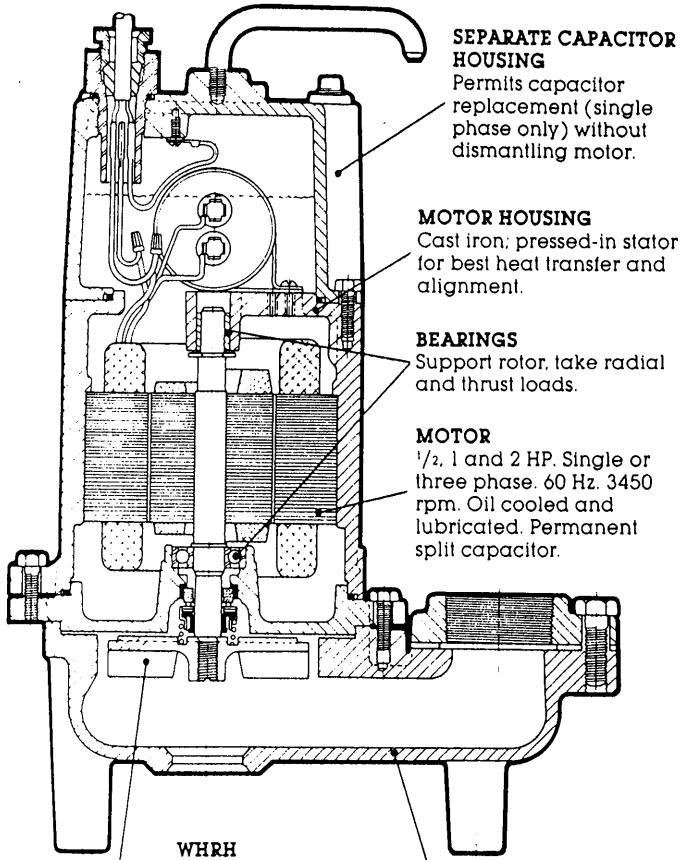
WHRH

WHRH-DS

## PERFORMANCE CURVE



*INSTALLER MUST  
VERIFY ELEVATIONS*



### SEPARATE CAPACITOR HOUSING

Permits capacitor replacement (single phase only) without dismantling motor.

### MOTOR HOUSING

Cast iron; pressed-in stator for best heat transfer and alignment.

### BEARINGS

Support rotor, take radial and thrust loads.

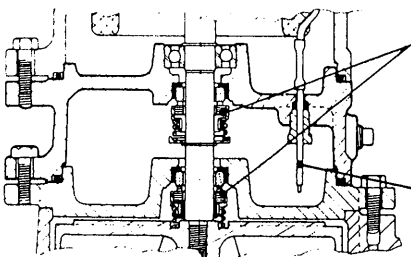
### MOTOR

1/2, 1 and 2 HP. Single or three phase. 60 Hz. 3450 rpm. Oil cooled and lubricated. Permanent split capacitor.

WHRH

**IMPELLER**  
Recessed completely out of volute passage

**VOLUTE CASE**  
Cast iron with support legs. Passes 1 1/2" solids.



### SHAFT SEAL(S)

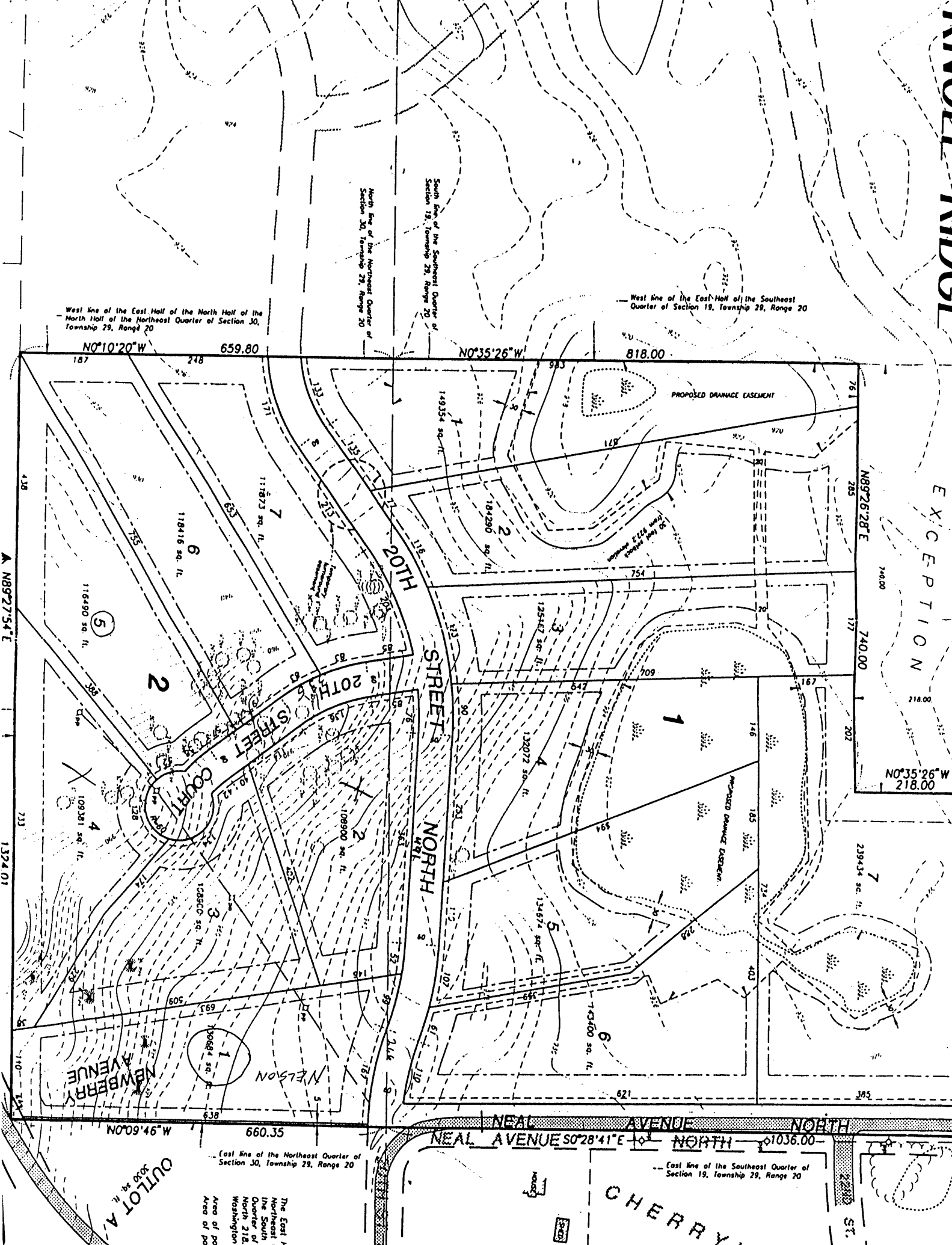
Carbon and ceramic faces. Second seal extends motor life.

### OPTIONAL SEAL LEAK PROBE (single phase only)

Detects water in seal housing, activates red light in control panel.

WHRH-DS

EXCEPTION



West line of the East Half of the North Half of the North Half of the Northeast Quarter of Section 30, Township 29, Range 20

South line of the Southeast Quarter of Section 19, Township 29, Range 20  
North line of the Northwest Quarter of Section 30, Township 29, Range 20

West line of the East Half of the Southeast Quarter of Section 19, Township 29, Range 20

N0°10'20"W 659.80

N0°35'26"W 818.00

N89°26'28"E 740.00

N0°35'26"W 218.00

N89°27'54"E

1324.01

N0°09'46"W 660.35

NEAL AVENUE NORTH S028°41'E 1036.00

East line of the Northeast Quarter of Section 30, Township 29, Range 20

East line of the Southeast Quarter of Section 19, Township 29, Range 20

OUTLOT A  
300 sq. ft.

The East H. Northeast C the South Quarter of North 21&C Washington Area of por

CHERRY ST.



# EKLIN SOIL TESTING AND INSPECTIONS, INC.

1986 Ridgewood Avenue  
White Bear Lake, MN 55110  
1-612-429-1090

Eric Nelson  
6190 Upper Afton Cove  
Woodbury, MN 55125

October 30, 2000

Dear Eric,

At your request, on October 26 & 27, 2000, soil borings and percolation tests were performed at Lot 1, Blk 2, Cherry Knoll Ridge, 20th St. No., West Lakeland Township.

Soil borings indicate there is a three foot separation from the bottom of the drainfield trench to water table. The percolation rate was 16 & 18 MPI.

For a five bedroom home, a 1500 and 1000 gallon septic tank will be needed. 1250 square feet of drainfield is recommended. The drainfield will consist of six runs, three feet wide, 24' to 36" deep and 70 feet long. There should be 12' of rock below the pipe and 2' of rock over the pipe. It will take approximately 75 yards of inch and a half washed rock for this job. Before backfilling, an approved Geotech fabric should be put down over the rock to keep the backfill from sifting into the drainfield. It is important to establish cover over the drainfield as soon as possible. Rain water getting into the system could cause the system to fail.

Because the drainfield is at a higher elevation, there should be a 1000 gallon lift station with a 24' manhole to grade for servicing the pump. The pump should be a 1/2-1 HP submersible sump pump with a 2" discharge pipe going to the drainfield. The pump should be placed 6" off of the bottom of the lift station. The 2" discharge pipe should have back pitch on it so water does not stand in the pipe and freeze during winter months. A warning device should be installed at the lift station to warn you of pump failure. The pumping cycle should be 225 gallons per cycle. This cycle will also allow for run back from the 2" discharge pipe.

See the attached papers for suggested design and boring and percolation logs.

DURING CONSTRUCTION IT IS IMPORTANT TO KEEP ALL TRAFFIC OFF OF THE DRAINFIELD AREA SO THE GROUND WILL NOT BECOME COMPACTED. YOU SHOULD FENCE OR FLAG OFF THE TESTED AREA BEFORE ANY EXCAVATION IS DONE ON THE SITE.

Low flush toilets and restricted shower heads would cut your water usage down. If a water softener is installed, it can drain directly to the wetlands or a low spot on the lot as this contains no harmful chemicals and it is legal. These recommendations are a very good practice to follow on all septic systems, whether they be mounds or the conventional

continued.....

trench systems. If hot tubs or over sized bath tubs are used, it would be advisable to enlarge the drainfield.

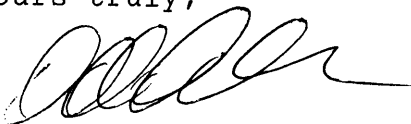
It is important to maintain your septic system by pumping the septic tank periodically. The size of the family will determine how often this has to be done. If the septic tank is not pumped when needed, sludge can build up and work over into the drainfield and cause the field to stop up. Never hook basement footing drains to your septic system. Always try to conserve on water use.

During winter months it is also very important to keep all traffic off of the drainfield area; snowmobiles, skiing, sliding, etc. If snow becomes compacted it could cause your drainfield to freeze up.

This report does not mean that you have a permit to install the job. Your local inspector will have to first approve the suggested design and logs. In some cases other agencies may require a permit. Your local authorities should be able to inform you of this.

If I can be of any further assistance please feel free to call me.

Yours truly,

A handwritten signature in black ink, appearing to read 'Dale Eklin', written in a cursive style.

Dale Eklin  
Certification No. 695



# SOIL REVIEW/SEPTIC PERMIT APPLICATION

Washington County Health, Environment & Land Management

14900 61st Street N., P.O. Box 3803

Stillwater, MN 55082-3803

612/430-6708 or 612/430-6656 FAX 612/430-6730

FEE \_\_\_\_\_

Receipt # \_\_\_\_\_

## Make checks payable to WASHINGTON COUNTY TREASURER

- \$150 - Application Fee (site review)      \$25 - Additional Review Fee (1 hour minimum)      \$100 base fee, plus \$50 per lot - Subdivision Fee
- \$150 - New Drainfield System Permit Fee      \$70 - Replacement Drainfield System Permit Fee
- \$250 - New Mound System Permit Fee      \$170 - Replacement Mound System Permit Fee

Legal Description and Parcel Identification Number (especially if this is for a NEW SUBDIVISION OR MINOR SUBDIVISION) Sec. 30  
Twp. 29  
RA. 20 W

LOT 1 BLOCK 2 CHERRY KNOLL RIDGE 20TH ST N. W. LAKELAND TWP.

Applicant	Address	City	State	Zip	Phone
<u>ERIC NELSON</u>	<u>6190 UPPER AFTON COVE</u>	<u>WOODBURY MN</u>	<u>55125</u>		
Owner (if different from applicant)	Address	City	State	Zip	Phone
					<u>578-7687</u>

New Home  Existing Home \_\_\_\_\_ New Business \_\_\_\_\_ Existing Business \_\_\_\_\_

Number Of Bedrooms: 5 Gallons Per Day: 750

Check the following fixture(s) which are or will be installed: Garbage Disposal \_\_\_\_\_ Recreational Bathing Facility: (jacuzzi, hot tub, etc.) \_\_\_\_\_

New Drainfield System  New Mound System \_\_\_\_\_ Replacement Drainfield System \_\_\_\_\_ Replacement Mound System \_\_\_\_\_ Permit Renewal \_\_\_\_\_ Approval Only \_\_\_\_\_

If this site has been approved, attach copy of approval letter \_\_\_\_\_ Additional Soil Test Data for Previously Approved Site \_\_\_\_\_

The following exhibits are required as part of this application and shall be attached hereto: Percolation Test Reports; Soil Boring Logs; Site Plan drawn to scale showing location of buildings, lot lines, percolation test holes, soil boring holes, proposed location of system and well; one (1) copy of the System Design; and one (1) copy of the Final Building Plan. The house and the drainfield areas must be staked. Inaccurate or incomplete information will result in delays in processing.

**AGREEMENT:** The undersigned hereby makes Application for Permit to Install or Extend Sewage Treatment System herein specified, agreeing that all such work shall be done in strict accordance with ordinances and regulations of the County of Washington, Minnesota. Applicant agrees that the Site Plan, Sketches and Design submitted herewith, and which are reviewed by the Washington County Building Official or his agent, together with any requirement and/or restriction made necessary by conditions peculiar to a particular location, shall become a part of the permit. Applicant further agrees to provide access, at reasonable times, to the Building Official or his agent for the purpose of performing inspections required and that no part of the system shall be covered until it has been inspected and accepted. **APPLICATION IS FOR AN INSTALLATION AT A SPECIFIC LOCATION; ANY DEVIATION FROM THE APPROVED LOCATION WILL VOID THE PERMIT.** It shall be the responsibility of the applicant for the permit to notify the Office of the Building Official that the installation is ready for inspection.

In connection with your request for a soil review/septic permit, you are hereby giving us permission to enter upon your property during normal business hours for the purpose of determining the suitability of the location, which may include minor excavation or soil borings.

\_\_\_\_\_  
Signature of Applicant (Owner or Builder)

\_\_\_\_\_  
Date

## THE AREA BELOW IS FOR COUNTY USE ONLY

SITE EVALUATION: BY INSPECTOR \_\_\_\_\_ DATE \_\_\_\_\_

Setbacks:	Required [circle appropriate item(s)]					Actual
	50'	75'	100'	150'		
Well (including adjacent property)						
Wetland, Pond, Lake, Stream, River, or Bluffline						

CONCLUSIONS: Site Suitable: \_\_\_\_\_ Site Unsuitable: \_\_\_\_\_ Additional Tests Required: \_\_\_\_\_ Verify Use: \_\_\_\_\_ Bedrooms \_\_\_\_\_

NOTES: Lot Size \_\_\_\_\_ Year Built \_\_\_\_\_

An Equal Employment Opportunity/Affirmative Action Employer

If You Need Assistance Due to Disability or Language Barrier, Please Call 430-6656 OR 430-6708 (TDD 439-3220)

### PROPERTY & APPLICANT INFORMATION

PROPERTY ADDRESS: <i>Lot 1 Bl 2 Cheryknoee Ridge</i>		GEOCODE: <i>30029 20110009</i>	
USE OF BUILDING:	<input type="checkbox"/> SINGLE FAMILY HOME <input type="checkbox"/> NON-SINGLE FAMILY	APPLICATION TYPE:	<input type="checkbox"/> NEW <input type="checkbox"/> REPLACEMENT
APPLICANT			
NAME(S) <i>Erik Nelson</i>	ADDRESS <i>6190 Upper Cstm Cove</i>	PHONE NUMBER(S) <i>C-618-382-4723</i>	
	CITY <i>Woodbury</i>	ZIP <i>55125</i>	
OWNER			
NAME(S)	ADDRESS	PHONE NUMBER(S)	
	CITY	ZIP	

### SYSTEM TYPE

<input checked="" type="checkbox"/> STANDARD SYSTEM	<input type="checkbox"/> ALTERNATIVE SYSTEM	<input type="checkbox"/> EXPERIMENTAL SYSTEM	<input type="checkbox"/> SUBDIVISION REVIEW	<input type="checkbox"/> LOT SPLIT
<input checked="" type="checkbox"/> DRAINFIELD	<input type="checkbox"/> PRESSURE BED	<input type="checkbox"/> MOUND	<input type="checkbox"/> AT-GRADE	<input type="checkbox"/> TANK REPLACEMENT
<input type="checkbox"/> CONSTRUCTED WETLAND	<input type="checkbox"/> COLLECTOR SYSTEM	<input type="checkbox"/> DRIP IRRIGATION	<input type="checkbox"/> HOLDING TANKS	<input type="checkbox"/> SAND FILTER
<input type="checkbox"/> FLOODPLAIN SYSTEM	<input type="checkbox"/> GREYWATER SYSTEM	<input type="checkbox"/> PRIVY	<input type="checkbox"/> AEROBIC TREATMENT UNIT SYSTEM	

### FEE SCHEDULE - 2007

<input checked="" type="checkbox"/> APPLICATION FEE/SOIL REVIEW	\$245	APPLICATION FEE	_____
<input checked="" type="checkbox"/> PERMIT FEE - DRAINFIELD OR PRESSURE BED	\$255	PERMIT FEE	_____
<input type="checkbox"/> PERMIT FEE - MOUND OR AT-GRADE	\$410	SUBDIVISION REVIEW BASE FEE:	_____
<input type="checkbox"/> PERMIT FEE - ALTERNATIVE SYSTEM	\$410	+	
<input type="checkbox"/> PERMIT FEE - EXPERIMENTAL SYSTEM	\$410	LOTS: _____ X \$75 PER LOT	_____
<input type="checkbox"/> PERMIT FEE - TANK REPLACEMENT	\$100	PENALTY	_____
<input type="checkbox"/> PERMIT FEE - REISSUANCE OF EXPIRED PERMIT	\$120	TOTAL PERMIT FEE	_____
<input type="checkbox"/> SUBDIVISION REVIEW	\$170 + \$75 PER LOT		
<input type="checkbox"/> PENALTY FOR FAILURE TO OBTAIN PERMIT PRIOR TO INSTALLATION	\$235		

Make Checks Payable to WASHINGTON COUNTY

The following exhibits are required as part of the application and shall be attached hereto: Percolation Test Reports; Soil Boring Logs; Site Plan drawn to scale showing location of buildings, lot lines, percolation test holes, soil boring holes, proposed location of system and location of well(s); one (1) copy of the System Design; and one (1) copy of the Final Building Plan. The house and drainfield areas must be staked. Inaccurate or incomplete information will result in delays in processing.

**AGREEMENT:** The undersigned hereby makes Application for Permit to Install or Extend the Sewage Treatment System herein specified, agreeing that all work shall be done in strict accordance with ordinances and regulations of the County of Washington, Minnesota. Applicant agrees that the Site Plan, Sketches, and Design submitted herewith, and which are reviewed by Washington County, together with any requirements and/or restrictions made necessary by conditions peculiar to a particular location, shall become part of the permit. Applicant further agrees to provide access, at reasonable times, to Washington County for the purpose of performing inspections required and that no part of the system shall be covered until it has been inspected and accepted. **APPLICATION IS FOR AN INSTALLATION AT A SPECIFIC LOCATION; ANY DEVIATION FROM THE APPROVED LOCATION WILL VOID THE PERMIT.** It shall be the responsibility of the applicant for the permit to notify the Office of the Washington County Department of Public Health & Environment that the installation is ready for inspection.

**PERMITS WILL NOT BE ISSUED ONCE FROZEN GROUND CONDITIONS EXIST** due to the inability to conduct soil reviews unless arrangements are made **BY THE APPLICANT** to provide a backhoe, geo-probe, or any other device that can penetrate the frozen soil to allow Washington County to conduct a soil review. In accordance with Minnesota Statute 15.99, Subdivision 2, Washington County has up to SIXTY (60) DAYS to review and approve or deny the permit application.

I hereby certify the above to be true and correct. I hereby give the Washington County Department of Public Health & Environment permission to enter upon my property during normal business hours for the purpose of determining the suitability of the location, design, and construction, which may include minor excavations or soil borings by the Department.

Signature of Applicant (Owner or Contractor)

Date

5/8/07

# SITE EVALUATION

# COUNTY USE ONLY

CHECK ALL THAT APPLY:

- NEW
- EXISTING
- DWELLING
- SHORELAND
- CLASS V
- COMMERCIAL ESTABLISHMENT
- FBL ESTABLISHMENT
- IN WELLHEAD PROTECTION AREA

EVALUATOR: CHRIS LECLAIR

PROPERTY ADDRESS: \_\_\_\_\_

GEOCODE: \_\_\_\_\_

DATE: 25 MAY 2007

TIME: 10:15

## SOIL REVIEW

SOIL CLASSIFICATION: \_\_\_\_\_ PARENT MATERIAL: \_\_\_\_\_

### SOIL BORING 1

### SOIL BORING 2

ELEVATION OF BORING: \_\_\_\_\_ LOCATION: IN GENERAL AREA ELEVATION OF BORING: \_\_\_\_\_ LOCATION: \_\_\_\_\_

GPS COORDINATES: LAT: \_\_\_\_\_ LON: \_\_\_\_\_ GPS COORDINATES: LAT: \_\_\_\_\_ LON: \_\_\_\_\_

BORING  PIT  PROBE  BORING  PIT  PROBE

SOIL HORIZON DEPTH (IN)	TEXTURE	COLOR	STRUCTURE	REDOXIMORPHIC FEATURES	SOIL HORIZON DEPTH (IN)	TEXTURE	COLOR	STRUCTURE	REDOXIMORPHIC FEATURES
0" - 10"	<u>LOAMY SAND</u>	<u>10YR 3/3</u>	<u>SBL</u>	<u>NO</u>	<u>SANDY LOAM</u>				
10" - 43"	<u>LOAMY SAND</u>	<u>10YR 4/4</u>	<u>SBL</u>	<u>NO</u>					
43" - 72"	<u>LOAM SAND</u>	<u>7.5YR 4/4</u>	<u>CR</u>						

## SOIL REVIEW CONCLUSIONS

<input type="checkbox"/> SITE SUITABLE <input type="checkbox"/> UNSUITABLE SOIL <input type="checkbox"/> DISTURBED SOIL <input type="checkbox"/> COMPACTED SOIL	DEPTH INFORMATION:		SOIL TEXTURE:
	STANDING WATER:	SATURATED SOIL:	SOIL SIZING FACTOR:
	BEDROCK:	MAXIMUM DEPTH OF SYSTEM:	LINEAR LOADING RATE:

## SITE REVIEW

CHECK ALL THAT APPLY	EASEMENTS ON LOT:	SETBACKS
<input type="checkbox"/> WETLAND OR WETLAND VEGETATION <input type="checkbox"/> POND, LAKE, STREAM, RIVER <input type="checkbox"/> FLOODPLAIN <input type="checkbox"/> 10 YEAR FLOOD ELEVATION _____ <input type="checkbox"/> BLUFFLINE <input type="checkbox"/> WELL WELL CASING DEPTH: _____	<input type="checkbox"/> UTILITY <input type="checkbox"/> DRAINAGE <input type="checkbox"/> OTHER	BLUFFLINE RIVER POND, LAKE, STREAM, WETLAND WELL

COMMENTS/NOTES: ALL STAKES FROM DESIGN LAYOUT ARE MISSING

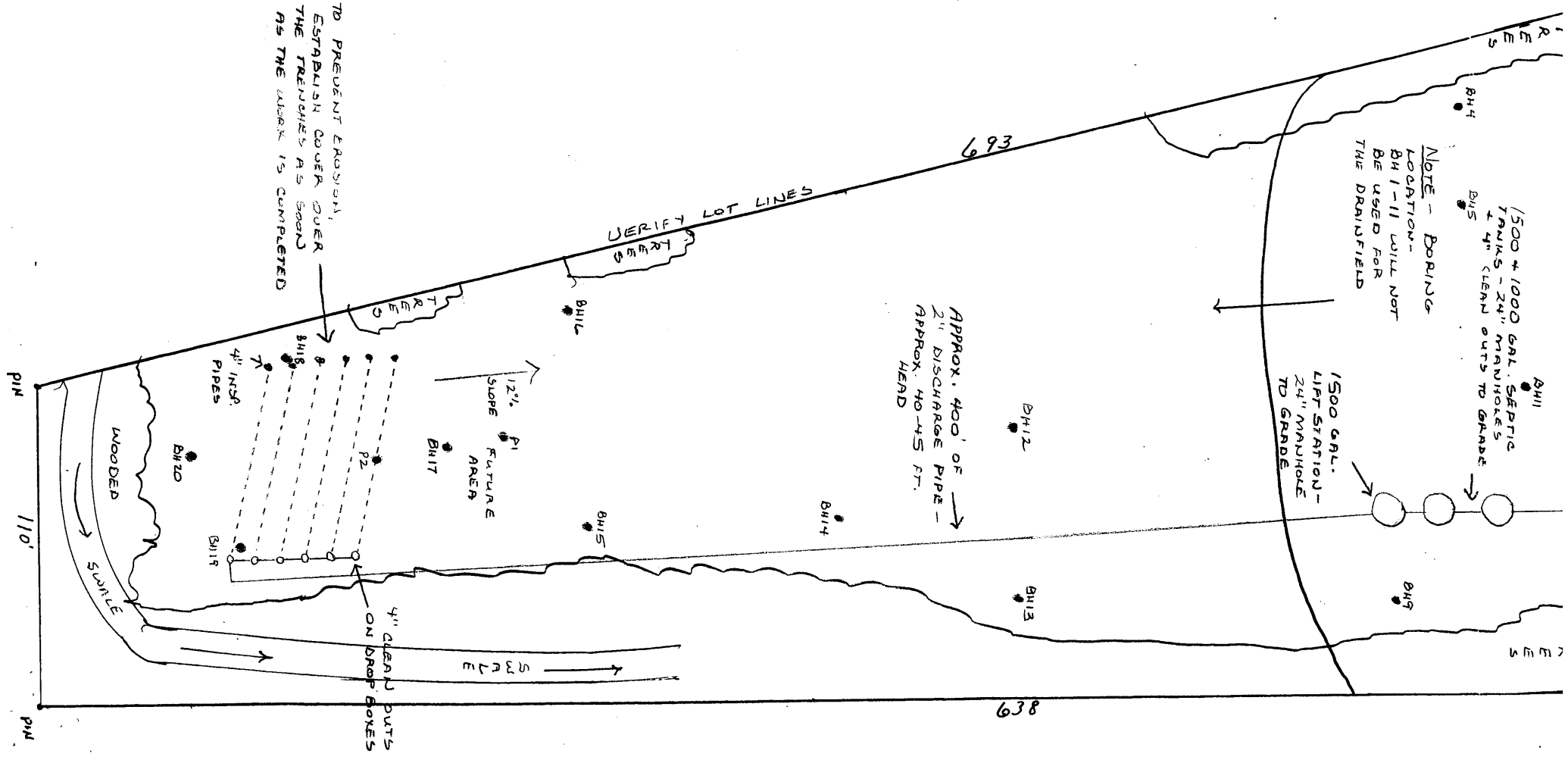
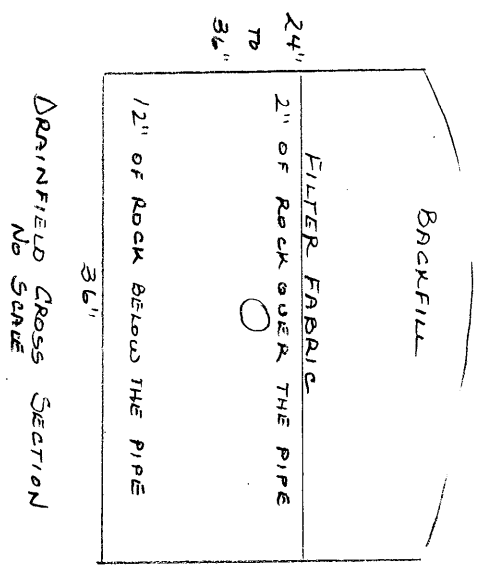
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

1260 SQ. FT. DRAINFIELD  
 6 RUNS - 70' LONG  
 36" WIDE - 24" to 36" DEEP  
 7 1/2" CENTER TO CENTER  
 TRENCH SPACING  
 FOLLOW THE CONTOURS  
 KEEP BOTTOM OF TRENCH LEVEL



TO PREVENT EROSION,  
 ESTABLISH COVER OVER  
 THE TRENCHES AS SOON  
 AS THE WORK IS COMPLETED

APPROX. 400' OF  
 2" DISCHARGE PIPE -  
 APPROX. 40-45 FT.  
 HEAD

NOTE - BORING  
 LOCATION -  
 B41-11 WILL NOT  
 BE USED FOR  
 THE DRAINFIELD

1500 GAL.  
 LIFT STATION -  
 24" MAJHOLE  
 TO GRADE

1500 + 1000 GAL. SEPTIC  
 TANKS - 24" MAJHOLE'S  
 + 4" CLEAN OUTS TO GRADE

ERIC NELSON  
LOT 1, BLK 2  
CHERRY KNOLL RIDGE  
20TH ST. N.B.  
W. LAKELAND TWP.

SCALE: 1" = APPROX. 50'  
NOT A SURVEY

