

FARLEY SEWER SYSTEMS

JAROLD R. FARLEY
 P.O. Box 472
 McGregor, MN 55760
 Bus. Lic. No. L1919
 Reg. No. 4744

218-839-4737

ESTIMATE & AGREEMENT

TO: Erica McKay + Bruce Smith

BID. We hereby propose to furnish material and labor to complete the work outlined herein for the sum of: 9500.00 dollars

18478 483rd St. McGregor, MN 55760

Payment due upon completion

(\$ _____) Payment to be made as follows:

WE HEREBY SUBMIT SPECIFICATIONS AND BID FOR

DESCRIPTION OF JOB: 18478 483rd St.

LOCATION OF JOB:

OWNER:

ADDRESS:

ARCHT/ENGR:

PLANS DATED:

SPECIFICATIONS AS FOLLOWS

TOTAL

Install a New 2 bed room pressure Bed. The tank that is there does not have a big enough pump tank and there isn't room to add one. I will remove the one that is there and replace with a New 1650 Tank - Zoehler 152 Pump. I will add new wiring at the tank and have it wired in to existing wiring. IF the box isn't big enough to handle the two circuits the homeowner will have to do that part of the Electrical.

8500.00

The price to go from 2 bedroom 1000.00 to a 3 bedroom is 9500.00

NOTICE & CONDITIONS

INTEREST ON UNPAID BALANCES WILL BE CHARGED AT THE MAXIMUM RATE ALLOWED BY MINNESOTA LAW.

THIS ESTIMATE AND AGREEMENT IS VOID 30 DAYS FROM DATE UNLESS WHITE AND CANARY COPIES ARE SIGNED AND RETURNED TO BIDDER. KEEP PINK COPY FOR YOUR RECORDS

This "Estimate & Agreement" and attached forms must be made part and parcel to any contract agreement into which Hardrives, Inc. may enter.

ACCEPTANCE

The specifications, attachments, terms and contract are satisfactory, and I (we) hereby authorize the performance of this work

SIGNATURE

DATE

FARLEY SEWER SYSTEMS ACCEPTANCE

DATE

PLEASE TAKE NOTICE: PERSONS OR COMPANIES FURNISHING LABOR OR MATERIALS FOR THE IMPROVEMENT OF REAL PROPERTY MAY ENFORCE A LIEN UPON THE IMPROVED LAND IF THEY ARE NOT PAID FOR THEIR CONTRIBUTIONS, EVEN IF SUCH PARTIES HAVE NO DIRECT CONTRACTUAL RELATIONSHIP WITH THE OWNER.

MINNESOTA LAW PERMITS THE OWNER TO WITHHOLD FROM HIS CONTRACTOR SO MUCH OF THE CONTRACT PRICE AS MAY BE NECESSARY TO MEET THE DEMANDS OF ALL OTHER LIEN CLAIMANTS, PAY DIRECTLY SUCH LIENS AND DEDUCT THE COST THEREOF FROM THE CONTRACT PRICE, OR WITHHOLD AMOUNTS FROM HIS CONTRACTOR UNTIL THE EXPIRATION OF 90 DAYS FROM THE COMPLETION OF SUCH IMPROVEMENT UNLESS THE CONTRACTOR FURNISHES TO THE OWNER WAIVERS OF CLAIMS FOR MECHANIC'S LIENS SIGNED BY PERSONS WHO FURNISHED ANY LABOR OR MATERIAL FOR THE IMPROVEMENT AND WHO PROVIDED THE OWNER WITH TIMELY NOTICE.

I ACKNOWLEDGE THAT I HAVE RECEIVED AND READ THE FOREGOING NOTICE

University of Minnesota Site Evaluation Form 5/16/2005



Property Owner(s) Erica McKay & Dawn Smith

Phone Number 952-240-4653

Address 18478 483rd. St., McGregor, Mn. 55760

3 bedroom Pressure bed

P.I.D. 29-1207000

Section _____

Township 49 N

Range 23

Date 5/27/2020

Time 4:00 PM

Weather conditions windy- sunny & clear

Location Information

(check all that apply)

shoreland

lot split info

dwelling

other establishment

replacement system

new home construction

Homeowner Information

No. of bedrooms (if applicable) 3 bedrooms (includes possible additions)

No. of residents in home 2 adults children

Estimated flow 450 gpd

Well casing depth shallow feet

Discharge location if checked

Water using devices (check) Garbage disposal Water softener _____

Dishwasher Sump pump _____

Large bathtub High eff. furnace _____

Laundry/large tub on 2nd floor Jacuzzi/hottub _____

Water use concerns (check) Toilet/faucet leaks Max load laundry/day Long term prescription medications

Home business Lint screen Antibact. soap Frequent parties or out of town guests

Soil Data

Soil texture classification: sandy loam

Unnatural soil (check) Yes No

Type of observation (check) Probe Pit Boring

Parent material (check) Till Outwash Loess Bedrock Alluvium

Vegetation type (check) Wet Dry Unknown

Slope form (check) Summit Shoulder Back Foot Toe

Drainage (check) Good Fair Poor Ponding Flooding

Located in floodplain (check) Yes No

Soil Survey Data	Soil #1	Soil #2
Map unit sym & name		
Landscape position		
Flooding		
Slope		
Watertable depth		
Bedrock depth		
Possible system depth		
Texture at depth		
Permeability (P)		
Perc(MPI) = 60 / P		
NRCS onsite suitability		

Site Summary Data

Standing water: n/a inches

Bedrock: n/a inches

Saturated soil: 48 inches

Maximum depth of system: 12 inches

Max elevation at system bottom: 108 feet

Soil sizing factor (SSF): 1.27 gpd/ft²

Linear loading rate (LLR): 0.79 gpd/ft

Was a perc test done? Yes _____ mpi

No

Soil Boring Data

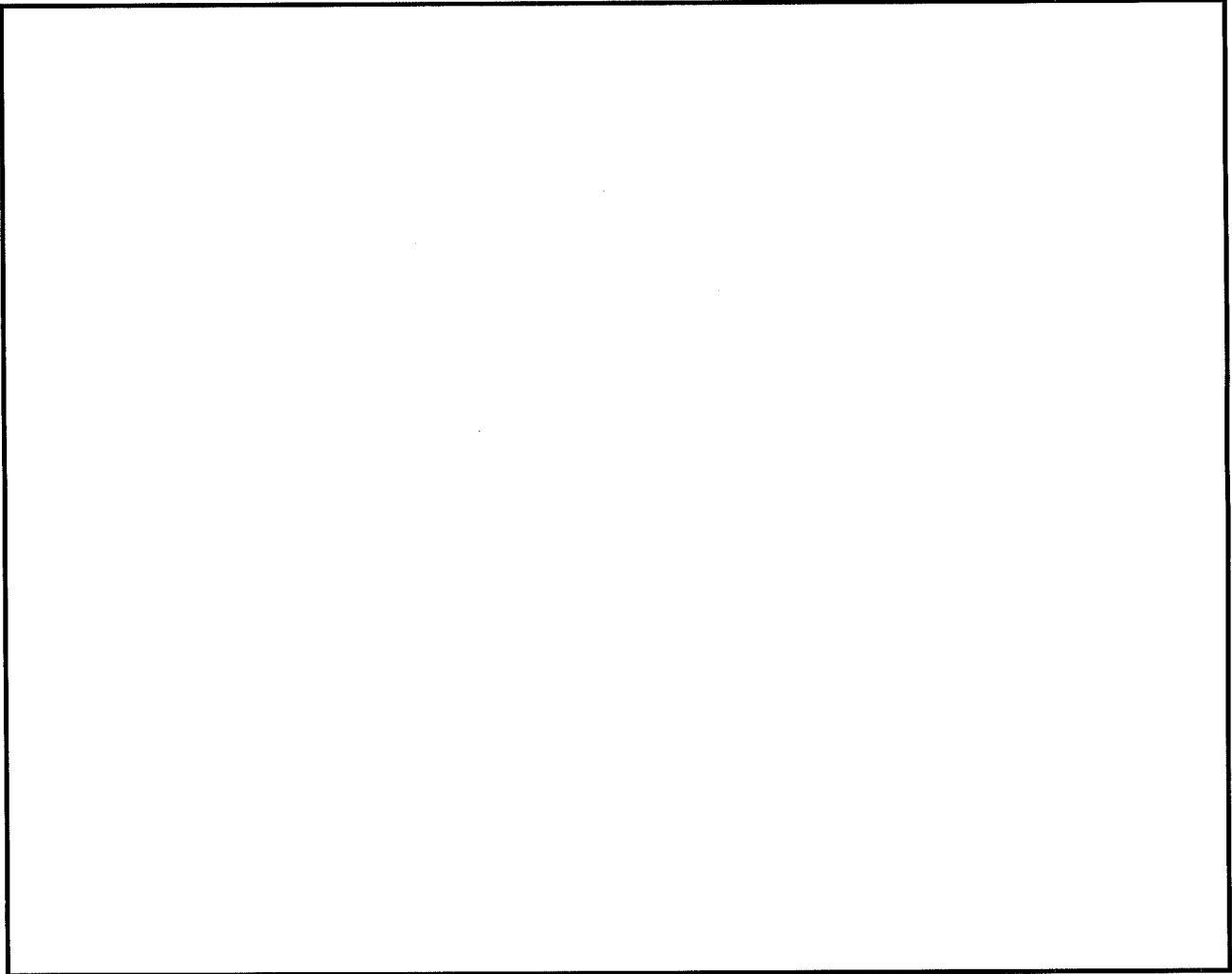
Boring 1 Elevation: _____ Location: _____

Soil Horizons Depth (inches)	Texture	Color	Structure	Consistence
0-6"	topsoil-sandy loam	10 yr 3/2	s.g.	loose
6-17"	sandy loam	10 yr 4/4	s.g.	loose
17-48"	med sand	10 yr 4/6	s.g.	loose
	mottles @ 48"			

Boring 2 Elevation: _____ Location: _____

Soil Horizons Depth (inches)	Texture	Color	Structure	Consistence
0-7"	top soil-sandy loam	10 yr 3/2	s.g.	loose
7-36"	sandy loam	10 yr 4/4	s.g.	loose
36-58"	med. Sand	10 yr 4/6	s.g.	loose
	mottles @ 54"			

Site Evaluation Map



List any construction issues: _____

Mapping Checklist

Map scale: _____ indicate north _____ show slope _____ % direction _____

Locate

- ___ lot dimensions/property lines
- ___ dwellings and other improvements
- ___ existing and/or proposed system(s)
- ___ replacement area
- ___ unsuitable area(s)
- ___ public water supply wells
- ___ pumping access
- ___ inner wellhead zone

Easements

- ___ phone
- ___ electric
- ___ gas

Elevations

- ___ borings
- ___ benchmark
- ___ perc tests
- ___ horiz&vert reference pts

Setbacks

- ___ building
- ___ all water wells within 100ft
- ___ pressure pipe
- ___ water suction pipe
- ___ streams, lakes, rivers
- ___ floodway and fringe

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

(signature)

5/26/2020 (date)

L-1919

(license #)

218-839-4737

(phone number)

University of Minnesota Pump Selection Procedure - 10/25/04

All boxed rectangles must be entered, the rest will be calculated.



1. Determine pump capacity:

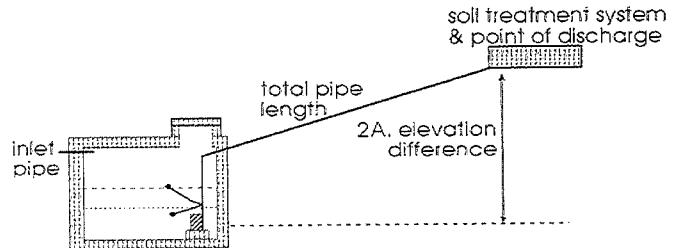
A. Gravity Distribution

1. Minimum required discharge is 10 gpm
2. Maximum suggested discharge is 45 gpm

For other establishments at least 10% greater than the water supply rate, but no faster than the rate at which effluent will flow out of the distribution device.

B. Pressure Distribution - see pressure design worksheet

Selected Pump Capacity: gpm



2. Determine Total Dynamic Head (TDH)

A. Elevation difference between pump and point of discharge.

feet

B. Special head requirement? (See Figure - Special Head Requirements)

feet

Special Head Requirements	
Gravity Distribution	0ft
Pressure Distribution	5ft

C. Friction loss in supply pipe

1. Select pipe diameter in

2. Enter Figure E-9 with gpm (1A or B) and pipe diameter (C1)

Read friction loss in feet per 100 feet from Figure E-9

Friction loss = ft/ 100 ft of pipe

Flow Rate (gpm)	E-9 Friction Loss in Plastic Pipe per 100 ft		
	nominal pipe diameter		
	1.5"	2.0"	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	0.3
40	8.91	2.64	0.39
45	11.07	3.28	0.48
50	13.46	3.99	0.58
55		4.76	0.7
60		5.6	0.82
65		6.48	0.95
70		7.44	1.09

3. Determine total pipe length from pump discharge to soil system discharge point.

Estimate by adding 25 percent to pipe length for friction loss in fittings.

Pipe length times 1.25 = equivalent pipe length

ft x 1.25 = feet

4. Calculate total friction loss by multiplying friction loss (C2)

by the equivalent pipe length (C3) and divide by 100.

Friction Loss = ft/100ft X ft / 100 = feet

D. Total head requirement is the sum of elevation difference (A), special head requirements (B), and total friction loss (C4).

ft + ft + ft

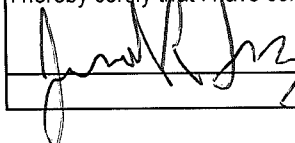
Total Head: feet

Zoehler 152

3. Pump Selection

1. A pump must be selected to deliver at least gpm (1A or B) with at least feet of total head (2D).

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

 (signature)

L-1919

(license #)

5/27/2020

University of Minnesota Trench and Bed Worksheet

All boxed rectangles must be entered, the rest will be calculated.

1. Flow

A. Estimated Flow gpd (Fig. A-1)



Number of Bedrooms	Class			
	I	II	III	IV
2	300	225	180	60% of the values in the Class I, II or II columns
3	450	300	218	
4	600	375	256	
5	750	450	294	
6	900	525	332	
7	1050	600	370	
8	1200	675	408	

500 gallons or 100% of Average Design Flow (A-1) or dual alternating pump system
--

2. Minimum Septic Tank Capacity

B. Septic tank capacity (Fig C-1) gallons Number of tanks/compartments

C. Effluent filter (yes/no)

Number of Bedrooms	Minimum Capacity	Capacity with GD*	Capacity with GD and pump in basement **
2 or less	750	1125	1500
3 or 4	1000	1500	2000
5 or 6	1500	2250	3000
7, 8 or 9	2000	3000	4000

* GD = garbage disposal, Must have multiple tanks or compartments

** Must have multiple tanks, compartments or effluent screen

3. Pump Tank Specifications

D. Pump tank needed (yes/no) Minimum size if needed gallons

4. SOILS (Site evaluation data)

E. Depth to restricting layer = ft

F. Maximum depth of system Item E - 3 ft = 4 - 3 = 1 ft

G. Texture Percolation Rate mpi
if available

H. SSF ft²/gpd (see figure D-15)

I. % Slope %

Perc Rate mpi	Soil Texture	Soil Sizing Factors ft ² /gpd
< 0.1 *	Coarse sand	0.83
0.1- 5	Medium sand	0.83
	Loamy sand	
0.1- 5**	Fine sand	1.67
6- 15	Sandy loam	1.27
16- 30	Loam	1.67
31- 45	Silt loam, silt	2.00
46- 60	Clay loam, sandy clay loam or silty clay loam	2.20
61- 120***	Clay, sandy or silty clay	4.20
>120****		

* No trench >25% of total system
** Soil with >50% fine sand particles
*** A mound must be used
**** An other or performance system

5. System Type

x	Pressure Bed (<6% slope)
	Gravity Bed (<6% slope)
	Trenches

Distribution Media Type

x	Rock
	Chamber
	Gravelless
	Other: _____

Method of Distribution

x	Pressure
	Drop Boxes
	Dist. Box (<3% slope)
	Other: _____

6. TRENCH OR BED BOTTOM AREA

J. For trenches with 6 inches of wide wall beneath the pipe or 10" diameter gravelless pipe:

A x H = 450 gpd x 1.27 ft/gpd = NA ft²

K. For trenches with 12 inches of sidewall:

A x H x 0.8 = 450 gpd x 1.27 ft/gpd x 0.8 = NA ft²

L. For trenches with 18 inches of sidewall:

A x H x 0.66 = 450 gpd x 1.27 ft/gpd x 0.66 = NA ft²

M. For trenches with 24 inches of sidewall:

A x H x 0.6 = 450 gpd x 1.27 ft/gpd x 0.6 = NA ft²

N. For gravity beds with 6 or 12 inches of rock below the pipe;

1.5 x A x H = 1.5 x 450 gpd x 1.27 ft/gpd = NA ft²

O. For pressure beds with 6 or 12 inches of rock below the pipe;

A x H = 450 gpd x 1.27 ft/gpd = 571.5 ft²

7. Trench and Bed Dimensions

P. Select required square feet of bottom area required based on depth of rock/gravelless pipe or height of chamber slats

571.5 ft²

(must use 6" of rock square footage for beds)

Q. Select width of trench or bed 14.0 ft

(use 3' for gravelless pipe, width of chamber or width of excavation for rock in trenches & beds can not be wider the 25')

R. For trenches or pressure beds the lineal feet required = required square footage / width of bottom of trench or bed

571.5 ft² / 14.0 ft = 40.8 lineal feet

S. For gravity beds the lineal feet required = required square footage / width of bed

571.5 ft² / 14.0 ft = _____ lineal feet

8. Rock Sizing and Volume

T. Depth of media below pipe 0.5 ft

Cubic feet of rock needed = Rock depth below distribution pipe plus 0.5 foot times bottom area:

(Rock depth + 0.5 foot) x Area (J, K, L, M)

(0.5 ft + 0.5 ft) x 571.5 ft² = 571.5 ft³

Volume in cubic yards = volume in cubic feet divided by 27

571.5 / 27 = 21.2 yd³

Weight of rock in tons = cubic yards times 1.4

21.2 x 1.4 = 29.6 tons

Add in 10% extra for constructability = 1.1 X 29.6 = 32.6 tons

9. Layout


Select an appropriate scale; one inch = _____ ft

Show pertinent property boundaries, rights-of-way, easements.

Show location of house, garage, driveway, and all other improvements, existing or proposed.

Show location and layout of sewage treatment system, well and dimensions of all elevations

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

 (signature) L-1919 (license #) 5/26/2020 (date)

Local Unit of Government Approval
 _____ (signature) _____ (registration #) _____ (date)

University of Minnesota Pressure Distribution System Design - 10/25/04

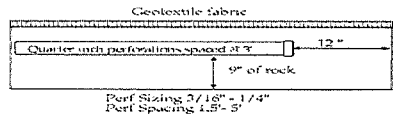
All boxed rectangles must be entered, the rest will be calculated.



1. Select number of perforated laterals:

2. Select perforation spacing = ft

3. Since perforations should not be placed closer than 1 foot to the edge of the rock layer (see diagram), subtract 2 feet from the rock layer length
 - 2 ft = ft



4. Determine the number of spaces between perforations.
 Divide the length (3) by perforation spacing (2) and round down to nearest whole number.
 Perforation spacing = ft / ft =

5. Select perforation size inch

6. Number of perforations is equal to one plus the number of perforation spaces (4).

* Check figure E-4 to assure the number of perforations per lateral guarantees < 10% discharge variation.

spaces + 1 = perforations/lateral

Perforation Spacing ft	Pipe Diameter			
	1 inch	1.25 inch	1.5 inch	2.0 inch
2.5	8	14	18	28
3.0	8	13	17	26
3.3	7	12	16	25
4.0	7	11	15	23
5.0	6	10	14	22

Perforation Spacing feet	Pipe Diameter			
	1 inch	1.25 inch	1.5 inch	2.0 inch
2.5	12	19	25	39
3	11	18	24	37
3.3	10	17	23	36
4	10	16	21	33
5	9	15	20	31

7. A. Total number of perforations = perforations per lateral (5) times number of laterals (1).
 perfs/ lat x laterals = perforations

B. Calculate the square footage per perforation.
 Recommended value is 6-10 sqft/perf. Does not apply to at-grades.

1. Rock bed area = rock width (ft) x rock length (ft)
 ft x ft = ft²

2. Square foot per perforation = Rock Bed Area / number of perfs (6)
 ft² / perfs = ft²/ perf

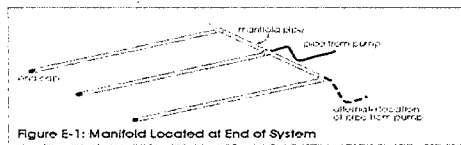
8. Determine required flow rate by multiplying the total number of perforations (6A) by flow per perforations (see figure E-6)
 perfs x gpm / perfs = gpm

Head (feet)	Perforations diameter (inches)		
	3/16	7/32	1/4
1 ^a	0.42	0.56	0.74
2 ^b	0.59	0.80	1.04
5	0.94	1.26	1.65

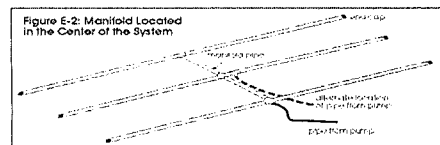
a. Use 1.0 foot for single-family homes.
 b. Use 2.0 feet for anything else

9. Determine Minimum Pipe Size

A. **Manifold on End.** If laterals are connected to header pipe as shown in Figure E-1, to select minimum required lateral diameter; enter figure E-4 or E-5 with perforation spacing and number of perforations per lateral. Select minimum diameter for perforated laterals = inches



B. **Center Manifold.** If perforated lateral system is attached to manifold pipe near the center, like Figure E-2, perforated lateral length (3) and number of perforations per lateral (5) will be approximately one half of that in step A. Using these values, select minimum diameter for perforated lateral = inches



I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.
 (signature) (license #) (date)

FARLEY SEWER SYSTEMS

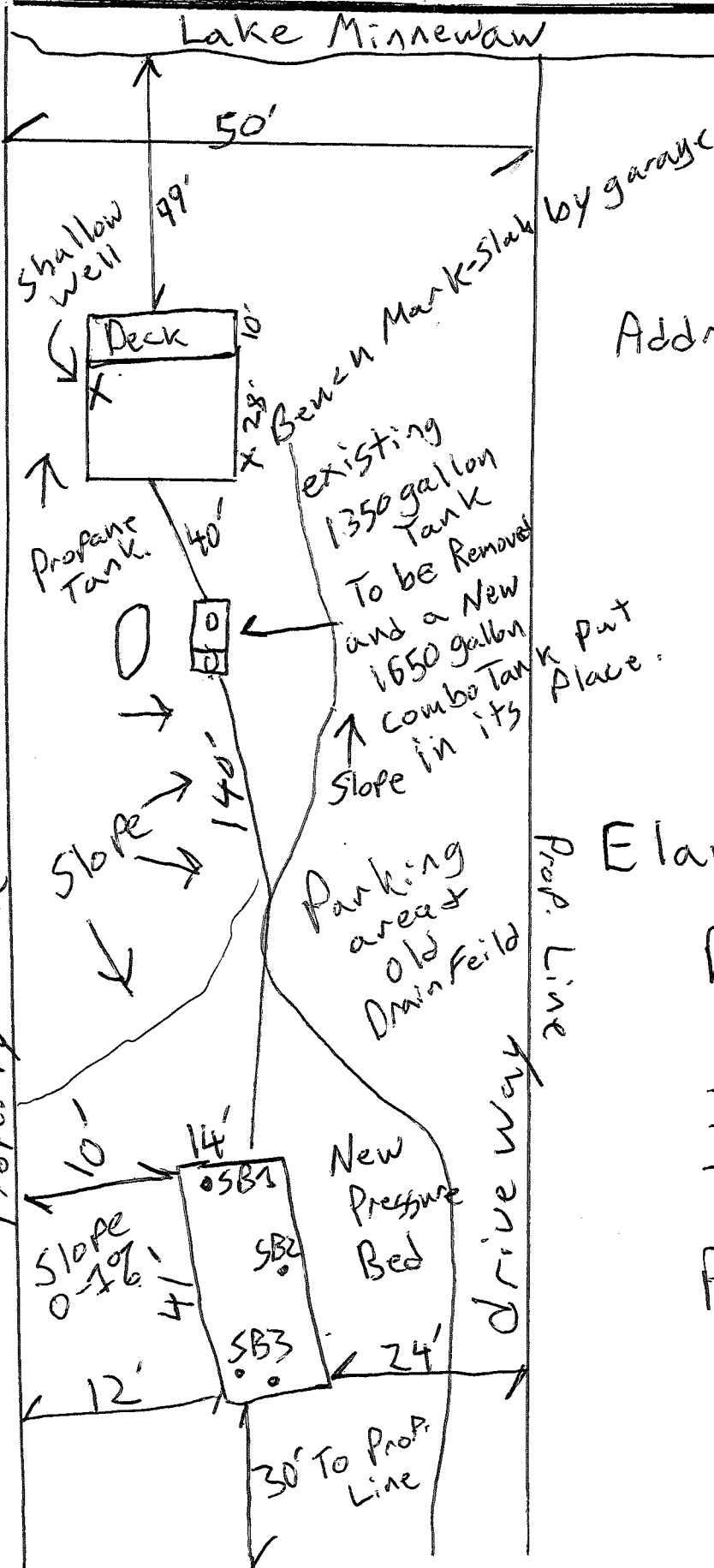
SEWER DESIGN & INSTALLATION

JAROLD R. FARLEY

P.O. Box 472
McGregor, MN 55760

Bus. Lic. No. L1919
Reg. No. 4744

218-839-4737 cel



P.I.D.

29-1-207000

Address = 18478 483rd ST.
McGregor, MN, 55760

Elevation:

- Bench Mark = 100.0
- Outlet of house = 105.0
- Inlet of tank = 103.0
- Top of Pump = 99.0
- Pipe @ Disp. Field = 109.0

Subsurface Sewage Treatment System Management Plan

Property Owner: Erica McKay + Dawn Smith Phone: _____ Date: _____
 Mailing Address: 612 Cowdry Lake Rd. City: Alexandria, MN Zip: 56308
 Site Address: 18478 483rd St City: McGregor, MN Zip: 55760

This management plan will identify the operation and maintenance activities necessary to ensure long-term performance of your septic system. Some of these activities must be performed by you, the homeowner. Other tasks must be performed by a licensed septic service provider.

System Designer: check every _____ months.
 Local Government: check every _____ months.
 State Requirement: check every 36 months.

My System needs to be checked every 36 months.

(State requirements are based on MN Rules Chapter 7080.2450, Subp. 2.8.3)

Homeowner Management Tasks

- Leaks* – Check (look, listen) for leaks in toilets and dripping faucets. Repair leaks promptly.
- Surfacing sewage* – Regularly check for wet or spongy soil around your soil treatment area.
- Effluent filter* – Inspect and clean twice a year or more.
- Alarms* – Alarm signals when there is a problem. Contact a service provider any time an alarm signals.
- Event counter or water meter* – Record your water use.
 -recommend meter readings be conducted (circle one): DAILY WEEKLY MONTHLY

Professional Management Tasks

- Check to make sure tank is not leaking
- Check and clean the in-tank effluent filter
- Check the sludge/scum layer levels in all septic tanks
- Recommend if tank should be pumped
- Check inlet and outlet baffles
- Check the drainfield effluent levels in the rock layer
- Check the pump and alarm system functions
- Check wiring for corrosion and function
- Check dissolved oxygen and effluent temperature in tank
- Provide homeowner with list of results and any action to be taken
- Flush and clean laterals if cleanouts exist

"I understand it is my responsibility to properly operate and maintain the sewage treatment system on this property, utilizing the Management Plan. If requirements in the Management Plan are not met, I will promptly notify the permitting authority and take necessary corrective actions. If I have a new system, I agree to adequately protect the reserve area for future use as a soil treatment system."

Property Owner Signature: _____ Date: _____
 Designer Signature: [Signature] Date: 5-27-2020

See Reverse Side for Management Log

Maintenance Log

Activity	Date Accomplished
Check frequently:	
Leaks: check for plumbing leaks	
Soil treatment area check for surfacing	
Lint filter: check, clean if needed	
Effluent screen: if owner-maintained	
Water usage rate (monitor frequency _____)	
Check annually:	
Caps: inspect, replace if needed	
Sludge & Scum/Pump	
Inlet & Outlet baffles	
Drainfield effluent leaks	
Pump, alarm, wiring	
Flush & clean laterals if cleanouts exists	
Other:	
Other:	

Notes: _____

Mitigation/corrective action plan: _____
