APPROVED
By Thomas Roloff at 2:58 pm, Aug 18, 2022

Crow Wing County Trench/Pressure Bed Design

A Land Use Permit must be obtained from Crow Wing County before installation of the septic system

Property Owner: TANNER MCFARLIN Date: 8-14-22
Mailing Address: 21520 MAIL Route Rd
City: BRAINERD State: MN Zip: 56401
Home Phone Number: ___-___-___ Cell: 218-232-6491
Site Address: 21520 MAIL Route Rd
City: BRAINERD State: MN Zip: 56401
Driving directions if no address issued: SALLAW MAIL Route Road to address
Legal Description: NW ¼ of NE ¼
Sec: 1 Twp: 44N Range: 29W Township Name: MAPLE GROVE
Parcel Number: 760-011-200-000-009 PID 76010523
Lake/ River: — Lake/River Classification: —

Flow Data

Number of Bedrooms: 2
Dwelling Classification: (I) II III
System Type: (I) II III IV V
GPD: 300

Estimated Flow in Gallons per Day (GPD)			
Bedrooms	Class I	Class II	Class III
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

Wells

Deep Well: (Y) or N (Proposed) or Existing
Shallow Well: Y or N Proposed or Existing
Wells to be sealed (if applicable)? NONE

Setbacks

Tank(s) to: Well 50' Drainfield to: Well 50' Sewer Line to well: 50'+
House 10'+ House 20'+ Air Test (Y) or N) ___
Property Line 10'+ Property Line 10'+

Designer Name: SHAWN PRATT License Number: 1341
Address: 23069 SWAN LANE
City: MERRIFIELD State: MN Zip: 56465
Home Phone Number: 218-765-4244 Cell: 218-838-8227
E-Mail Address: SLPRATT@BRAINERD.NET

I hereby certify that I have completed this work in accordance with all applicable requirements.
Designer Signature: Date: 8-14-22

Crow Wing County Trench/Pressure Bed Design

Property Owner: Tanner McFarlin Date: 8-14-22 Designer's Initials: [illegible]

Tank Sizing

A. Septic Tank Capacity: 1500 Gallons
Compartmentalized (Y or N): ____ Filter (Y or N): ____
Garbage Disposal (Y or N): ____ Bsmt Lift Station (Y or N): ____

B. Pump Tank Capacity: ____ Gallons (7080.2100)
   a. Alarm Type: ____

Septic Tank Capacity		
Bedrooms	Minimum	GD/BL
5 or less	1,500	2,250
6 or 7	2,000	3,000
8 or 9	2,500	3,750

Soils

C. Depth to Restricting Layer: +7' ft.

D. Native SSF: 1.27 (Perc. Rate [Optional] ____ MPI)

Rock Trenches

E. 6 in. Trench Depth GPD ____ × D = ____ sq. ft. 305

F. 12 in. Trench Depth GPD 300 × D × .8 = [illegible] sq. ft.

G. 18 in. Trench Depth GPD ____ × D × .66 = ____ sq. ft.

H. 24 in. Trench Depth GPD ____ × D × .6 = ____ sq. ft. 305

I. Divide Sq. Ft. by Trench Width for lineal feet (E-H) [illegible] ÷ 3 = 102 Lineal Feet

J. Sq. Ft. of Trenches 305 ft. × Rock Depth (Trench Depth + 0.5 ft.) 1.5 ft. ÷ 27 = 17 yds³ of rock

Chamber Trenches

K. Brand: ____ Length of one chamber: ____ Width of one chamber: ____

L. 6-11 in. Chamber Depth GPD 300 × D = 381 sq. ft.

M. 12 in. Chamber Depth GPD 300 × D × .8 = 305 sq. ft.

N. Divide Sq. Ft. by Trench Width for lineal feet (L-M) 305 ÷ 3 = 102 Lineal Feet

O. Divide Lineal Feet by Chamber Length for Total Chambers Needed (Round Up) N ÷ Chamber Length: ____

Seepage Beds

P. Seepage Bed GPD ____ × D ____ × 1.5 = ____ sq. ft.
   a. Bed Dimensions ____ ft. × ____ ft.
   b. Bed Length ____ ft. × Bed Width ____ ft. × Rock Depth ____ ft. ÷ 27 = ____ yds³ of rock

Additional System Notes and Information: ____

Crow Wing County Trench/Pressure Bed Design

Property Owner: Tanner McFarlin Date: 8-14-22 Designer's Initials: [illegible]

Please record the depths of all horizons, redoximorphic features, restricting layers, and saturated soils. Include all chroma and hue values.

#1 Proposed Site

Depth (in.)	Texture	Color
0-4"	topsoil	10YR 3/2
4"-22"	sandy loam	10YR 4/4
22"-84"	sandy loam	10YR 5/4

#1 Alternate Site

Depth (in.)	Texture	Color

#2 Proposed Site

Depth (in.)	Texture	Color

#2 Alternate Site

Depth (in.)	Texture	Color

Soil Sizing Factors/Hydraulic Loading Rates

Perc. Rate	Texture	SSF	HLR	Perc. Rate	Texture	SSF	HLR
<0.1	Coarse Sand			16 to 30	Loam	1.67	0.60
0.1 to 5	Sand	0.83	1.20	31 to 45	Silt Loam	2.00	0.50
0.1 to 5	Fine Sand	1.67	0.60	46 to 60	Clay Loam	2.20	0.45
6 to 15	Sandy Loam	(1.27)	0.79	> 60	Clay Loam	****	0.24

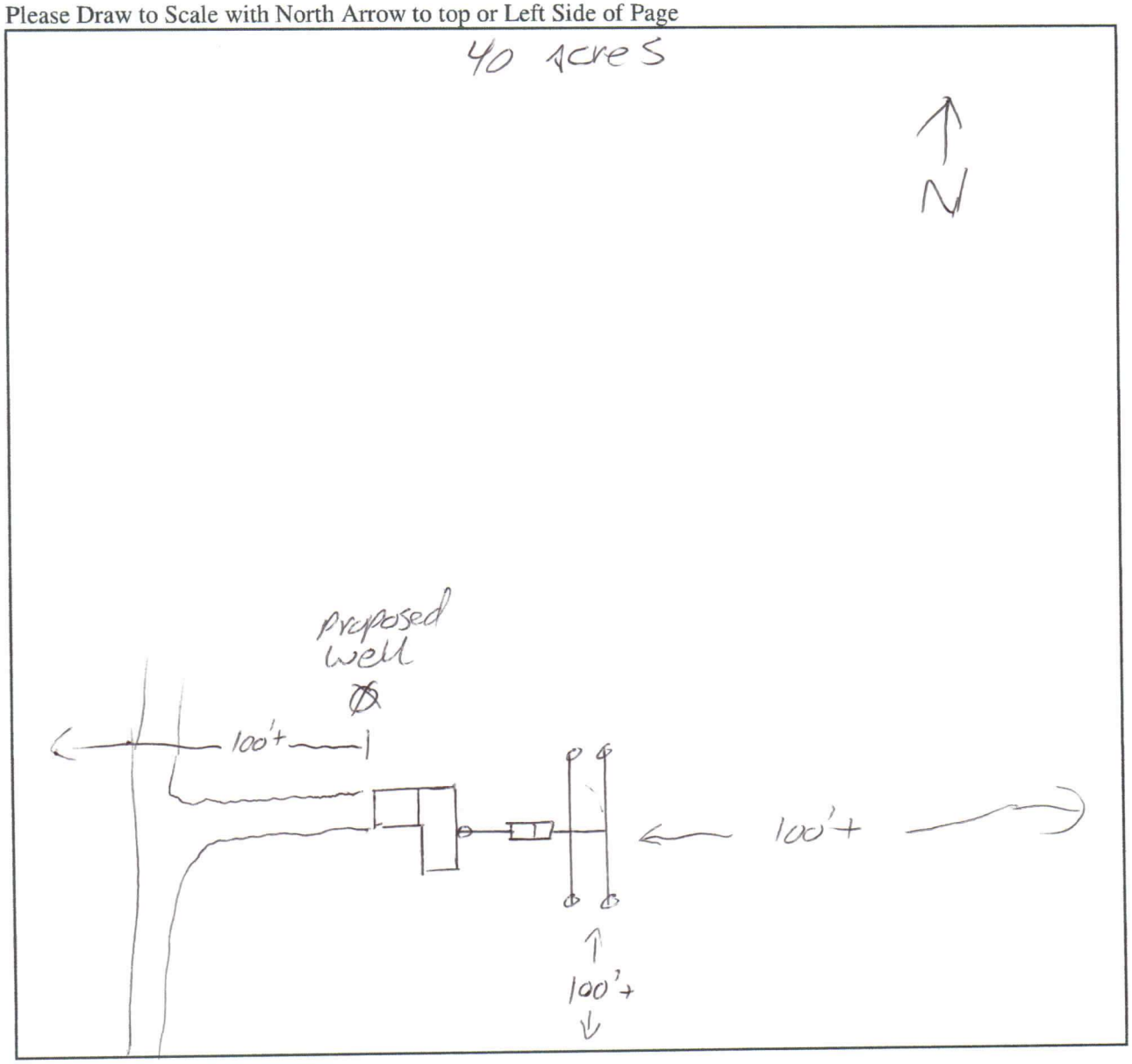
Description of Soil Treatment Areas

	Proposed Site		Alternate Site	
Disturbed Areas?	Yes or (No)		Yes or No	
Compacted Areas?	Yes or (No)		Yes or No	
Flooding Potential?	Yes or (No)		Yes or No	
Run on Potential?	Yes or (No)		Yes or No	
Limiting Layer Depth	Proposed #1	Proposed #2	Alternate #1	Alternate #2
Slope % and Direction	none			
Landscape Position	flat area			
Vegetation Types	field			
Soil Texture	sandy loam			
Soil Sizing Factor	0.83 (1.27) 1.67 2.0 2.2		0.83 1.27 1.67 2.0 2.2	

Crow Wing County Trench/Pressure Bed Design

Property Owner: Tanner McFarlin Date: 8-14-22

Please Draw to Scale with North Arrow to top or Left Side of Page



Please show all that apply (Existing or Proposed):

Wells within 100 ft. of a Drainfield	Boring Locations	Access Route for Tank Maintenance
Water lines within 10 ft. of a Drainfield	Component Location	Property Lines
Disturbed/Compacted Areas	OHW	Structures
Drainfield Areas	Lot Easements	Setbacks

Elevations:

100	Benchmark Elevation		Pump Elevation
99	Elevation of Sewer Line at House		Pump Discharge Elevation
98.5	Tank Inlet Elevation	93+	Restricting Layer Elevation
96	Drainfield Elevation		

Designer Signature: _____ Date: 8-14-22

License Number: 1341

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Septic System Management Plan for Below Grade Systems

The goal of a septic system is to protect human health and the environment by properly treating wastewater before returning it to the environment. Your septic system is designed to kill harmful organisms and remove pollutants before the water is recycled back into our lakes, streams and groundwater.

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 maintainer or service provider. However, it is YOUR responsibility to make sure all tasks get accomplished in a timely manner.

The University of Minnesota's *Septic System Owner's Guide* contains additional tips and recommendations designed to extend the effective life of your system and save you money over time.

Proper septic system design, installation, operation and maintenance means safe and clean water!

Property Owner Tanner McFarlin

Property Address 21520 Mail Route Road, Brainerd, MN 56401 Property ID 760011200000009

System Designer Shawn Pratt Phone 218-765-4244

System Installer Shawn Pratt Phone 218-765-4244

Service Provider/Maintainer Phone

Permitting Authority Crow Wing County Phone

Permit # Date Inspected

Keep this Management Plan with your Septic System Owner's Guide. The Septic System Owner's Guide includes a folder to hold maintenance records including pumping, inspection and evaluation reports. Ask your septic professional to also:

- Attach permit information, designer drawings and as-builts of your system, if they are available.
- Keep copies of all pumping records and other maintenance and repair invoices with this document.
- Review this document with your maintenance professional at each visit; discuss any changes in product use, activities, or water-use appliances.

For a copy of the *Septic System Owner's Guide*, call 1-800-876-8636 or go to http://shop.extension.umn.edu/

http://septic.umn.edu

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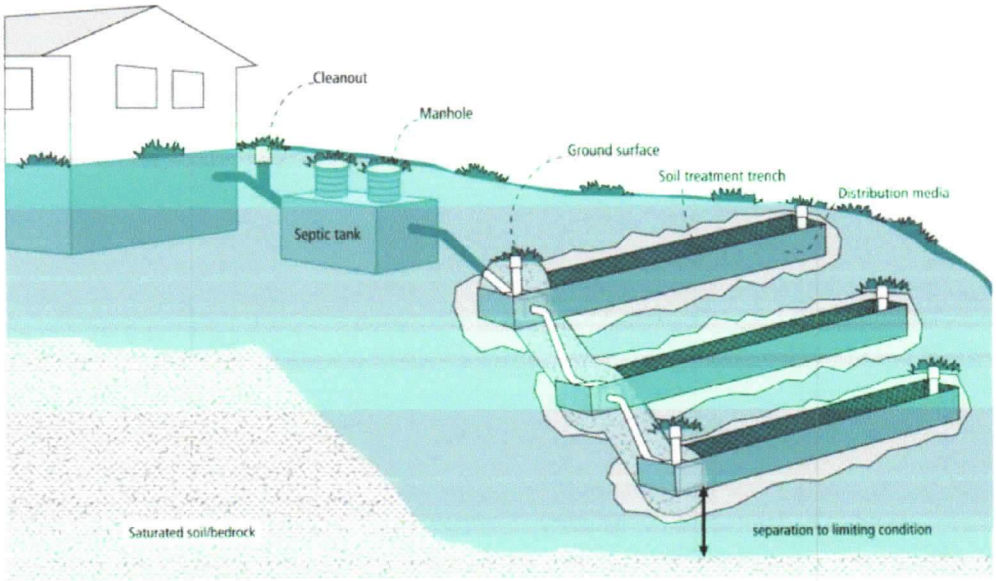
Septic System Management Plan for Below Grade Systems

Your Septic System



Septic System Specifics

System Type: ◉ I ○ II ○ III ○ IV* ○ V*

(Based on MN Rules Chapter 7080.2200 – 2400)

☐ System is subject to operating permit*

☐ System uses UV disinfection unit*

Type of advanced treatment unit _____

**Additional Management Plan required*

Dwelling Type

Number of bedrooms: 2

System capacity/ design flow (gpd): 300

Anticipated average daily flow (gpd): 300

Comments _____

Business? ☐ What type? _____

Well Construction

Well depth (ft): _____

☐ Cased well Casing depth: _____

☐ Other (specify): _____

Distance from septic (ft): _____

Is the well on the design drawing? ☐ Y ☐ N

Septic Tank

☑ One tank *Tank volume:* 1500 *gallons*

Does tank have two compartments? ☑ Y ☐ N

☐ Two tanks *Tank volume:* _____ *gallons*

❑ Tank is constructed of concrete

❑ Effluent Screen *type*: none

☐ Pump Tank (*if one*) _____ gallons

☐ Effluent Pump *make/model*: _____

Pump capacity _____ GPM

TDH _____ Feet of head

❑ Alarm location _____

Soil Treatment Area (STA)

Trenches: 102 total lineal feet

Number of trenches: 102 at 50.5 feet each

STA size (width x length): ____ ft x ____ ft

Location of additional STA: _____

☐ Gravity distribution ☐ Pressure distribution

☐ Inspection ports ☐ Cleanouts

☐ Additional STA not available

Homeowner Management Tasks

These op*eration and maintenance ac*tivities are your responsibility. *Use the chart on page 6 to track your activities.*

Identify the service intervals recommended by your system designer and your local government. The tank assessment for your system will be the **shortest interval of these three intervals**. Your pumper/maintainer will determine if your tank needs to be pumped.

System Designer: check every _____ months

Local Government: check every _____ months

State Requirement: check every 36 months

My tank needs to be checked every 36 months

Seasonally or several times per year

- *Leaks.* Check (listen, look) for leaks in toilets and dripping faucets. Repair leaks promptly.
- *Surfacing sewage.* Regularly check for wet or spongy soil around your soil treatment area. If surfaced sewage or strong odors are not corrected by pumping the tank or fixing broken caps and leaks, call your service professional. *Untreated sewage may make humans and animals sick.*
- *Alarms.* Alarms signal when there is a problem; contact your maintainer any time the alarm signals.
- *Lint filter.* If you have a lint filter, check for lint buildup and clean when necessary. Consider adding one after washing machine.
- *Effluent screen.* If you do not have one, consider having one installed the next time the tank is cleaned.

Annually

- *Water usage rate.* A water meter can be used to monitor your average daily water use. Compare your water usage rate to the design flow of your system (listed on the next page). Contact your septic professional if your average daily flow over the course of a month exceeds 70% of the design flow for your system.
- *Caps.* Make sure that all caps and lids are intact and in place. Inspect for damaged caps at least every fall. Fix or replace damaged caps before winter to help prevent freezing issues.
- *Water conditioning devices.* See Page 5 for a list of devices. When possible, program the recharge frequency based on *water demand (gallons)* rather than *time (days)*. Recharging too frequently may negatively impact your septic system.
- *Review your water usage rate.* Review the Water Use Appliance chart on Page 5. Discuss any major changes with your pumper/maintainer.

During each visit by a pumper/maintainer

- Ask if your pumper/maintainer is licensed in Minnesota.
- Make sure that your pumper/maintainer services the tank through the manhole. (NOT though a 4" or 6" diameter inspection port.)
- Ask your pumper/maintainer to accomplish the tasks listed on the Professional Tasks on Page 4.

Professional Management Tasks

These are the operation and maintenance activities that a pumper/maintainer performs to help ensure long-term performance of your system. Professionals should refer to the O/M Manual for detailed checklists for tanks, pumps, alarms and other components. Call 800-322-8642 for more details.

- Written record provided to homeowner after each visit.

Plumbing/Source of Wastewater

- Review the Water Use Appliance Chart on Page 5 with homeowner. Discuss any changes in water use and the impact those changes may have on the septic system.
- Review water usage rates (if available) with homeowner.

Septic Tank/Pump Tanks

- *Manhole lid.* A riser is recommended if the lid is not accessible from the ground surface. Insulate the riser cover for frost protection.
- *Liquid level.* Check to make sure the tank is not leaking. The liquid level should be level with the bottom of the outlet pipe. (If the water level is below the bottom of the outlet pipe, the tank may not be watertight. If the water level is higher than the bottom of the outlet pipe of the tank, the effluent screen may need cleaning, or there may be ponding in the drainfield.)
- *Inspection pipes.* Replace damaged caps.
- *Baffles.* Check to make sure they are in place and attached, and that inlet/outlet baffles are clear of buildup or obstructions.
- *Effluent screen.* Check to make sure it is in place; clean per manufacturer recommendation. Recommend retrofitted installation if one is not present.
- *Alarm.* Verify that the alarm works.
- *Scum and sludge.* Measure scum and sludge in each compartment of each septic and pump tank, pump if needed.

Pump

- *Pump and controls.* Check to make sure the pump and controls are operating correctly.
- *Pump vault.* Check to make sure it is in place; clean per manufacturer recommendations.
- *Alarm.* Verify that the alarm works.
- *Drainback.* Check to make sure it is operating properly.
- *Event counter or run time.* Check to see if there is an event counter or run time log for the pump. If there is one, calculate the water usage rate and compare to the anticipated average daily flow listed on Page 2.

Soil Treatment Area

- *Inspection pipes.* Check to make sure they are properly capped. Replace caps that are damaged.
- *Surfacing of effluent.* Check for surfaced effluent or other signs of problems.
- *Gravity trenches and beds.* Check the number of gravity trenches with ponded effluent. Identify the percentage of the system in use. Determine if action is needed.
- *Pressure trenches and beds - Lateral flushing.* Check lateral distribution; if cleanouts exist, flush and clean as needed.

All other components – inspect as listed here:

_____

_____

_____

Water-Use Appliances and Equipment in the Home

Appliance	Impacts on System	Management Tips
Garbage disposal	• Uses additional water. • Adds solids to the tank. • Finely-ground solids may not settle. Unsettled solids can exit the tank and enter the soil treatment area.	• Use of a garbage disposal is not recommended. • Minimize garbage disposal use. Compost instead. • To prevent solids from exiting the tank, have your tank pumped more frequently. • Add an effluent screen to your tank.
Washing machine	• Washing several loads on one day uses a lot of water and may overload your system. • Overloading your system may prevent solids from settling out in the tank. Unsettled solids can exit the tank and enter the soil treatment area.	• Choose a front-loader or water-saving top-loader, these units use less water than older models. • Limit the addition of extra solids to your tank by using liquid or easily biodegradable detergents. • Install a lint filter after the washer and an effluent screen to your tank • Wash only full loads. • Limit use of bleach-based detergents. • Think even – spread your laundry loads throughout the week.
2nd floor laundry	• The rapid speed of water entering the tank may reduce performance.	• Install an effluent screen in the septic tank to prevent the release of excessive solids to the soil treatment area. • Be sure that you have adequate tank capacity.
Dishwasher	• Powdered and/or high-phosphorus detergents can negatively impact the performance of your tank and soil treatment area. • New models promote "no scraping". They have a garbage disposal inside.	• Use gel detergents. Powdered detergents may add solids to the tank. • Use detergents that are low or no-phosphorus. • Wash only full loads. • Scrape your dishes anyways to keep undigested solids out of your septic system.
Grinder pump (in home)	• Finely-ground solids may not settle. Unsettled solids can exit the tank and enter the soil treatment area.	• Expand septic tank capacity by a factor of 1.5. • Include pump monitoring in your maintenance schedule to ensure that it is working properly. • Add an effluent screen.
Large bathtub (whirlpool)	• Large volume of water may overload your system. • Heavy use of bath oils and soaps can impact biological activity in your tank and soil treatment area.	• Avoid using other water-use appliances at the same time. For example, don't wash clothes and take a bath at the same time. • Use oils, soaps, and cleaners in the bath or shower sparingly.
Clean Water Uses	**Impacts on System**	**Management Tips**
High-efficiency furnace	• Drip may result in frozen pipes during cold weather.	• Re-route water into a sump pump or directly out of the house. Do not route furnace recharge to your septic system.
Water softener Iron filter Reverse osmosis	• Salt in recharge water may affect system performance. • Recharge water may hydraulically overload the system.	• These sources produce water that is not sewage and should not go into your septic system. • Reroute water from these sources to another outlet, such as a dry well, draintile or old drainfield. • When replacing, consider using a demand-based recharge vs. a time-based recharge. • Check valves to ensure proper operation; have unit serviced per manufacturer directions
Surface drainage Footing drains	• Water from these sources will likely overload the system.	

Maintenance Log

Track maintenance activities here for easy reference. See list of management tasks on pages 3and 4.

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										
Check annually:										
Water usage rate (monitor frequency____)										
Caps: inspect, replace if needed										
Water use appliances – review use										
Other:										

Notes: _____

_____

Mitigation/corrective action plan: _____

_____

_____

_____

_____

"As the owner of this SSTS, 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 this 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 _____

Management Plan Prepared By: Shawn Pratt Certification # 1341

Permitting Authority: Crow Wing County