Ende Septic Service

INDIVIDUAL SEWAGE SYSTEM DESIGN SUMMARY

Property Owner: Greg Smith
Phone:
Address: XXXXX Vanadium St
PID: 02-32-25-23-0021
City: Ramsey Zip: 55303
County: Anoka County

DESIGN USAGE

Single Family Home X Other
Number of Potential Bedrooms 4
bedrooms Garbage Disposal No
Sewage Lift Pump No

SITE CHARACTERISTICS

Soil type Clay Loam,
Hydraulic Loading .45
Depth to restrictive layer 0 inches

PUMP INFORMATION-

Pump GPM & TDH 38 gpm and 16 tdh
Cycles per day 4 cycles
Gallons per cycle 150 gallons per dose
Perforation size & spacing 1/4“ perfs every 3 feet
Number, spacing, & diameter of laterals 3-2” inch, 48 ft laterals every 3 feet

CAPACITIES

Daily Water Use Est Calc 600
Septic Tank Capacity 1000-gallon trash tank
1250 gallon eco-pod tank
Pump Tank Capacity 1000 gallon-proposed

MOUND SYSTEM

Dimension of Rock Base 2-10'x50'
Depth of Rock Below Pipe 6 inches
Depth of Rock Above Pipe 3 inches
% Slope of Soil Above Bed 6%
Upslope Width 10 feet berms
Downslope Width 21 feet downslopes
Sideslope Width 12 feet upslopes

Mound Materials

Amount of Rock 24 tons
Amount of Mound Sand 128 tons
Amount of Loamy Cap 81tons
Amount of Topsoil 95 tons
Lineal Feet supply line 20 ft
Main Line Length +10-20 ft

APPROVAL

By *Tristan Ende* Date 9/02/2026

See additional information sheet if checked ☒

24910 Territorial Road • Rogers, MN 55374
763-428-4489 • www.endeseptic.com • Info@endeseptic.com

Property Address: XXXXX Vanadium St NW Ramsey, MN

Description of Wastewater Treatment System

This site is a new .9-acre lot. A 4-bedroom home is proposed on the lot. The mainline will exit the East side of the home. From the home influent is proposed to gravity flow 10 ft to a proposed 1000-gallon trash trap tank. From the outlet of the trash tank effluent will gravity flow to a proposed 1000-gallon tank with an Eco-Pod E-60-NIM. The eco-pod will have an air compressor with Blower installed above ground with a 2-inch pvc air-supply to the eco-pod. From the outlet of the eco-pod tank, effluent will pass through a Salcor UV disinfection unit, which will be installed on the inlet of the proposed 1000-gallon time dose pump tank. The pump tank must have a pump installed that can handle 38 gpm and 16 tdh. The pump must have a time dose panel installed with alarm light on the box.

The mound will have a 1 ft sandlift. The mound must have a 10'x50' rockbed installed atop the 1 ft sandlift. The mound must have 3-48 ft laterals installed inside the rockbed. Each lateral must have 1/4" perforations installed every 3 feet througout each lateral. Each lateral must have cleanouts installed to grade in either a central irrigation box or 3 individual distribution boxes.

CONSTRUCTION NOTES: Site is heavily wooded. Trees must be cut down prior to installation. Trees must be cut as low to the ground as possible but the stumps must remain. Tracked equipment is the only approved machines to cross the proposed mound sites.

The new on-site sewage treatment system is designed for a 750 gpd , Type 4 -residential in accordance with the MPCA Chapter 7080 and local ordinances.

The power supply and switches must be located outside the manhole and pumping chamber in a weatherproof enclosure. A warning device must also be installed with audio/visual alerts. The supply line must have drain back to the pumping chamber.

All tank manholes should be brought to grade upon completion of tank installation, inspection ports for the distribution boxes should also be at grade upon completion.

Keep all vehicles and construction equipment off septic area. Rutting and/or compacting the soil will change the percolation rates and may lead to system failure.

Homeowner to verify all property lines and all relevant setbacks. Homeowner/homebuilder and septic installation company must verify all wetland setbacks, property lines setback and well setbacks prior to installation. A verified survey is best.

Septic System Design
Additional Information

Installer to verify all elevations, dimensions, and ensure proper fall to pipes. Pitch pump chamber outlet to ensure complete drain back to pump chamber.

Establish turf to prevent erosion and freezing.

Each tank is to be pumped through the maintenance cover when serviced. Do not pump through inspection pipes.

Homeowner is responsible for all costs involved in servicing, monitoring, and mitigating the system.

All construction to be performed in accordance with MN Rule 7080.
Nothing other than human waste, toilet tissue, laundry, showers, water softener etc. should be disposed of into the septic tank. Recommend iron filters be diverted out of the system. Recommended to divert the water softener as well. Garbage disposals are not recommend, due to adding more solids and fine solids passing through the system. Excessive amounts of soap, antibacterial soaps, cleaning agent, showers, cleaners used every shower and chlorine agents may kill the bacteria needed to treat septic effluent. Additives are not recommended. Recommend laundering be limited to 3 loads per day.

IRON FILTERS ARE NOT ALLOWED IN THE SEPTIC SYSTEM. IF AN IRON FILTER IS INSTALLED IT VOIDS ALL WARRANTIES AND GUARANTEES OF SYSTEM LONGEVITY BY INSTALLER AND DESIGNER>

Maintenance Requirements
Operating permit is required for this type 4 septic system. An annual inspection of all technologies and required sampling must be completed by a service provider.
Three Management plans are attached, one for the ecopod, one for the salcor disinfection lights and one for the mound system.

Tristan Ende

ArcGIS Web Map



9/2/2026, 3:33:24 PM *Tristan Ende*

1:450

0 20 40 80 ft

0 5 10 20 m

2011 purple code

ECOPOD & MOUND SYSTEM

www.SepticResource.com (vers 24.8)

Property Owner: Greg Smith **Date:** 9/2/2026

Site Address: XXXXX Vanadium St NW **PID:** 02-32-25-23-0021

Comments: EMPTY LOT

instructions: [ ] = site specific input [ ] = adjust if desired [ ] = self-calculated (DO NOT ADJUST)

1) 4 bedroom Type IV Residential System

2) 600 GPD design flow (average flow should be < 70% of design flow)

PRETREATMENT: (Residential strength to level "A")

3) 1000 Gallon Trash trap (1st compartment) (1 days design flow)

4) 1250 Gallon Treatment tank (2nd compartment) (1.5 days design flow, minimum)

5) 600 Gallon ECOPOD unit
UV light req'd Yes

DISPERSAL:

6) 0.45 GPD/ft^2 Soil Loading Rate [ ] ft^2 (code minimum) 500 ft^2 (design size / LUG req'd)
Treatment Level A/B (must match soil boring log)

7) 10.0 ft desired bed width, leads to a 50.0 ft bed length
(25' maximum)

8) 3.0 ft lateral spacing 3.0 ft perforation spacing (maximum 3 for both)
end feed manifold connection

9) 3 laterals 48.0 feet long 17.0 perfs / lateral 51 perfs total
(1/2 perf means the 1st perf starts at the middle feed manifold)

10) 1/4" inch perfs at 1 feet residual head gives 0.74 gpm flow rate per perforation
(If bed has > 1' of cover, increase residual head for cleanout req's)
for this perf size & spacing, & pipe size on line 13, max perfs/lateral = 25, line #9 must be less --> OK

11) 4.0 doses per day (4 minimum)

12) 150 gallons per dose (treatment volume)

13) 2.00 inch diameter laterals must be used to meet "4x pipe volume" requirement

14) 50 feet of 2.0 inch supply line leads to 9 gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)

15) 159 gallons TOTAL pump out volume (treatment + drainback)

16) 10 feet vertical lift from pump to drainfield laterals, leads to a

17) 38 GPM @ 18 feet of head, DISPERSAL Pump requirement
(>50 gpm may require additional 3-6' head allowance for discharge assembly)

18) 500 gal Dose tank (code minimum) 1000 gal Dose tank (design size / LUG req'd) at 23.00 gpi

19) 6.9 inch swing on Demand float, or Timed dosing of 4.2 min ON (confirm pump rate with drawdown
(to deliver Average flow, 66% of Peak design flow) 8.5 hrs OFF - normal test and adjust as necessary)
5.9 hrs OFF - peak / OR

20) 12 inches of from bottom of tank to "pump OFF" float

21) 19 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float if time dosed

22) 22 inches from bottom of tank to "Hi Level" float, or 32 inches to "Hi Level" float if time dosed

23) 494 gallons reserve capacity (after High Level Alarm is activated - demand dosed)

24) 0 inches, or 0.00 ft. to Redox or other limiting condition (This must match the soil boring log)
Treatment zone contains 0 inches 0% soil credit and 0 inches 50% soil credit

25) 12 inches, or 1.00 ft. of vertical separation required
leads to bottom of rock no more than:

26) -12 inches, or 1.0 ft. Above existing grade **CRITICAL FOR FUTURE CERTIFICATIONS!!!**

27) 6 inches of rock below the pipe
2 inches of rock to cover the pipe

28) Overall Dimensions: 10.0 ft. wide by 50.0 ft. long Pressure Bed

29) Rock Bed materials:
10 ft. by 50.0 ft. by 8 inches total, plus 20% gives 15 yd^3 or *1.4= 21 ton

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

Tristan Ende	Ende Septic Service	L2654	9/2/2026
Designer Signature	Company	License#	Date

Installer Summary

PRETREATMENT:

1000 gallon trash trap (1st compartment)
1250 gallon treatment tank (2nd compartment)

(IMPORTANT - Water level to be 2" above media)

600 gallon ECOPOD unit
Blower - 2" air supply line (minimum) & 3" exhaust vent line (minimum)
electrical supply - one 12-2g wire, minimum

UV light req'd Yes

DISPERSAL:

1000 gallon Dose tank (minimum) at 23.00 gpi

38 GPM @ 18 ft. of head, DISPERSAL Pump

(Time Dosing generally required)

6.9 inch swing on Demand float or 4.2 minutes ON time & 8.5 hours OFF time average flow

19 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float IF time dosed
22 inches from bottom of tank to "Hi Level" float, or 32 inches to "Hi Level" float IF time dosed

50 ft. of 2.0 inch supply line with end feed manifold connection

3 laterals 2.00 inch diameter 48.0 feet long 3.0 ft lateral spacing

1/4" inch perfs 3.0 ft perforation spacing

3 clean out & valve box assembly

Bottom of rock no more than:
-12 inches, or 1.0 ft. Below existing grade

6 inches of rock below the pipe

Overall Dimensions: 10 ft. wide by 50.0 ft. long Pressure Bed

Rock Bed materials: 15 yd^3 or *1.4= 21 ton

INSPECTOR CHECKLIST - ECOPOD - Pressure bed

XXXXX Vanadium St NW

- ☐ WELL setbacks: 20' -50' to sewer line req's MDH pressure test form (5 psi for 15 min)
  50' to everything 100' to drainfield with shallow well
- ☐ PROPERTY LINES setback: 10' to everything
- ☐ Road setback: platted: 10' prop line. Metes & bounds: out of road easement, or outer ditch.
- ☐ LAKE / BLUFF setback: 20' for bluff. Lakes: GD ___, RD ___, NE ____. Protected wetland ___.
- ☐ Building setbacks: 10' for everything, 20' for dispersal area.
- ☐ WATER LINE under pressure 10' to bed,tank & sewer line. (else sewer line > 12" below)

- ☐ Sewer line & tank connection (no hard 90's, Long sweep 90 or 2-45's, slope minimum 1" in 8' =1%)
  (no depth req's, clean out every 100', Sch 40 pipe)
- ☐ Septic tank and risers (water tight risers, baffles, insulated, proper depth, existing verified by pumping)

- ☐ mfg_____ 1000 gal trash trap (1st compartment)
- ☐ 1250 gal treatment tank (2nd compartment)
- ☐ 600 gallon ECOPOD unit **(IMPORTANT - water level to be 2" above media !)**
  Blower - 2" air supply (minimum) & 3" Ecopod exhaust vent (minimum)
- ☐ UV light req'd Yes electrical supply - one 12-2g minimum

Dispersal:

- ☐ Dose tank, risers and piping (water tight, insulated, proper depth, drainback)
  mfg_____ 1000 gallons **(Time Dosing generally req'd)**
- ☐ dose pump _____ 38 gpm 18 head VERIFY PUMP CURVE 4.2 min ON 8.5 hr OFF
  average flow
- ☐ float setting drop 6.9 inches at 23 gpi "DESIGNED"
  159.0 gal dose divided by _____ gpi "INSTALLED" = _____ inches float drop (field corrected)
  LABEL pump requirements and drawdown on riser or panel
- ☐ Cam lock reachable from grade - 30" max. J-hook weep hole. Supply line access (no hard 90's)

- ☐ 2.0 inch supply pipe: sch40, sloped 1/8"+, supported by 4" sch40 sleeve or compacted, and buried 6"+.

- ☐ splice box / control panel / electrical connections / Hi Level Alarm

- ☐ Bed dimensions 10 X 50.0
- ☐ Rock depth below pipe 6 inches
- ☐ Rock bottom elevation -12.0 inches from Grade to bottom of rock (max)

- ☐ cover depth of 12"+ VERIFY
- ☐ 3 laterals (1-2' from edge of rock)
- ☐ 2.00 inch pipe size (sch40 pipe & fittings)
- ☐ 3.0 ft lateral spacing

- ☐ 1/4" inch perforations (smaller is ok)

- ☐ 3.0 ft perforation spacing

- ☐ Air inlet at end of laterals, and at top feed manifold. VERIFY
- ☐ clean outs (deep bed 2' of head) (no hard 90's)
- ☐ 4" inspection pipe to bottom of rock, anchored VERIFY

- ☐ Abandon existing system if necessary ☐ Re-use existing tank certification
- ☐ monitoring plan and type _____
- ☐ well abandonment if necessary

"Type IV - performance"

Monitoring and Maintenance Disclosure

Property address: _____

The septic system designed for this site has been classifed as a **Type IV** system and will therefore require ongoing monitoring and maintenance for the life of the system.

It is the owners responsibility to discuss these requirements (as listed on the permit) and their respective intervals and costs with their septic designer and/or maintenance provider.

Monitoring and maintenance may include (but is not limited to):

- Manufacturer required maintenance

- Tank pumping

- Taking Lab samples

It is the owners responsibility to hire an M.P.C.A licensed septic professional to perform this work, and for that professional to submit an annual report to the Local Unit of Governement.

All other long term septic system costs such as repairs and emergency service calls outside of any warranty coverage (if applicable), are outside the scope of this disclosure.

I acknowledge and understand these requirements, and agree to contract a licensed professional to monitor and maintain this system.

_____ _____

Owner Signature Date

Owners Septic System Management Plan & Operating Permit

Date: 9/2/2026

Property Address: XXXXX Vanadium St NW

Septic Systems can be an expensive investment, good maintenance will ensure they last a lifetime. The purpose of a septic system is to properly "decompose" the pollutants before the water is recycled back into the groundwater. If you're not taking this seriously, ask yourself where your well water comes from.

Your septic design lists all the components of your system and their location. Keep the design, this management plan and the UofM "Septic System Owners Guide" in a safe place for future reference. For a copy of the Owners guide call the University of MN at 1-800-876-8636.

Some of the following tasks you can do yourself, some require a professional, but is it YOUR responsibility to see that it gets done.

Homeowner Tasks

- Do your best to conserve water. Don't overload your septic with multiple large water uses at the same time or on the same day.
- Fix household leaks promptly (leaky toilet, dripping faucets).
- Limit bleach and anti-bacterial products. Use Biodegradable dishwasher detergent.
- Consider a lint filter on your clothes washer.
- Regularly check for wet or spongy soil around your drainfield.
- Have a septic professional check your tanks every 3 years to determine if they need pumping.
- If you have a septic tank filter (effluent filter) clean it on a regular basis (or have a professional do it).
- If a septic alarm goes off, call your septic professional to diagnose the problem.
- Notify the County/City/Township when this management plan is not being met.
- Be aware of and protect your secondary drainfield site.

Professional Tasks

- Disclose the location of the secondary drainfield (if applicable).
- Respond to alarms and diagnose problems as needed.
- Review water use with the owner, check for a "soggy" drainfield.
- Pump the septic tanks as needed and ensure they are in proper working order.
- Verify the pump, dose amount, HI Level Alarm & drainback are all working properly.

- Operating Permit:
  SERVICE PROVIDER is to maintain pretreatment system per Mfg req's: 1-2 times per year, and follow operating permit/monitoring plan requirements of:

_____

_____

_____

"As the owner, I understand it is my responsibility to properly operate and maintain this septic system".

Property Owner Signature: _____ **Date** _____

2011 purple code

Mound Design

www.SepticResource.com (vers 24.8)

Property Owner: Greg Smith **Date:** 9/2/2026

Site Address: XXXXX Vanadium St NW **PID:** 02-32-25-23-0021

Comments: Eco-Pod Design

instructions: [ ] = enter data [ ] = adjust if desired [ ] = computer calculated - DO NOT CHANGE!

1) 4 bedroom Type I Residential System

2) 600 GPD design flow

3) No Garbage disposal or pumped to septic

4) 1000 Gal Septic tank (code minimum) 1000 Gal Septic tank (design size / LUG req'd)
Tank options: none

5) 1.2 GPD/ft^2 mound sand loading rate contour loading rate of 12 req's a min 50 ft. long rockbed

6) 10.0 ft rockbed width 50.0 ft rockbed length

7) 3.0 ft lateral spacing 3.0 ft perforation spacing (maximum of 3 for both)
end feed manifold connection

8) 3 laterals 48.0 feet long 17.0 perfs / lateral 51 perfs total
(1/2 a perf means the first perf starts at the middle feed manifold)

9) 1/4" inch perfs at 1 feet residual head gives 0.74 gpm flow rate per perforation

for this perf size & spacing, & pipe size on line 12, max perfs/lateral = 25 , line #8 must be less --> OK

10) 4.0 doses per day (4 minimum)

11) 150 gallons per dose (treatment volume)

12) 2.00 inch diameter laterals must be used to meet "4x pipe volume" requirement

13) 20 feet of 2.0 inch supply line leads to 3 gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)

14) 153 gallons TOTAL pump out volume (treatment + drainback)

15) 10 feet vertical lift from pump to mound laterals, leads to a:

16) 38 GPM @ 16 feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)

17) 500 gal Dose tank (code minimum) 1000 gal Dose tank (design size / LUG req'd) at 23.00 gpi
leads to a:
REQUIRED Time Dosing of:

18) 6.7 inch swing on Demand float, (this delivers Average flow, =70% of Peak design flow)

	4	min ON
19) 12	8.5	hrs OFF - normal
20) 19	12	inches to "Timer ON" float
21) 22	32	inches to "Hi Level" float
	5.9	hrs OFF - peak / OR

22) 494 gallons reserve capacity (after High Level Alarm is activated-demand dosed)

23) 0.45 gpd/ft^2 Absorption area Soil Loading Rate, (this must match the soil boring log) which gives a mound ratio of 2.7 (minimum) desired mound ratio 2.7

24) 3 percent site slope (0-20% range) 3 (% downslope site slope, if different than upslope)

25) 0 inches, or 0.0 ft. to Redox or other limiting condition (need at least 12" to be a Type I)

Treatment zone contains 0 inches of 0% soil credit, and 0 inches of 50% soil credit. Giving a:

26) 12 inch, or 1.0 ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**

27) 27.0 ft.Total ABSORPTION width (with sand beyond rockbed as follows:)

28) 0.0 ft. upslope and sideslope
17.0 ft. Downslope

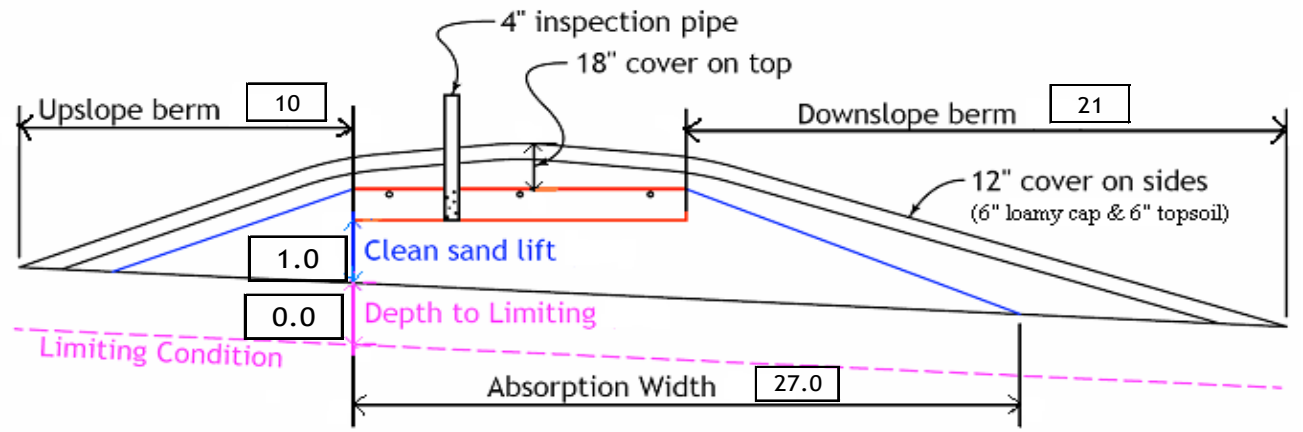
Individual slope ratios give BERM widths (topsoil beyond rockbed) of:

29) 4:1 upslope ratio 10 ft. upslope berm

30) 4:1 sideslope 12 ft. sideslope berms

31) 4:1 downslope 21 ft. downslope berm

32) Overall Dimensions: 10.0 ft. wide by 50.0 ft. long Rock bed
41 ft. wide by 74 ft. long Mound footprint



Note:
For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.
For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

33) Rock Bed:
10.0 ft. by 50.0 ft. by 6 inches under pipe, plus 20% gives 17 yd^3 or *1.4= 24 ton

34) Mound Sand: (note: volume is based on 3:1/4:1 slope from top of rockbed, Exchange sand for loamy cap if desired)
17.5 up + 29.4 downslope + 7.8 ends + 21.3 under rock = 91 yd^3 or *1.4= 128 ton
plus 20%

35) Loamy Cap:
37 ft. by 70 ft. 6" deep, plus 20% gives 58 yd^3 or *1.4= 81 ton

36) Topsoil:
41 ft. by 74 ft. 6" deep, plus 20% gives 68 yd^3 or *1.4= 95 ton

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

Tristan Ende	Ende Septic Service	L2654	9/2/2026
Designer Signature	Company	License#	Date

Installer Summary

1000 gallon Septic tank (minimum) Tank options: none

1000 gallon Dose tank (minimum) at 23.00 gpi

38 GPM @ 16 ft. of head, Pump required

6.7 inch swing on Demand float which translates to roughly 4.4 inches of float tether length

REQUIRED Time Dosing of:

4 minutes ON

8.5 hours OFF - normal

19 inches from bottom of tank to "pump ON" float, or

22 inches from bottom of tank to "Hi Level Alarm" or

12 inches to "timer ON" float

32 inches to "Hi level" float

20 ft. of 2.0 inch supply line with end feed manifold connection

(Tip: "top feed" manifold to control drainback)

12 inch, or 1.0 ft. Sand Lift Mound

10.0 ft. wide by 50.0 ft. long Rock bed

3 laterals 2.00 inch diameter 48.0 ft. long 3.0 ft. lateral spacing

1/4" inch perfs 3.0 ft. perforation spacing

No Effluent filter & optional alarm

3 clean out & valve box assemblies

27.0 ft.Total sand ABSORPTION width (minimum)

0.0 ft. upslope and sideslope (sand beyond rockbed, minimum)

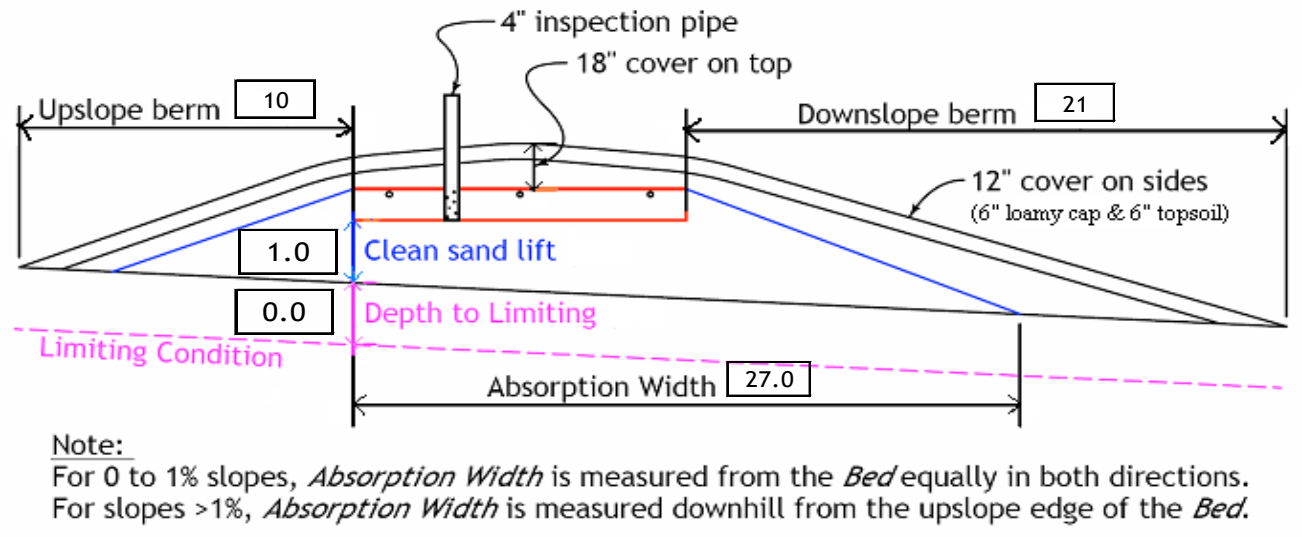
17.0 ft. Downslope (sand beyond rockbed, minimum)

Specific slope ratios give BERM widths (topsoil beyond rockbed) of:

4:1 upslope ratio 10 ft. upslope berm

4:1 sideslope 12 ft. sideslope berms

4:1 downslope 21 ft. downslope berm



Note:
For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.
For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

Rock Bed:	17.0	yd^3 or *1.4=	24	ton	6 inches under pipe
Mound Sand:	91	yd^3 or *1.4=	128	ton	calculation based on 3:1/4:1 slope from top of rockbe
Loamy Cap:	58	yd^3 or *1.4=	81	ton	6" deep
Topsoil:	68	yd^3 or *1.4=	95	ton	6" deep

INSPECTOR CHECKLIST - mound

XXXXX Vanadium St NW

☐ WELL setbacks: 20'- 50' to sewer line req's MDH pressure test form (5 psi for 15 min)
50' to everything 100' to drainfield with shallow well

☐ PROPERTY LINES setback: 10' to everything

☐ Road setback: platted: 10' prop line. Metes & bounds: out of road easement, or outer ditch.

☐ LAKE / BLUFF setback: 20' for bluff. Lakes: GD ___, RD ___, NE ____. Protected wetland ___.

☐ Building setbacks: 10' for everything, 20' for dispersal area.

☐ WATER LINE under pressure 10' to bed,tank & sewer line. (else sewer line > 12" below)

☐ Sewer line & tank connection (no hard 90's, long sweep 90 or 2-45's, slope minimum 1" in 8' = 1%)
(no depth req's, clean out every 100', Sch 40 pipe)

☐ Septic tank and risers (water tight risers, baffles, insulated, proper depth, existing verified by pumping)
mfg_____ 1000 gallons none

☐ Riser over outlet, riser over inlet or center, and 6"+ inspection pipe over any remaining baffles.

☐ No effluent filter & optional alarm

☐ Dose tank, risers and piping (water tight risers, insulated, proper depth, drainback)
mfg_____ 1000 gallons

REQUIRED Time Dosing of:
4 min ON 8.5 hr OFF

☐ dose pump _____ 38 gpm 16 head VERIFY PUMP CURVE

☐ verify that installed "vertical lift from pump to laterals" is no more than design value of 10 feet

☐ float setting drop 6.7 inches at 23.0 gpi "DESIGNED" 4.4 inches approx float tether length
153.0 gal dose divided by _____ gpi "INSTALLED" = _____ inches float drop (field corrected

LABEL pump requirements and drawdown on riser or panel

☐ Cam lock reachable from grade - 30" max. J-hook weep hole. Supply line access (no hard 90's)

☐ 2.0 inch supply pipe: Sch40, sloped 1/8"+, supported by 4" sch40 sleeve or compacted, and buried 6"+.

☐ splice box / control panel / electrical connections / Hi Level Alarm

☐ flow measurement: CT, ETM, time dosed, home water meter

☐ mound absorption area rough up

☐ mound rock dimensions 10.0 X 50.0

☐ Sand lift depth 12 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

☐ Absorption Sand beyond rock 0.0 upslope 17.0 downslope

☐ Bermed topsoil beyond rockbed 10 upslope 12 sideslope 21 downslope

☐ cover depth of 12-18"+ VERIFY

☐ 3 laterals (1-2' from edge of rock)

☐ 2.00 inch pipe size (Sch40 pipe & fittings)

☐ 3.0 ft lateral spacing

☐ 1/4" inch perforations

☐ 3.0 ft perforation spacing

☐ Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY

☐ clean outs (no hard 90's)

☐ 4" inspection pipe to bottom of rock, anchored VERIFY

☐ Abandon existing system - if necessary ☐ Re-use existing tank certification

☐ monitoring plan and type _____

☐ well abandonment form - if necessary

Soil Observation Log

Owner Information

Property Owner / project: Greg Smith Date 9/2/2026

Property Address / PID: XXXXX Vanadium St NW

Soil Survey Information

☐ refer to attached soil survey

Parent matl's: ☑ Till ☐ Outwash ☐ Lacustrine ☐ Alluvium ☐ Organic ☐ Bedrock

landscape position: ☐ Summit ☐ Shoulder ☑ Side slope ☐ Toe slope

soil survey map units: DIA slope 3 % direction- downhill

Soil Log #1

☑ Boring ☐ Pit Elevation _____ Depth to SHWT 6"

Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-6	loam	<35	10YR3/2		Friable	Weak	Blocky
6-13	Clay Loam	<35	10YR3/2	5YR5/8	Friable	Moderate	Blocky
13-21	Clay Loam	<35	10YR4/4	5YR5/8,10RY6/2	Friable	Moderate	Blocky
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

Comments:

XXXXX Vanadium St NW			**Soil Log #2**				
	☑ Boring	☐ Pit	Elevation _____		Depth to SHWT 4"		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-4	Loam	<35	10YR3/2		Friable	Weak	Blocky
4-11	Loam	<35	10YR3/2	5YR5/8	Friable	Moderate	Blocky
11-18	Clay Loam	<35	10YR3/4	5YR5/8,10YR6/2	Friable	Moderate	Blocky
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

XXXXX Vanadium St NW			**Soil Log #3**				
	☐ Boring	☐ Pit	Elevation _____		Depth to SHWT 6"		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-6	Loam	<35	10YR3/2		Friable	Weak	Blocky
6-9	Clay Loam	<35	10YR4/3	5YR5/8	Friable	Moderate	Blocky
9-17	Clay Loam	<35	10YR4/3	5YR5/8,10YR6/2	Friable	Moderate	Blocky
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

I hereby certify this work was completed in accordance with MN 7080 and any local req's.

Tristan Ende — Designer Signature

Ende Septic Service — Company

L2654 — License #

LUG soil verify Signature + LUG media elev/depth Signature = Soil Separation Report

XXXXX Vanadium St NW			**Soil Log #4**				
	☑ Boring	☐ Pit	Elevation		Depth to SHWT	7"	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-7	Loam	<35	10YR3/2		Friable	Weak	Blocky
7-16	Loam	<35	10YR3/2	5YR5/8	Friable	Moderate	Blocky
16-23	Clay Loam	<35	10YR4/3	5YR5/8,10YR6/2	Friable	Moderate	Blocky
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

XXXXX Vanadium St NW			**Soil Log #5**				
	☑ Boring	☐ Pit	Elevation		Depth to SHWT	5"	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-5	Loam	<35	10YR3/2		Friable	Weak	Blocky
5-14	Loam	<35	10YR3/2	5YR5/8	Friable	Moderate	Blocky
14-20	Clay Loam	<35	10YR3/4	5YR5/8,10YR6/2	Friable	Moderate	Blocky
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

I hereby certify this work was completed in accordance with MN 7080 and any local req's.

Tristan Ende — Designer Signature

Ende Septic Service — Company

L2654 — License #

Preliminary & Field Evaluation Form

Owner Information

Date	9/2/2026	Sec / Twp / Rng	
Parcel ID	02-32-25-23-0021	LUG (county, city, township)	City of Ramsey
Property Owner:	Greg Smith	Owners address (if different)	
Property Address:	XXXXX Vanadium St NW		
City / State / Zip:	Ramsey, MN 55303		

Flow Information and Waste Type / Strength

Estimated Design flow: 600

Comments:

Anticipated Waste strength	☐ Hi Strength	☑ Domestic
Any Non-Domestic Waste	☐ Yes (class V)	☑ No
Sewage ejector/grinder pump	☐ Yes	☑ No
Water softener	☑ Yes	☐ No
Garbage Disposal	☐ Yes	☑ No
Daycare / In home business	☐ Yes	☑ No

Site Information

Existing & proposed lot improvements located (see site map)	☑ Yes	☐ No	Well casing depth	to be drilled
Easements on lot located (see site map)	☑ Yes	☐ No	Drainfield w/in 100' of residential well	☐ Yes ☑ No
Property lines determined (see site map)	☑ Yes	☐ No	Site w/in 200' of transient noncommunity water supply (TNCWS)	☐ Yes ☑ No
Req'd setbacks determined (see site map)	☑ Yes	☐ No	Site w/in an inner wellhead mgmt zone (CWS/NTNCWS)	☐ Yes ☑ No
Utilities located & identified (gopher state one call)	☑ Yes	☐ No	Buried water supply pipe w/in 50' of system	☐ Yes ☑ No
Access for system maintenance (shown on site map)	☑ Yes	☐ No	Site located in Shoreland (w/in 1000' of lake, 300' of river)	☐ Yes ☑ No
Soil treatment area protected	☑ Yes	☐ No	Site map prepared with previous items included	☑ Yes ☐ No

Construction related issues

Soil Information

Evidence of site:

Cut	☐ Yes	☑ No
Filled	☐ Yes	☑ No
Compacted	☐ Yes	☑ No
Disturbed	☐ Yes	☑ No

Original soils ☑ Yes ☐ No

Soil logs completed and attached ☑ Yes ☐ No

Perk test completed and attached (if applicable) ☐ Yes ☑ No

Soil loading rate (gpd/ft^2) 0.45

Percolation rate (if applicable) _____

Depth/elev to SHWT 0.00

Flooding or run-on potential (comments) ☐ Yes ☐ No

Depth to system bottom maximum (or elev minimum) -12.00

Flood elevation (if applicable) _____

Depth/elev to standing water (if applicable) _____

Elevation of ordinary high water level (if applicable) _____

Depth/elev to bedrock (if applicable) _____

Soil Survey information determined (see attachment) ☑ Yes ☐ No

Floodplain designation and elev - 100 yr/10 yr (if applicable) _____

Differences between soil survey and field evaluation (if applicable) _____

I hereby certify this evaluation was completed in accordance with MN 7080 and any local req's.

Tristan Ende
Designer Signature

Ende Septic Service
Company

L2654
License #

Owners Septic System Management Plan

Date: 9/2/2026

Property Address: XXXXX Vanadium St NW

Septic Systems can be an expensive investment, good maintenance will ensure they last a lifetime. The purpose of a septic system is to properly "decompose" the pollutants before the water is recycled back into the groundwater. If you're not taking this seriously, ask yourself where your well water comes from.

Your septic design lists all the components of your system and their location. Keep the design, this management plan and the UofM "Septic System Owners Guide" in a safe place for future reference. For a copy of the Owners guide call the University of MN at 1-800-876-8636.

Some of the following tasks you can do yourself, some require a professional, but is it YOUR responsibility to see that it gets done.

Homeowner Tasks

- Do your best to conserve water. Don't overload your septic with multiple large water uses at the same time or on the same day.
- Fix household leaks promptly (leaky toilet, dripping faucets).
- Limit bleach and anti-bacterial products. Use Biodegradable dishwasher detergent.
- Consider a lint filter on your clothes washer.
- Regularly check for wet or spongy soil around your drainfield.
- Have a septic professional check your tanks every 3 years to determine if they need pumping.
- If you have a septic tank filter (effluent filter) clean it on a regular basis (or have a professional do it).
- If a septic alarm goes off, call your septic professional to diagnose the problem.
- Notify the County/City/Township when this management plan is not being met.
- Be aware of and protect your secondary drainfield site.

Professional Tasks

- Disclose the location of the secondary drainfield (if applicable).
- Respond to alarms and diagnose problems as needed.
- Review water use with the owner, check for a "soggy" drainfield.
- Pump the septic tanks as needed and ensure they are in proper working order.
- Verify the pump, dose amount, HI Level Alarm & drainback are all working properly.

"As the owner, I understand it is my responsibility to properly operate and maintain this septic system".

Property Owner Signature: _____ **Date** _____

UNIVERSITY OF MINNESOTA



Septic System Management Plan for Above 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 Greg Smith	Email
Property Address 17850 Vanadium St NW Ramsey	Property ID 02-32-25-23-0021
System Designer Ende Septic Service	Contact Info 763-428-4489
System Installer	Contact Info
Service Provider/Maintainer	Contact Info
Permitting Authority City of Ramsey	Contact Info
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-built 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*, visit www.bookstores.umn.edu and search for the word "septic" or call 800-322-8642.

For more information see http://septic.umn.edu

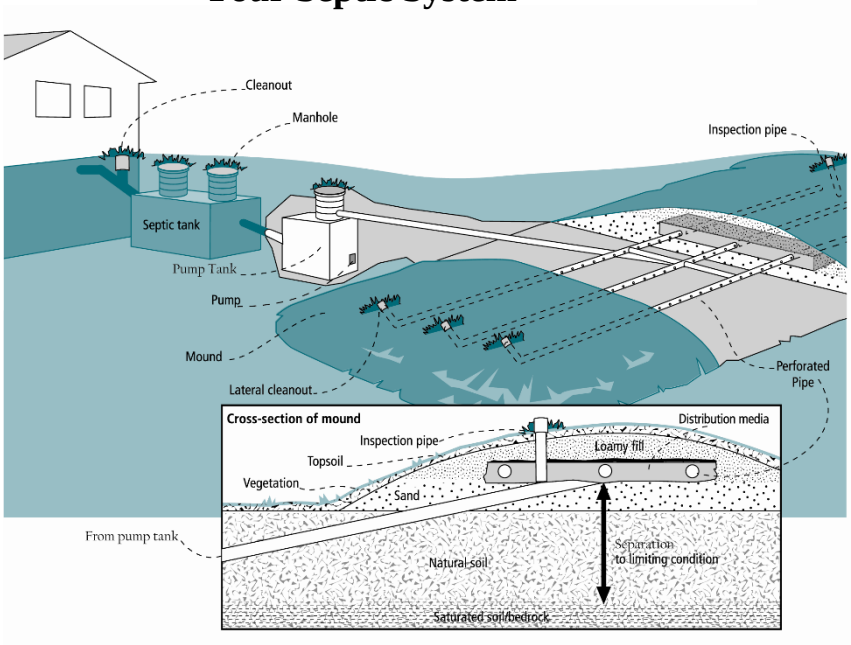
Version: August 2015

UNIVERSITY OF MINNESOTA

Septic System Management Plan for Above Grade Systems



Your Septic System



Septic System Specifics

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

(*Based on MN Rules Chapter 7080.2200 – 2400)*

**Additional Management Plan required*

☑ System is subject to operating permit*

☐ System uses UV disinfection unit*

Type of advanced treatment unit _____

Dwelling Type

Number of bedrooms: 4

System capacity/ design flow (gpd): 600

Anticipated average daily flow (gpd): _____

Comments_____

Business? : ◯ Y ◉ N What type? _____

Well Construction

Well depth (ft): to be drilled

- ❑ Cased well Casing depth: _____
- ❑ Other (specify): _____

Distance from septic (ft):_____

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

Septic Tank

- ❑ First tank *Tank volume:* 1000 *gallons*
  Does tank have two compartments? ◯ Y ◉ N
- ❑ Second tank *Tank volume:* 1000 *gallons*
- ❑ Tank is constructed of ecopod-concrete
- ❑ Effluent screen: ◯ Y ◉ N Alarm ◯ Y ◉ N

- ❑ Pump Tank 1000 *gallons*
- ❑ Effluent Pump *make/model*: Gould PE51
  Pump capacity 38 GPM
  TDH 16 Feet of head
- ❑ Alarm location on power post

Soil Treatment Area (STA)

Mound/At-Grade area (width x length): 41 ft x 74 ft

Rock bed size (width x length): 10 ft x 50 ft

Location of additional STA: North of Primary

Type of distribution media: rock or ez-flow

☑ Inspection ports ☑ Cleanouts

☐ Surface water diversions

☐ Additional STA not available



Homeowner Management Tasks

These op*eration and maintenance ac*tivities are your responsibility. *Chart on page 6 can help track your activities.*

Your toilet is not a garbage can. Do not flush anything besides human waste and toilet paper. No wet wipes, cigarette butts, disposal diapers, used medicine, feminine products or other trash!

The system and septic tanks needs to be checked every 6 months

Your service provider or pumper/maintainer should evaluate if your tank needs to be pumped more or less often.

Seasonally or several times per year

- *Leaks.* Check (listen, look) for leaks in toilets and dripping faucets. Repair leaks promptly.
- *Soil treatment area.* 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.* Keep bikes, snowmobiles and other traffic off and control borrowing animals.
- *Alarms.* Alarms signal when there is a problem; contact your service professional any time the alarm signals.
- *Lint filter.* If you have a lint filter, check for lint buildup and clean when necessary. If you do not have one, 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 along with an alarm.

Annually

- *Water usage rate.* A water meter or another device 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. Consider updating to demand operation if your system currently uses time,
- *Review your water usage rate.* Review the Water Use Appliance chart on Page 5. Discuss any major changes with your service provider or pumper/maintainer.

During each visit by a service provider or pumper/maintainer

- Make sure that your service professional services the tank through the manhole. (NOT though a 4" or 6" diameter inspection port.)
- Ask how full your tank was with sludge and scum to determine if your service interval is appropriate.
- 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. At each visit a written report/record must be provided to homeowner.

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 soil treatment area.)
- *Inspection pipes*. Replace damaged or missing pipes and 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 draining properly.
- *Event counter or elapsed time meter*. Check to see if there is an event counter or elapsed time meter for the pump. If there is one or both, calculate the water usage rate and compare to the anticipated use listed on Design and Page 2. Dose Volume: _____ gallons: Pump run time: 4.0 _____ Minutes

Soil Treatment Area

- *Inspection pipes*. Check to make sure they are properly capped. Replace caps and pipes that are damaged.
- *Surfacing of effluent*. Check for surfacing effluent or other signs of problems.
- *Lateral flushing*. Check lateral distribution; if cleanouts exist, flush and clean at recommended frequency.
- *Vegetation* - Check to see that a good growth of vegetation is covering the system.

All other components – evaluate 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. Limit use of bleach-based detergents and fabric softeners. • Install a lint filter after the washer and an effluent screen to your tank • Wash only full loads and think even – spread your laundry loads throughout the week.
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 directly out of the house. Do not route furnace discharge 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 overload the system and is prohibited from entering septic system.	



Homeowner Maintenance Log

Track maintenance activities here for easy reference. See list of management tasks on pages 3 and 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)***										
Alarm**										
Check annually:										
Water usage rate (maximum gpd _____)										
Caps: inspect, replace if needed										
Water use appliances – review use										
Other:										

*Monthly

**Quarterly

***Bi-Annually

Notes:

"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: Tristan Ende *Tristan Ende* Certification # C9206

Permitting Authority: City of Ramsey

©2015 Regents of the University of Minnesota. All rights reserved. The University of Minnesota is an equal opportunity educator and employer. This material is available in alternative formats upon request. Contact the Water Resources Center, 612-624-9282. The Onsite Sewage Treatment Program is delivered by the University of Minnesota Extension Service and the University of Minnesota Water Resources Center.

UNIVERSITY OF MINNESOTA

Onsite Sewage Treatment Program
Septic System Management Plan
Delta Environmental Products
ECOPOD Fixed Film Treatment System



This Management Plan identifies some basic requirements for proper operation and maintenance of the Delta ECOPOD wastewater treatment device for residential use. Refer to the manufacturer's Operation and Maintenance Manual for ECOPOD wastewater treatment products for detailed instructions on proper system operation and maintenance. Refer to your soil treatment system management plan (below or above-grade) for additional management requirements.

The ECOPOD Manual, submitted by the manufacturer as part of the Minnesota registration of this product in Minnesota, can be found at the following website: https://septic.umn.edu/ssts-professionals/manual

SYSTEM COMPONENT	TASK	FREQUENCY		RESPONSIBLE PARTY
		Flow <1,500 gpd	HSW or Flow >1,500 gpd	
DELTA ECOPOD Aerobic Treatment Unit	Monitor alarm	On-going		User
	Clean vents on housing	On-going	Monthly for First Sixth Months Adjusted based on performance thereafter.	User or Service Provider
	Monitor flow	Annually		Service Provider
	Verify flow splitting devices are performing accurately & adjust as needed	Annually		Service Provider
	Clean air filter on blower	Annually		Service Provider
	Check mechanical and electrical components	Annually		Service Provider
	Perform operational field tests on influent/effluent quality including odor, color, turbidity, temperature, dissolved oxygen and pH as appropriate	Annually		Service Provider
	Sample effluent as required in the local Operating Permit	See Operating Permit*		Service Provider
	Check sludge level in all tanks; follow manufacturers recommendations for solids removal refilling with clean water after pump out	Annually		Service Provider and Maintainer
	For seasonal use, follow manufacturers guidelines	As required based on seasonal usage		Service Provider

** See page 2 for recommended frequencies.*

Items not permitted in the wastewater for this system are specified in the device's Manual for Minnesota.

Systems designed to meet treatment level A or B with **UV disinfection** or **chlorination** must also have an ultraviolet or chlorine disinfection device which requires an additional management plan.

At the time of each service visit, Form 7-2: Aerobic Treatment Unit should be completed by the MPCA licensed Service Provider. See https://septic.umn.edu/ssts-professionals/forms-worksheets. The protocol for collection of wastewater samples is specified in the Delta Ecopod Manual for Minnesota.

University of Minnesota
Onsite Sewage Treatment Program



Septic System Management Plan
Sampling Parameters and Frequency

Sampling of system

- Sampling frequencies assumes year-round occupancy and can potentially be reduced with seasonal facilities. Sampling requirements are specified in local operating permits.
- Over time sampling frequency may be adjusted based on performance.
- Systems with ultraviolet (UV) or chlorination treatment must refer to the additional management plan, but the sampling requirements are covered below.
- Sample locations for all Type IV and V systems should be from the pump tank to soil treatment area (STA) or based on manufacturers specifications.
  - See http://septic.umn.edu/ssts-professionals/forms-worksheets#maintenance/ for forms and supplementary information.
- Inspection forms and signed management plans should be submitted to the presiding county or local government unit.

Designer Specified Sampling Requirements

1. This system is designed to meet treatment level:

   ☑ A ☐ A2 ☐ B ☐ B2 ☐ C ☐ Total Nitrogen (TN)

2. Based on the tables below or local requirements:

   a. The system needs to be sampled for: _____

   b. The system needs to be sampled at the frequency of: _____ (per year)
      - Minimum sampling requirements may be reduced if building not occupied year-round.
      - Additional sampling may be required based on results of sampling and/or local ordinance.

Recommended sampling frequencies per wastewater parameters and system sizes

Sampling Parameters per System Treatment Level				
Parameter	Treatment level			
	A & B	A2 & B2	C*	TN**
BOD	X	X	X	X
TSS	X	X	X	X
Fecal	X			
Nitrogen				X
FOG			X*	

*Includes high strength wastewater treatment
**For midsize subsurface sewage treatment systems (MSTS) or systems requiring a BMP.

Sampling Frequencies Based on Design Flow Rates	
Flow (gallons per day)	Minimum sampling frequency per year
<2,500	1 (annually)
2,500 - 5,000	2 (bi-annually)
5,000 - 10,000	4 (quarterly)

Anoka County, Minnesota

DIA—Dalbo silt loam, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: f8zf
Elevation: 850 to 920 feet
Mean annual precipitation: 25 to 34 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 120 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Dalbo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dalbo

Setting

Landform: Lake plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine

Typical profile

Ap - 0 to 6 inches: silt loam
Bt - 6 to 28 inches: clay
C - 28 to 60 inches: silty clay loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.57 in/hr)
Depth to water table: About 30 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

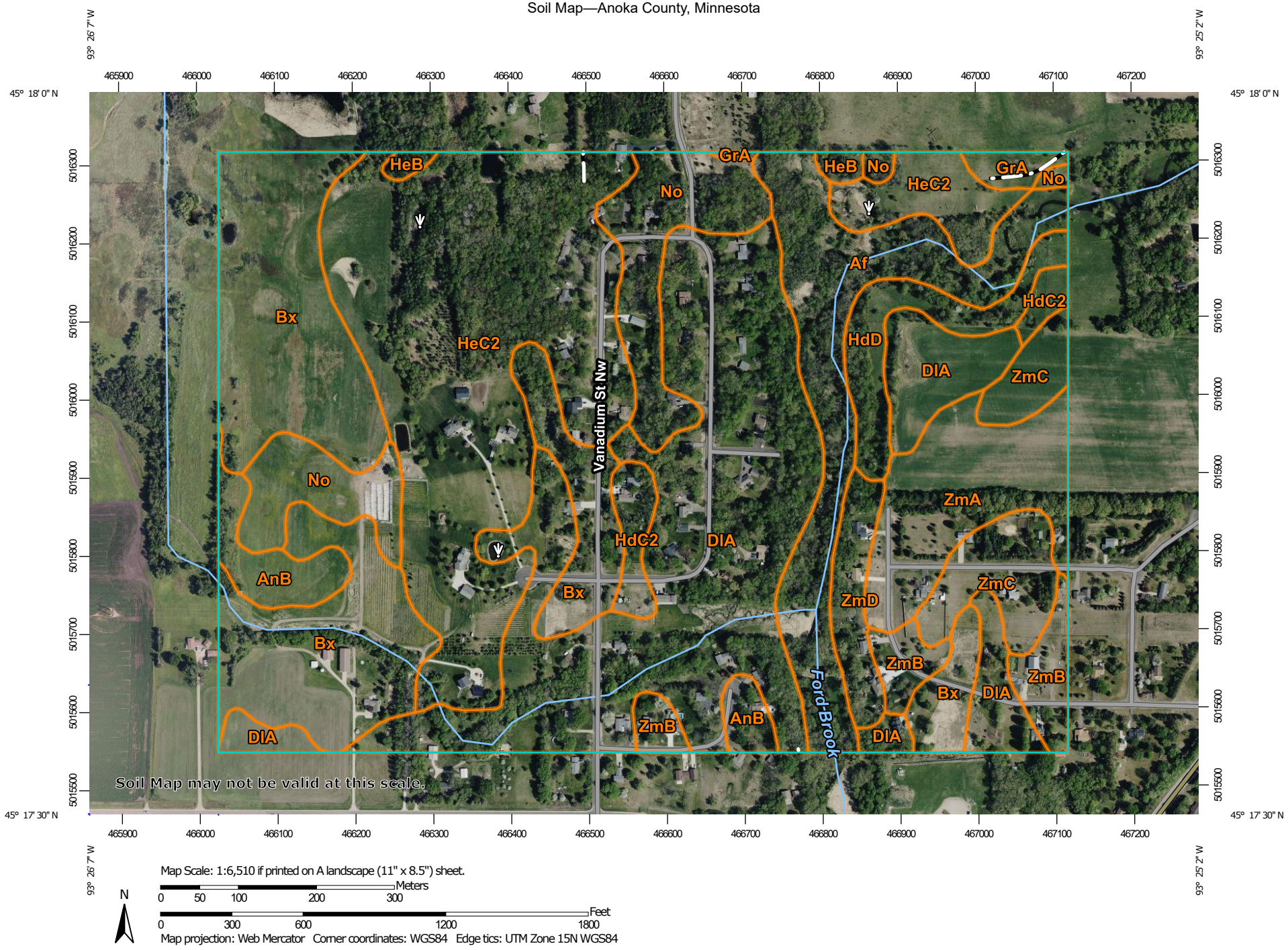
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F090AY011WI - Moist Loamy Lowland
Forage suitability group: Sloping Upland, Acid (G090AN006MN)
Other vegetative classification: Sloping Upland, Acid (G090AN006MN)
Hydric soil rating: No

Minor Components

Sandy substratum soils
Percent of map unit: 15 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Anoka County, Minnesota
Survey Area Data: Version 23, Sep 10, 2025



Map Scale: 1:6,510 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Anoka County, Minnesota
Survey Area Data: Version 23, Sep 10, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 1, 2025—Jul 1, 2025

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Af	Alluvial land, mixed, frequently flooded	17.3	8.3%
AnB	Anoka loamy fine sand, 2 to 6 percent slopes	4.6	2.2%
Bx	Brickton silt loam	37.4	18.0%
DlA	Dalbo silt loam, 1 to 5 percent slopes	50.1	24.1%
GrA	Growton fine sandy loam, 1 to 4 percent slopes	1.3	0.6%
HdC2	Hayden fine sandy loam, 6 to 12 percent slopes, eroded	2.9	1.4%
HdD	Hayden fine sandy loam, 12 to 24 percent slopes	5.3	2.6%
HeB	Heyder fine sandy loam, 2 to 6 percent slopes	0.9	0.5%
HeC2	Heyder fine sandy loam, 6 to 12 percent slopes, eroded	46.7	22.4%
No	Nowen sandy loam	14.2	6.8%
ZmA	Zimmerman fine sand, 0 to 2 percent slopes	11.0	5.3%
ZmB	Zimmerman fine sand, 1 to 6 percent slopes	5.3	2.5%
ZmC	Zimmerman fine sand, 6 to 12 percent slopes	7.4	3.6%
ZmD	Zimmerman fine sand, 12 to 24 percent slopes	3.7	1.8%
Totals for Area of Interest		**208.1**	**100.0%**