

Preliminary & Field Evaluation Form

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Owner Information			
Date	<u>8/11/2022</u>	Sec / Twp / Rng	<u>S.21 T.49 R.22</u>
Parcel ID	<u>10-0-035602</u>	LUG (county, city, township)	<u>Aitkin County</u>
Property Owner:	<u>James Onstad</u>	Owners address (if different)	
Property Address:	<u>48127 Kestrel Ave.</u>	<u>15415 Goshawk St.</u>	
City / State / Zip:	<u>Tamarack, MN. 55787</u>		

Flow Information and Waste Type / Strength			
Estimated Design flow	<u>600</u>	Anticipated Waste strength	<input type="checkbox"/> Hi Strength <input checked="" type="checkbox"/> Domestic
Comments:		Any Non-Domestic Waste	<input type="checkbox"/> Yes (class V) <input checked="" type="checkbox"/> No
		Sewage ejector/grinder pump	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Water softener	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Garbage Disposal	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Daycare / In home business	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

Soil Information

		Evidence of site:		
		Cut	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
		Filled	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
		Compacted	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
		Disturbed	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Original soils	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Soil logs completed and attached	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Perk test completed and attached (if applicable)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Soil loading rate (gpd/ft ²)	<u>0.78</u>	Percolation rate (if applicable)	_____	
Depth/elev to SHWT	<u>8.00</u>	Flooding or run-on potential (comments)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Depth to system bottom maximum (or elev minimum)	<u>-28.00</u>	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)	_____	Floodplain designation and elev - 100 yr/10 yr (if applicable)	_____	
Soil Survey information determined (see attachment)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
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.

_____ Designer Signature	R.H. Inspection & Design Company	3847 License #
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Soil Observation Log

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Owner Information	
Property Owner / project: <u>James Onstad</u>	Date <u>8/11/2022</u>
Property Address / PID: <u>48127 Kestrel Ave.</u>	

Soil Survey Information	
<input type="checkbox"/> refer to attached soil survey	
Parent matl's:	<input checked="" type="checkbox"/> Till <input type="checkbox"/> Outwash <input type="checkbox"/> Lacustrine <input type="checkbox"/> Alluvium <input type="checkbox"/> Organic <input type="checkbox"/> Bedrock
landscape position:	<input type="checkbox"/> Summit <input type="checkbox"/> Shoulder <input checked="" type="checkbox"/> Side slope <input type="checkbox"/> Toe slope
soil survey map units:	_____ slope <u>1</u> % direction- <u>downhill</u>

Soil Log #1							
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation _____	Depth to SHWT <u>12"</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-8	Topsoil	<35	5YR3/3		Friable	Weak	Granular
8-12	Sandy Loam	<35	10YR4/3	7.5YR5/6	Friable	Weak	Granular
		<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
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
Comments: Mottles at 12"							

48127 Kestrel Ave.		Soil Log #2					
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation _____	Depth to SHWT <u>12"</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-8	Topsoil	<35	5YR3/3		Friable	Weak	Granular
8-12+	Sandy Loam	<35	10YR4/3	7.5YR5/6	Friable	Weak	Granular
		<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
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

48127 Kestrel Ave.		Soil Log #3					
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation _____	Depth to SHWT <u>12"</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-8	Topsoil	<35	5YR3/3		Friable	Weak	Granular
8-12+	Sandy Loam	<35	10YR4/3	7.5YR5/6	Friable	Weak	Granular
		<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
		<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.

Designer Signature

R.H. Inspection & Design

Company

3847

License #

48127 Kestrel Ave.		Soil Log #4					
		<input type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation _____	Depth to SHWT _____		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
		<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
		<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
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

48127 Kestrel Ave.		Soil Log #5					
		<input type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation _____	Depth to SHWT _____		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
		<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
		<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
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

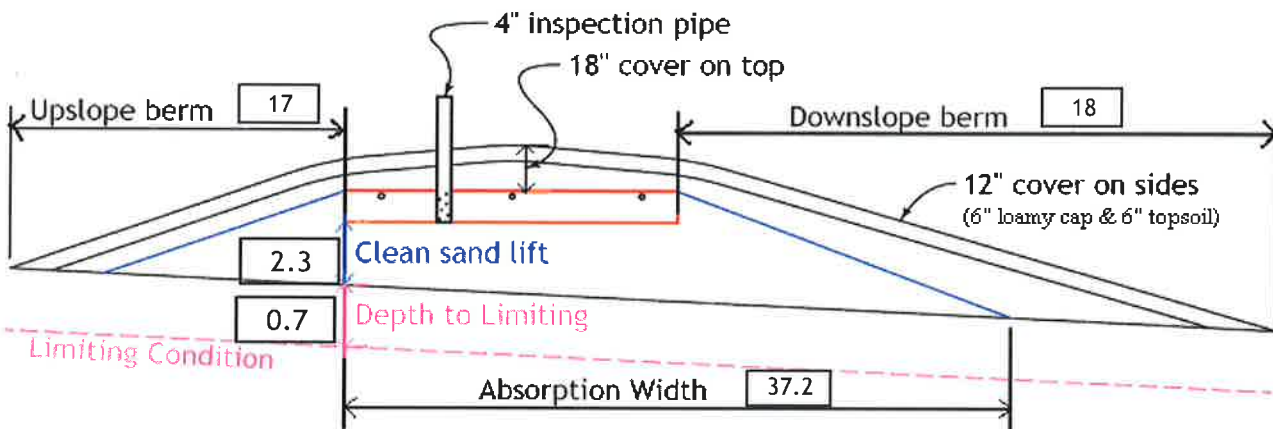
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- 23) **0.78** gpd/ft² Absorption area Soil Loading Rate, which gives a mound ratio of **1.5** (minimum)
 (this must match the soil boring log) desired mound ratio **1.5**
- 24) **1** percent site slope (0-20% range) **1** (% downslope site slope, if different than upslope)
- 25) **8** inches, or **0.7** 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) **28** inch, or **2.3** ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**
- 27) **15.0** ft. base absorption width (with sand beyond rockbed as follows):
37.2 greater of: absorption width OR sand slope
- 28) **2.5** ft. upslope and sideslope sand upslope **12.8**
2.5 ft. Downslope sand down slope **14.3**
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29) **4:1** upslope ratio **17** ft. upslope berm
- 30) **4:1** sideslope **18** ft. sideslope berms
- 31) **4:1** downslope **18** ft. downslope berm
- 32) Overall Dimensions: **10.0** ft. wide by **50.0** ft. long Rock bed
45 ft. wide by **86** 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** yd³ 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)
61.8 up + **71.0** downslope + **17.5** ends + **44.1** under rock = **233** yd³ or *1.4= **327** ton
 plus 20%
- 35) Loamy Cap:
41 ft. by **82** ft. 6" deep, plus 20% gives **75** yd³ or *1.4= **105** ton
- 36) Topsoil:
45 ft. by **86** ft. 6" deep, plus 20% gives **86** yd³ or *1.4= **120** ton

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

 Designer Signature

R.H. Inspection & Design
 Company

3847
 License#

8/11/2022
 Date

Property Owner: James OnstadDate: 8/11/2022Site Address: 48127 Kestrel Ave.PID: 10-0-035602

Comments: _____

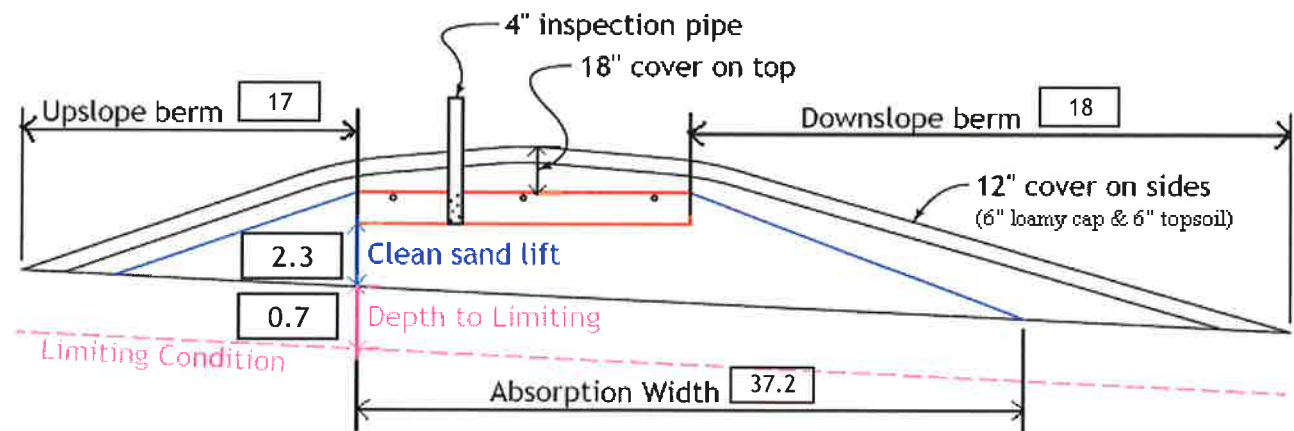
Instructions: = enter data = adjust if desired = computer calculated - DO NOT CHANGE!

- 1) bedroom Type Residential System
- 2) GPD design flow
- 3) Garbage disposal or pumped to septic
- 4) Gal Septic tank (code minimum) Gal Septic tank (design size / LUG req'd)
Tank options: Effluent filter & alarm req'd
- 5) GPD/ft² mound sand loading rate contour loading rate of req's a min ft. long rockbed
- 6) ft rockbed width ft rockbed length
- 7) ft lateral spacing ft perforation spacing (maximum of 3 for both)
 end feed manifold connection
- 8) laterals feet long perfs / lateral perfs total
(1/2 a perf means the first perf starts at the middle feed manifold)
- 9) inch perfs at feet residual head gives gpm flow rate per perforation
for this perf size & spacing, & pipe size on line 12, max perfs/lateral = , line #8 must be less --> **OK**
- 10) doses per day (4 minimum)
- 11) gallons per dose (treatment volume) 2.00 5x
- 12) inch diameter laterals must be used to meet "4x pipe volume" requirement 2.00 3x
- 13) feet of inch supply line leads to gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)
- 14) gallons TOTAL pump out volume (treatment + drainback)
- 15) feet vertical lift from pump to mound laterals, leads to a:
- 16) GPM @ feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)
- 17) gal Dose tank (code minimum) gal Dose tank (design size / LUG req'd) at gpi
leads to a
- 18) inch swing on Demand float, or timed dosing of min ON (confirm pump rate with drawdown
(this delivers Average flow, =70% of Peak design flow) hrs OFF test and adjust as necessary)
- 19) inches from bottom of tank to "Pump OFF" float
- 20) inches from bottom of tank to "Pump ON" float, or inches to "Timer ON" float if time dosed
- 21) inches from bottom of tank to "Hi Level" float, or inches to "Hi Level" float if time dosed
- 22) gallons reserve capacity (after High Level Alarm is activated)

Installer Summary

- gallon Septic tank (minimum) Tank options: Effluent filter & alarm req'd
- gallon Dose tank (minimum) at gpi
- GPM @ ft. of head, Pump required
- inch swing on Demand float which translates to roughly inches of float tether length
if time dosing is required --> minutes ON time & hours OFF time
- inches from bottom of tank to "pump ON" float, or inches to "timer ON" float
- inches from bottom of tank to "Hi Level Alarm" or inches to "Hi level alarm" if time dosed
- ft. of inch supply line with manifold connection
(Tip: "top feed" manifold to control drainback)
- inch, or ft. Sand Lift Mound
- ft. wide by ft. long Rock bed
- laterals inch diameter ft. long ft. lateral spacing
- inch perfs ft. perforation spacing
- Effluent filter & alarm
- clean out & valve box assemblies

- ft. Total sand ABSORPTION width (minimum)
- ft. upslope and sideslope (sand beyond rockbed, minimum)
- ft. Downslope (sand beyond rockbed, minimum)
- Specific slope ratios give BERM widths (topsoil beyond rockbed) of:
- upslope ratio ft. upslope berm
- sideslope ft. sideslope berms
- downslope 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:	<input type="text" value="17.0"/> yd ³ or *1.4=	<input type="text" value="24"/> ton	<input type="text" value="6"/> inches under pipe
Mound Sand:	<input type="text" value="233"/> yd ³ or *1.4=	<input type="text" value="327"/> ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	<input type="text" value="75"/> yd ³ or *1.4=	<input type="text" value="105"/> ton	<input type="text" value="6"/> " deep
Topsoil:	<input type="text" value="86"/> yd ³ or *1.4=	<input type="text" value="120"/> ton	<input type="text" value="6"/> " deep

INSPECTOR CHECKLIST - mound

48127 Kestrel Ave.

- WELL setbacks: 20' to pressure tested sewer line (5 psi for 15 min)
50' to everything 100' to dispersal area 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 set 10' to bed, tank & sewer line. (else sewer line > 12" below, else ok w/pvc)

- Sewer line & baffle connection (no 90's, 3' between 45's, slope min 1" in 8', max 2" in 8')
(no depth req's, clean out every 100', Sch 40 pipe)

- Septic tank and risers (water tight, insulated, proper depth, existing verified by pumping)
mfg _____ 1500 gallons Effluent filter & alarm req'd _____

- Riser over outlet, riser over inlet or center, and 6"+ inspection pipe over any remaining baffles.
No _____ effluent filter & alarm
- Dose tank risers and piping (water tight, insulated, proper depth, drainback)
mfg _____ 520 gallons

- dose pump _____ 29 gpm 16 head VERIFY PUMP CURVE 5.5 min ON 9 hr OFF

- float setting drop 9.6 inches at 16.6 gpi "DESIGNED" 5.8 inches approx float tether length
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
- 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 28 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

- Absorption Sand beyond rock 12.8 upslope 14.3 downslope

- Bermed topsoil beyond rockbed 17 upslope 18 sideslope 18 downslope

- cover depth of 12-18"+ VERIFY
- 3 laterals (1-2' from edge of rock)
- 1.50 inch pipe size (Sch40 pipe & fittings)
- 3.0 ft lateral spacing

- 7/32 inch perforations
- 3.0 ft perforation spacing

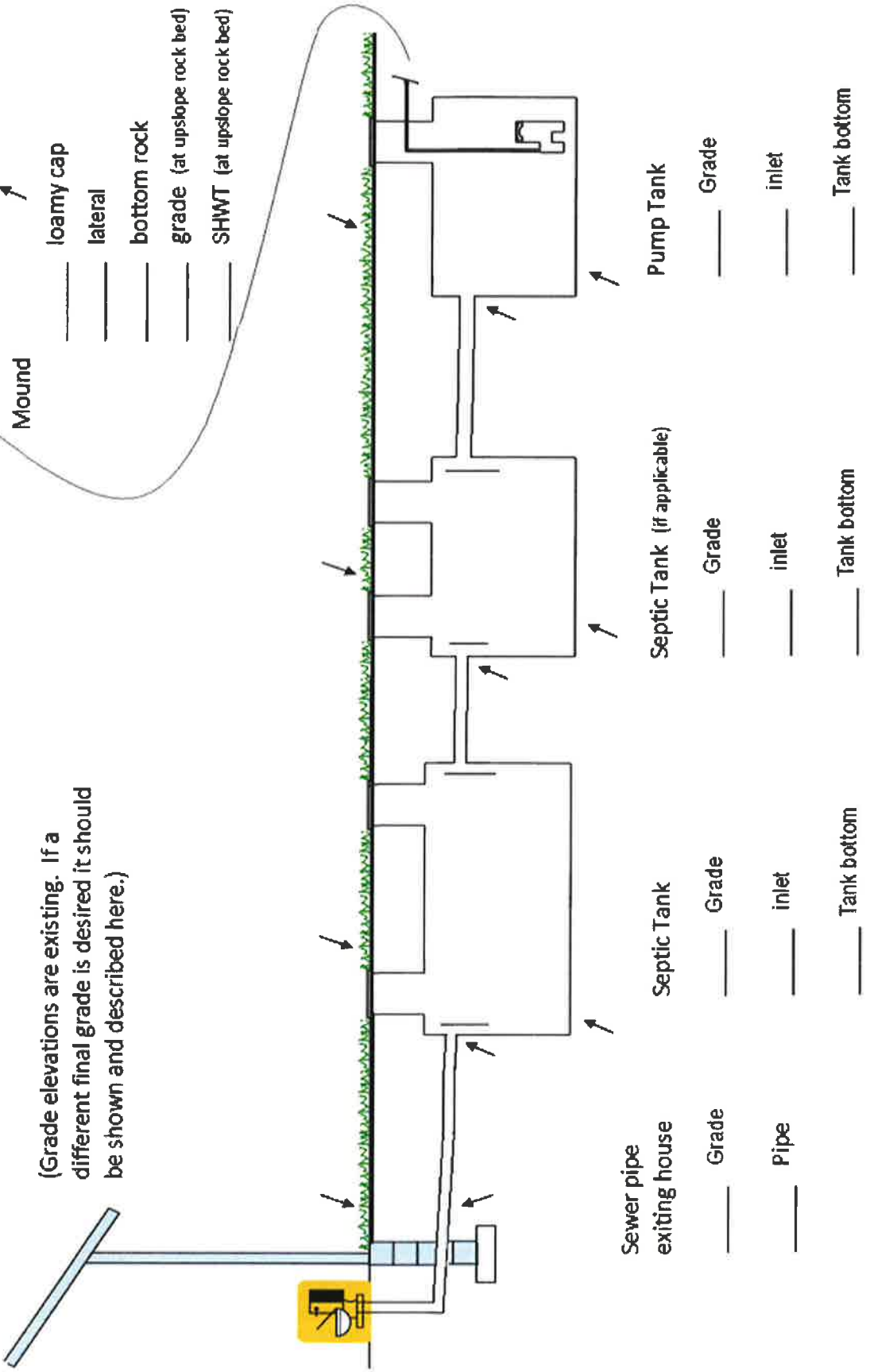
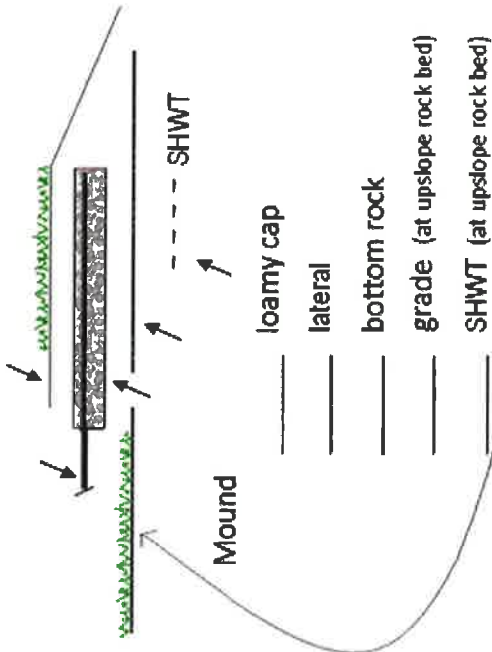
- Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- clean outs (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY

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

System Elevations

_____ benchmark

(Grade elevations are existing. If a different final grade is desired it should be shown and described here.)



Sewer pipe exiting house

Grade _____

Pipe _____

Septic Tank

Grade _____

inlet _____

Tank bottom _____

Septic Tank (if applicable)

Grade _____

inlet _____

Tank bottom _____

Pump Tank

Grade _____

inlet _____

Tank bottom _____

48127 KESTREL AVE.
TAMARACK, MN.
55787

