

Mound Design

Property Owner: **Todd and Susie Morrision** Date: **6/10/2024**
 Site Address: **45188 310th st Aitkin** PID: **07-0-037502**
 Comments: existing 10x25 2ft mound adding 1820 tank for 1 bed guest house

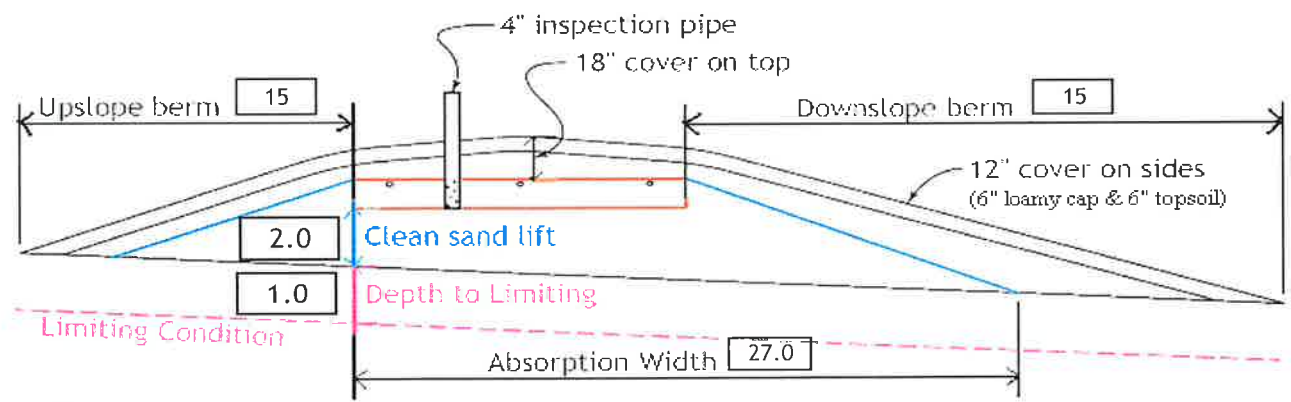
Instructions: = enter data = adjust if desired = computer calculated - DO NOT CHANGE!

- 1) bedroom Type Residential System **1 BED HOUSE**
- 2) GPD design flow **1 BED GUEST HOUSE**
- 3) Garbage disposal or pumped to septic **EXISTING 1500 COMBO**
- 4) Gal Septic tank (code minimum) Gal Septic tank (design size / LUG req'd)
Tank options: none
- 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)
 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)
- 12) inch diameter laterals must be used to meet "4x pipe volume" requirement
- 13) feet of inch supply line leads to gallons of drainback volume
NEW TANK TO EXISTING TANK
(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: **Optional Time dosing of:**
- 18) inch swing on Demand float, (this delivers Average flow, =70% of Peak design flow)

<input type="text" value="8.4"/>	min ON
<input type="text" value="8.4"/>	hrs OFF
<input type="text" value="12"/>	inches to "Timer ON" float
<input type="text" value="38"/>	inches to "Hi Level" float
- 19) inches from bottom of tank to "Pump OFF" float
- 20) inches from bottom of tank to "Pump ON" float
- 21) inches from bottom of tank to "Hi Level" float
- 22) gallons reserve capacity (after High Level Alarm is activated-demand dosed)

23) gpd/ft² Absorption area Soil Loading Rate, which gives a mound ratio of (minimum)

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
 Optional Time dosing of:
 minutes ON
 hours OFF
 inches to "timer ON" float
 inches to "Hi level" float
 inches from bottom of tank to "pump ON" float, or
 inches from bottom of tank to "Hi Level Alarm" or
 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="9.0"/> yd ³ or *1.4=	<input type="text" value="13"/> ton	6 inches under pipe
Mound Sand:	<input type="text" value="113"/> yd ³ or *1.4=	<input type="text" value="159"/> ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	<input type="text" value="41"/> yd ³ or *1.4=	<input type="text" value="57"/> ton	6" deep
Topsoil:	<input type="text" value="49"/> yd ³ or *1.4=	<input type="text" value="69"/> ton	6" deep

INSPECTOR CHECKLIST - mound

- 45188 310th st Aitkin
- 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 & alarm
- Dose tank, risers and piping (water tight risers, insulated, proper depth, drainback)
mfg _____ 600 gallons
- dose pump _____ 18 gpm 26 head VERIFY PUMP CURVE
- verify that installed "vertical lift from pump to laterals" is no more than design value of 15 feet
- float setting drop 12.7 inches at 12.0 gpi "DESIGNED" 7.4 inches approx float tether length
- 152.0 gal dose divided by _____ gpi "INSTALLED" = _____ inches float drop (field corrected)
- Optional Time dosing of:
8.4 min ON 8.4 hr OFF
- 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 25.0
- Sand lift depth 24 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)
- Absorption Sand beyond rock 8.5 upslope 8.5 downslope
- Bermed topsoil beyond rockbed 15 upslope 15 sideslope 15 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

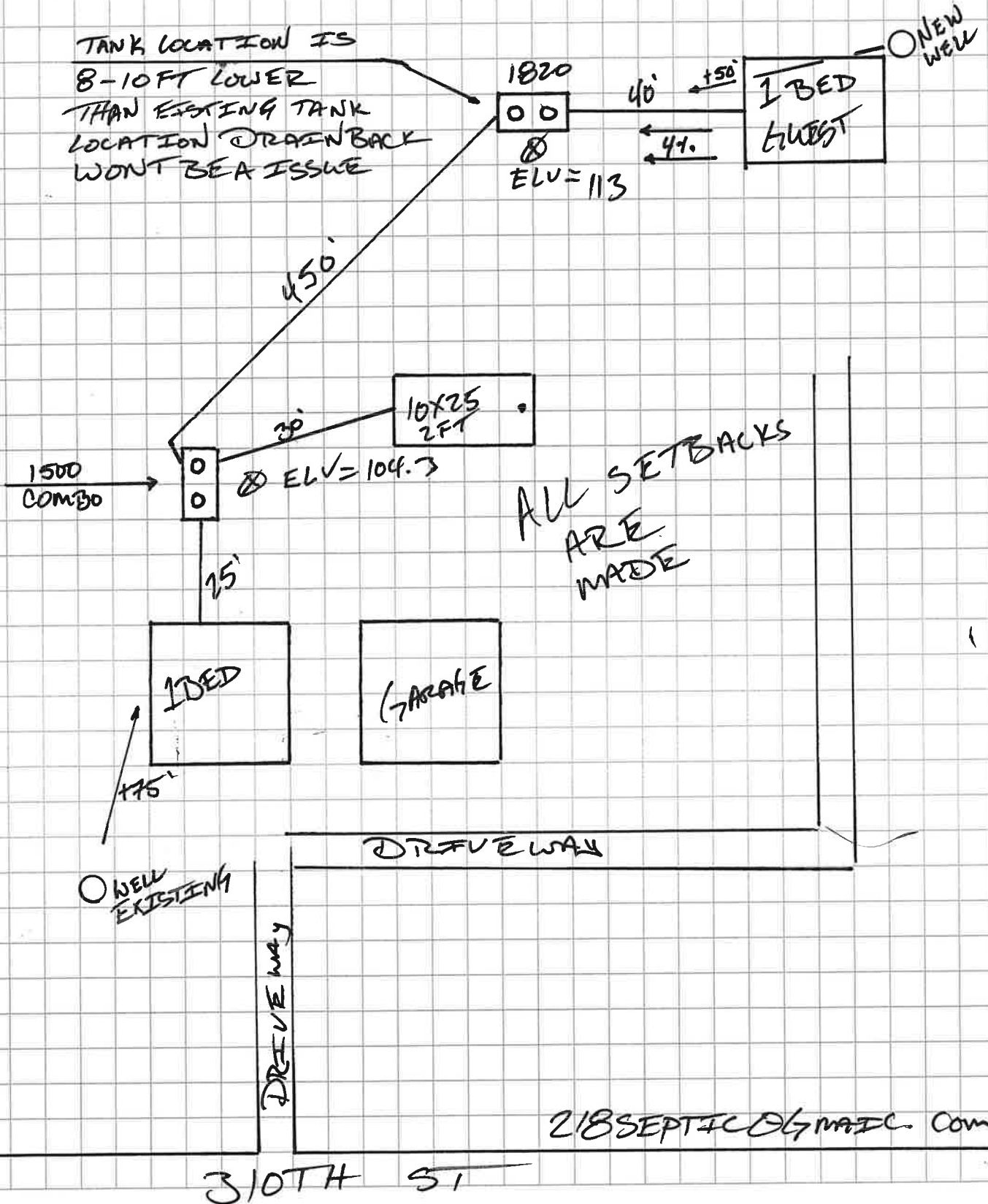
Property ID (PIN): 07-0-037502
Tax District: FARM ISLAND TWP
Taxpayer Name: MORRISON, TODD & SUSIE
Taxpayer Address: 45188 310TH ST
Taxpayer Address 2: AITKIN MN 56431
Taxpayer Address 3:
Taxpayer Address 4:
Owner Name: MORRISON, TODD & SUSIE
Owner Address: 45188 310TH ST
Owner Address 2: AITKIN MN 56431
Owner Address 3:
Owner Address 4:
Township: 46.0
Range: 27
Section: 18
Physical House Number: 45188
Physical Address: 45188 310TH ST
Physical City: AITKIN MN
Physical Zip: 56431



PARCEL #	07-0-037502
DATE	6/10/24

LICENSE -L4197

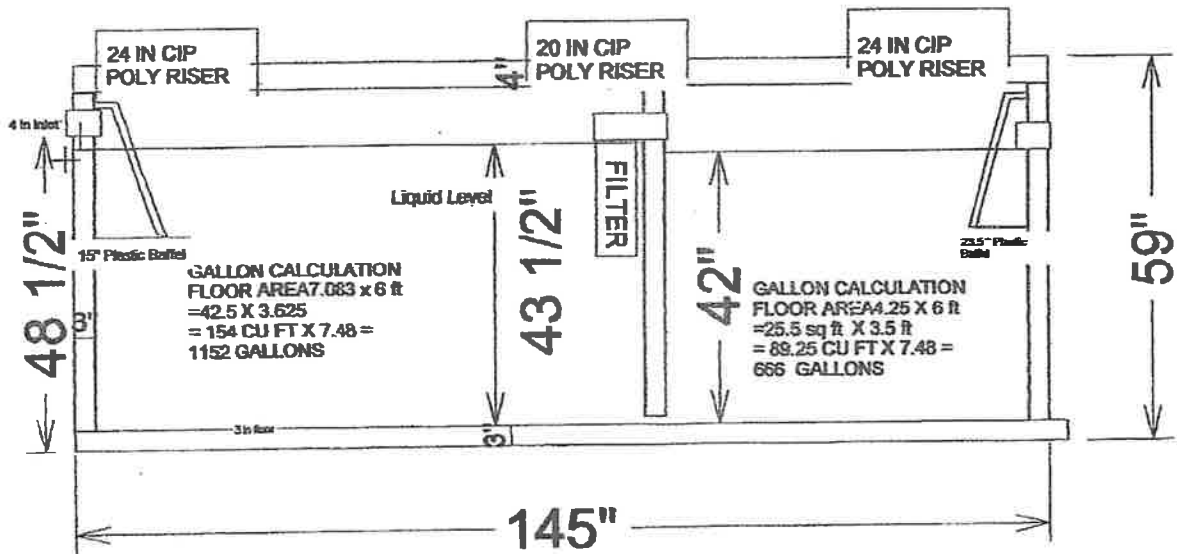
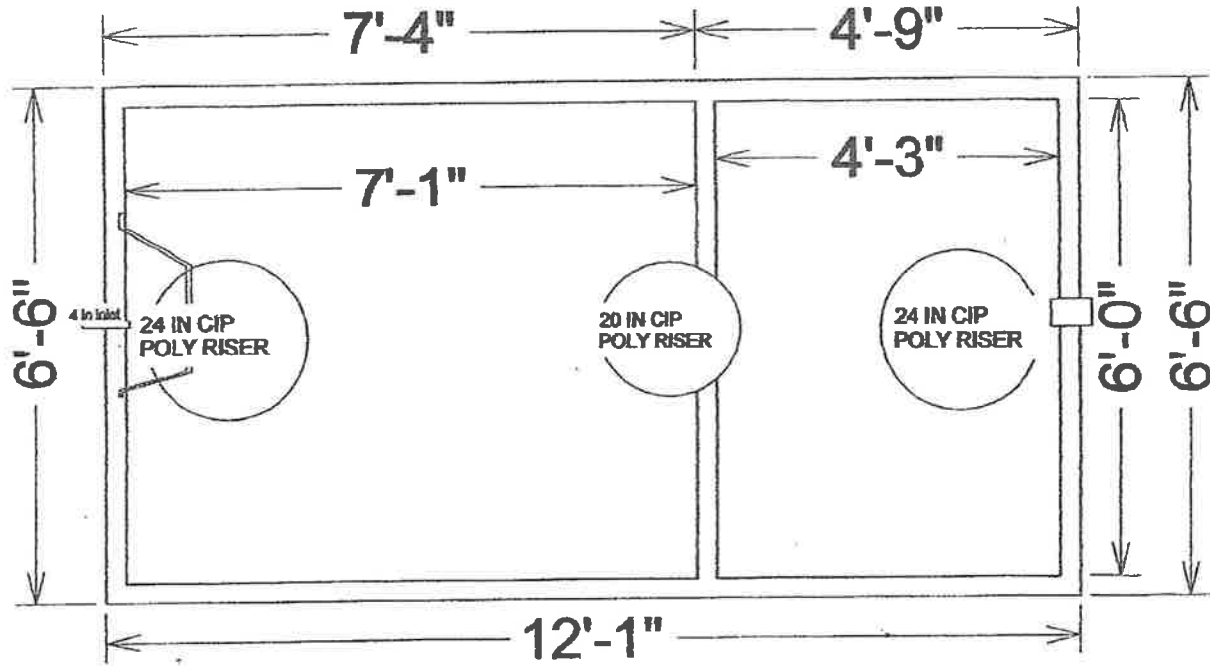
TANK LOCATION IS
8-10 FT LOWER
THAN EXISTING TANK
LOCATION DRAINBACK
WONT BE A ISSUE



1820 Gallon 2 Compartment Septic Tank

Weight: 13,780 Lbs

TOP VIEW



666 gal. / 42" = 15.85 GPI

SIDE VIEW

Drawings Owned BY Jacobson Precast, Inc.
36641 HWY 169, Aitkin, Mn 56431