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Attached is a proposed design for an Accepted (25% reduction) Septic System with Pressure Manifold distribution for a 4 bedroom single family residence on Lot #26 WALDEN RIDGE Subdivision, Iredell County, North Carolina.

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September 9, 2009
Project #: 01-1430
Design By: Rollans Soil and Environmental Services

INFORMATION FOR THE INSTALLER:

- The permit should be read very carefully prior to bidding. The following are details that must be considered along with all other considerations.
- Tanks shall be approved by NC DENR, and certification supplied by the manufacturer.
- Tanks shall be water tested prior to installation.
- The installer shall be responsible to the owner for placement of the tanks and to insure that final grades are returned to the original natural grade, with exception of added structural features.
- The supply trench shall be compacted to eliminate cavities left during initial fill placement.
- Installation of the system shall be during dry conditions in order to protect the soil structure.
- All fittings shall be pressure rated fittings.
- All joints shall be cleaned with PVC pipe cleaner and a heavy bodied glue applied to weld all joints.
- Where required by the county health department, post installation inspections by the designer must be scheduled 5 week days in advance.
- Trenches shall be carefully excavated so the bottom is within 2" from the highest to . the lowest points of elevation within the trench. If the bottom elevation needs adjusting after it has been trenched, it will be done by removing high points rather than filling low points. It is extremely important to insure that trenches are not over excavated during initial trenching. All fine grading within the trench will be hand done with a shovel. No loose material will be left in the trench
- All pipe openings in the tanks shall be properly grouted. This also applies to the joints around the riser.
- All tanks shall be properly back filled and compacted to prevent slump at a later date.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral.
- No heavy equipment shall be used on the field during or after installation. The use of a small loader (i.e. Bobcat) or a trencher (i.e. Ditch Witch 2300/2310) may be used for installation.
- Elevations at pinflag locations should be checked by the installer prior to beginning trenches.
- Pumptank riser should be 6" above grade, control panel should be 12" above grade.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as an accepted 25% reduction installation.
- Repair is specified as a PPBPS with low pressure distribution installation.
- Rake trench walls, lime sidewalls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner:	Ray Short
	Mid-Atlantic Custom Builders
Address:	P.O. Box 3792
	Mooresville, NC 28117
Phone:	828-478-2761
County:	Iredell
Location:	WALDEN RIDGE LOT#26
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	28.44

Design Specifications

Drainfield Size:	400
Loading Rate (gpd/ft.^{2}):	0.3
Depth of Gravel in Trench:	NA (25% reduction)
Gravel Size:	NA (25% reduction)
Trench Depth:	36 in.
Trench Width:	36 in.
Septic Tank Size:	1000
Pump Tank Size:	1000
Estimated Supply Line Length:	149
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	25.93
Dosing Volume:	182.84
Supply Manifold:	4 in. SCH 80 PVC
Supply Manifold Length:	4 ft. (minimum)
Supply Manifold Volume:	N/A
Recommended Float Controls:	SJE Sensor Float Control Switches as Required for Control Panel or County Approved Equivalents
Recommended Control Panel:	SJE-Rhombus Model 112 (NEMA 4x) Control Panel or County Approved Control Panel.
Pressure Head:	2 ft.
Friction Head:	5.19
Elevation Head:	35.00
Total Dynamic Head:	48.51
Threaded Union:	In Tank
Gate Valves:	1 in Tank
	1 at Pressure Manifold
Check Valves:	In Tank
Anti-Siphon Hole:	NA
Additional Comments:	Soil suitability was performed by Rollans Soil & Environmental Services.

WALDEN RIDGE LOT#26
PRESSURE MANIFOLD DESIGN

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.3
TOTAL AREA TRENCH BOTTOM:	1200
TOTAL LATERAL LENGTH:	400
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	400
SUPPLY LINE LENGTH:	149
TOTAL DYNAMIC HEAD:	48.51
MANIFOLD SIZE:	4 in.SCH 80 PVC
DOSING VOLUME:	182.84
PUMP TANK DRAW DOWN*:	8.7
SEPTIC TANK SIZE:	1000
PUMP TANK SIZE:	1000

**Pump tank draw down based on a volume basis of 21 gallons per inch. Draw down may vary among pump tank manufacturers.*


16.21
S66°08'53"E
124.32
3.2' 64'
P 4' 70'
3 B 4.8' 76'
4 P 5.4' 80'
Septic Area
6 DP 7' 85'
7 B 8.1' 93'
8 P 9.5' 97'
1 R 2.1' 48'
50-2 P 3.1' 64'
3 R 3.7' 84'
Front Setback
4 P 4.4' 100'
PM
5 R 5.1' 100'
6 B 6.3' 100'
7 O 6.9' 100'
8 P 8.0' 164'
358.23
48'
70'
Lot 26
1.18 Acres
PT ST
70'
DRIVEWAY 351.34
9/17/12
Approved
ICHD
S36°09'16"W
WELL
S28°51'26"W
Lot 27
1.22 Acre
170.00
549.90 Total

WALDEN RIDGE LOT#26

Project #: 01-1430

LAYOUT FOR 4 BEDROOM HOME

September 9, 2009

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		4.5			100.00		
INSTR. 1			104.50				
HOUSE CNR				10.60	93.90		
P. TANK				35.10	69.40		
1	RED			2.10	102.40	48	48
2	PINK			3.10	101.40	64	64
3	RED			3.70	100.80	84	84
4	PINK			4.40	100.10	100	100
5	***RED***			***5.10***	***99.40***	***130***	***100***
6	***BLUE***			***6.30***	***98.20***	***123***	***100***
7	***ORANGE***			***6.90***	***97.60***	***107***	***100***
8	***PINK***			***8.00***	***96.50***	***100***	***100***
					Total	**756**	**696**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
**** System***	***400***	***0.30***	***ACCEPT.***	***0.30***	***25% RED.***	**PRESSURE**
Repair	296	0.30	*MOD.*	0.30	PPBPS	**MANIFOLD** LOW PRESSURE

Notes:

** TBM located on angle point of lot (see site plan)

**TBM is assumed to be 100'

**All measures in feet

**Nitrification lines are demonstrated on contour via colored pin flags

**BS, HI, and FS indicate rod readings

PRESSURE MANIFOLD TAPSHEET - WALDEN RIDGE LOT#26

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area
5	***RED***	***99.40***	***100***	SCH 40 1/2	**7.11**	300
6	***BLUE***	***98.20***	***100***	SCH 40 1/2	**7.11**	300
7	***ORANGE***	***97.60***	***100***	SCH 40 1/2	**7.11**	300
8	***PINK***	***96.50***	***100***	SCH 40 1/2	**7.11**	300
	total	**feet =**	**400**	**gal/min =**	**28.44**	
			Des. Flow	**480**		
			Pump Run=	**6.43**		
			soil LTAR	**0.30**		
			LTAR +5%	**0.315**		
			LTAR with ACCEPTED	**0.4**		
			LTAR with ACCEPTED + 5%	**0.42**		

CALCULATIONS

Location WALDEN RIDGE

Project Number 01-1344

Lot No: Lot 26

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.30	$^{gpd/ft^2}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	149	ft.
Supply Line Volume	25.926	gal.
Required Feet of Line	400	ft.
Amount of Line from Layout	400	ft.
Gallons per Minute	28.44	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	261.2	gal.
Dosing Volume	182.84	gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	8.7	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	6.43	minutes
Elevation Head	35	ft.
Pressure Head	2	ft.
Friction Factor	3.48	ft./100 ft. *(From the interpolater.)*
Friction Head	5.19	ft.
Total Dynamic Head (+15%)	48.51	ft.

FRICTION FACTOR INTERPOLATER
2" SCH 40 PVC

GPM	*f*
20	0.84
	-0.88
25	1.27
	-1.28
30	1.78
	-1.76
35	2.37
	-2.25
40	3.03
43.07	3.48
45	3.77
48.14	4.28
50	4.58
57.11	5.89
60	6.42