ROLLANS *SOIL & ENVIRONMENTAL SERVICES*

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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 24 in Winding Forest Subdivision, Iredell County, North Carolina.

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October 4, 2006
Project No. 01-1152
Design By: Rollans Soil and Environmental Services

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner: BO OF NC

Address: 249 Williamson Rd. STE 101
Mooresville, NC 28117
Phone: 704-696-2662
County: Iredell
Location: Winding Forest Subdivision Lot #24

Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Daily Wastewater Production: 480 gpd
System Flow: 21.33

Design Specifications

Drainfield Size: 400
Loading Rate: .3 gpd/ft²
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: 87
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 15.14
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: 1.55
Elevation Head: 7.70
Total Dynamic Head: 12.94

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.

Winding Forest Subdivision Lot #24
PRESSURE MANIFOLD DESIGN

DESIGN FLOW:	480	
SOIL APPLICATION RATE:	.3 gpd/ft²	
TOTAL AREA TRENCH BOTTOM:	1200	
TOTAL LATERAL LENGTH:	400	
NUMBER OF FIELDS:	1	
LATERAL LENGTH REQUIRED PER FIELD:	400	
SUPPLY LINE LENGTH:	87	
TOTAL DYNAMIC HEAD:	12.94	
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.*

WINDING FOREST LOT 24

Project #: 01-1152

LAYOUT FOR 4 BEDROOM HOME

October 4, 2006

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		11.9			100.00		
INSTR. 1			111.90				
HOUSE CNR				9.30	102.60		
P. TANK				9.90	102.00		
1	PINK			3.70	108.20	35	35
2	BLUE			4.10	107.80	53	53
3	RED			5.00	106.90	71	71
4	ORANGE			6.30	105.60	110	110
5	***PINK***			***7.20***	***104.70***	***135***	***133***
6	***BLUE***			***7.60***	***104.30***	***135***	***133***
7	***RED***			***8.70***	***103.20***	***134***	***134***
8	ORANGE			9.40	***102.50***	88	88
					Total	**761**	**757**

	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 MANIFOLD**
Repair	357	0.25	*MOD.*	0.25	PPBPS	LOW PRESSURE

Notes:

** TBM located on angle point of lot 53/54 (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 - WINDING FOREST LOT 24

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area
5	PINK	104.7	*133*	SCH 40 1/2	**7.11**	399
6	BLUE	104.3	*133*	SCH 40 1/2	**7.11**	399
7	RED	103.2	*134*	SCH 40 1/2	**7.11**	402
	total	**feet =**	**400**	**gal/min =**	**21.33**	
			Des. Flow	**480**		
			Pump Run=	**8.57**		
			soil LTAR	**0.3**		
			LTAR +5%	**0.315**		
			LTAR with ACCEPTED	**0.4**		
			LTAR with ACCEPTED + 5%	**0.42**		

CALCULATIONS

Location WINDING FOREST

Project Number 01-1152

Lot No: Lot 24

No. of Bedrooms 4

Design Flow 480 $^{gal}/_{day}$

LTAR .3 gpd/ft²

25% RED.? (YES OR NO) YES

Supply Line Length	87	ft.
Supply Line Volume	15.138	gal.
Required Feet of Line	400	ft.
Amount of Line from Layout	400	ft.
Gallons per Minute	21.33 $^{gal}/_{min}$	
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	(5) 8.7	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	8.57	minutes
Elevation Head	7.7	ft.
Pressure Head	2	ft.
Friction Factor	1.78	ft./100 ft. *(From the interpolater.)*
Friction Head	1.55	ft.
Total Dynamic Head (+15%)	12.94	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