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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 # 79 WATERTREE LANDING Subdivision, Iredell County, North Carolina.

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May 21, 2008
Project #: 01-1430
Design By: Rollans Soil and Environmental Services

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner:	MID-ATLANTIC CUSTOM BUILDERS
Address:	P.O. BOX 3792 Mooresville, NC 28117
Phone:	704-202-5568
County:	Iredell
Location:	WATERTREE LANDING LOT 79

Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	21.33

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:	152
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	26.45
Dosing Volume:	195.90
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:	1.93
Elevation Head:	8.00
Total Dynamic Head:	13.72

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.

WATERTREE LANDING LOT 79
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:	152
TOTAL DYNAMIC HEAD:	13.72
MANIFOLD SIZE:	4 in.SCH 80 PVC
DOSING VOLUME:	195.90
PUMP TANK DRAW DOWN*:	9.3
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.*

WATERTREE LANDING LOT 79

Project #: 01-1430

LAYOUT FOR 4 BEDROOM HOME

May 21, 2008

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		3.6			100.00		
INSTR. 1			103.60				
HOUSE			97.40	6.20			
TANK			96.00	7.60			
1	RED			3.80	99.80	64	64
2	ORANGE			4.10	99.50	111	111
3	RED			4.30	99.30	42	42
4	***BLUE***			***4.60***	***99.00***	***154***	***133***
5	***PINK***			***4.80***	***98.80***	***153***	***133***
6	***RED***			***5.00***	***98.60***	***150***	***134***
7	ORANGE			5.20	98.40	70	70
					Total	**744**	**687**

* *System*	LINE LENGTH *400*	LTAR GPD/FT² *0.3*	SYSTEM TYPE *ACCEPT.*	SOIL LTAR GPD/FT² *0.3*	TRENCH SYSTEM *25% RED.*	DISTRIBUTION PRESSURE MANIFOLD
Repair	287	0.30	MOD.	0.30	PPBPS	LOW PRESSURE

Notes:

** TBM located on right rear corner 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 - WATERTREE LANDING LOT# 42

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area	Line LTAR
4	***BLUE***	99	*133*	SCH 40 1/2	**7.11**	399	0.16
5	***PINK***	98.8	*133*	SCH 40 1/2	**7.11**	399	0.16
6	***RED***	98.6	*134*	SCH 40 1/2	**7.11**	402	0.16
	total	**feet =**	**400**	**gal/min =**	**21.33**		
			Des. Flow	**480**			
			Pump Run=	**9.18**			
			soil LTAR	**0.300**			
			LTAR +5%	**0.315**			
			LTAR with ACCEPTED	**0.33075**			
			LTAR with ACCEPTED + 5%	**0.3472875**			

SOIL/SITE EVALUATION

(Continuation Sheet)

Sheet ___ of ___

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

Lot 79 Waterfree

PROPERTY ID #: _____
DATE OF EVALUATION: _____
COUNTY: _____

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) .1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
79 A Pit	LSS 5-10%	0-27	RL MFSBK	fri SSSPSMP	–	54	–	–	3
		27-54	RLL WSBK	fri SSSPSMP					
79 B Pit	↓	0-26	RL MFSBK	fri SSSPSMP	–	52	–	–	3
		26-52	RLL WSBK	fri SSSPSMP					
79 C Pit	↓	0-8	BSBK WL	fri SSSPSMP	–	62	–	–	3
		8-27	RL MFSBK	fri SSSPSMP					
		27-62	RLL WSBK	fri SSSPSMP					
				few SMP					
79 D Pit		0-26	RL SBK	fri SSSPSMP	–	52	–	–	3
		26-52	RLL WSBK	fri SSSPSMP					

COMMENTS: _____

CALCULATIONS

Location WATERTREE LANDING

Project Number 01-1430

Lot No: Lot 79

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.3	$^{gpd/ft^2}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	152	ft.
Supply Line Volume	26.448	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	195.90	gal.

Note: Dosing Volume based on75% of lateral line volume

Tank Draw Down	9.3	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	9.18	minutes
Elevation Head	8	ft.
Pressure Head	2	ft.
Friction Factor	1.27	ft./100 ft. *(From the interpolater.)*
Friction Head	1.93	ft.
Total Dynamic Head (+15%)	13.72	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