ROLLANS *SOIL & ENVIRONMENTAL SERVICES*

2120 Graham Road, Mount Ulla, NC 28125 *Phone/Fax (704) 278 – 0989*

Ashley Rollans, NC Licensed Soil Scientist
Mobile: (704) 746-5046
E-mail: Rollansfortcj@aol.com

Brady Freeman, Registered Sanitarian
Mobile: (704) 746-6497
E-mail: bfree209@yahoo.com

Attached is a proposed design for a PPBPS Septic System with low pressure distribution for a 4 bedroom single family residence on Lot #11 in Lakewood Crossing Subdivision, Iredell County, North Carolina.

Contents: **Page**

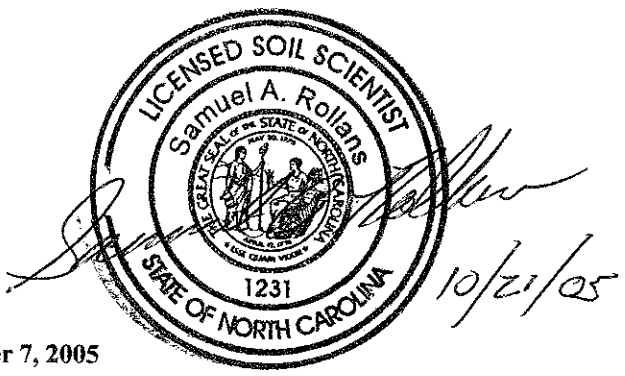
Information for the Installer---------- 1

Design Information
- Design Specifications---------- 2-3
- Layout Specifications---------- 4
- System Tapsheet---------- 5

Site Plan/System Plan---------- 6

Calculations---------- 7

Profile Descriptions---------- 8



October 7, 2005
Project No. 01-1089
Design By: Rollans Soil & Environmental Services

LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant:	Nation Land Company LLC
Address:	4330 Sterilite Street SE Massillion, OH 44646
Phone:	330-832-4091
County:	Iredell
Location:	Lakewood Crossing Subdivision Lot #11
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Daily Wastewater Production:	480 gpd
System Flow:	27.15461538

Design Specifications

Drainfield Size:	287
Loading Rate:	0.3 gpd/ft.^{2}
Depth of Gravel in Trench:	NA (PPBPS)
Gravel Size:	NA (PPBPS)
Trench Depth:	36 in.
Trench Width:	36 in.
Septic Tank Size:	1000
Pump Tank Size:	1000
Estimated Supply Line Length:	59
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	10.27
Dosing Volume:	159.75
Supply Manifold:	N/A
Supply Manifold Length:	N/A
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:	1.05
Elevation Head:	10.00
Total Dynamic Head:	15.01
Threaded Union:	In Tank
Gate Valves:	1 in Tank 1 per lateral (4)
Check Valves:	In Tank
Anti-Siphon Hole:	NA
Additional Comments:	Soil suitability was performed by Rollans Soil & Environmental Services

Lakewood Crossing Lot 11
LP PPBPS

DESIGN FLOW:	480
SOIL APPLICATION RATE:	0.3 gpd/ft²
TOTAL AREA TRENCH BOTTOM:	861
TOTAL LATERAL LENGTH:	287
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	266.6666667
SUPPLY LINE LENGTH:	59
TOTAL DYNAMIC HEAD:	15.01
MANIFOLD SIZE:	N/A
DOSING VOLUME:	159.75
PUMP TANK DRAW DOWN*:	7.6
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.*

Lakewood Crossing Lot 11

Project #: 01-1089

LAYOUT FOR 4 BEDROOM HOME — October 7, 2005

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		2.3			100.00		
INSTR. 1			102.30				
HOUSE CNR				4.50	97.80		
P. TANK				5.60	96.70		
1	*ORANGE*			*3.60*	*98.70*	*60*	*60*
2	*ORANGE*			*3.60*	*98.70*	*60*	*60*
3	*BLUE*			*4.80*	*97.50*	*110*	*110*
4	*PINK*			*5.80*	*96.50*	*57*	*57*
5	BLUE			4.80	97.50	110	110
6	ORANGE			5.60	96.70	140	140
7	BLUE			6.70	95.60	80	80
					Total	617	617

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
** System*	*287*	*0.3*	*MOD.*	*0.30*	*PPBPS*	*LOW PRESSURE*
Repair	330	0.3	MOD.	0.30	PPBPS	LOW PRESSURE

Notes:
** TBM located top of ground at EIP at corner of lot 10 and 11 (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

LP PPBPS TAPSHEET - Lakewood Crossing Lot 11

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	Number of Panels
1	ORANGE	97.5	**60**	0.156	**0.41**	180	13.84615385
2	ORANGE	96.6	**60**	0.156	**0.41**	180	13.84615385
3	BLUE	95.9	**110**	0.156	**0.41**	330	25.38461538
4	PINK	95.1	**57**	0.156	**0.41**	171	13.15384615
	total	**feet =**	**287**	**gal/min =**	**27.154615**		
			Des. Flow	**480**			
			Pump Run=	**5.88**			
			soil LTAR	**0.3**			
			LTAR +5%	**0.315**			
			LTAR with mod.	**0.27**			
			LTAR with mod., + 5%	**0.2835**			

.156 equals 5/32 inch hole

CALCULATIONS

Location Lakewood Crossing

Project Number 01-1089

Lot No: Lot 11

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.3	$^{gal}/_{ft^2\ day}$
PPBPS? (YES OR NO)	YES	
Supply Line Length	59	ft.
Supply Line Volume	10.266	gal.
Required Feet of Line	266.6667	ft.
Amount of Line from Layout	287	ft.
Gallons per Minute	27.15462	$^{gal}/_{min}$
	Note:	*Flow/hole (.41gpm) x # of panels (66)*
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Panel Volume	3.6	gal.
# of Panels	66.23077	
Dosing Volume	159.75	gal. 67
	Note:	*Dosing Volume based on 39% of # of panels times 3.6 gal/panel*
Tank Draw Down	7.6	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.88	minutes
Elevation Head	10	ft.
Pressure Head	2	ft.
Friction Factor	1.78	ft./100 ft. *(From the interpolater.)*
Friction Head	1.05	ft.
Total Dynamic Head (+15%)	15.01	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