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

December 7, 2006

An evaluation was done by the Iredell County Health Department at 629 Bell Farm Road Statesville, NC permit # 137478/ PIN # 4764737529. The result was a denial of the application for an Improvement Permit. The Laws and Rules for Sewage Treatment and Disposal Systems 15A NCAC 18A .1900 were used to evaluate the property.

After further evaluation with the Health Department and Rollans Soil & Environmental Services an agreement was reached to reclassify the lot with minor modifications from Unsuitable to Provisionally Suitable according to 15A NCAC 18A rule .1948(d). Modifications of the lot consist of a french drain around the system and minimum/maximum trench bottom depth of 42 inches.

It was our determination that these modifications would prevent the ground absorption system to be installed so that the effluent will be non-pathogenic, non-infectious, non-toxic, and non-hazardous. The effluent will not contaminate groundwater or surface water and will not be exposed on the ground surface or be discharged to surface waters where it could come in contact with people, animals, or vectors.

See detailed site plan and system design by Rollans Soil & Environmental Services for further instructions on system installation.

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 3 bedroom single family residence on 629 Bell Farm Road, Iredell County, North Carolina.

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December 7, 2006
Project #: 01-1317
Design By: Rollans Soil and Environmental Services

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner:	Jamie Workman
Address:	452 South Main St Suite 130 Davidson, NC 28036
Phone:	704 622 3996
County:	Iredell
Location:	629 Bell Farm Road
Source of Wastewater Flow:	3 Bedroom Single Family Residence
Estimated Daily Wastewater Production:	360 gpd
System Flow:	28.44

Design Specifications

Drainfield Size:	400
Loading Rate:	0.225
Depth of Gravel in Trench:	NA (25% reduction)
Gravel Size:	NA (25% reduction)
Trench Depth:	42 in.
Trench Width:	36 in.
Septic Tank Size:	1000
Pump Tank Size:	1000
Estimated Supply Line Length:	250
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	43.50
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:	4.45
Elevation Head:	9.10
Total Dynamic Head:	17.88
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.

629 Bell Farm Road
PRESSURE MANIFOLD DESIGN

DESIGN FLOW:	360	
SOIL APPLICATION RATE:	0.225	
TOTAL AREA TRENCH BOTTOM:	1200	
TOTAL LATERAL LENGTH:	400	
NUMBER OF FIELDS:	1	
LATERAL LENGTH REQUIRED PER FIELD:	400	
SUPPLY LINE LENGTH:	250	
TOTAL DYNAMIC HEAD:	17.88	
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.*

629 BELL FARM RD

Project #: 01-1317

LAYOUT FOR 3 BEDROOM HOME — December 7, 2006

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		5.5			100.00		
INSTR. 1			105.50				
HOUSE CNR				4.40	101.10		
P. TANK				7.20	98.30		
1	PINK			2.70	102.80	56	56
2	ORANGE			2.90	102.60	79	79
3	***PINK***			***3.10***	***102.40***	***104***	***100***
4	***ORANGE***			***3.40***	***102.10***	***160***	***100***
5	***PINK***			***4.10***	***101.40***	***155***	***100***
6	***ORANGE***			***4.60***	***100.90***	***107***	***100***
7	PINK			4.80	100.70	80	80
8	BLUE			5.30	100.20	61	61
					Total	**802**	**676**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
**** System***	***400***	***0.225***	***ACCEPT.***	***0.225***	***25% RED.***	**PRESSURE MANIFOLD**
Repair	276	0.225	*MOD.*	0.225	PPBPS	LOW PRESSURE

Notes:

** TBM located at top of ground. (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 - 629 BELL FARM RD

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area
3	*PINK*	102.4	*100*	SCH 40 1/2	**7.11**	300
4	*ORANGE*	102.1	*100*	SCH 40 1/2	**7.11**	300
5	*PINK*	101.4	*100*	SCH 40 1/2	**7.11**	300
6	*ORANGE*	100.9	*100*	SCH 40 1/2	**7.11**	300

total	**feet =**	**400**	**gal/min =**	**28.44**
		Des. Flow	**360**	
		Pump Run=	**6.43**	
		soil LTAR	**0.225**	
		LTAR +5%	**0.23625**	
		LTAR with ACCEPTED	**0.3**	
		LTAR with ACCEPTED + 5%	**0.315**	

CALCULATIONS

Location 629 BELL FARM RD

Project Number 01-1317

Lot No:

No. of Bedrooms	3	
Design Flow	360	$^{gal}/_{day}$
LTAR	0.225	$^{gpd}/_{ft^2}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	250	ft.
Supply Line Volume	43.5	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	9.1	ft.
Pressure Head	2	ft.
Friction Factor	1.78	ft./100 ft. *(From the interpolater.)*
Friction Head	4.45	ft.
Total Dynamic Head (+15%)	17.88	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

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL HEALTH

ON-SITE WASTEWATER SECTION

SHEET: 1 of 3
PERMIT #:
PROPERTY ID #:
COUNTY: Iredell

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

OWNER/APPLICANT: J.M. Wolkman
ADDRESS:
APPLICATION DATE:
DATE EVALUATED:
PROPOSED FACILITY: 3 BR SFD PROPOSED DESIGN FLOW (.1949): 360 GPD
LOCATION OF SITE: Bell Farm Rd. South, on left before Creek
PROPERTY SIZE: 0.80 Ac.
PROPERTY RECORDED:
WATER SUPPLY: ☐ Private ☐ Public ☐ Well ☐ Spring ☐ Other
EVALUATION METHOD: ☐ Auger Boring ☒ Pit ☐ Cut
TYPE OF WASTEWATER: ☒ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LSCP PSTN/ SLOPE %	HORIZ DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	FS/T L	0-3	1, M, Gr, SL	VFr, NP, NEXP	Few 2.5Y 6/6 (Yellow)	18"	N/A	N/A	US
		3-18	2/1, C, Pr Parting to 2/1	S/vc, Abk, C Fi, MS, VP, SEXP	10YR 2/1, 7.5YR 4/3				
		18-26	0, Massive, Grvly, SCL	Fr/Fi, SP, SEXP	Common 2.5Y 4/6				
		26-48	1, M, Sbk/Abk, CL	Fr, SP, SEXP	2.5Y 4/6, 10YR 2/1, 10YR 7/2				
2	FS/T L	0-4	1, M, Gr, SL	VFr, NP, NEXP		22"	N/A	N/A	US
		4-22	1, C, Pr, Parting to 2/1, C	Abk, C Fr/Fi, MP, SEXP	10YR 2/1				
		22-38	0, Massive, Grvly, SCL	Fr, NP/SP, NEXP	Common 2.5Y 4/6				
		38-50	1, M, Abk, C	Fr, SP, SEXP	10YR 7/8, 10YR 2/1, 10YR 7/2, 2.5Y 4/6				
3	FS/T L	0-7	1, M, Gr, SCL	Fr, NP, SEXP		26"	N/A	N/A	US
		7-26	1, C, Abk Parting to 1, M, Sbk, C	Fi/Fr, SP, SEXP	7.5YR 4/3, 10YR 2/1				
		26-37	0, Massive, Grvly, SC	Fr, SP (~¼" just above Layer)	10YR 7/2 Layer				
		37-53	1, M, Sbk/Abk, CL	Fr, SP, SEXP	Common 2.5Y 4/6, Few 10YR 7/2				
4	FS/T L	0-4	1, F, Gr, SL	VFr, NP, NEXP		>54"	N/A	N/A	PS ≤0.25
		4-43	1, M, Sbk, SC	Fr, SP, SEXP	Few-Common 2.5Y 4/6				
		43-54	1, M, Sbk/Abk, C	Fr, SP, SEXP	Few 10YR 2/1, 2.5Y 4/2, 2.5Y 4/6				

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)		
System Type(s)	LS	
Site LTAR		

OTHER FACTORS (.1946):
SITE CLASSIFICATION (.1948): US
EVALUATED BY: P. Mitchell
OTHER(S) PRESENT: Gene Young, Steve Hedrick, Tim Higgins

COMMENTS: (SEE COMMENTS #6, 3) *#6, 2 ON REAR

SOIL/SITE EVALUATION

(Continuation Sheet)

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

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	OTHER PROFILE FACTORS .1943 SOIL DEPTH	OTHER PROFILE FACTORS .1956 SAPRO CLASS	OTHER PROFILE FACTORS .1944 RESTR HORIZ	PROFILE CLASS & LTAR
5		0-3	1,M,Gr, SL	VFr, NP, NEXP	Few-Common 10YR 3/1, 2.5Y 6/6 7.5YR 4/3	28"	N/A	N/A	US
		3-28	1,C,Abk,p/m,th	M, Sbk, C Fr, SP					
		28-39	O, Massive, V.Gnlly	SC/SCL Fi/Fr, SP	Common 2.5Y 6/6				
		39-46	1,M,Abk,C	Fr, SP, SEXP	Few-Common 2.5Y 6/6, 10YR 7/3 7.5YR 4/3				
6		0-3	1,M,Gr, SCL	Fr, SP, SEXP	Few-Comm Brwn-Yellow 2.5Y 6/6				US
		3-24	C/M, Abk, C	Fr, SP, SEXP					
		24-45	O, Massive, V.Gnlly	SC, Fi, SP	Common 2.5Y 6/6	24"	N/A	N/A	
		45-52	1,M, Sbk/Abk, CL	Fr, SP, SEXP	2.5Y 6/6, 10YR 7/1 10YR 7/3				
7			EXIST, SEPTIC FIELD EXPOSED						US

COMMENTS: _____

SITE IS UNSUITABLE BY DESCRIPTION, GENE YOUNG'S DIRECTION IS TO ALLOW A SOIL CONSULTANT TO DO Ksat MEASUREMENTS ON THE LOT & IF THEY SHOW SUITABLE PERM., THEN A LOW LTAR