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Attached is a proposed design for a PPBPS Septic System with low pressure distribution for a 4 bedroom single family residence on Lot #21 in Highland Ridge Subdivision, Iredell County, North Carolina.

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August 20, 2007
Project #: 01-1043
Design By: Rollans Soil & Environmental Services

LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant:	E&J DEVELOPMENT
Address:	227 Hideaway Lane Mooresville, NC 28117
Phone:	704-201-6465
County:	Iredell
Location:	AUTUMN GROVE LOT 21
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	30.75

Design Specifications

Drainfield Size:	325
Loading Rate (gpd/ft.^{2}):	0.25
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:	138
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	24.01
Dosing Volume:	180.90
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:	3.27
Elevation Head:	8.50
Total Dynamic Head:	15.84
Threaded Union:	In Tank
Gate Valves:	1 in Tank 1 per lateral
Check Valves:	In Tank
Anti-Siphon Hole:	NA
Additional Comments:	Soil suitability was performed by Rollans Soil & Environmental Services

AUTUMN GROVE LOT 21
LP PPBPS

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.25
TOTAL AREA TRENCH BOTTOM:	975
TOTAL LATERAL LENGTH:	325
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	320
SUPPLY LINE LENGTH:	138
TOTAL DYNAMIC HEAD:	15.84
MANIFOLD SIZE:	N/A
DOSING VOLUME:	180.90
PUMP TANK DRAW DOWN*:	8.6
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.*

AUTUMN GROVE LOT 21

Project #: 01-1043

LAYOUT FOR 4 BEDROOM HOME

August 20, 2007

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		5.2			100.00		
INSTR. 1			105.20				
HOUSE CNR				4.70	100.50		
P. TANK				8.40	96.80		
1	ORANGE			3.00	102.20	69	69
2	PINK			3.80	101.40	122	122
3	BLUE			4.60	100.60	129	129
4	***DARK PINK***			*4.90*	*100.30*	*50*	*45*
5	***DARK PINK***			*4.90*	*100.30*	*50*	*45*
6	***ORANGE***			*5.70*	*99.50*	*60*	*50*
7	***ORANGE***			*5.70*	*99.50*	*60*	*50*
8	***PINK***			*6.40*	*98.80*	*85*	*85*
9	***BLUE***			*7.70*	*97.50*	*50*	*50*
					Total	**675**	**645**

I

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
** System*	*325*	*0.25*	*MOD.*	*0.250*	*PPBPS*	*LOW PRESSURE*
Repair	320	0.25	MOD.	0.250	PPBPS	LOW PRESSURE

Notes:

** TBM located top of ground at EIP at 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

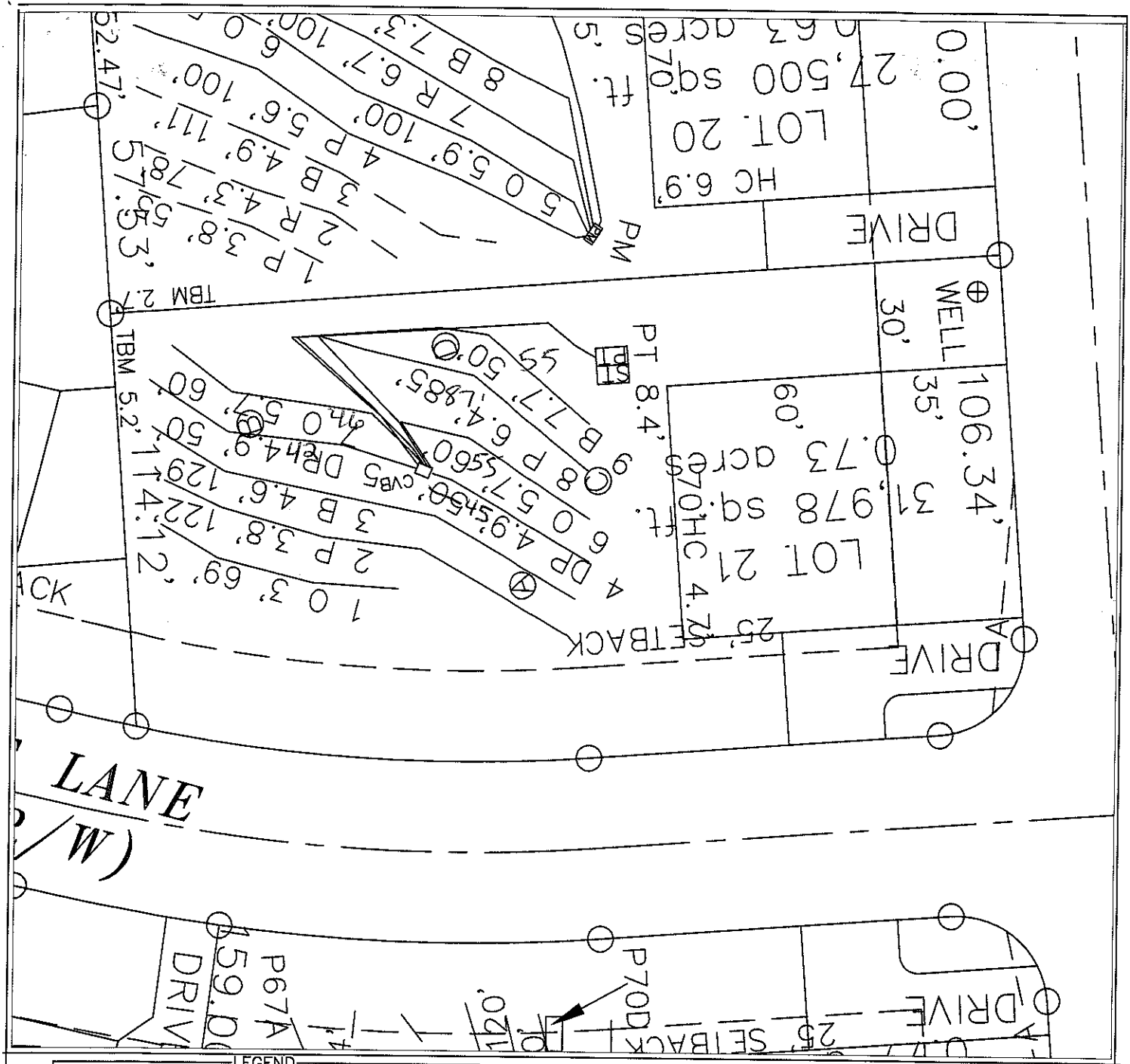
LP PPBPS TAPSHEET -AUTUMN GROVE LOT#21

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	Number of Panels
4	*DARK PINK*	100.3	*45*	0.156	**0.41**	135	10
5	*DARK PINK*	100.3	*45*	0.156	**0.41**	135	10
6	*ORANGE*	99.5	*50*	0.156	**0.41**	150	12
7	*ORANGE*	99.5	*50*	0.156	**0.41**	150	12
8	*PINK*	98.8	*85*	0.156	**0.41**	255	20
9	*BLUE*	97.5	*50*	0.156	**0.41**	150	12
							75
	total	**feet =**	**325**	**gal/min =**	**30.75**		

Des. Flow	**480**
Pump Run=	**5.88**
soil LTAR	**0.25**
LTAR +5%	**0.2625**
LTAR with mod.	**0.5**
LTAR with mod.. + 5%	**0.525**

.156 equals 5/32 inch hole



LEGEND

- House Box.
- System lines.
- Repair lines.
- House Corner Shot.
- T.B.M.

GRAPHIC SCALE
1" = 40'

40 0 40 80

FOR PRELIMINARY PLANNING PURPOSES ONLY. ALL LOTS WILL REQUIRE FINAL APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A LOT BY LOT BASIS. THIS MAP SHOULD BY USED AS A GENERAL GUIDE, SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND COMPLEX TOPOGRAPHIC FEATURES. THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS.

PLEASE REFER TO ATTACHED SOIL REPORT FOR ADDITIONAL SITE SPECIFIC INFORMATION

345
42
46
55
87
55
330

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
EMAIL: ROLLANSFORTC@AOL.COM

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: Orchard Farms LLC/ AUTUMN GROVE

LOCATION/DATE: FERNHILL, BULLFINCH RD IREDELL COUNTY, NORTH CAROLINA FEBRUARY 2007

JOB # : 01-1043
FILE: C:\JOBS\01-1043
PROJECT MGR.: C.B.F.
FIELD WORK: C.B.F. & A.L.P.
DRAWN BY: C.B.F.

CALCULATIONS

Location AUTUMN GROVE

Project Number 01-1043

Lot No: Lot 21

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.250	$^{gal}/_{ft^2\ day}$
PPBPS? (YES OR NO)	YES	
Supply Line Length	138	ft.
Supply Line Volume	24.012	gal.
Required Feet of Line	320	ft.
Amount of Line from Layout	325	ft.
Gallons per Minute	30.75	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Panel Volume	3.6	gal.
# of Panels	75	
Dosing Volume	180.90	gal.

Note: Dosing Volume based on 33% of # of panels times 3.6 gal/panel

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

Tank Draw Down	8.6	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.88	minutes
Elevation Head	8.5	ft.
Pressure Head	2	ft.
Friction Factor	2.37	ft./100 ft. *(From the interpolater.)*
Friction Head	3.27	ft.
Total Dynamic Head (+15%)	15.84	ft.

SOIL/SITE EVALUATION

(Continuation Sheet)

Sheet ___ of ___

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	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
P	LSS	0-7	B scl Gr	ss sp fr SExP	—	52"	PS	—	PS
21A	0-5%	7-29	RC MFABK	ss, sp, fr SExP	few/common YB				
		29-52	RCL WFSBK	ss, sp, fr SExP	common Sap				
		52-58	Ver. SL Sap Mass	ss, NP, fr SExP					.275
21 B	0-5%	0-32	RC MFSBK	fri SSSP Smap	—	58	—	—	PS .3
		32-58	RCL WSMK	fri SSSP Smap					
				common SAP					
21 C	0-5%	0-4	BSCL WK	fri SSSP Smap	-	50	PS	-	PS .3
		4-26	RC MFSBK	fri SSSP Smap					
		26-50	RCL WSBK	fri SSSP Smap					
				Comm. SAP					
21 D	0-5%	0-6	BSCL GR	fri SSSP Sap	-	48	—	—	PS .3
		6-28	RC MFSBK	fri SSSP Sap					
		28-78	RCL WSBK	fri SSSP Sap					

COMMENTS: Ver variegated (Multi colored)

DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

PROPERTY ID #: _____
COUNTY: _____

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: ET APPLICANT: _____
ADDRESS: _____ APPLICATION DATE: _____ DATE EVALUATED: 8/27/07
PROPOSED FACILITY: _____ PROPOSED DESIGN FLOW (.1949): _____ PROPERTY SIZE: _____
LOCATION OF SITE: Autumn Grove #21 PROPERTY RECORDED: _____
WATER SUPPLY: ☐ Private ☐ Public ☐ Well ☐ Spring ☐ Other _____
EVALUATION METHOD: ☐ Auger Boring ☐ Pit ☐ Cut
TYPE OF WASTEWATER: ☐ Sewage ☐ Industrial Process ☐ Mixed

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
1	A	0-7	Brw SCL	GR, FR					PS .275 to .3
		7-22	R C/CL	SS, SP, SE, FR					
		22-46	CL	SS, SP, SE w/Few to many			SAP Inclus		
		46-52	L/SL	SAP					
2	B	0-4	Brw SCL						PS .275
		4-20	R C, M-W	SBK					
		20-46	R CL	W, SBK w/Common			SAP Inclus		
3		0-4	BSCL	GR FR					PS .275 to .3
		4-26	R C, M-W	SBK SS SP SE					
		26-48	R C	W SBK FR SS SP, SE w/Common			SAP Inclus		
4									

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

OTHER FACTORS (.1946): _____
SITE CLASSIFICATION (.1948): _____
EVALUATED BY: _____
OTHER(S) PRESENT: _____