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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 #6 in Northlake Subdivision, Iredell County, North Carolina.

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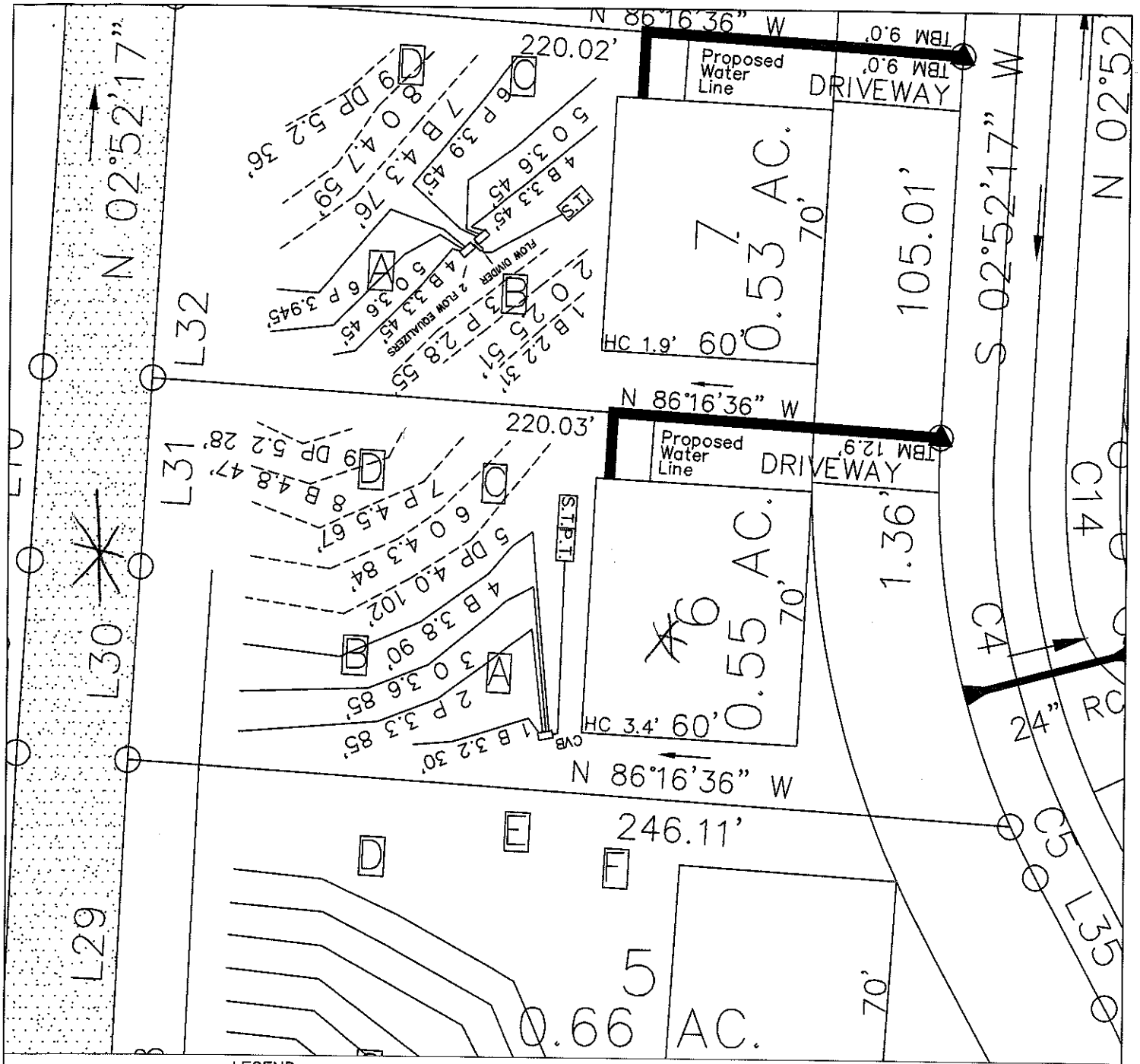
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October 6, 2008
Project #: 01-1391
Design By: Rollans Soil & Environmental Services

INFORMATION FOR THE INSTALLER:

The permit should be read very carefully prior to bidding. The following are details that must be considered along with all other considerations.

- Tanks shall be approved by NC DENR, and certification supplied by the manufacturer.
- Tanks shall be water tested prior to installation.
- The installer shall be responsible to the owner for placement of the tanks and to insure that final grades are returned to the original natural grade, with exception of added structural features.
- The supply trench shall be compacted to eliminate cavities left during initial fill placement.
- Installation of the system shall be during dry conditions in order to protect the soil structure.
- All fittings shall be pressure rated fittings.
- All joints shall be cleaned with PVC pipe cleaner and a heavy bodied glue applied to weld all joints.
- Where required by the county health department, post installation inspections by the designer must be scheduled 5 week days in advance.
- Trenches shall be carefully excavated so the bottom is within 2" from the highest to . the lowest points of elevation within the trench. If the bottom elevation needs adjusting after it has been trenched, it will be done by removing high points rather than filling low points. It is extremely important to insure that trenches are not over excavated during initial trenching. All fine grading within the trench will be hand done with a shovel. No loose material will be left in the trench
- All pipe openings in the tanks shall be properly grouted. This also applies to the joints around the riser.
- All tanks shall be properly back filled and compacted to prevent slump at a later date.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral.
- No heavy equipment shall be used on the field during or after installation. The use of a small loader (i.e. Bobcat) or a trencher (i.e. Ditch Witch 2300/2310) may be used for installation.
- Elevations at pinflag locations should be checked by the installer prior to beginning trenches.
- Pumptank riser should be 6" above grade, control panel should be 12" above grade.
- Design precludes foundation drains.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as a PPBPS installation.
- Repair is specified as a PPBPS installation.
- Backfill 4 - 6" of material (County Approved) over panels, rake trench walls, lime side-walls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.
- Backfill against house to achieve positive drainage.



LEGEND

House Box.

System lines.

Repair lines.

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

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MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: NORTHLAKE SUBDIVISION

LOCATION/DATE: BETHESDA RD IREDELL COUNTY, NORTH CAROLINA AUG 2006

JOB # : 01-1391
FILE: C:\JOBS\01-1391
PROJECT MGR.: A.L.P
FIELD WORK: A.L.P.
DRAWN BY: A.L.P.

LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant:	ABMS Development, Inc
Address:	111-B Raceway Drive Mooresville, NC 28117
Phone:	704-664-7029
County:	Iredell
Location:	Northlake LOT #6
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	27.88

Design Specifications

Drainfield Size:	290
Loading Rate (gpd/ft.^{2}):	0.3
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:	49
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	8.53
Dosing Volume:	164.02
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:	0.87
Elevation Head:	5.60
Total Dynamic Head:	9.74
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

Northlake LOT #6
LP PPBPS

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.3
TOTAL AREA TRENCH BOTTOM:	870
TOTAL LATERAL LENGTH:	290
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	266.6666667
SUPPLY LINE LENGTH:	49
TOTAL DYNAMIC HEAD:	9.74
MANIFOLD SIZE:	N/A
DOSING VOLUME:	164.02
PUMP TANK DRAW DOWN*:	7.8
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.*

Northlake LOT #6

Project #: 01-1391

LAYOUT FOR 4 BEDROOM HOME

October 6, 2008

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		12.9			100.00		
INSTR. 1			112.90				
HOUSE CNR				3.40	109.50		
P. TANK				3.80	109.10		
1	***BLUE***			***3.20***	***109.70***	***33***	***30***
2	***PINK***			***3.30***	***109.60***	***89***	***85***
3	***ORANGE***			***3.60***	***109.30***	***89***	***85***
4	***BLUE***			***3.80***	***109.10***	***91***	***90***
5	DARK PINK			4.00	108.90	102	102
6	ORANGE			4.30	108.60	84	84
7	PINK			4.50	108.40	67	67
8	BLUE			4.80	108.10	47	47
9	DARK PINK			5.20	107.70	28	28
					Total	630	618

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
****System***	***290***	***0.3***	***MOD.***	***0.30***	***PPBPS***	***LOW PRESSURE***
Repair	328	0.3	MOD.	0.30	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 -NORTHLAKE LOT#6

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	Number of Panels
1	***BLUE***	***109.70***	***30***	0.156	**0.41**	90	7
2	***PINK***	***109.60***	***85***	0.156	**0.41**	255	20
3	***ORANGE***	***109.30***	***85***	0.156	**0.41**	255	20
4	***BLUE***	***109.10***	***90***	0.156	**0.41**	270	21
							68
	total	**feet =**	**290**	**gal/min =**	**27.88**		
			Des. Flow	**480**			
			Pump Run=	**5.88**			
			soil LTAR	**0.3**			
			LTAR +5%	**0.315**			
			LTAR with mod.	**0.6**			
			LTAR with mod.. + 5%	**0.63**			

.156 equals 5/32 inch hole

CALCULATIONS

Location Northlake

Project Number 01-1391

Lot No: Lot 6

No. of Bedrooms 4

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

LTAR 0.300 $^{gal}/_{ft^2\,day}$

PPBPS? (YES OR NO) YES

Supply Line Length 49 ft.

Supply Line Volume 8.526 gal.

Required Feet of Line 266.6667 ft.
Amount of Line from Layout 290 ft.

Gallons per Minute 27.88 $^{gal}/_{min}$

Required Septic Tank Capacity 1000 gal.
Minimum Standard Tank Size 1000

Panel Volume 3.6 gal.
# of Panels 68
Dosing Volume 164.02 gal.

Note: Dosing Volume based on 67% of # of panels times 3.6 gal/panel

Tank Draw Down 7.8 *Generic Draw Down of 21 gal.per in.*

Pump Run Time 5.88 minutes

Elevation Head 5.60 ft.
Pressure Head 2 ft.
Friction Factor 1.78 ft./100 ft. *(From the interpolater.)*
Friction Head 0.87 ft.

Total Dynamic Head (+15%) 9.74 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 1
PROPERTY ID #:
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: ABMS Development Inc
ADDRESS: 111-B Raceway Drive Mooresville, NC 28117
PROPOSED FACILITY: 4 BRM
PROPOSED DESIGN FLOW (.1949): 480 gpd
LOCATION OF SITE: Northlake Subdivision Lot 6
WATER SUPPLY: ☐ Private ☒ Public ☐ Well ☐ Spring ☐ Other
EVALUATION METHOD: ☐ Auger Boring ☒ Pit ☐ Cut
APPLICATION DATE
DATE EVALUATED: 6/08
PROPERTY SIZE: 0.55 ac
PROPERTY RECORDED: Yes
TYPE OF WASTEWATER: ☒ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON 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
P	SS	0-7	BR SCL VWFSBk	SS, SP, Fr SExP	—	36"	PS	-	PS
6	0-5%	7-16	R C MFSBk	SS, SP, Fr SExP					
A		16-36	RY CL WFSBk	SS, SP, Fr SExP	many Sap				
		36-61	Var SL Sap Mass	SS, SP, Fr SExP	few R CL incl				.3-.35
P	SS	0-7	B SCL Gr	SS, SP, Fr SExP	—	48"	PS	—	PS
6		7-35	R C MFSBk	SS, SP, Fr SExP					
B	0-5%	35-48	R CL WFSBk	SS, SP, Fr SExP	Com Sap				
		48-60	Var SL Sap Mass	SS, SP, Fr SExP	few R CL incl.				.3
P	SS	0-8	B SCL Gr	SS, SP, Fr SExP	—	46"	PS	—	PS
6		8-26	RB C MFSBk	SS, SP, Fr SExP					
C	0-5%	26-46	RY CL WFSBk	SS, SP, Fr SExP	many Sap				
		46-61	Var SL Sap Mass	SS, SP, Fr SExP	Com R CL incl.				.3
P	SS	0-4	B SCL WFSBk	SS, SP, Fr SExP	—	51"	PS	—	PS
6		4-22	RB C MFSBk	SS, SP, Fr SExP					
D	0-5%	22-51	R CL WFSBk	SS, SP, Fr SExP	many Sap				
		51-61	Var SL Sap Mass	SS, SP, Fr SExP	Com R CL incl				.3

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	PS	PS
System Type(s)	LP PPBPS	LP PPBPS
Site LTAR	0.3	0.3

OTHER FACTORS (.1946): None
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: ALP
OTHER(S) PRESENT: None

COMMENTS: