DEPARTMENT OF ENVIRONMENT, HEALTH, AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

SITE/SOIL EVALUATION for ON-SITE WASTEWATER SYSTEMS

Sheet ____ of ____
PROPERTY ID # 4646-04-0108

OWNER: Fred Hill APPLICANT: Dillons Soil Environmental
ADDRESS: 188 Brookhill Dr Mooresville NC 28117 APPLICATION DATE: ____ DATE EVALUATED: 9/23/14
PROPOSED FACILITY: 3BR -> 4BR PROPOSED DESIGN FLOW (.1949): 480 PROPERTY SIZE: ____
LOCATION OF SITE: 188 Brookhill Dr Woodland Hills S/D Sect 5 Lot 79 PROPERTY RECORDED: ____
WATER SUPPLY: ☐ Private ☐ Public ☐ Well ☐ Spring ☑ Other community well
EVALUATION METHOD: ☑ Auger Boring ☐ Pit ☐ Cut
TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

PROFILE	1940 LANDSCP POS. / SLOPE %	HORIZON DEPTH (IN)	SOIL MORPHOLOGY .1941 (a)(1) TEXTURE	(a)(2) STRUCTURE	(a)(3) MINERALOGY CONSISTENCE	SOIL MATRIX COLOR	SOIL MOTTLE COLOR	OTHER PROFILE FACTORS	
1		0-8	C+SAP fill	none	fr SE			.1942 WETNESS CONDITION	S
		8-15	C	wBK	fi compacted			.1941 SOIL STRUCTURE	PS
		15-27	C	SB	fr SE			.1945 SOIL DEPTH/ .1956 SAP ROUTE	S
		27-48	C+SAP	SB	fr SE			.1944 RESTRICTIVE HORIZON	S
								.1947 PROFILE CLASSIF.	PS
								PROFILE LTAR	.3
2		0-8	C+SAP fill	none	fr SE			1942 WETNESS CONDITION	S
		8-15	C	SB	fr SE			.1941 SOIL STRUCTURE	PS
		15-24	C+SAP	SB	fr SE			1945 SOIL DEPTH/ 1956 SAP ROUTE	S
		24-48	C+SAP	SB	fr SE			1944 RESTRICTIVE HORIZON	S
								PROFILE CLASSIF.	PS
								PROFILE LTAR	.3
3		0-15	CL	SB	fr SE			1942 WETNESS CONDITION	S
		15-24	C	SB	fr SE			.1941 SOIL STRUCTURE	PS
		24-48	C+SAP	SB	fr SE			1945 SOIL DEPTH/ 1956 SAP ROUTE	S
								1944 RESTRICTIVE HORIZON	S
								PROFILE CLASSIF.	PS
								PROFILE LTAR	.3
4								1942 WETNESS CONDITION	
								.1941 SOIL STRUCTURE	
								1945 SOIL DEPTH/ 1956 SAP ROUTE	
								1944 RESTRICTIVE HORIZON	
								PROFILE CLASSIF.	
								PROFILE LTAR	

COMMENTS septic expansion from 3 to 4 BR

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	S	S
System Type (s)	IVa LPP panel	IVa LPP panel
Site LTAR	.3	.3

OTHER FACTORS (.1946): S
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: Ferris
OTHER(S) PRESENT: ____

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

Sheet 1 of 1
PROPERTY ID #: 4605 10 08
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Fred Hill
ADDRESS: 188 Broad Bill Dr, Mooresville NC 28119
PROPOSED FACILITY: Single Family PROPOSED DESIGN FLOW (.1949): _____
LOCATION OF SITE: Lot 99 Woodland Hills Subdivision
WATER SUPPLY: ☐ Private ☒ Public ☐ Well ☐ Spring ☐ Other _____
EVALUATION METHOD: ☒ Auger Boring ☐ Pit ☐ Cut

APPLICATION DATE 9/18/14
DATE EVALUATED: 9/19/14
PROPERTY SIZE: .733
PROPERTY RECORDED: _____
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	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	10%	0-4	Fill			49"			PS .3
		4-10	B/Gr	Fr SS SP					
		10-45	RC mmsbk	Fr SS SP					
		45-49	RCl wfsbk	Fr SS SP f.SAP					
2	10%	0-4	Fill			49"			PS .3
		4-12	B/Gr	Fr SS SP					
		12-35	RC mmsbk	Fr SS SP					
		35-49	RyCl wfsbk	Fr SS SP-CSAP					
3	13%	0-4	B/Gr	Fr SS SP		49"			PS .3
		4-30	RC wwsbk	Fr SS SP					
		30-40	RyC wfsbk	Fr SS SP-fSAP					
		40-49	RyCl wfsbk	Fr SS SP-fCSAP					
4	12%	0-10	B/Cl Gr wsbk	Fr SS SP		48"			PS .3
		10-40	RC mmsbk	Fr SS SP					
		40-48	RCl wfsbk	Fr SS SP-fSAP					

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

OTHER FACTORS (.1946): _____
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: Ashley Rollins
OTHER(S) PRESENT: Chad Wagner

APPROVED SEP 25 2014

COMMENTS: _____

Richard Farris

From: Richard Farris
Sent: Friday, September 26, 2014 3:28 PM
To: 'rollans.ashley@yahoo.com'
Subject: Fred Hill lot 79 Woodland Hills S/D 188 Broadbill Dr.

Ashley,
I was reviewing your fast track plans and saw on page 2 that you had specified a 30" trench depth.

1) I found closer to 8" of fill on the surface. Taking the slope correction into account, could you please adjust your trench depth to 36" on page 2?
2) Also on page 2 could you specify your lateral diameter and volume? I'm guessing it is 1.25"sch 40.
3) Please specify how many holes per panel block you want on page 5. From your calculations, it appears to be one 5/32" hole /block.
4) Please show that the gpm flow meet the minimum scouring velocity requirement for LPP distribution
5) Please indicate how many gallons/inch for the 1500 gal pump tank you plan to use.

I tried calling earlier on your cell phone but your mail box is full. Just revise the pages with the mentioned items and email them to me at richard.farris@co.iredell.nc.us
Richard Farris

ROLLANS *Soil & Environmental Services, PA.*

P.O. Box 832, Mooresville, NC 28115 Phone: (704) 278-0989 Fax: (704) 278-0989

Ashley Rollans, NC Licensed Soil Scientist
Mobile: (704) 746-5046
Email: rollans.ashley@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 79 in Woodland Hills Subdivision, 188 Broadbill Dr, Iredell County, NC.

Contents:

	Page
Information for the Installer	1
Design Information	
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Layout Specifications	4
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Site Plan/System Plan	6-7
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Profile Descriptions	9+

September 17, 2014
Project #: 01-2011
Design By: Rollans Soil & Environmental Services, PA

Revision
APPROVED OCT 17 2014

~~APPROVED SEP 26 2014~~
Richard Farris

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 requires foundations drains 12" or less below grade.
- 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 24" wide and have no more than 1/4" fall in 10 feet.
- **Gate valves on existing trenches should be replace and check valves installed or.**

APPROVED SEP 26 2014

Richard Farris

LP PPBPS TAPSHEET -WOODLAND HILL LOT 79

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	Number of Panels
1	***RED***	***99.80***	***50***	0.156	**0.41**	150	12
2	***YELLOW***	***98.90***	***50***	0.156	**0.41**	150	12
3	***ORANGE***	***97.60***	***50***	0.156	**0.41**	150	12
4	***BLUE***	***96.30***	***67***	0.156	**0.41**	201	15
							51
	total	**feet =**	**217**	**gal/min =**	**20.91**		
			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 per panel block

APPROVED OCT 17 2014

Richard Farris

CALCULATIONS

Location WOODLAND HILL LOT 79

Project Number #01-2011

Lot No: 79

No. of Bedrooms 4

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

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

PPBPS? (YES OR NO) YES

Supply Line Length 143 ft.

Supply Line Volume 24.882 gal.

Required Feet of Line 266.6667 ft.
Amount of Line from Layout 217 ft.

Gallons per Minute 20.91 $^{gal}/_{min}$

Required Septic Tank Capacity 1500 gal.
Minimum Standard Tank Size 1500 gal.

Panel Volume 3.6 gal.
# of Panels 51
Dosing Volume 123.01 gal.

(51 panels)(.41 gal/min) = 20.91 gpm ≈ 21

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

(3.6 gal)(51 panels)

183.6 gal/dose

Tank Draw Down (inches) 4.2 *Generic Draw Down of 29 gal.per in.*

Pump Run Time 5.88 minutes

183.6 gal/dose / 29 gal/in ≈ 6.33 min pump runtime

Elevation Head 25 ft.
Pressure Head 2 ft.
Friction Factor 1.27 ft./100 ft. *(From the interpolater.)*
Friction Head 1.82 ft.

Total Dynamic Head (+15%) 33.14 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

APPROVED OCT 17 2014
Richard Farris

LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant: Frederick E. Hill

Address: 188 Broadbill Dr.
Mooresville, NC 28117

Phone:
County: Iredell
Location: Woodland Hills Subdivision Lot 79

Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow: 480
System Flow: 20.91

Design Specifications

Drainfield Size: 217 vol of drain line
Loading Rate (gpd/ft.^{2}): 0.3
Depth of Gravel in Trench: NA (PPBPS)
Gravel Size: NA (PPBPS)
Trench Depth: 36 in.
Trench Width: 24 in.
Septic Tank Size: 1500 gal.
Pump Tank Size: 1500 gal.

Estimated Supply Line Length: 143
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 24.88
Dosing Volume: 123.01 123 / 20.91 gpm = 5.88 min pump run time
Supply Manifold: N/A
Supply Manifold Length: N/A
Supply Manifold Volume: N/A
Lateral Line Diameter & Volume: 1.25" SCH 40
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: 1.82
Elevation Head: 25.00
Total Dynamic Head: 33.14

APPROVED OCT 17 2014
Richard Farris

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

Woodland Hills Subdivision Lot 79
LP PPBPS

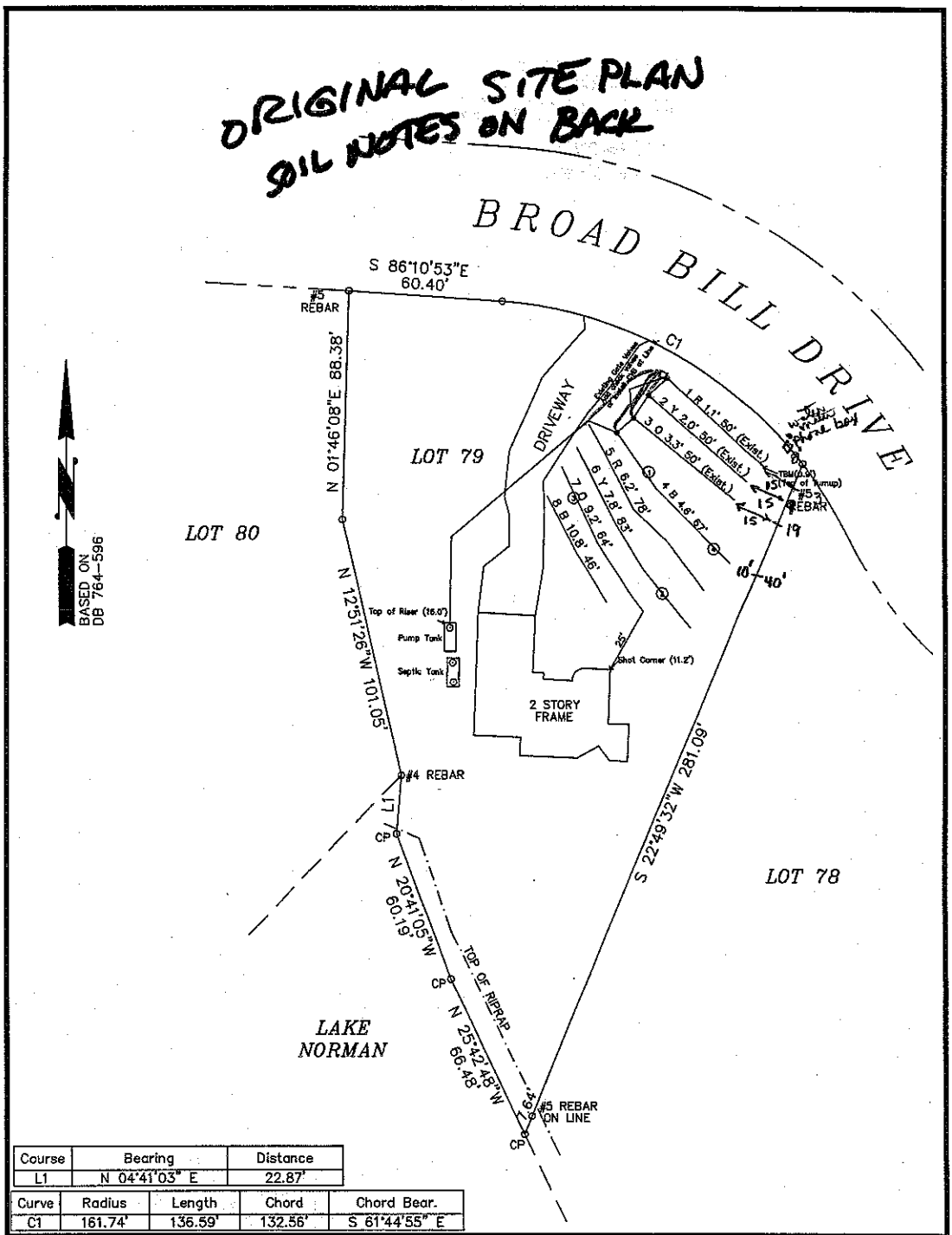
DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.3
TOTAL AREA TRENCH BOTTOM:	434
TOTAL LATERAL LENGTH:	217
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	266.6666667
SUPPLY LINE LENGTH:	143
TOTAL DYNAMIC HEAD:	33.14
MANIFOLD SIZE:	N/A
DOSING VOLUME:	123.01
PUMP TANK DRAW DOWN* (INCHES):	4.2
SEPTIC TANK SIZE:	1500 gal.
PUMP TANK SIZE:	1500 gal.

**Pump tank draw down based on a volume basis of 29 gallons per inch. Draw down may vary among pump tank manufacturers.*

APPROVED OCT 17 2014

Richard Farris

ORIGINAL SITE PLAN
SOIL NOTES ON BACK



Course	Bearing	Distance
L1	N 04°41'03" E	22.87'

Curve	Radius	Length	Chord	Chord Bear.
C1	161.74'	136.59'	132.56'	S 61°44'55" E

SEPTIC FIELD SKETCH

PROPERTY OF FRED HILL

188 BROADBILL DRIVE
LOT 79, SECTION 5 OF WOODLAND HILLS, MB. 17-76
WILL BOOK 10E-905, PIN 4646-04-0108
DAVIDSON TOWNSHIP, IREDELL COUNTY
NORTH CAROLINA
AUGUST 26, 2014

FILE NAME: BROAD-BILL-DR

50 0 50 100 150
GRAPHIC SCALE – FEET 1"=50'

NOTES:

1. THIS PROPERTY IS LOCATED ON LAKE NORMAN.
2. AREA DETERMINED BY COORDINATE COMPUTATION.
3. CP DENOTES COMPUTED POINT, NO MONUMENT FOUND OR SET.
4. UNDERGROUND UTILITIES NOT LOCATED AS OF THIS DATE.
5. ALL MONUMENTS ARE EXISTING UNLESS OTHERWISE NOTED.
6. NO NCGS GRID MONUMENTS WITHIN 2000' OF SUBJECT PROPERTY.

LEGEND:

PROPERTY LINE
TIE LINE
UNSURVEYED LINE
BACK OF CURB/EDGE OF PVMT.
SETBACK LINE
CP COMPUTED POINT
PP POWER POLE

PYRAMID LAND SURVEYING PA C-1341
P.O. BOX 11 DAVIDSON, NORTH CAROLINA
(704)892-4249 RUFUS JACKSON LOVE L-2844

① 0-8 [illegible]
8-15 c fr
15-27 c fr SB SE
27-48 CL-SAP fr SE

② 0-8 CL-SAP fill [illegible] fr SE
8-15 CL fr SB SE
15-24 C fr SB SE
24-48 CL-SAP fr WBK SE

③ 0-15 CL fr SB SE
15-24 C fr SB SE
24-48 CL-SAP fr SB SE