ROLLANS ***Soil & Environmental Services, PA.***
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Ashley Rollans, NC Licensed Soil Scientist
Mobile: (704) 746-5046
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Attached is a proposed design for a PPBPS Septic System with gravity distribution for a 4 bedroom single family residence at 342 Broken Arrow Drive, Statesville, Iredell County, North Carolina.

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December 14, 2015
Project No.01-2056
Design By: Rollans Soil & Environmental Services, PA

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 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.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as a PPBPS installation with gravity distribution (4 existing trenches).
- Repair is specified as a PPBPS installation with low pressure distribution.
- Backfill 4 - 6" of material (County Approved) over panels, rake trench walls, lime side-walls, install trenches 24" wide to be level but have no more than 1/4" fall in 10 feet.
- **Distribution box with 7 outlets required and bedded on a level pad.**
- **Remove approximately 12" of fill material over Line 12.**

GRAVITY PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant: Steven Blackstock

Address: 342 Broken Arrow Drive
Statesville, NC 28677
Phone: 828.446.2123
County: Iredell
Location: 342 Broken Arrow Drive

Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Daily Wastewater Production: 480 gpd
System Flow: N/A

Design Specifications

Drainfield Size: 300
Loading Rate: 0.3
Depth of Gravel in Trench: NA (PPBPS)
Gravel Size: NA (PPBPS)
Trench Depth: Line 12 (35" after fill removal), Lines 13 & 14 (32")
Trench Width: 24 in.
Septic Tank Size: 1000
Pump Tank Size: NA

Estimated Supply Line Length: 5
Supply Line Diameter: 3 in. SCH 40 PVC
Supply Line Volume: 1.90
Dosing Volume: N/A
Supply Manifold: N/A
Supply Manifold Length: N/A
Supply Manifold Volume: N/A

Recommended Float Controls: N/A

Recommended Control Panel: N/A

Pressure Head: N/A
Friction Head: N/A
Elevation Head: N/A
Total Dynamic Head: N/A

Threaded Union: N/A
Gate Valves: N/A

Check Valves: N/A
Anti-Siphon Hole: N/A
Additional Comments: Soil suitability was performed by Rollans Soil & Environmental Services

342 Broken Arrow Drive
GRAVITY PPBPS

DESIGN FLOW:	N/A
SOIL APPLICATION RATE:	0.3
TOTAL AREA TRENCH BOTTOM:	600
TOTAL LATERAL LENGTH:	300
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	266.67
SUPPLY LINE LENGTH:	5
TOTAL DYNAMIC HEAD:	N/A
MANIFOLD SIZE:	N/A
DOSING VOLUME:	N/A
PUMP TANK DRAW DOWN*:	N/A
SEPTIC TANK SIZE:	1000
PUMP TANK SIZE:	NA

342 Broken Arrow Drive

Project #:01-2056

LAYOUT FOR 4 BEDROOM HOME

12/14/2015

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM							
INSTR. I							
HOUSE CNR							
P. TANK							
1	RED					45	45
2	PINK					45	45
3	ORANGE					50	50
4	BLUE					44	44
5	YELLOW					41	41
6	RED					26	26
7	PINK					20	20
8	ORANGE					26	26
9	BLUE					28	28
10	BLUE					36	36
11	ORANGE					21	21
12	*RED*					*52*	*50*
13	*PINK*					*57*	*50*
14	*ORANGE*					*56*	*50*
15	*BLUE*				*EXISTING*	*50*	*25*
16	*ORANGE*				*EXISTING*	*50*	*25*
17	*RED*				*EXISTING*	*50*	*50*
18	*YELLOW*				*EXISTING*	*50*	*50*
					Total	747	682

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
* *System*	*300*	*0.3*	*MOD.*	*0.300*	*PPBPS*	*GRAVITY*
Repair	*382*	0.3	MOD.	0.300	PPBPS	LOW PRESSURE

Notes: **All septic lines & borings located via survey

**All measures in feet

**Nitrification lines are demonstrated on contour via colored pin flags

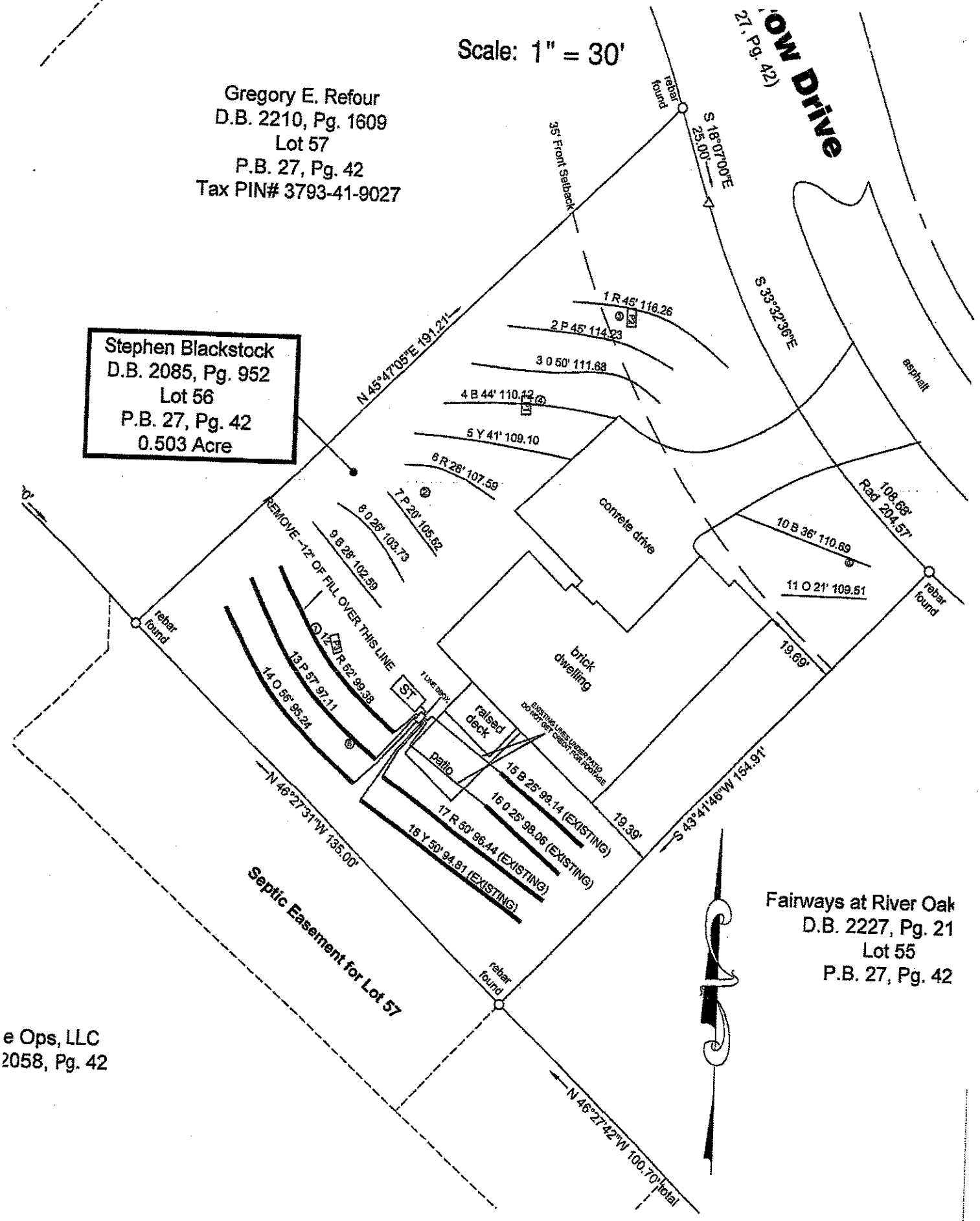
GRAVITY PPBPS SPECIFICATIONS - 342 Broken Arrow Drive

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	# of Panels
12	*RED*	*N/A*	*50*	*N/A*	*N/A*	100	11
13	*PINK*	*N/A*	*50*	*N/A*	*N/A*	100	11
14	*ORANGE*	*N/A*	*50*	*N/A*	*N/A*	100	11
15	*BLUE*	*N/A*	*25*	*N/A*	*N/A*	50	6
16	*ORANGE*	*N/A*	*25*	*N/A*	*N/A*	50	5
17	*RED*	*N/A*	*50*	*N/A*	*N/A*	100	11
18	*YELLOW*	*N/A*	*50*	*N/A*	*N/A*	100	11
						600	66

total	feet =	300	gal/min =	N/A	
		Des. Flow	480		
		Pump Run=	N/A		
		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


Scale: 1" = 30'
Gregory E. Refour
D.B. 2210, Pg. 1609
Lot 57
P.B. 27, Pg. 42
Tax PIN# 3793-41-9027
Stephen Blackstock
D.B. 2085, Pg. 952
Lot 56
P.B. 27, Pg. 42
0.503 Acre
rebar found
35' Front Setback
S 18°07'00"E 25.00'
S 33°32'36"E
asphalt
N 45°47'05"E 191.21'
1 R 45' 116.26
2 P 45' 114.93
3 O 50' 111.68
4 B 44' 110.12
5 Y 41' 109.10
6 R 26' 107.59
7 P 20' 105.52
8 O 26' 103.73
9 B 28' 102.59
REMOVE ~12" OF FILL OVER THIS LINE
12 R 52' 99.38
13 P 57' 97.11
14 O 56' 96.24
concrete drive
108.68'
Rad 204.57'
10 B 36' 110.69
11 O 21' 109.51
brick dwelling
19.69'
ST
1 UNIT BRICK
raised deck
patio
EXISTING LINES UNDER PATIO DO NOT GET CREDIT FOR FOOTAGE
15 B 25' 99.14 (EXISTING)
16 O 25' 98.06 (EXISTING)
17 R 50' 96.44 (EXISTING)
18 Y 50' 94.81 (EXISTING)
19.39'
S 43°41'46"W 154.91'
N 46°27'31"W 135.00'
Septic Easement for Lot 57
N 46°27'42"W 100.70' total
Fairways at River Oak
D.B. 2227, Pg. 21
Lot 55
P.B. 27, Pg. 42
e Ops, LLC
2058, Pg. 42

CALCULATIONS

Location 342 Broken Arrow Drive

Project Number 01-2056

Lot No: 56

No. of Bedrooms	4	
Design Flow	N/A	$^{gal}/_{day}$
LTAR	0.3	$^{gal}/_{ft^2\ day}$
PPBPS? (YES OR NO)	YES	
Supply Line Length	5	ft.
Supply Line Volume	1.9	gal.
Required Feet of Line	266.67	ft.
Amount of Line from Layout	300	ft.
Gallons per Minute	N/A	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Panel Volume	3.6	gal.
# of Panels	66	
Dosing Volume	N/A	gal.
Tank Draw Down	N/A	
Pump Run Time	N/A	minutes
Elevation Head	N/A	ft.
Pressure Head	N/A	ft.
Friction Factor	N/A	ft./100 ft. *(From the interpolater.)*
Friction Head	N/A	ft.
Total Dynamic Head (+15%)	N/A	ft.

FRICTION FACTOR INTERPOLATER
2" SCH 40 PVC

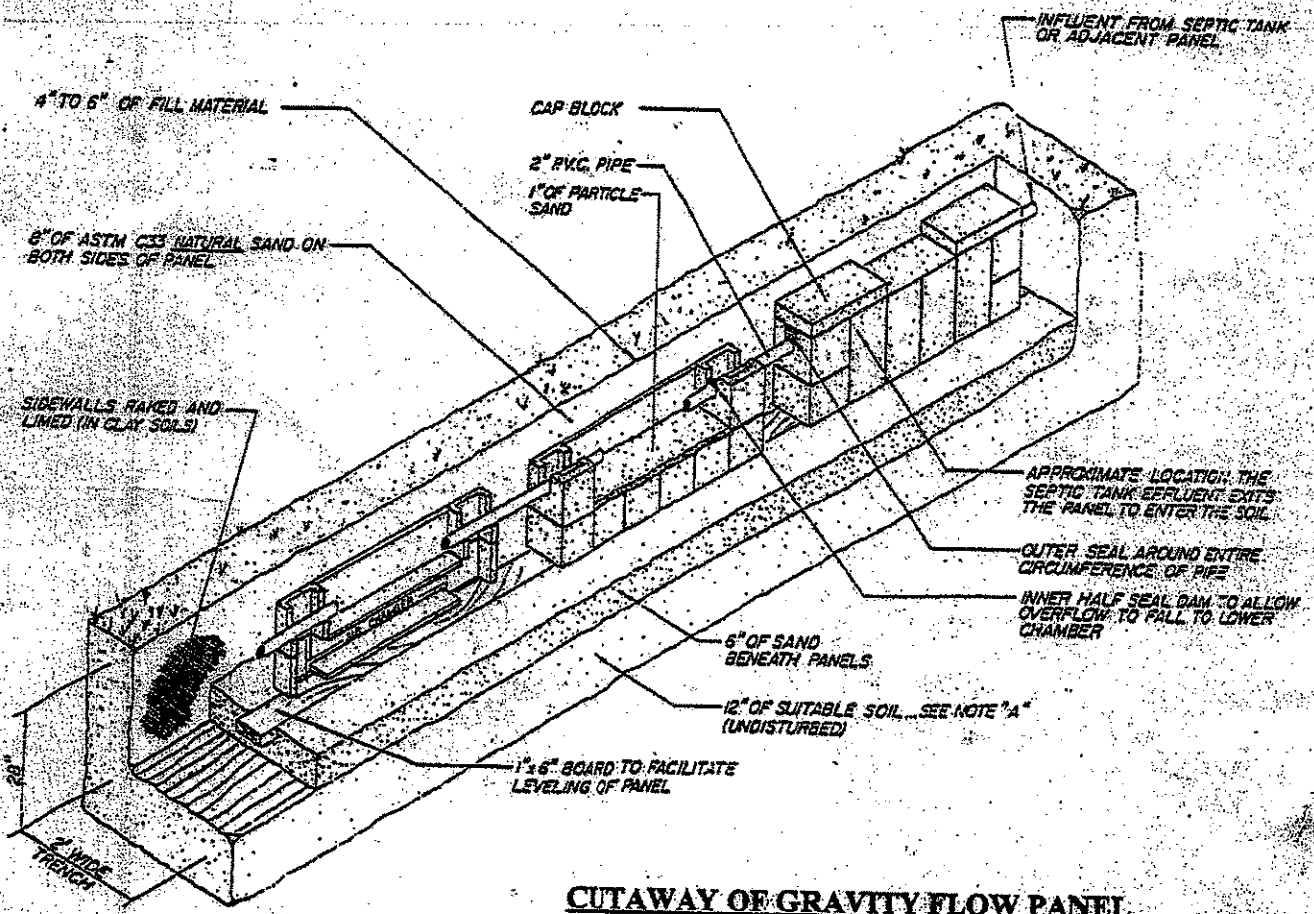
GPM	*f*
20	0.84
	-0.88
25	1.27
	-1.28
30	1.78
	-1.76
35	2.37
	-2.25
40	3.03
43.07	3.48
45	3.77
48.14	4.28
50	4.58
57.11	5.89
60	6.42

The T & J Panel
Wastewater Treatment System

Patent # 4013559

269 Marble Road
Statesville, N.C. 28625
704-924-8600

ISOMETRIC DRAWING OF A SEGMENT OF 16" T & J PANEL SYSTEM DRAINFIELD



CUTAWAY OF GRAVITY FLOW PANEL

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

Soils of PA

Sheet 1 of 2
PROPERTY ID #: 3715500906
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Steve Blackstock
ADDRESS: 342 Broken Arrow Dr. Statesville NC 28677
PROPOSED FACILITY: 4BR
LOCATION OF SITE: 342 Broken Arrow Dr, Statesville
WATER SUPPLY: ☐ Private ☑ Public ☐ Well ☐ Spring ☐ Other
EVALUATION METHOD: ☑ Auger Boring ☑ Pit ☐ Cut
PROPOSED DESIGN FLOW (.1949): 480 gpd
TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

APPLICATION DATE 4/15
DATE EVALUATED: 2015
PROPERTY SIZE: .502ac
PROPERTY RECORDED:

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
B 1	L/20%	0-7	BR cl wsbk	FrSSSPSExP					PS
		7-14	RB cl wfsbk	" " " "					
		14-36	RCwmsbk	" " " "		49	–	–	0.3
		36-49	RY cl wfsbk	" " " "	fsap				
B 2	L/12%	0-6	BR l gr	FSSSPSExP					PS
		6-12	RB cl wmsbk	FSSSPSExP					
		12-36	RCwmsbk	FrSSSPSExP		48	–	–	0.3
		36-48	RY cl wfsbk	" " " "	fsap				
B 3	L/20%	0-2	B l gr	FrSSSPSExP					PS
		2-20	RCwmsbk	" " " "					
		20-30	RY cl wfsbk	" " " "	csap	30	PS	–	0.3-.35
		30-48	var l mass	" " " "					
B 4	L/12%	0-5	RB cwmsbk	FSSSPSExP					PS
		5-22	RCwmsbk	FrSSSPSExP					
		22-36	RY cl wfsbk	" " " "	fsap	36	PS	–	0.3
		36-48	var l mass	" " " "					

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: S. Ashley Rollans
OTHER(S) PRESENT: Chad Wagner

COMMENTS:

SOIL/SITE EVALUATION

(Continuation Sheet-Complete all field in full)

DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH

Sheet 2 of 2

PROPERTY ID #: 3792500906
DATE OF EVALUATION: 2015
COUNTY: Iredell

OL AP

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
B5	L/11%	0-6	RBc/wmsbk	FrSSSPSExP					PS
		6-34	Rcwmsbk	" " " "					
		34-46	RYclwfsbk	" " " "	-fs ap	46	—	—	0.3
		46	AR (QtzFlooded)						
36	L/16%	0-13	BRclwfsbk	FrSSSPSExP					PS
		13-38	Rcwmsbk/Abk	" " " "					
		38-48	Rclwfsbk	" " " "	-fs ap	48	—	—	0.3
P1	L/12%	0-6	Fill						PS
		6-19	RBcwmsbk/Abk	FSSSPSExP					
		19-22	RYclwfsbk	FrSSSPSExP	-CSap	22	PS	—	0.35-
		22-66	varl mass	" " " "					1.4
P2	L/20%	0-9	RBcwmsbk	FSSSP SExP					PS
		9-24	RYclwfsbk	FrSSSPSExP	-fs ap	24	PS	—	
		24-60	varsl-l mass	" " " "					0.35-
									0.4
P3	L/12%	0-12	Fill (Remove)						
		12-16	Bcl wmsbk	FSSSP SExP	-compacted				PS
		16-42	Rcwmsbk/Abk	FSSSP SExP		58"	PS	—	0.3
		42-70	RYcl wfsbk	FrSSSP SExP	-f-c sap				
		70-88	varl mass	FrSSSP SExP					

COMMENTS: