Carolina Soil & Septic Consulting, PLLC

162 West B St Kannapolis, NC 28081
adrianpruett@yahoo.com
(704) 202-5791
NC Licensed Soil Scientist, SC Professional Soil Classifier,
Certified Septic System Operator, Licensed Septic Installer,
Certified Septic Inspector

Proposed design for an Innovative 25% reduction Septic System with Pressure Manifold distribution for a 5 bedroom single family residence on Lot #4 of Twinn Coves on Morrison Subdivision, Iredell County, North Carolina.

Contents: **Page**

Information for the Installer---------- 1

Design Information
- Design Specifications---------- 2
- Field Layout Specifications---------- 3
- Pressure Manifold Tapsheet---------- 4
- Pressure Manifold Diagram---------- 5

Site Plan/System Plan---------- 6

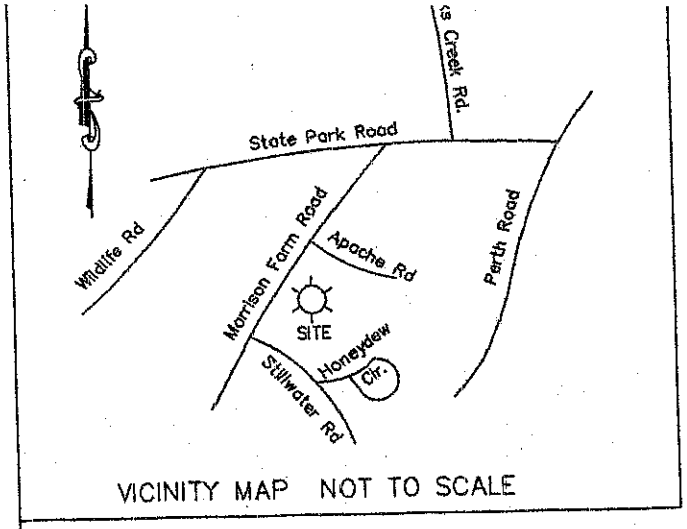
Calculations---------- 7

Profile Descriptions---------- 8-9

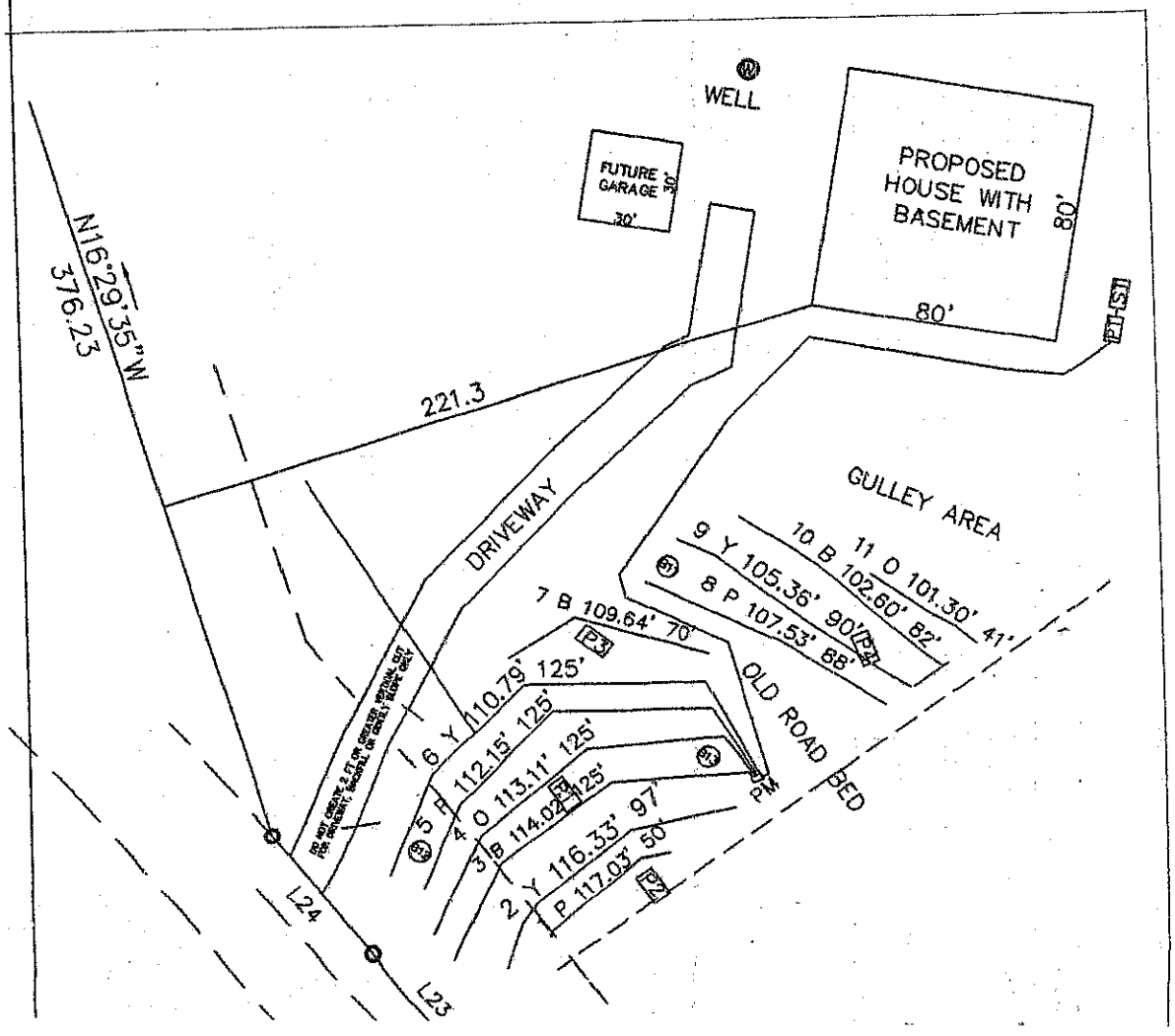
March 7, 2013
Design By: Adrian L. Pruett

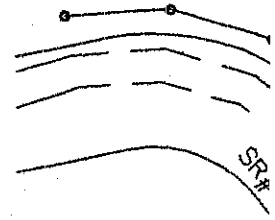
INFORMATION FOR INSTALLER:

- The permit should be read very carefully prior to submitting bid. The following are details that must be considered along with all other considerations.
- Tanks shall be approved by NC DHHS, and certification supplied by the manufacturer when requested.
- All tanks shall be properly back filled and compacted to prevent slumping at a later date.
- The installer is responsible for final grades and returning that grade to original, with exception of added structural features.
- The supply trench shall be compacted to eliminate any 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 has no more than 1/4"fall in 10 feet with no high or low areas within. If high or low areas do exist after trench excavation, high areas should be removed rather than filling in low areas. Do not over excavate trenches! Any fine grading should be completed by hand with a rake and shovel, leaving no loose material.
- All pipe openings in the tanks shall be properly grouted. This also applies to the joints around the riser.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral to prevent unwanted lateral water movement.
- 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 pin flag locations should be checked by the installer prior to beginning trenches to insure accuracy.
- Pump tank riser should be 6" above grade, control panel should be 12" above grade.
- If septic tank riser is used it should be a minimum of 6" above finished grade or within 6" below finished grade.
- Design precludes use of foundation drains on the residence and assumes back filling for positive drainage unless other wise noted.
- Trench walls should be raked, limed and installed at the depth specified by this design.
- Rake trench walls, lime sidewalls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.
- **System is specified as an Innovative 25% reduction pump installation.**
- **Repair is specified as an modified LP PPBPS installation.**
- **DO NOT GRADE FOR DRIVEWAY AND CREATE 2 FT OR GREATER VERTICAL CUT, BACKFILL OR GENTLY SLOPE ONLY.**

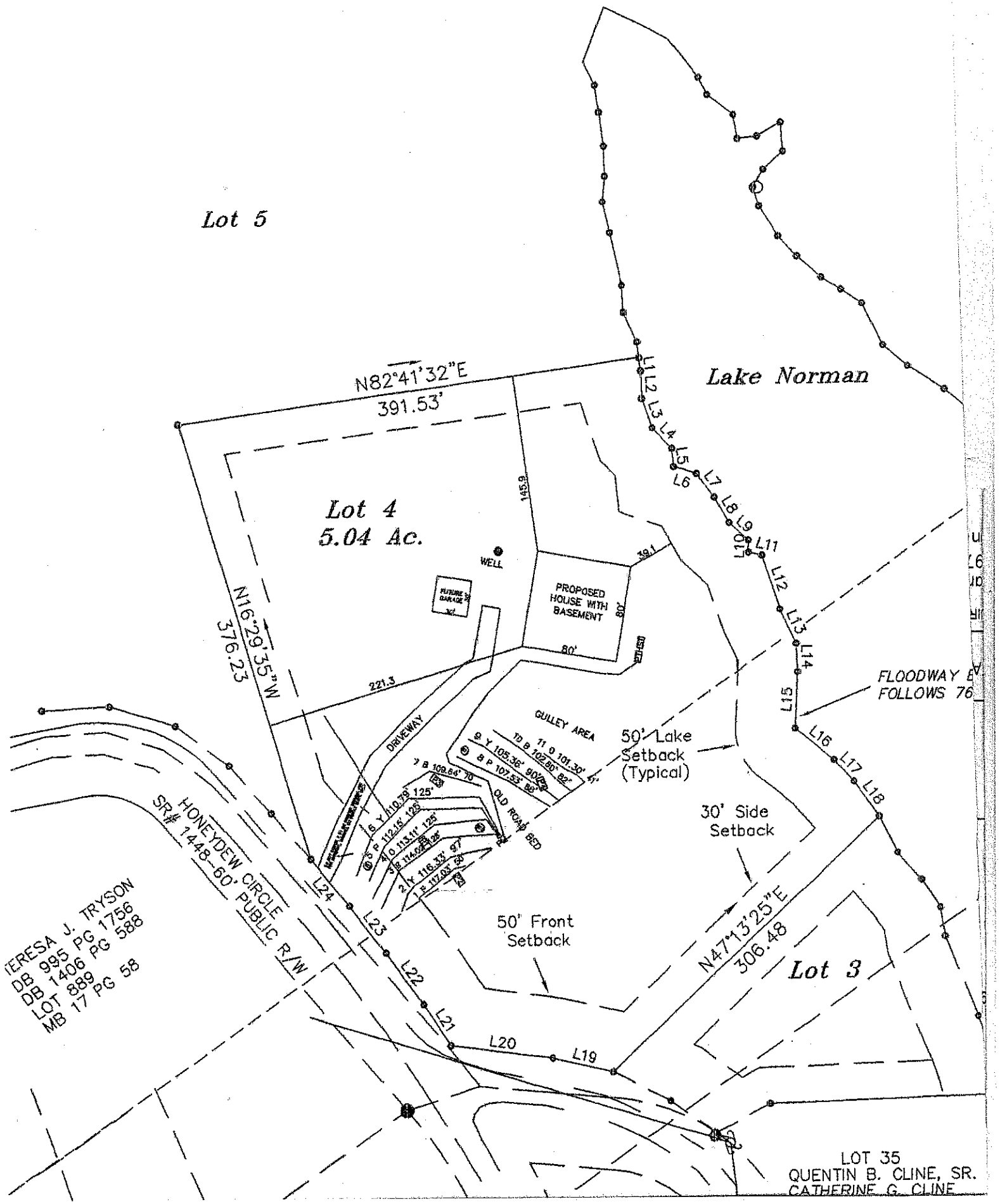


VICINITY MAP NOT TO SCALE





J. TRYSON
1756
588


Lot 5
Lake Norman
N82°41'32"E
391.53'
Lot 4
5.04 Ac.
WELL
FUTURE GARAGE
PROPOSED HOUSE WITH BASEMENT
N16°29'35"W
376.23
221.3
145.9
39.1
80'
80'
DRIVEWAY
GULLEY AREA
50' Lake Setback (Typical)
30' Side Setback
50' Front Setback
OLD ROAD BED
FLOODWAY E
FOLLOWS 76
HONEYDEW CIRCLE
SR# 1448-60' PUBLIC R/W
N47°13'25"E
306.48
Lot 3
L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15 L16 L17 L18 L19 L20 L21 L22 L23 L24
TERESA J. TRYSON
DB 995 PG 1756
DB 1406 PG 588
LOT 889
MB 17 PG 58
LOT 35
QUENTIN B. CLINE, SR.
CATHERINE G. CLINE

PRESSURE MANIFOLD SYSTEM
DESIGN SPECIFICATIONS

Drainfield Design Flow (gpd):	600
Loading/Soil Application Rate (gpd/ft.^{2}):	0.3
Depth of Gravel in Trench:	NA (25% reduction)
Gravel Size:	NA (25% reduction)
Total Lateral Length From Layout:	500
Total Lateral Length Required:	500
Trench Depth:	28 in.
Trench Width:	36 in.
Trench Bottom Area:	1500
Septic Tank Size:	1500
Pump Tank Size:	1500
Estimated Supply Line Length:	294
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	51.16
Dosing Volume:	228.55
Pump Tank Draw Down:	7.4
Supply Manifold Size:	4 in. SCH 80 PVC
Supply Manifold Length:	4 ft. (minimum)
Supply Manifold Volume:	N/A
Recommended Dosing Controls:	Float Control Switches as Required for Control Panel or County Approved Equivalents
Recommended Control Panel:	NEMA 4X Control Panel or County Approved Control Panel.
Pressure Head:	2 ft.
Friction Head:	1.78
Elevation Head:	18.40
Total Dynamic Head:	**30.76**
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 Adrian L. Pruett, LSS
Owner:	James and Debra Schneider
Address:	1977 W. Emery Church Rd Linden, PA 17744
Telephone Number:	

**Pump tank draw down based on an industry standard volume basis of 31 gallons per inch. Draw down may vary among pump tank manufacturers.*

FIELD LAYOUT SPECIFICATIONS
TWINN COVES ON MORRISON, LOT 4

March 7, 2013

LAYOUT FOR 5 BEDROOM HOME

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM					100.00		
HOUSE					101.85		
TANK					100.65		
1	PINK				117.03	50	50
2	YELLOW				116.33	97	97
3	*BLUE*				*114.02*	*125*	*125*
4	*ORANGE*				*113.11*	*125*	*125*
5	*PINK*				*112.15*	*125*	*125*
6	*YELLOW*				*110.79*	*137*	*125*
7	BLUE				109.64	70	70
8	PINK				107.53	88	88
9	YELLOW				105.36	90	90
10	BLUE				102.60	82	82
11	ORANGE				101.30	41	41
					Total	**1030**	**1018**

	LINE LENGTH	SYSTEM TYPE	SOIL LTAR GPD/FT[1]	TRENCH SYSTEM	DISTRIBUTION
** System*	*500*	*INNOV.*	*0.300*	*25% RED.*	**PRESSURE MANIFOLD**
Repair	518	MOD.	0.250	PPBPS	LOW PRESSURE

Notes:

** TBM located at nail on ridge top in transmisson right of way (see site plan)
**All measures in feet
**Nitrification lines are demonstrated on contour via colored pin flags
**BS, HI, and FS indicate rod readings

PRESSURE MANIFOLD TAPSHEET - TWINN COVES ON MORRISON, LOT 4

SYSTEM

Line #	Color	Elev	Length	Hole Size	Flow/Tap	gpd	Trench Area	Line LTAR
3	*BLUE*	*114.02*	*125*	SCH 40 1/2	**7.11**	57.14	375	0.15
4	*ORANGE*	*113.11*	*125*	SCH 40 1/2	**7.11**	57.14	375	0.15
5	*PINK*	*112.15*	*125*	SCH 40 1/2	**7.11**	57.14	375	0.15
6	*YELLOW*	*110.79*	*125*	SCH 40 1/2	**7.11**	57.14	375	0.15
	total	**feet =**	**500**	**gal/min =**	**28.44**			
			Des. Flow	**600**				
			Pump Run=	**8.04**				
			LTAR	**0.30**				

Some lines flagged longer in the field, shorten to lengths shown here.

CALCULATIONS

Location TWINN COVES ON MORRISON

Lot No: 4

No. of Bedrooms 5

Design Flow 600 $^{gal}/_{day}$

LTAR 0.3 $^{gpd/ft^2}$

25% RED.? (YES OR NO) YES

Supply Line Length 294 ft.

Supply Line Volume 51.156 gal.

Required Feet of Line 500 ft.
Amount of Line from Layout 500 ft.

Gallons per Minute 28.44 $^{gal}/_{min}$

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

Lateral Line Volume 326.5 gal.

Dosing Volume 228.55 gal.

Note: Dosing Volume based on 70% of lateral line volume

Tank Draw Down 7.4 *Generic Draw Down of 31 gal.per in.*

Pump Run Time 8.04 minutes

Elevation Head 18.4 ft.
Pressure Head 2 ft.
Friction Factor 1.78 ft./100 ft. *(From the interpolater.)*
Friction Head 5.23 ft.

Total Dynamic Head (+20%) **30.76** 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

DENR/DEH

ON-SITE WASTEWATER SECTION

PROPERTY ID #: _____

COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: James and Debra Schneider

ADDRESS: 1977 W. Emery Church Rd Linden, PA 17744

APPLICATION DATE 3/12/2013

PROPOSED FACILITY: 5 BRM

PROPOSED DESIGN FLOW (.1949): 600 gpd

DATE EVALUATED: 1/10/2013

LOCATION OF SITE: Honeydew Cir, Troutman NC Lot 4

PROPERTY SIZE: 5.04 ac

WATER SUPPLY: X Private ☐ Public X Well ☐ Spring ☐ Other _____

PROPERTY RECORDED: Yes

EVALUATION METHOD: X Auger Boring X Pit ☐ Cut

TYPE OF WASTEWATER: X 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 1	LSS 6%	0-6	B SCL GR	FR, SS, SP, SEXP	-Com. Sap./ Wavy boundary -Few WR/Shiest incl.	41"	PS	-	PS 0.3 gpd/sqft
		6-30	R C MMSBK	FR, SS, SP, SEXP					
		30-41	R CL WFSBK	FR, SS, SP, SEXP					
		41-61	VAR FSL SAP M	FR, SS, SP, SEXP					
P 2	LSS 8%	0-10	B SCL GR	FR, SS, SP, SEXP	-Few Sap. -Com. Sap	45"	PS	-	PS 0.3 gpd/sqft
		10-31	R C MMSBK	FR, SS, SP, SEXP					
		31-45	YR CL WFSBK	FR, SS, SP, SEXP					
		45-66	VAR SL SAP M	FR, NS, NP, NEXP					
P 3	LSS 5%	0-6	B SCL GR	FR, SS, SP, SEXP	-Few/Com. Sap. -Com. Sap.	60"	-	-	PS 0.3 gpd/sqft
		6-37	R C MMSBK	FR, SS, SP, SEXP					
		37-47	R C WFSBK	FR, SS, SP, SEXP					
		47-60	YR CL WFSBK	FR, SS, SP, SEXP					
P 4	LSS 10%	0-6	B SCL GR	FR, SS, SP, SEXP	-Few Sap. -Com. Sap. -Few CL incl.	54"	PS	-	PS 0.3 gpd/sqft
		6-20	R C MFSBK	FR, SS, SP, SEXP					
		20-36	R C WFSBK	FR, SS, SP, SEXP					
		36-54	R CL WFSBK	FR, SS, SP, SEXP					
		54-64	VAR SL SAP M	FR, SS, SP, SEXP					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	PS	PS
System Type(s)	25% RED.	LP PPBPS
Site LTAR	0.3	0.25

OTHER FACTORS (.1946): NONE

SITE CLASSIFICATION (.1948): PS

EVALUATED BY: ADRIAN L. PRUETT, LSS

OTHER(S) PRESENT: NONE

COMMENTS: _____

SOIL/SITE EVALUATION

(Continuation Sheet)

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

PROPERTY ID #: _____
DATE OF EVALUATION: 3/9/2012
COUNTY: Iredell

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
B 11	LSS 10%	0-8	B SCL GR	FR, SS, SP, SEXP	-Com. YB, few yellow minerals	48"	-	-	PS 0.25GPD/SQFT
		8-48	R C WFSBK/ABK	FR, SS, SP, SEXP					
B 12	LSS 8%	0-8	B SCL GR	FR, SS, SP, SEXP	-Com. Sap	46"	PS	-	PS 0.3GPD/SQFT
		8-30	R C WFSBK	FR, SS, SP, SEXP					
		30-46	R CL WFSBK	FR, SS, SP, SEXP					
		46-48	YR SL SAP M	FR, SS, SP, SEXP					
B 13	LSS 10%	0-7	B SCL GR	FR, SS, SP, SEXP	-Few Sap.	48"	PS	-	PS 0.3GPD/SQFT
		7-36	R C WFSBK	FR, SS, SP, SEXP					
		36-48	R CL WFSBK	FR, SS, SP, SEXP	-Many Sap., few sap veins				

COMMENTS: _____