August 1, 2011

Ms. Tracey Mathew
213 Morgan Bluff Road
Mooresville, North Carolina 28117

Reference: **Technical Assistance with a Potential Septic System**
Approximate 0.731 Acre, Lot 20 Pirates Cove
213 Morgan Bluff Road
Iredell County, N.C.
S&ME, Inc. Project No. 1588-11-026

Dear Ms. Mathew:

S&ME, Inc (S&ME) has conducted a soil scientist evaluation and proposed system layout on parts of the above referenced property in Iredell County, North Carolina. The evaluation was performed to evaluate and assess the general suitability of the site soils with regard to permitting a possible, new 5 bedroom on-site wastewater treatment and disposal system (septic system). The evaluation was performed in general accordance with S&ME Proposal No. 1588-11-P032 dated May 31, 2011. All ratings were determined in accordance with the "Laws and Rules for Sewage Treatment and Disposal Systems (15A NCAC 18A .1900)".

BACKGROUND

S&ME made an application for a septic Improvement Permit to the Iredell County Health Department for a 5 bedroom septic system on July 22, 2011. It is our understanding you want to remodel the existing 3 bedroom house into a 5 bedroom house. The approximately 0.731 acre lot is located at 213 Morgan Bluff Road (Figure 1) in Iredell County, North Carolina and is your current residence.

Ms. Maria Dobson, R.S., with the ICHD visited the lot on July 29, 2011 to review the soils on the lot and the possibility of permitting a new 5 bedroom septic system and 100% repair area. Mr. Paul Penninger with S&ME, Mr. Ralph Sparver, the builder, and you were present for the ICHD site visit.

Based on our review of the lot with the ICHD, the 100% repair would have to be placed within the 50 foot (ft.) setback from Lake Norman. Rule 15A NCAC 18A .1970 states that a 25 ft. setback from surface waters can be used with TS-II pretreatment. Rule 15A

NCAC 02B .0243 Iredell River Basin: Protection and Maintenance of Existing Riparian Buffers states that only Zone 2 (area 30 to 50 ft. from Lake Norman) can be used for septic systems for properties included in a recorded subdivision plan prior to June 30, 2001. The ICHD requested a Licensed Soil Scientist evaluate the feasibility of placing part of the repair within the first 20 ft. of the lake setback with pretreated effluent.

METHODS AND PROCEDURES

The soil scientist evaluation consisted of review of aerial maps, reconnaissance and visual inspection of the site, and the evaluation of subsurface soils collected by hand auger borings at select locations across the site. The hand auger borings were approximately located on the attached site plan from the surveyor.

The soils were evaluated for the following site specific characteristics: texture; color; structure; soil depth; depth and thickness of any restrictive horizon(s) if present; depth (if present) of a seasonal high water table; and topography and landscape position. With this information the hand auger borings evaluated were rated in accordance with the "Laws and Rules for Sewage Treatment and Disposal Systems (15A NCAC 18A .1900)".

The proposed septic lines were flagged by S&ME and located by the surveyor. The surveyor also flagged the 50 foot lake buffer, the property lines, and the proposed house expansion.

RESULTS AND DISCUSSION

Soils

Ms. Dobson reviewed and described 4 hand auger borings on the site and reviewed the proposed system layout on July 29, 2011. Ms. Dobson agreed the soils on the lot were Provisionally Suitable at a 0.325 gallons per day per square foot (gpd/ft^2) Long Term Acceptance Rate (LTAR). Based on the most limiting texture described (clay) in the upper 48 inches of the soil profile, the LTAR range is 0.1 to 0.4 gpd/ft^2. The proposed LTAR should be a reasonable for the evaluated areas. A clay loam texture was present for most soil profiles at the trench bottom depth. The soil profile descriptions are attached and approximate hand auger boring locations are shown on the attached site plan. Information from three additional hand auger borings placed on the site in 2008 is also attached.

Proposed New Septic System

The existing three bedroom system consists of a bed approximately 6 feet wide and 75 feet long that was thought to have been installed in the 1970's. The bed extends under a concrete pad of the screened patio. The patio and concrete slab will be removed during the remodel of the home. The existing septic tank and bed drainfield will not be used for

the remodeled house and should be abandoned as recommended by the ICHD if necessary for the house expansion.

The proposed LTAR of 0.325 gpd/ft^2 will require 308 feet of T&J Panel trench and 308 feet of T&J Panel trench for the required 100 percent repair area. The proposed new, primary system will be located between the house and 50 foot lake setback. Low pressure pipe distribution will be required for the system. Ms. Dobson reviewed the system layout, line lengths, and required setbacks on July 29, 2011. Possible tank locations and possible pretreatment unit locations were discussed on both sides of the home. The tanks should be located as indicated on the ICHD permits.

The attached site plan shows there is potentially 370 feet of T&J Panel repair on the lot. This repair utilizes the first 20 feet of the 50 foot setback from Lake Norman. Rule 15A NCAC 18A .1970 states that a 25 ft. setback from surface waters can be used with TS-II pretreatment. Rule 15A NCAC 02B .0243 Iredell River Basin: Protection and Maintenance of Existing Riparian Buffers states that only Zone 2 (area 30 to 50 ft. from Lake Norman) can be used for septic systems for properties included in a recorded subdivision plan prior to June 30, 2001. The repair system would have to be designed by a Professional Engineer before it can be installed, if it utilizes any area in the lake setback. The proposed repair LTAR of 0.325 gpd/ft^2 should be reasonable based on the soils observed and that the effluent for the possible future repair will be pretreated.

This report does not constitute or imply approval for permit, as required by the local health department. Soil evaluations and system layouts are done based on interpretations of the rules governing wastewater treatment and disposal systems and are not guarantees for site approval and / or future system performance. The soil report is only valid for the located Hand Auger Borings. Building placement and size, lot configuration and size, topography, design flow, required setbacks, buried items hidden from view, etc., can affect the suitability of each lot for a septic system. It is ultimately the responsibility of the ICHD to review all soil, setback, and proposed system specifications. Any system should be installed based on the ICHD permit conditions. Current soil science and environmental health sampling procedures have been used for this evaluation.

CLOSING

S&ME appreciates the opportunity to provide soil scientist services to you. A soil scientist evaluation and proposed system layout has been completed on parts of the approximately 0.731 acre lot for a potential 5 bedroom septic system and S&ME has reviewed the site with the ICHD and obtained verbal approval for the proposed system.

If you have any questions or comments or require additional information please contact us at your convenience.

Sincerely,

S&ME, Inc.

Paul G. Penninger, L.S.S.
Senior Soil Scientist

Rob Willcox, L.S.S.
Natural Resources Department Manager

Attachments:

1. Figure 1: Site Plan
2. Survey Map
3. Soil Profile Descriptions
4. 15A NCAC 18A .1970
5. 15A NCAC 02B .0243

Copy: ICHD

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1. Figure 1: Site Plan

NOTE: IRON STAKES AND MONUMENTS AS SHOWN (●). ALL OTHERS CALCULATED POINTS (○).

Williams Land Surveying, Inc.

License Number C-3638

274 Baymount Drive, Statesville, NC 28625

phone (704) 876-3996 ~ email: runningonfaith@bellsouth.net

file: 11\MRGNBLF

I, Thomas E. Williams, certify that this plat was drawn under my supervision from an actual survey made under my supervision (deed description recorded in Book 1735, Page 1313, or other reference source AS NOTED); that the boundaries not surveyed are shown as broken lines drawn from information found in adjoining deeds and plats as noted; that the ratio of precision is 1 : 10,000+; and that this plat meets the requirements of The Standards of Practice for Land Surveying in North Carolina according to North Carolina Administrative Code Title 21, Chapter 56, Section 1600.

This survey is of an existing parcel or parcels of land and does not create a new street or change an existing street.

This 24th day of June, 2011

THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY THOMAS E. WILLIAMS, PLS L-4718, ON JUNE 24, 2011. THIS MEDIUM SHALL NOT BE CONSIDERED A CERTIFIED DOCUMENT.

Thomas E. Williams, NCPLS 4718

NORTH CAROLINA PROFESSIONAL SEAL L-4718 LAND SURVEYOR THOMAS E. WILLIAMS

NOTES:

1) Area determined by Coordinate Computation Method.
2) Property subject to any facts that may be disclosed by a full and accurate title search.
3) Property may be subject to any Easements and Right of Ways of record and those not of record if they exist.
4) A portion of Subject Property is located in a Special Flood Hazard Area (Zone AE) as designated by the FEMA FLOOD INSURANCE RATE MAPS. See Cld No. 370313, PANEL 4648, SUFFIX J – Effective Date 3/18/2008.

40 0 40 80

SCALE: 1" = 40'

CURVE TABLE

NUM	DELTA	ARC	RADIUS	BEARING	DISTANCE
C1	42°49'23"	44.84'	60.00'	S70°41'57"E	43.81'

VICINITY MAP

NOT TO SCALE

LEGEND:

- SURVEYED PROPERTY LINE
- UNSURVEYED PROPERTY LINE FROM DEED OR PLAT
- TIE LINE
- FENCE LINE
- MINIMUM BLDG. SETBACK
- EP EDGE OF PAVEMENT
- R/W RIGHT OF WAY
- W WHITE SEPTIC FLAG
- R RED SEPTIC FLAG
- P PINK SEPTIC FLAG

MORGAN BLUFF RD. 60' PUBLIC R/W

EX AXLE

75.88' N46°51'37"E

EX 3/4" PIPE (DIST)

S20°04'28"E 56.96'

EX #4 REBAR

EX 3/4" PIPE AT 0.68'

C1

PCLE

Lot 21

WELL BLDG

15' BLDG LINE

ASPHALT DRIVE

Lot 20 0.731 Ac.

Lot 19

N41°42'57"E 229.21'

CAR PORT

EXISTING SF RESIDENCE W/BASEMENT

PROPOSED ADDITION

S1°22'31"E 227.60'

WOOD FENCE

BLDG

TANK

EX #4 REBAR AT 12" CEDAR

N40°10'00"W 81.30'

PROPERTY LINE

N82°16'00"W 89.80'

100 YEAR FLOODLINE

EX #4 REBAR

58.00' S86°45'00"W

EX BUGGY AXLE

EX FULL POND

ZONE X

ZONE AE

50' VEGETATIVE BUFFER LINE (MEASURED FROM EX 760 CONTOUR LINE)

50' BLDG LINE (MEASURED FROM PROPERTY LINE)

DOCK

PIER

PB 6-99

N

Screen Patio to be removed

Possible tank Pretreatment Loc

Approx. Hand Auger Boring Locations

Lake Norman

370' Poss T & J Panel Repair w/ TST II Pretreatment

Existing tank Existing RED SYSTEM

Possible tank Pretreatment Loc.

310' Prop. T & J Panel Primary

Septic & Soil Notes by Site 8-1-11

Approved by LHD 8/9/11

PROPOSED SITE PLAN

213 Morgan Bluff Rd.; 0.731 Ac.

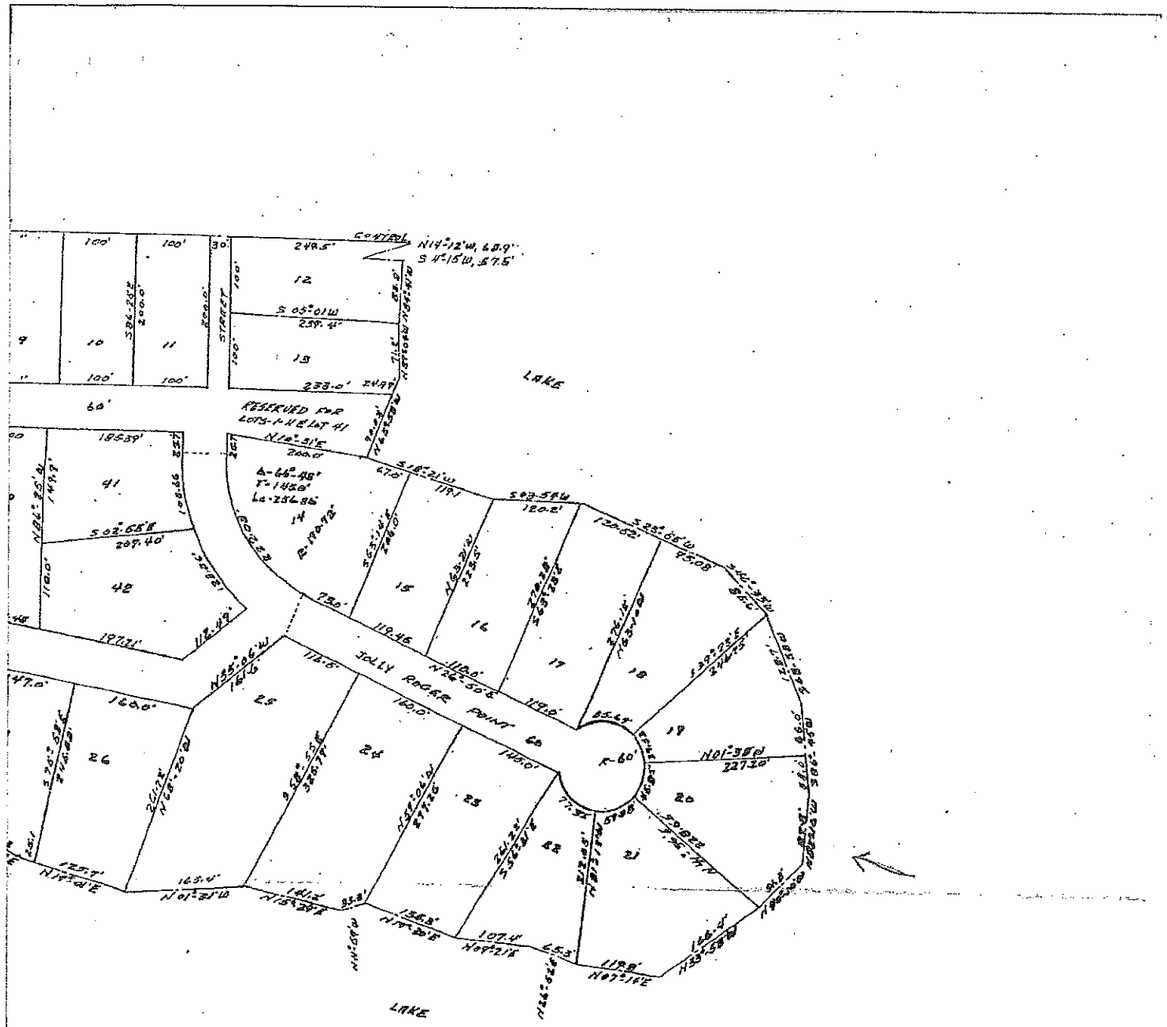
Lot 20 of PIRATES COVE

Davidson Township Iredell County, NC

Tax PIN 4648-05-2484 ~ D. B. 1735-1313 ~ P. B. 6-99

Property of: Tracey D. Mathew

2. Survey Map



FILED FOR REGISTRATION AT 8:40 a.m. THIS THE 31
DAY OF July A.D. 1961 AND RECORDED IN PLAT BOOK 6
PAGE 99

Mariemma Stanley
REGISTER OF DEEDS

SUBSCRIBED BEFORE ME, THIS THE 31 DAY
1. 19 61.
TRUMENT WITH THIS CERTIFICATE, BE RECORDED.

CLERK SUPERIOR COURT

3. Soil Profile Descriptions

213 Magnolia Bluff
Tracy Matthews

S&ME, INC.
SITE/SOIL EVALUATION

Project No. 1585-17-026 **Phone No.** _____ **Date:** 7.29-16
Location _____ **Pin** _____ **County:** Tuttle **Property Size** 0.73±

Proposed Facility: SFD **Water Supply:** On-Site Well ☒ **Evaluation:** Auger Boring ☒
Community ☐ Pit ☐
Public ☐ Cut ☐

Described By: PRP - Mario Dobson
Weather: Hot **Antecedent Moisture** moist **Surface Water:** LN

Approved
1 of 1
8/9/16

FACTORS	PROFILE M1	PROFILE M2	PROFILE M3	PROFILE M4
Landscape Position %	L a 5%	C - 5%	L a 5%	C 1 5%
Horizon Depth I	0-12	0-14	0-11	0-23
Color Munsell	10yr	10yr		10yr
Texture	cl	scl - c	sl	scl
Structure	m-wsbk	wsbk		wsbk
Consistence	fr ss/sp	fr ss/sp		fr ss/sp
Boundary				
Horizon Depth II	12-29	14-30	11-35	23-27
Color – Munsell	10yr	10yr		10yr
Texture	c	c		c
Mottles				sf-md-f-d
Structure	msbk	msbk	sl	msbk/sbk
Consistence	fr ss/sp	fr ss/sp		fr ss-s/p-s/p
Boundary				
Horizon Depth III	29-49	30-48	35-41	
Color – Munsell	10yr 4/6	10yr 4/6		
Texture	cl	cl		
Mottles	f-d sap	f-d sap		
Structure	wsbk	wsbk	sl	
Consistence	fr ss/sp	fr ss/sp		
Boundary				
Horizon Depth IV				
Color – Munsell				
Texture				
Mottles				
Structure				
Consistence				
Boundary				
Soil Wetness	—	—	—	—
Restrictive Horizon	—	—	—	—
Saprolite	(wl) -			
LTAR	.32	.32	.32	.32
Classification	PS	PS	PS	PS

LEGEND

LANDSCAPE POSITION
R Ridge Interfluve
S Shoulder
L Linear Slope
S Foot Slope
N Nose Slope
H Head Slope
Cc Concave Slope
Cv Convex Slope
T Terrace
P Flood Plain

TEXTURE
s sand
ls loamy sand
sl sandy loam
l loam
si silt
sil silt loam
sicl silty clay loam
cl clay loam
scl sandy clay loam
sc sandy clay
sic silty clay
c clay

CONSISTENCE WET
Ns non-sticky
Ss slightly sticky
S sticky
Vs very sticky

Np non-plastic
Sp slightly plastic
P plastic
Vp very plastic

MOIST
vfr Very friable
fr friable
fi firm
vfi Very firm

STRUCTURE
sg single grain
m massive
cr crumb
gr granular
sab subangular blocky
ab angular blocky
pl platy
pr prismatic

213 Map Rise

math on Lot

S&ME, INC.
SITE/SOIL EVALUATION

Project No. _____ **Phone No.** _____ **Date:** 8-8

Location _____ **Pin** _____ **County:** Lee **Property Size** 0.731

Proposed Facility: SFH **Water Supply:** On-Site Well ☒ **Evaluation:** Auger Boring ☒

Community ☐ Pit ☐

Described By: PGO Public ☐ Cut ☐

Weather: _____ **Antecedent Moisture** _____ **Surface Water:** LW

Approved ICHD 8/9/11

FACTORS	PROFILE 1	PROFILE 2	PROFILE 3	PROFILE
Landscape Position %				
Horizon Depth I	0-4	0-5	0-11	
Color Munsell	br		A – SYR 5/1	br
Texture	cl		scl	
Structure	1 sbk	sbk	wsbk	
Consistence	fr ss/sp		fr ss/sp	
Boundary				
Horizon Depth II	4-32	5-33	11-37	
Color – Munsell	red br			
Texture	c			
Mottles		sm	sm	
Structure	msbk			
Consistence	fr ss/sp			
Boundary				
Horizon Depth III	32-44 Bc	33-45	37-45	
Color – Munsell	4YR 5/6	red	red	
Texture	c	cl/sil	c	
Mottles	f-c SPS	f SP	f-c SP	
Structure	wsbk	m sbk	wsbk	
Consistence	fr ss/sp	fr sp	fr ss/sp	
Boundary				
Horizon Depth IV				
Color – Munsell				
Texture				
Mottles				
Structure				
Consistence				
Boundary				
Soil Wetness				
Restrictive Horizon				
Saprolite				
LTAR	325	325	325	
Classification	Ps	Ps	Ps	

LEGEND

LANDSCAPE POSITION

R	Ridge Interfluve
S	Shoulder
L	Linear Slope
S	Foot Slope
N	Nose Slope
H	Head Slope
Cc	Concave Slope
Cv	Convex Slope
T	Terrace
P	Flood Plain

TEXTURE

s	sand
ls	loamy sand
sl	sandy loam
l	loam
si	silt
sil	silt loam
sicl	silty clay loam
cl	clay loam
scl	sandy clay loam
sc	sandy clay
sic	silty clay
c	clay

CONSISTENCE WET

Ns	non-sticky
Ss	slightly sticky
S	sticky
Vs	very sticky
Np	non-plastic
Sp	slightly plastic
P	plastic
Vp	very plastic

MOIST

vfr	Very friable
fr	friable
fi	firm
vfi	Very firm

STRUCTURE

sg	single grain
m	massive
cr	crumb
gr	granular
sab	subangular blocky
ab	angular blocky
pl	platy
pr	prismatic