

9540 STONEBRIDGE WY

13903315

1/11/2008

duponbj

Groundwater and Wastewater Services File Imaging Project
May 2007
Barcode Font = IDAutomationHC39M

Residential Subsurface Wastewater Treatment and Disposal System Design

for

Lot 14 – Stonebridge at Mint Hill
9540 Stonebridge Way
Mint Hill, North Carolina

Tax Parcel No. 139-033-15
Mecklenburg County File No. 6833B
February 2, 2008

GWS Septic System Design Review

GWS File #: 6833B **Approved** ☒ **Disapproved** ☐

Design Review: TCT 2-4-08

Field Review: _____ ☐ ☐

*Projects are not considered "APPROVED" until both sections above are completed and indicate an APPROVED status.

Prepared for:

Ryan Homes
10706 Sikes Place, Suite 300
Charlotte, NC 28277

Prepared by:

Larry Thompson, RS, PWS, LSS
Michael Wood, LSS
Gary Kreiser, LSS
The Catena Group, Inc.
410-B Millstone Drive
Hillsborough, NC 27278
Phone: 704-301-4881
Fax: 704-888-1496

LICENSED SOIL SCIENTIST
LARRY B. THOMPSON
1287
STATE OF NORTH CAROLINA

LICENSED SOIL SCIENTIST
MICHAEL G. WOOD
1219
STATE OF NORTH CAROLINA

cc: Mr. David Cornelius, RS
Union County Environmental Health

Details

In an application for an Improvement Permit filed with the Mecklenburg County Health Department, Groundwater and Wastewater Services section, (MCHD) by NVR, Inc., the subject property was proposed to be developed with a single family 4 bedroom residence served by a municipal water supply. Based upon this information, a soil and site evaluation was conducted by the MCHD where the 1 acre lot was determined to be "Provisionally Suitable" for the installation of a subsurface wastewater treatment and disposal system in accordance with the *Laws and Rules for Sewage Treatment, and Disposal Systems* 15A NCAC 18A .1900 (North Carolina Department of Environment and Natural Resources, Division of Environmental Health, On-Site Wastewater Section).

Upon further investigation by The Catena Group, Inc., it was determined that a sufficient amount of "Suitable" Group IV soils are available for the installation of a Type III innovative system for a 4-bedroom residence (drip irrigation repair). It is the desire of the owner that the UCHD consider issuing an Improvement Permit and Construction Authorization, based upon the following proposal.

Location

The subject property is located in Stonebridge Subdivision (Lot 14 – 9540 Stonebridge Way) in the town of Mint Hill, North Carolina. From NC 51, travel south on NC 218 approximately 0.9 mile, turn left onto SR 3109 (Bartlett Road). Stonebridge is the first subdivision on the right after crossing the I-485 overpass. Turn right onto Stonebridge Way. Lot14 is located on the right just after the first stream crossing.

References

Laws and Rules for Sewage Treatment and Disposal Systems, 15A NCAC 18A, Section .1900, Department of Environment and Natural Resources, Division of Environmental Health, On-Site Wastewater Section, August 1, 2007.

Onsite Wastewater Treatment and Disposal Systems; EPA 625/R-00/008 Design Manual, February 2002.

Innovative Wastewater System Approval: IWWS-95-3-R3; North Carolina Department of Environment and Natural Resources, Division of Environmental Health, On-Site Wastewater Section, April 18, 2002.

Innovative Wastewater System Approval: IWWS-93-2-R10; North Carolina Department of Environment and Natural Resources, Division of Environmental Health, On-Site Wastewater Section, November 1, 2005.

Plans and Specifications

Septic Tank

- The septic tank shall be State approved (Section .1953 of 15A NCAC 18A), watertight, structurally sound, and 1500 gallons in capacity.
- The septic tank will be fitted with an approved effluent filter and riser for easy access and periodic maintenance.
- It is the responsibility of the septic contractor to thoroughly inspect the septic tank prior to accepting delivery to assure that the tank has had time to properly cure and is free of cracks or other structural deficiencies.

Pump Tank

- The pump tank shall be State approved, watertight, structurally sound and 1000 gallons in capacity. Again, it is the responsibility of the septic tank contractor to thoroughly inspect each pump tank prior to accepting delivery.
- The pump tank shall have access risers that extend, at a minimum, 6 inches above finished grade and must have less than 36 inches of fill over its top once finished grade has been established (a reinforced concrete tank will be required if finished soil cover is 36 inches or greater in depth).
- The pump and alarm controls shall be provided with manual circuit disconnects within a watertight, corrosion resistant, Nema 4X rated control panel. The control panel must be securely mounted outside, adjacent to the pump tank riser and at a minimum of 12 inches above finished grade. Pump and float control wiring should be long enough to reach from the tank to the control panel without splicing, routed through wire conduit, and sealed at the openings within the pump tank as well as the control panel enclosure. It is paramount that the conduit is properly sealed to prevent the escape of flammable gases from the pump tank. Furthermore, there must be two electrical circuits for the pump tank controls: one for the pump and one for the alarm controls.
- The pump tank shall have a properly functioning high water alarm incorporated into the control panel. The alarm circuit shall be supplied separate from any pump overload and short circuit devices. The alarm shall be both audible and visible by the system users.
- The float switch for the high water alarm should be mounted at a location slightly above the "pump on" elevation for the pump float control switch. The high water alarm float switch shall not be set more than 3 inches above this elevation.
- Pump float(s) shall be mounted so that the effluent at the end of a pump cycle is above the top of the effluent pump. The septic contractor must determine pump draw down and set the float switch accordingly.
- Float switch tie downs must be made of a corrosion resistant material (do not use electrical tape or metal hose clamps to secure these switches). Floats should be mounted on a separate "float tree" rather than the pump supply line (see pump tank detail).

- The pump must be placed on two 4-inch concrete blocks to allow for some settling of solid particulates within the pump tank.

Pump Tank Effluent

- The pump discharge piping shall be fitted with a pressure effluent filter. The filter must be equivalent to the SIM/TECH STF 100 Filter, Boyne City, Michigan, 49712, telephone: 1-888-999-3290. This device provides a very high degree of filtration and is highly recommended.

Pipe and Fittings

- All discharge piping, supply lines, valves and disconnects should be made of PVC.
- All joints must be properly "welded" utilizing the appropriate PVC cement for each application.
- The supply line from the pump tank to the pressure manifold shall be 2 inch Schedule 40 PVC (approximate length of supply line is 70 feet).

Pressure Manifold

- The pressure manifold shall be constructed of SCH 80 PVC and contained within an adequately sized box/vault that is designed to allow for drainage of effluent that may accumulate in it during flushing and head pressure adjustments. The box should be placed upon a gravel base.
- A gate valve shall be provided at the Pressure Manifold box to allow for final pressure adjustment (2 foot of head pressure as per design).
- There shall be 4 taps (SCH 80 PVC - direct thread or saddle), ½ inch in diameter, each to have a true union ball valve that will allow for future removal/replacement.
- The connecting pipe between the Pressure Manifold taps and the 4-inch single wall corrugated pipe shall be constructed of PVC.

Drain Field Installation

- The drain field has been previously laid out on-site utilizing metal stemmed flags. Once this area has been approved by the MCHD, the property owner/builder should mark this area and isolate it as much as possible from construction traffic. Prior to the system installation, the septic contractor shall contact the MCHD and the system designer for a preconstruction conference at which time the drain field area will be re-verified.
- Under no circumstances shall any construction take place within the drain field area while the soil is in a wet condition. If the installer has doubts as to whether or not the drain field area is dry enough to begin construction, the MCHD should be contacted for permission to proceed with the installation.
- The specified system is a Type III Innovative, specifically the **Infiltrator Chamber System** (other innovative systems may be substituted with prior approval by the MCHD).

- The drain field consists of (6) lateral trenches to be constructed 3 foot wide by 90 feet in length.
- The maximum trench depth for this system shall be **22 inches**.
- The laterals are to be installed on contour with the land, keeping the individual trench bottoms level from beginning to end.
- The trenches should be left open for the final inspection by the MCHD.

Proper Operation Check

- After all components of the waste water disposal system have been installed and connected, the system shall be checked for proper operation.
- With the electrical power turned off, fill the pump tank with water until the liquid rises to a level high enough to activate the high water alarm float. Turn on the electrical power. The alarm, alarm light and pump should activate at this time. Turn off the electrical power once these checks have been performed and prepare to set the head pressure at the manifold box.

Pressure Head Adjustment

- A 2-foot section of pipe (standpipe) shall be threaded into the "pressure head check tap" and the pump activated once again. The gate valve should be adjusted so that the water exiting this 2-foot section of pipe is barely trickling out of it. Once the 2-feet of head pressure has been properly set, the pump can be turned off and the standpipe removed. A male threaded plug should be used to replace the standpipe.
- Turn the pump on again and allow it to run through the remainder of the cycle. The pump float switch will automatically turn the pump off if it is operating properly. Make sure that the effluent pump is completely submerged in the remaining water, making adjustments to the float switch(es) as needed. This completes the checks for proper operation of the pump, alarm and float switches.

Drainage Improvements

- A French Drain must be installed along the left property line, beginning at the left rear corner, and sloped to drain to the front of the property.
- Minimum depth of French Drain is three (3) feet.
- The existing ditch along the rear property line must be cleaned out in order to achieve positive drainage.

Final Landscaping

- The drain field shall be shaped to shed rainwater and be free from low spots.
- The entire area of the drain field should be planted with grass as soon as possible to prevent erosion. The soil should be properly tilled, limed (if necessary) and fertilized prior to planting. After applying grass seed, the area should be heavily mulched with straw or other suitable material.

Utility Conflicts

- The builder and property owner must take special care in planning for water, power, gas, telephone and cable lines. These utilities shall be kept clear of all parts of the septic system and its proposed repair area. Improper planning for underground utilities can negatively impact the installation and, in some cases, cause irreparable damage. If there are any questions regarding preferred routes, contact the MCHD as soon as possible.

Maintenance

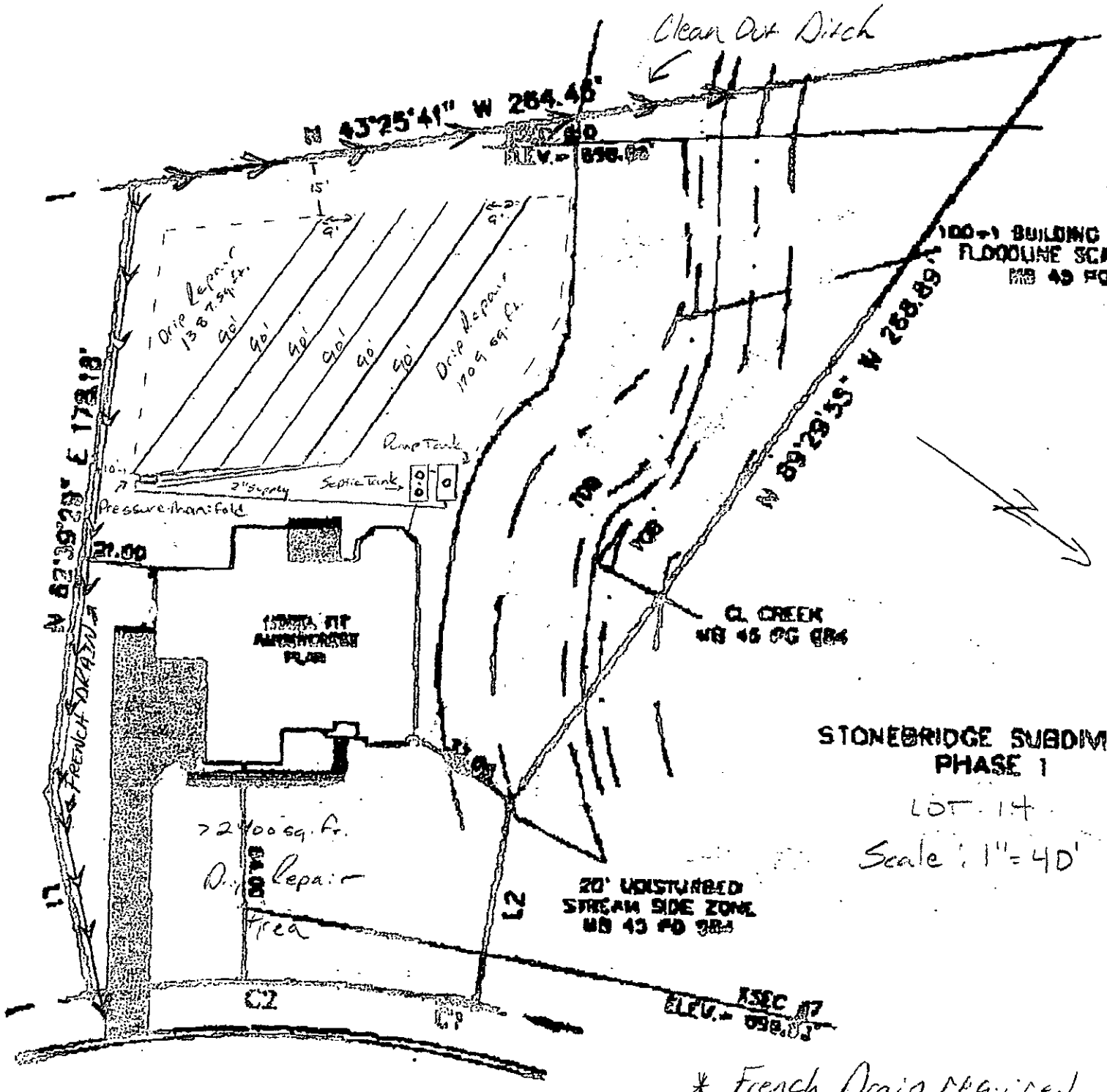
In General

- The minimum inspection/maintenance frequency for a Type III system is once every 5 years by the local health department. However, it is recommended that the homeowner contract with a reputable subsurface system operator to perform an annual maintenance inspection to ensure that the system is operating properly.
- The septic and pump tanks shall be pumped every 4 years or when the solids within the septic tank reach an elevation that is equivalent to 1/3 of the volume of the tank. In some situations, the tanks may need to be pumped more frequently. If using a garbage disposal, it is recommended that the homeowner has the septic and pump tanks cleaned out annually.
- When it becomes necessary to clean the effluent filter, the filter should be removed and the accumulated debris washed back into the septic tank – not onto the lawn.
- All piping and valves should be inspected annually for damage and corrections/repairs made immediately.
- The pump and float controls/switches should be inspected annually to assure proper operation
- The drain field area should be maintained to prevent over growth of vegetation. Any damp areas, leakages or malfunctions should be addressed immediately.
- Divert gutter downspouts and surface water runoff away from the septic and pump tanks.
- Do not install lawn irrigation near the septic drain field area.

Design Specifics ✓ TOK

Daily Design Flow:	480 GPD – 4 bedroom house
Septic Tank Size:	1500 gallons
Pump Tank Size:	1000 gallons
Effluent Loading Rate:	Design = 0.25 GPD per sq. ft.
Supply Length and Diameter:	Approx. 70 feet of 2 inch SCH 40 PVC (please see note at the bottom of this page.)
Number and Size of Taps:	(6) ½ inch taps (SCH 80 PVC)
Drain Lines:	(6) 3' W x 90' L x 22" D
Dosing Volume:	240 gallons per dose
Flow Rate Through System:	32.88 gallons per minute
Elevation Head:	15 feet (includes friction loss)
Pressure Head:	2 feet
Pump Requirements:	34.88 GPM at 17.0 TDH (2 GPM added for Vapor Lock)
Depth of Water Pumped:	11.43" (1 cu. ft. of water equals 7.5 gal.)
Pump Run:	7.30 minutes
Check Valve:	Yes
Vapor Lock Hole:	Yes (A vapor lock hole can reduce vibrations in the discharge pipe upon start up and shut down)

* Please note that supply line and elevation head measurements are approximate. It is the contractor's responsibility to confirm these values based upon the actual house and plumbing location. If there is a discrepancy, contact the system designer prior to beginning construction.



STONEBRIDGE WAY

60' PUBLIC R/W

* French Drain required along left property line

* Clean out ditch along rear property line

BEARING
N 43°25'41" W
S 64°37'02" E

CURVE TABLE

CURVE	CHORD	BEARING	DELTA
C2	91.53	S 23°02'44" E	1°24'33"
C3	88.47	S 33°54'47" E	10°46'36"

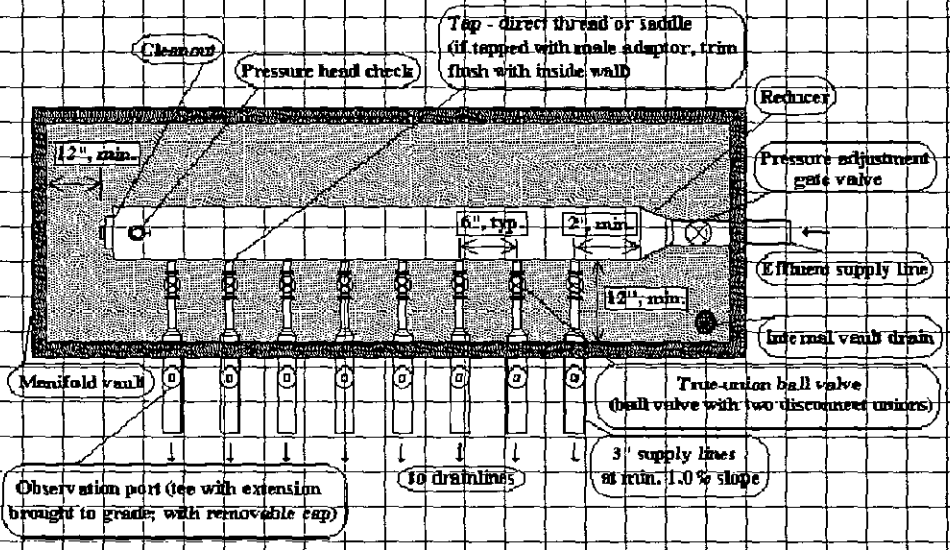
The Catena Group
410-B Millstone Drive
Hillsborough, NC 27278

File Number: 6833B

Location: Lot 14 – Stonebridge at Mint Hill

Date: January 19, 2008

Lot 14 – Stonebridge at Mint Hill
Recommended Pressure Manifold Design



From: Michael Wood [mailto:mwood@thecatenagroup.com]
Sent: Thursday, April 12, 2007 12:51 PM
To: 'chris.sherrill@co.mecklenburg.nc.us'
Cc: 'lthompson@thecatenagroup.com'
Subject: Stonebridge Soil Lab Results

Hey Chris – Attached are the lab results for expansive clay. The soil from Stonebridge is Sample 11. These were run according to the apparent CEC methodology noted by Stan Buol. Taking the CEC and dividing by the percent clay (4.5 / 48%) yields an apparent CEC of 9.375, well below the 16.3 threshold for expansive.

The cost is $18 for the textural analysis and $36 for the CEC.

Thanks.

Michael Wood
The Catena Group
410-B Millstone Drive
Hillsborough, NC 27278
919-732-1300

Report Number:
R07086-0178
Acount Number:
46372

A&L Eastern Labortories, Inc.

7621 Whitepine Road Richmond, Virginia 23237 (804) 743-9401
Fax No. (804) 271-6446 Email: office@al-labs-eastern.com

TO: THE CATENA GROUP
410B MILLSTONE DRIVE
HILSBOROUGH, NC 27278

RE: CATENA GROUP MICHAEL WOOD

ATTN: MICHAEL WOOD

Date Received: 3/27/07 **Date Reported:** 03/29/2007

REPORT OF ANALYSIS

LAB NO.	SAMPLE ID	ANALYSIS	RESULT	UNIT	METHOD
11975	9"	Cation Exchange Capacity NC	2.6	meq/100g	SW846-9081
		Sand	56	%	Bouyoucos 1962
		Silt	10	%	Bouyoucos 1962
		Clay	34	%	Bouyoucos 1962
		Soil Textural Class	Sandy Clay Loam		Bouyoucus 1962
11976	10"	Cation Exchange Capacity NC	3.2	meq/100g	SW846-9081
		Sand	40	%	Bouyoucos 1962
		Silt	14	%	Bouyoucos 1962
		Clay	46	%	Bouyoucos 1962
		Soil Textural Class	Clay		Bouyoucus 1962
11977	11"	Cation Exchange Capacity NC	4.5	meq/100g	SW846-9081
		Sand	32	%	Bouyoucos 1962
		Silt	20	%	Bouyoucos 1962
		Clay	48	%	Bouyoucos 1962
		Soil Textural Class	Clay		Bouyoucus 1962
11978	12"	Cation Exchange Capacity NC	5.5	meq/100g	SW846-9081
		Sand	30	%	Bouyoucos 1962
		Silt	14	%	Bouyoucos 1962
		Clay	56	%	Bouyoucos 1962
		Soil Textural Class	Clay		Bouyoucus 1962

ALE-MISC

Our reports and letters are for the exclusive and confidential use of our clients, and may not be reproduced in whole or in part, nor may any reference be made to the work, the results, or the company in any advertising, news release, or other public announcements without obtaining our prior written authorization.

Paul Chu, Ph.D.

THOMPSON ENVIRONMENTAL CONSULTING, INC.
WATER ♦ WASTEWATER ♦ WETLANDS

January 19, 2008

Mr. Trevor Thomason, RS
Mecklenburg County Environmental Health
Groundwater and Wastewater Section
700 N. Tryon Street, Suite 211
Charlotte, NC 28202

Trevor,

Enclosed you will find a proposal for a shallow placed innovative system for Lot 14 of Stonebridge at Mint Hill. There may be some confusion on the soil depths and loading rates for this lot so I thought it best to recap what I know about the project.

Chris Sherrill originally evaluated the lot on February 6, 2007 and that is the only soil report that I can find online. Gary Kreiser evaluated the lot on September 12, 2006 and, as you will see his report is totally different that the one that Chris generated (0.2 vs. 0.3 LTAR).

After some discussion, Mike Wood and I met with Chris on Lot 14 in March of 2007. Chris had told us that he suspected expansive clay on the lot, hence the shallow soil depths from his report. We made some borings and collected some samples to be tested for CEC. We did not believe that the soil was expansive and the lab results, which are attached, confirm this.

Chris indicated that he was in partial agreement with us before we left the lot that day and we also agreed that the LTAR for the site would be 0.25 pending favorable lab results. I hope that Chris included this visit in his notes and I hope that he still recalls the 0.25 LTAR.

With the understanding that the conflicting soil reports might slow the permitting process down, I laid out the proposed drain field area and then spot checked the soils, the results of which are attached. If you have any questions regarding this correspondence or the enclosed proposal, please let me know.

Thanks!

Enclosure

114 ORCHARD RIDGE ROAD• LOCUST, NC • 28097-8748
PHONE: 704-301-4881 • FAX: 704-888-1496
E-MAIL: LARRY@THOMPSONENV.COM
WEB: WWW.THOMPSONENV.COM

Thompson Environmental Consulting, Inc.
114 Orchard Ridge Road
Locust, NC 28097-8748
704-301-4881

SHEET 1 OF 1

COUNTY: Mecklenburg
TAX ID: 139-033-15

OWNER: NVR, Inc.
LOCATION: Stonebridge - Lot 14

DATE: January 19, 2008

PROFILES		SB 1	SB 2	SB 3
LANDSCAPE POSITION	.1940	ls	ls	ls
SLOPE (%)	.1940	5%	5%	5%
HORIZON 1 DEPTH	.1943	0-9	0-10	0-8
TEXTURE	.1941 (a)(1)	sl	sl	sl
CONSISTENCE	.1941	fr	fr	fr
STRUCTURE	.1941 (a)(2)	gr	gr	gr
CLAY MINERALOGY	.1941 (a)(3)	-	-	-
HORIZON 2 DEPTH	.1943	9-36+	10-34+	8-36+
TEXTURE	.1941 (a)(1)	c	c	c
CONSISTENCE	.1941	fi	fi	fi
STRUCTURE	.1941 (a)(2)	sbk	sbk	sbk
CLAY MINERALOGY	.1941 (a)(3)	se	se	se
HORIZON 3 DEPTH	.1943			
TEXTURE	.1941 (a)(1)			
CONSISTENCE	.1941			
STRUCTURE	.1941 (a)(2)			
CLAY MINERALOGY	.1941 (a)(3)			
HORIZON 4 DEPTH	.1943			
TEXTURE	.1941 (a)(1)			
CONSISTENCE	.1941			
STRUCTURE	.1941 (a)(2)			
CLAY MINERALOGY	.1941 (a)(3)			
SOIL WETNESS	.1942			
RESTRICTIVE HORIZON	.1944			
SAPROLITE	.1943/.1956	~36"	~34"	~36"
CLASSIFICATION	.1948			
L.T.A.R. (gpd/ft^2)	.1955			

OTHER FACTORS (.1946):		**SITE LTAR (gpd/ft^2):**	**0.25**
AVAILABLE SPACE (.1945):	provisionally suitable		
SITE CLASSIFICATION (.1948):	provisionally suitable	SYSTEM TYPE:	*drip irrigation*
EVALUATED BY:	Larry Thompson	OTHERS PRESENT:	

COMMENTS: Site evaluated on 9/12/06 by Gary Kreiser, LSS and received a recommended LTAR of 0.3 Chris Sherrill evaluated site on 2/6/07 and recommended a LTAR of 0.2. Another evaluation was performed in March of 2007 with Larry Thompson, Mike Wood and Chris Sherrill present. At that time all present agreed that the loading rate could be set at 0.25. Soil samples for CEC test were taken at that time and the results are included in with this report.

LOT # 14

DEPARTMENT OF ENVIRONMENT,
HEALTH & NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

SHEET 5 OF 7

9/12/06

COUNTY:
PROPERTY I.D. #
TAX #:

SUBDIVISION:
SECTION/PHASE: Stonebridge Phase II

FACTORS		PROFILES									
		59-4	55-1	55-2	56-1	56-2	57-1	57-2	57-3	57-4	14-1
		1	2	3	4	5	6	7	8	9	10
LANDSCAPE POSITION	.1940	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS
SLOPE (%)	.1940	3	5	10	4	5	5	5	5	4	6
HORIZON 1 DEPTH	.1943	0-24	0-18	0-24	0-24	0-10	0-5	0-5	0-36	0-33	0-10
TEXTURE	.1941 (a)(1)	CL	SL	SCL	CL	SL	SL	SL	CL	CL	SL
CONSISTENCE	.1941	FI	FR	FI	FI	FR	FR	FR	FI	FI	FR
STRUCTURE	.1941 (a)(2)	SBK	SBK	SBK	SBK	SBK	SBK	SBK	SBK	SBK	SBK
CLAY MINERALOGY	.1941 (a)(3)	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP
HORIZON 2 DEPTH	.1943	24-36+	18-40		24-40+	10-30	5-25	5-24	36-45+	33-40+	10-30
TEXTURE	.1941 (a)(1)	CL	CL		SL	CL	CL	CL	L	L	L
CONSISTENCE	.1941	FR	FI		FR	FI	FI	FI	FR	FR	FR
STRUCTURE	.1941 (a)(2)	M	SBK		M	SBK	SBK	SBK	M	M	SBK
CLAY MINERALOGY	.1941 (a)(3)	SEXP	SEXP		SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP
HORIZON 3 DEPTH	.1943		40-50+			30-40+	25-36+	24-35			30-40+
TEXTURE	.1941 (a)(1)		CL			CL	CL/L	CL/L			L
CONSISTENCE	.1941		FR			FR	FR	FR			FR
STRUCTURE	.1941 (a)(2)		M			M	M	M			M
CLAY MINERALOGY	.1941 (a)(3)		SEXP			SEXP	SEXP	SEXP			SEXP
HORIZON 4 DEPTH	.1943										
TEXTURE	.1941 (a)(1)										
CONSISTENCE	.1941										
STRUCTURE	.1941 (a)(2)										
CLAY MINERALOGY	.1941 (a)(3)										
SOIL WETNESS	.1942			18"							
RESTRICTIVE HORIZON	.1944										
SAPROLITE	.1943/.1956	24"	40"		24"	30"	25"	24"	36"	33	30
CLASSIFICATION	.1948										
S. T. A. R. (gpd/ft2)	.1955		.3						.3	.3	.3

OTHER FACTORS (.1946):

AVAILABLE SPACE (.1945):

SITE CLASSIFICATION (.1948):

EVALUATED BY:

COMMENTS:

SITE LTAR (gpd/ft2):

SYSTEM TYPE:

OTHERS PRESENT:

LOT #

DEPARTMENT OF ENVIRONMENT,
HEALTH & NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

SHEET 6 OF 7

COUNTY:
PROPERTY I.D. #
TAX #:

SUBDIVISION: Stonebridge Phase II 9/12/06
SECTION/PHASE:

FACTORS		14-2	14-3	14-4	13-1	13-2	13-3	13-4	12-1	12-2	12-3
		PROFILES									
		1	2	3	4	5	6	7	8	9	10
LANDSCAPE POSITION	.1940	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS
SLOPE (%)	.1940	10	8	5	5	5	5	3	5	2	2
HORIZON 1 DEPTH	.1943	0-15	0-10	0-10	0-12	0-18	0-6	0-8	0-30	0-8	0-10
TEXTURE	.1941 (a)(1)	SL	SL	SL	SL	L	L	L	CL	L	SL
CONSISTENCE	.1941	FR	FR	FR	FR	FR	FR	FR	FI	FR	FR
STRUCTURE	.1941 (a)(2)	SBK/GR	SBK/GR	SBK/GR	GR	SBK	SBK	SBK	SBK	SBK	SBK
CLAY MINERALOGY	.1941 (a)(3)	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP
HORIZON 2 DEPTH	.1943	15-30"	10-30	10-36	12-40	18-45	6-48	8-30	30-36	8-30	10-25
TEXTURE	.1941 (a)(1)	CL	L	CL	CL	CL	CL	CL	L	CL	L
CONSISTENCE	.1941	FI	FR	FI	FI	FI	FI	FI	FR	FI	FR
STRUCTURE	.1941 (a)(2)	M	SBK	SBK	SBK	SBK	SBK	SBK	M	SBK	SBK
CLAY MINERALOGY	.1941 (a)(3)	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP	SEXP
HORIZON 3 DEPTH	.1943		30-40"	36-45"	40-50"	45-48"	48-55"	30-40"	36-A	30-40	25-40
TEXTURE	.1941 (a)(1)		L	CL	CL	CL	CL	CL/L		CL	CL
CONSISTENCE	.1941		FR	FR	FR	FR	FR	FR		FR	FI
STRUCTURE	.1941 (a)(2)		M	M	M	M	M	M		M	SBK
CLAY MINERALOGY	.1941 (a)(3)		SEXP	SEXP	SEXP	SEXP	SEXP	SEXP		SEXP	SEXP
HORIZON 4 DEPTH	.1943										40-48
TEXTURE	.1941 (a)(1)										L
CONSISTENCE	.1941										M
STRUCTURE	.1941 (a)(2)										SEXP
CLAY MINERALOGY	.1941 (a)(3)										
SOIL WETNESS	.1942	18"									
RESTRICTIVE HORIZON	.1944										
SAPROLITE	.1943/.1956	18"	30"	36"	40"	45"	48	30	30	30	40
CLASSIFICATION	.1948										
L. T. A. R. (gpd/ft2)	.1955		.3	.3	.3	.3	.3	.3	.3	.3	.3

OTHER FACTORS (.1946):

AVAILABLE SPACE (.1945):

SITE CLASSIFICATION (.1948):

EVALUATED BY:

SITE LTAR (gpd/ft2):

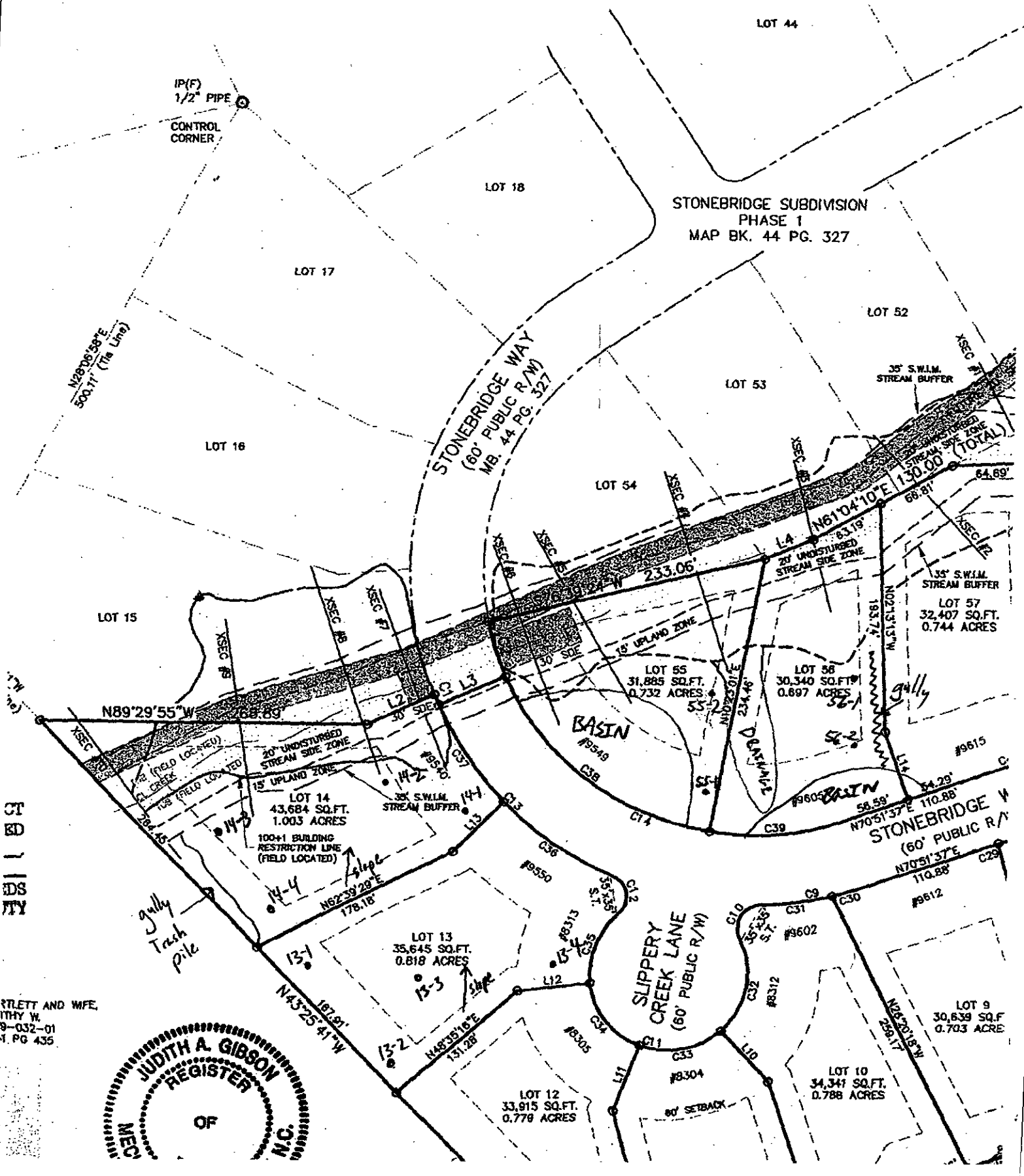
SYSTEM TYPE:

OTHERS PRESENT:

COMMENTS:

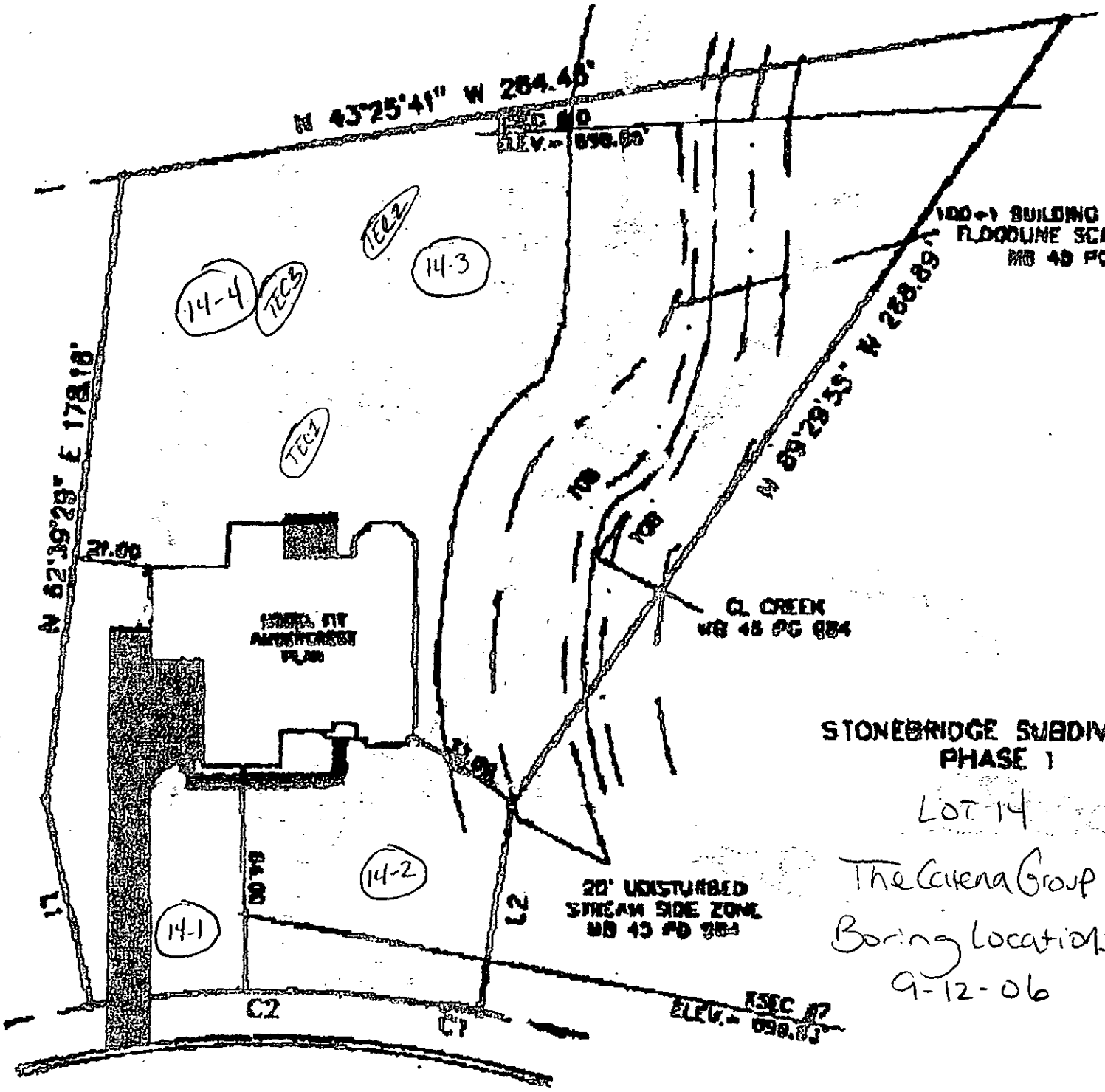
LOT # _____

46 PAGE 453



RTLETT AND WIFE,
ITHY W.
9-032-01
I, PG 435

JUDITH A. GIBSON REGISTER OF DEEDS



STONEBRIDGE WAY

60' PUBLIC R/W

	BEARING
	44°04'43"E
	84°37'02"E

CURVE TABLE

TH	CHORD	BEARING	DELTA
3	9.53	S23°02'44"E	1°54'33"
96	98.47	S33°54'47"E	15°49'34"

ESTIMATED SIDE
AREA = 178.7 S

ESTIMATED DRIVE
AREA = 1744 SC

STANFORD

Department of Environment, Health, and Natural Resources
Division of Environmental Health
On-site Wastewater Section

Sheet: 1 of 2
Property ID: 139-033-15
Lot #: 14
File #: 6833B
AppID: 1541

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: NVR, Inc.
Applicant: Kim Stanley
Address: 10815 David Taylor Drive, Suite 100, Charlotte, NC 28262
Date Evaluated: 2/6/2007
Proposed Facility: Residence
Design Flow (.1949): 480 gpd
Property Size:
Location of Site: 9540 Stonebridge Way
Property Recorded:
Water Supply: [x] Public [ ] Individual [ ] Well [ ] Spring [ ] Other
Evaluation Method: [x] Auger Boring [ ] 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	b PROFILE FACTORS .1942 Soil Wetness/ Color	.1943 Soil Depth (IN.)	.1956 Sapro Class	.1944 Restr Horiz	Profile Class & LTAR
1	LS,10	0-8	GR/SL	VFR/NS/NP/SEXP	24"	27	NA	NONE	US
		8-27	ABK/SBK/C	FI/S/P/SEXP	10YR 7/2				
2	"	0-9	GR/SCL	FR/SS/SP/SEXP	>19" TO SOIL WETNESS	19	"	"	US
		9-19	ABK/C	VFI/VS/VP/EXP					
3	"	0-11	GR/SCL	FR/SS/SP/SEXP	24"	34	"	"	US
		11-34	ABK/C	VFI/VS/VP/EXP	10YR 7/2				
4	"	0-8	GR/SCL	FR/SS/SP/SEXP	38"	42	"	"	PS,IV
		8-39	ABK/SBK/C	FI/S/P/SEXP	10YR 7/2				.2 GPD/FT^2
		39-42	ABK/C	VFI/VS/VP/EXP					
					SITE LTAR				.2 GPD/FT

Description	Initial System	Repair System
Available Space (.1945)		
System Type(s)		
Site LTAR		

Other Factors (.1946): None
Soil Evaluation By: Chris Sherrill, RS, LSS 2/6/07
Others Present: B.Marlin
Site Classification (.1948):
Site Evaluation By:
Others Present:

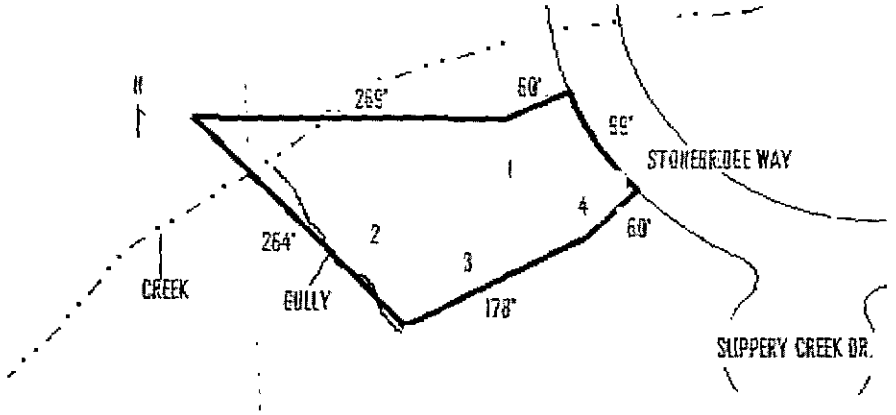
COMMENTS: 100% Repair Area Required

FILE #: 6833B

Landscape Position	Group	Texture	.1955 LTAR	Structure
R-Ridge	I	S-Sand	1.2 - 0.8	SG-Single Grain
SS-Shoulder Slope		LS-Loamy Sand		M-Massive
LS-Linear Slope				CR-Crumb
FS-Foot Slope	II	SL-Sandy Loam	0.8 - 0.6	GR-Granular
NS-Nose Slope		L-Loam		SBK-Subangular Blocky
HS-Head Slope				ABK-Angular Blocky
CC-Concave Slope	III	SI-Silt	0.6 - 0.3	PL-Platy
CV-Convex Slope		SICL-Silty Clay Loam		PR-Prismatic
T-Terrace				
FP-Flood Plain		CL-Clay Loam		
		SCL-Sandy Clay Loam		
	IV	SC-Sandy Clay	0.4 - 0.1	
		SIC-Silty Clay		
		C-Clay		

Consistence Moist	Consistence Wet	Mineralogy
VFR-Very Friable	NS-Non-Sticky	SEXP-Slightly Expansive
FR-Friable	SS-Slightly Sticky	EXP-Expansive
FI-Firm	S-Sticky	
VFI-Very Firm	VS-Very Sticky	
EFI-Extremely Firm	NP-Non-Plastic	
	SP-Slightly Plastic	
	P-Plastic	
	VP-Very Plastic	

Sketch of Soil Evaluation Locations



Department of Environment, Health, and Natural Resources
Division of Environmental Health
On-site Wastewater Section

Sheet: 1 of 3
Property ID: 139-033-15
Lot #: 14
File #: 6833B
AppID: 1541

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: NVR,Inc.
Applicant: Kim Stanley
Address: 10815 David Taylor Dr., Ste.100, Charlotte, NC 28262
Date Evaluated: 1/24/2008
Proposed Facility: Residence
Design Flow (.1949): 480 gpd
Property Size:
Location of Site: 9540 Stonebridge Wy
Property Recorded:
Water Supply: [x] Public [ ] Individual [ ] Well [ ] Spring [ ] Other
Evaluation Method: [x] Auger Boring [ ] 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	b PROFILE FACTORS .1942 Soil Wetness/ Color	.1943 Soil Depth (IN.)	.1956 Sapro Class	.1944 Restr Horiz	Profile Class & LTAR
1	LS,10	0-16	GR/SCL	FR/SS/SP/SEXP	2.5Y 7/2 @ 21"	28+	N/A	NONE	US
		16-18	GR/SL	FR/SS/SP/SEXP					
		18-28	ABK/C	VFI/VS/VP/EXP					
2	"	0-18	GR/SCL	FR/SS/SP/SEXP	2.5Y 7/2 @ 42"	48	"	"	PS,IV
		18-48	ABK/SBK/C	FI/S/P/SEXP					.25 GPD/FT^2
3	"	0-6	GR/SL	FR/SS/SP/SEXP	2.5Y 7/1 @ 24"	29+	"	"	US
		6-21	ABK/SBK/C	FI/S/P/SEXP					
		21-29	M/C	FI/S/P/SEXP					
4	"	0-10	GR/SCL	FR/SS/SP/SEXP	>37" TO SOIL WETNESS	37+	"	"	US,IV
		10-34	ABK/SBK/C	FI/S/P/SEXP					.25 GPD/FT^2
		34-37	M/C	FI/S/P/SEXP					
					SITE LTAR BORINGS 2,4,5				.25 GPD/FT^2
					SITE LTAR BORING 6				.125 GPD/FT^2/LPP

Description	Initial System	Repair System
Available Space (.1945)		
System Type(s)		
Site LTAR		

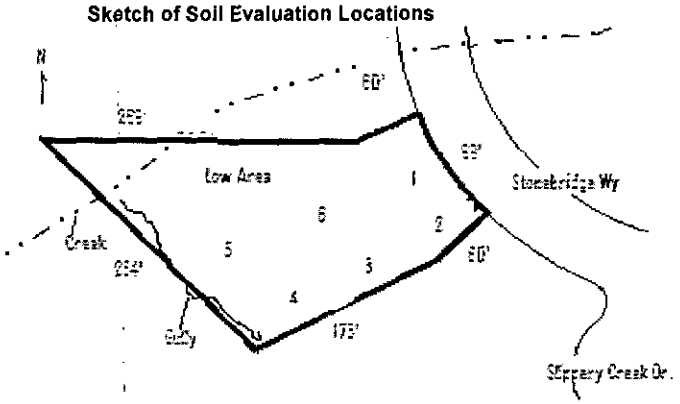
Other Factors (.1946):
Soil Evaluation By: C.Sherrill, RS,LSS
Others Present: None
Site Classification (.1948):
Site Evaluation By:
Others Present:

COMMENTS: 100% Repair Required

Landscape Position	Group	Texture	1955 LTAR	Structure
R-Ridge	I	S-Sand	1.2 - 0.8	SG-Single Grain
SS-Shoulder Slope		LS-Loamy Sand		M-Massive
LS-Linear Slope				CR-Crumb
FS-Foot Slope	II	SL-Sandy Loam	0.8 - 0.6	GR-Granular
NS-Nose Slope		L-Loam		SBK-Subangular Blocky
HS-Head Slope				ABK-Angular Blocky
CC-Concave Slope	III	SI-Silt	0.6 - 0.3	PL-Platy
CV-Convex Slope		SICL-Silty Clay Loam		PR-Prismatic
T-Terrace				
FP-Flood Plain		CL-Clay Loam		
		SCL-Sandy Clay Loam		
	IV	SC-Sandy Clay	0.4 - 0.1	
		SIC-Silty Clay		
		C-Clay		

Consistence Moist	Consistence Wet	Mineralogy
VFR-Very Friable	NS-Non-Sticky	SEXP-Slightly Expansive
FR-Friable	SS-Slightly Sticky	EXP-Expansive
FI-Firm	S-Sticky	
VFI-Very Firm	VS-Very Sticky	
EFI-Extremely Firm	NP-Non-Plastic	
	SP-Slightly Plastic	
	P-Plastic	
	VP-Very Plastic	

Sketch of Soil Evaluation Locations



SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM
CONTINUED

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 (IN.)	.1956 Sapro Class	.1944 Restr Horiz	Profile Class & LTAR
5	LS,10	0-12	GR/SCL	FR/SS/SP/SEXP	2.5Y 7/2 @ 30"	41+	N/A	NONE	US,IV
		12-33	ABK/SBK/C	FI/S/P/SEXP					.25 GPD/FT^2
		33-41	M/C	FI/S/P/SEXP					
6	"	0-15	GR/SCL	FR/SS/SP/SEXP	>27" TO SOIL WETNESS	27+	"	"	US
		15-18	GR/SL	FR/SS/SP/SEXP					
		18-24	ABK/SBK/C	FI/S/P/SEXP					
		24-27	M/C	FI/S/P/SEXP					

#1541

GWS – RES. APP 07/05

SEPTIC FEE: 200.00
DATE: 10/9/06
CRT[ ] X 33575 OKA

PERMIT APPLICATION FOR A RESIDENTIAL SITE IMPROVEMENT PERMIT / CONSTRUCTION AUTHORIZATION FOR ON-SITE WASTEWATER SYSTEM NEW WELL INSTALLATION OR REPAIR OF EXISTING WELL MECKLENBURG COUNTY GROUNDWATER & WASTEWATER SERVICES

FILE # 6833B

WELL FEE:
DATE:
CRT[ ]

SEPTIC / TYPE APPLICATION: ☐ NONE ☐ NEW SYSTEM ☐ ALTERATION ☐ REPAIR ☐ MODIFY PLOT PLAN

WELL / TYPE APPLICATION: ☐ NONE ☐ NEW WELL ☐ MAJOR REPAIR ☐ ABANDONMENT

JOB LOCATION INFORMATION:

TAX/PARCEL #: 139-033-15
STREET ADDRESS: 9540 Stonebridge Way
CITY: Mint Hill
STATE: NC ZIP: 28227
SUBDIVISION OR MOBILE HOME PARK NAME: Stonebridge at Mint Hill
LOT #: 14

TOWNSHIP:

☐ 0-MECKLENBURG ☐ 4-PINEVILLE
☐ 1-CHARLOTTE ☐ 5-MATTHEWS
☐ 2-DAVIDSON ☐ 6-HUNTERSVILLE
☐ 3-CORNELIUS ☒ 7-MINT HILL

BUILDING INFORMATION:

TYPE OF BUILDING:

☐ SINGLE MOBILE HOME (S) ☐ MODULAR HOME (M)
☐ DOUBLE WIDE (D) ☐ MULTIPLE FAMILY (U)
☒ HOUSE (H) ☐ OTHER

HEATED SQUARE FOOTAGE: 4,000
NUMBER OF BEDROOMS: 4
NUMBER OF OCCUPANTS: 4

FOUNDATION FOR RESIDENCE:

☐ CONCRETE SLAB ☐ BASEMENT WITH PLUMBING
☒ CRAWLSPACE ☐ BASEMENT WITH NO PLUMBING

IF PLANNING TO EXPAND/ALTER THE EXISTING SYSTEM INDICATE THE FOLLOWING CHANGES:

NUMBER OF BEDROOMS TO BE ADDED: NUMBER OF ADDITIONAL OCCUPANTS IN THE RESIDENCE:
WILL THERE BE A HOME BUSINESS IN THE RESIDENCE? ☐ YES ☐ NO TYPE:

WATER SUPPLY:

☒ MUNICIPAL (M) ☐ PUBLIC (C) ☐ PRIVATE WELL (P) ☐ SHARED WELL (S) ☐ OTHER 'SPRINGS' (O)

PROPOSED USE OF WELL: ☒ N/A ☐ IRRIGATION ☐ POTABLE ☐ GEOTHERMAL ☐ OTHER

ARE ANY OF THE FOLLOWING LOCATED ON THE PROPERTY? IF SO, PLEASE SHOW LOCATION ON SITE PLAN/PLAT.

BURIED CABLES, LANDFILLS, STUMPHOLES	☐ YES	☒ NO	WELLS, SPRINGS, OR WATER LINES	☐ YES	☒ NO
EXISTING WASTEWATER SYSTEMS	☐ YES	☒ NO	DESIGNATED WETLANDS	☐ YES	☒ NO
EASEMENTS OR RIGHT-OF-WAYS	☒ YES	☐ NO	GRADING/SOIL REMOVAL PERFORMED	☐ YES	☒ NO

PROPERTY OWNER:

NAME: NVR, INC.
ADDRESS: 10815 David Taylor Dr., Ste 100
CITY: Charlotte
STATE: NC ZIP: 28262
HOME PHONE: WORK PHONE: 704-548-3534
MOBILE PHONE: FAX:

LEGAL AGENT FOR PROPERTY OWNER, IF APPLICABLE:

NAME: Kim Stanley
ADDRESS:
CITY:
STATE: ZIP:
HOME PHONE: WORK PHONE: 791-6853
MOBILE PHONE: FAX:

WHAT DATE WAS THE PROPERTY ORIGINALLY DEEDED AND RECORDED? 8/13/04
WHAT IS THE ANTICIPATED CLOSING DATE FOR THIS PROPERTY? Jan 2007

*An Improvement Permit is subject to suspension or revocation if site plans or the intended use change or if information submitted in this application is falsified or changed. The undersigned, owner, or legal agent for the owner, of the property described above as the "Job Location" has read the foregoing application, acknowledges that the contents of same are true, and authorizes the Mecklenburg County Health Department to enter onto the property for the purpose of processing this request.

Kim Stanley 10/9/06
Owner's/Agent's Signature Date

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT & NATURAL RESOURCES DIVISION
OF ENVIRONMENTAL HEALTH ON-SITE
WASTEWATER SECTION

*A Well Permit is subject to suspension or revocation if site plans or the intended use change or if information submitted in this application is falsified or changed. The undersigned, owner, or legal agent for the owner, of the property described above as the "Job Location" has read the foregoing application, acknowledges that the contents of same are true, and authorizes the Mecklenburg County Health Department to enter onto the property for the purpose of processing this request.

Owner's/Agent's Signature Date

MECKLENBURG COUNTY HEALTH DEPARTMENT
GROUNDWATER & WASTEWATER SERVICES
700 N. TRYON ST., SUITE 211
CHARLOTTE, NC 28202 704-336-5100 / FAX: 704-336-8894

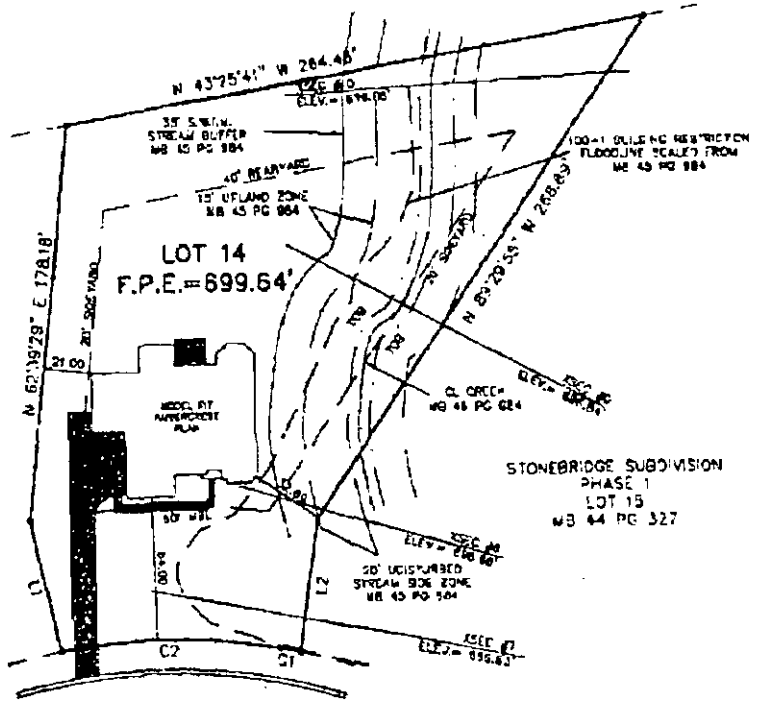
PROPOSED MODEL FIT

PREPARED BY:

DELTA LAND SERVICES, INC.
6033 FLORENCE AVENUE, SUITE 100
CHARLOTTE, NORTH CAROLINA 28212
(704) 536-6190

MODEL FIT ONLY
NOT TO BE USED
FOR CONSTRUCTION
OR STAKING

SCALE: 1" = 60'



STONEBRIDGE WAY
60' PUBLIC R/W

LINE TABLE		
LINE	LENGTH	BEARING
L1	50.03	N44°04'43"E
L2	50.08	N84°37'02"E

CURVE TABLE					
CURVE	RADIUS	LENGTH	CHORD	BEARING	DELTA
C1	286.00	9.53	9.53	S23°02'44"E	1°54'35"
C2	286.00	98.96	98.47	S33°54'47"E	19°49'34"

ESTIMATED SIDEWALK AREA = 178.7 SQ.FT.±
ESTIMATED DRIVEWAY AREA = 1744 SQ.FT.±

STAKEOUT [ ]

NOT FOR RECORDATION, CONVEYANCES OR SALES

Subdivision STONEBRIDGE SUBDIVISION, PASE 2, MAP 1 (REVISED) County MECKLENBURG
Address 9540 STONEBRIDGE WAY Owner RYAN HOMES
Lot 14 Block ___ Plan AMBERCRESS Elevation A Drive (Left) X (Right) ___ (Courtyard) ___ Deck X
Patio ___ Fireplace REAR Garage (1 Car) ___ (2 Car) ___ (3 Car) X Brick FULL Basement ___ Curtain Wall ___ X
Crawl ___ Slab ___ Other MORNING ROOM, SITTING AREA, IN-LAW SUITE

REVISED: DWN: TMC CKD: MB DATE: 07/ 31/ 06