HA OWEN & ASSOCIATES NC.

SOIL & ENVIRONMENTAL SCIENTISTS

P. O. Box 400, 266 Old Coats Road
Lillington, NC 27546
Phone (910) 893-8743 / Fax (910) 893-3594
E-mail: halowen@intrstar.net

25 October 2004

Mr. Leon Anderson
Leon Anderson Construction
6212 Rawls Church Road
Fuquay-Varina, NC 27526

Reference: Site Investigation & Septic System Design
Victoria Hills II – Lot 61

Dear Mr. Anderson,

A site investigation was conducted for the above referenced property located on the west side of Lafayette Road (S.R. 1443), Black River Township, Harnett County, North Carolina. The purpose of the investigation was to determine the ability of this lot to support a subsurface sewage waste disposal system and 100 % repair area for a typical three-bedroom home. It is my understanding that public water supplies will be utilized for this lot. A foundation drain will not be possible. A pressure manifold to unequal length innovative drainlines totaling 300 linear feet is the proposed design for the initial septic system and a low-pressure pipe distribution system with a pretreatment filter is proposed for the repair septic system. The pretreatment filter is proposed with the repair field because of limited depths to unsuitable layers within the 12-inch treatment zone below the trench bottom. The house footprint was modified from the original submittal to allow sufficient space for the initial and repair septic system. Attached is the septic system design and supporting information that you will need to submit along with a modified site plan to the Harnett County Health Department for review and the permitting process. This report represents my professional opinion but does not guarantee or represent permit approval for this lot by the local Health Department.

The septic system has been demonstrated with various colored pin flags that are located on the lot. It is important that you do not disturb the septic system area. It is recommended that a staked line or protective fence be placed around the system prior to construction to eliminate any potential damage to the soil or the layout of the system.

I appreciate the opportunity to provide this service and hope to be allowed to assist you again in the future. If you have any questions or need additional information, please contact me at your convenience.

Sincerely,

Laura J. Fortner

Laura J. Fortner
Licensed Soil Scientist

q:\misch--8\vhills61.pla 10-21-2004

Lot 61, Victoria Hill I, Phase 7

On-Site Wastewater Design Specifications

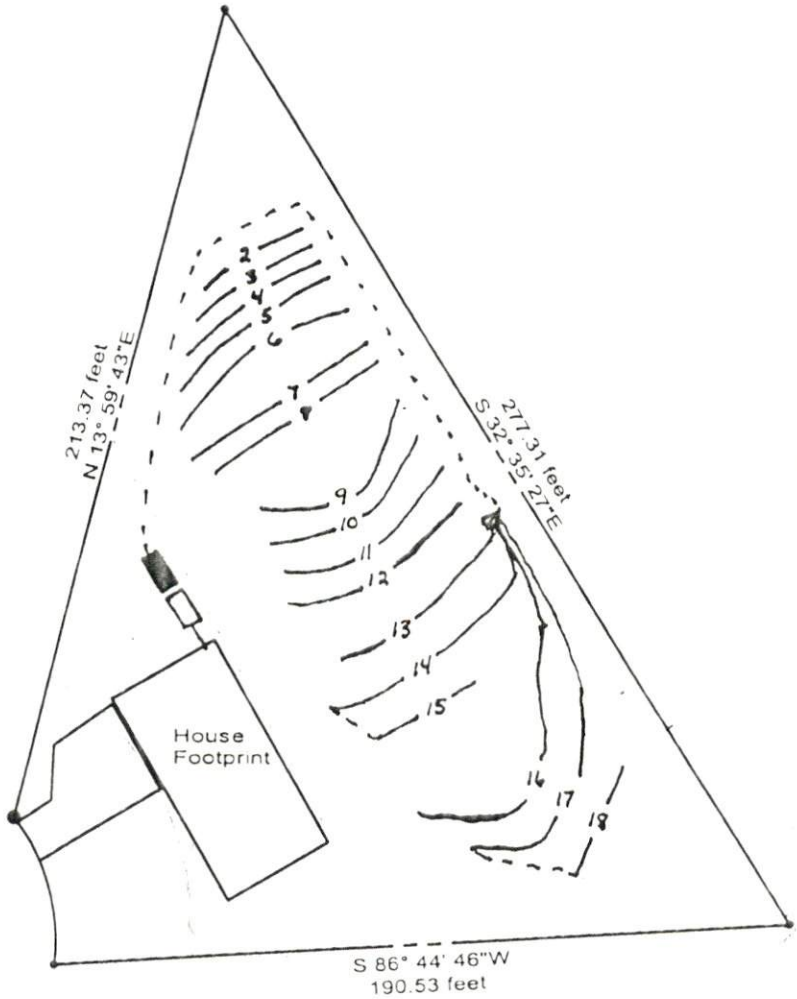
Prepared By: LJF
Hal Owen & Associates, Inc.
Soil & Environmental Scientists
P.O. Box 400, 266 Old Coats Rd.
Lillington, NC 27546-0400
Phone: (910) 893-8743

House Footprint: 30' x 60' (No Foundation Drain)
Bedrooms: 3 (Daily Flow 360 gpd/sqft)

Initial System: Pressure-Manifold Innovative (300-ft)
on contour at: 12 inches
Soil LTAR: 0.3 gpd/sqft
Repair System: Pretreatment Filter with
Low-Pressure Pipe Distribution (540-ft)
on contour at: 12 inches
LTAR: 0.13 gpd/sqft

LEGEND

☆	EIP		Septic Tank
	Step-down		Pump Tank
Ⓦ	Proposed Well		D-Box
⊗	Existing Well		Pressure Manifold



50.00 feet
1:600

Lot 61, Victoria Hills I.

Lines 1-12 flagged at site on 5-ft centers.
Lines 12-18 flagged at site on 9-ft centers.

Initial/ Repair	Line #	Color	Drainline Length(ft)	Measured Field Line Length (ft)	Relative Elevation (ft)
N/A	1	W	0	23	105.91
Repair	2	B	28	28	105.87
Repair	3	R	35	35	105.7
Repair	4	Y	42	42	105.49
Repair	5	W	49	49	105.25
Repair	6	B	53	53	105.09
Repair	7	R	55	55	104.83
Repair	8	Y	52	54	104.75
Repair	9	W	55	58	104.44
Repair	10	B	56	58	104.33
Repair	11	Y	57	58	104.2
Repair	12	R	58	58	104.04
Initial	13	Y	50	59	103.81
Initial	14	W	60	68	103.57
Initial	15	B	30	33	103.35
Initial	16	R	70	73	103.13
Initial	17	Y	60	61	102.7
Initial	18	B	30	30	102.13
Pump Tank:					104.16
		Total:	840	895	EIP = 100

Lot 61, Victoria Hills II

Pressure Manifold Design Criteria

Initial System

Line Number	Line Color	Elevation	Drainline Length(ft)	Tap Size/ Schedule	Flow/tap (gpm)	gpd/ft	LTAR (gpd/sqft)
13	Y	103.81	50	1/2" sch 80	5.48	1.203	0.401
14/15	W/B	103.57 & 103.35	90	3/4" sch 80	10.10	1.232	0.411
16	R	103.13	70	1/2" sch 40	7.11	1.115	0.372
17/18	Y/B	102.70 & 102.13	90	3/4" sch 80	10.10	1.232	0.411

Total Drainline= 300 Total Flow= 32.79

Pressure Head (ft)= 2

Target LTAR (gpd/sqft)= 0.4

LTAR + 5% 0.42

Daily Flow 360

Total Flow (gpm)= 32.79

Daily PRT(min)= 10.98

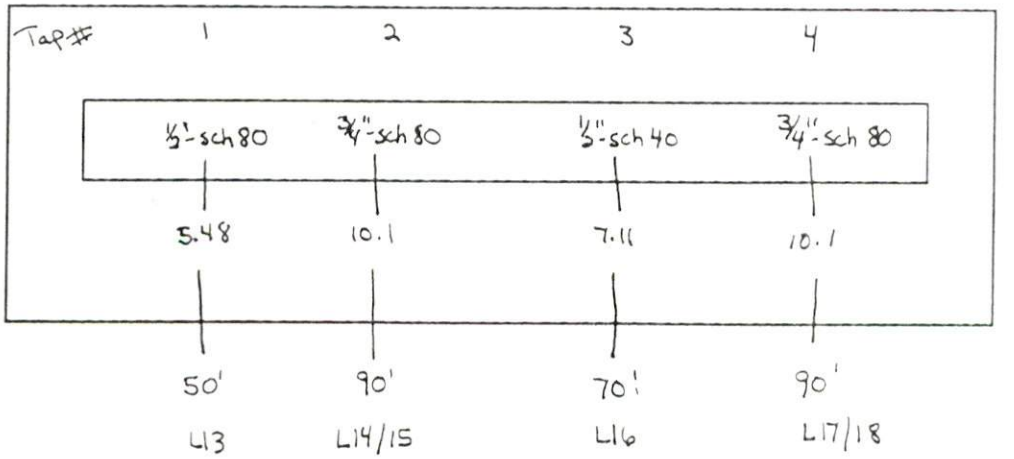
% Pipe Volume = 75

Dose Volume (gal)= 146.93

Dose PRT (min)= 4.48

Manifold Diagram:

4 Inch Schedule 80 Manifold



Prepared By: Hal Owen and Associates, Inc.
PO Box 400, Lillington, NC 27546
Ph (910) 893-8743 / Fx 893-3594

10/20/2004

Lot 61, Victoria Hills II

Repair System

Low Pressure Pipe Distribution Flow Sheet

Subfields	Line #	Line Color	Line Length	Relative Elev(ft)	Elevation Change	Pressure Head(ft)	Hole Size	Flow/ Hole	Flow/ Lateral	gpm/ft	# Holes	Hole Spacing	First/Last Holes
	2	B	28	105.9	0.0	4.0	5/32	0.5757	3.45	0.1234	6	4	4.00
	3	R	35	105.7	0.2	4.2	9/64	0.4778	4.30	0.1229	9	3	5.50
1	4	Y	42	105.5	0.4	4.4	5/32	0.6038	4.83	0.1150	8	5	3.50
	5	W	49	105.3	0.6	4.6	5/32	0.6174	5.56	0.1134	9	4	8.50
	6	B	53	105.1	0.8	4.8	5/32	0.6306	5.68	0.1071	9	5	6.50
	7	R	55	104.8	1.1	5.1	5/32	0.6500	5.85	0.1064	9	6	3.50
	8	Y	52	104.8	0.0	4.0	9/64	0.4663	5.60	0.1076	12	4	4.00
	9	W	55	104.4	0.4	4.4	5/32	0.6038	5.43	0.0988	9	5	7.50
2	10	B	56	104.3	0.5	4.5	5/32	0.6106	5.50	0.0981	9	6	4.00
	11	Y	57	104.2	0.6	4.6	5/32	0.6174	5.56	0.0975	9	5	8.50
	12	R	58	104.0	0.8	4.8	5/32	0.6306	5.04	0.0870	8	7	4.50
		Sum=	540										
						% Decrease of gpm/ft from top to bottom line=				29.50			

Calculations:

Flow/Hole = 11.79 d^2 $h^{1/2}$ **Flow/Lateral** = (flow/hole) x #holes

gpm/ft = (flow/hole) x #Holes / line length

Sup. Ln(d)Vol = Supply Line Length /100 x Pipe Size & Vol Table

Lat. Ln Vol (1&1/4) =Total linear footage /100 x Pipe Size & Vol Table

Man Vol = Manifold Length x Pipe Volume /100

Dose Vol = Sup. Line Vol + Manifold Vol + 5(Lat. Line Vol)

Run Time = Dose Vol/Total Flow

Draw Down = Dose Vol / Pump Tank Vol x liquid depth of tank(inches)

Elev Head(EH)=Manifold - (PTank - 5)

Friction Head = [0.00113 x (Supply Line Length(ft) + 70' for fittings in pump tank) x Flow(gpm)^1.85] / Pipe Inside Diameter(in)^4.87

Computed by the Hazen Williams Formula

TDH= Pressure Head + Elevation Head + Friction Head

Design Specifications

Sup.Line (d)Vol=	
Lat. Line (d)Vol=	
Manifold (d)Vol=	
Dose Vol Range	
Dose Vol=	@ x

Total Flow=	56.79
LTAR=	
Run Time=	
Draw Down=	

Pressure Head(ft)=	4
Elevation Head(ft)=	
Friction Head(ft)=	
TDH (ft)=	

Prepared By: Hal Owen and Associates, Inc.
P.O Box 400, Lillington, NC 27546
Ph (910) 893-8743 / Fx 893-3594

10/20/2004