HALOWEN & ASSOCIATES, INC.
SOIL & ENVIRONMENTAL SCIENTISTS
P.O. Box 400, 266 Old Coats Road
Lillington, NC 27546-0400
Phone (910) 893-8743 / Fax (910) 893-3594
E-mail: halowen@earthlink.net

20 February 2006

Oliver Tolksdorf
Harnett County Environmental Health
307 Cornelius Harnett Blvd.
Lillington, NC 27546

Reference: Henry Lewis Spears -- Lot B1
Health Department file No. 05-50013666

Dear Mr. Tolksdorf,

A site investigation was conducted for the above referenced property on 16 February 2006. 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. Public water supplies will be utilized for this lot. A foundation drain appears possible if the proposed home is properly sited. A pump to shallow conventional drainlines (3 X 100ft) installed on contour with maximum ditch bottom depths at 18 inches below surface is the proposed for the initial septic system. The repair septic system has been designed as a pump to shallow innovative drainlines installed on contour with maximum ditch bottom depths at 18 inches below surface.

A curtain drain will need to be installed above the initial septic system. It is recommended that the curtain drain be installed 15 feet off of the northwestern property line in order to maintain regulatory setbacks from the neighboring lot's initial septic system and repair area; no setbacks from the rear property line are recommended. The curtain drain has been designed at least 36 inches deep along the northwest property line to intercept lateral water movement indicated by gray mottles observed at 30 inches. The attached chart shows the ground surface elevation and the proposed in-ground-elevation of the curtain drain relative to the existing iron pipe (EIP) in the northwest corner. At the location where the curtain drain will begin (distance 0 ft), the ground surface is at elevation 99.05ft and the curtain drain will be installed at elevation 94.89 ft – or 4.16 feet below ground surface. The curtain drain will run for 138 feet to the rear property line with a uniform fall of 1 percent (1 inch fall per 8 linear feet). The ground surface at the turn (distance 138 ft) is elevation 97.92ft, and the curtain drain will be installed with an in-ground-elevation of 93.45 ft – or 4.47 feet below ground surface. At this point, the curtain drain will end and the water collected will be conveyed by solid pipe approximately 100 more feet (distance 240 ft), maintaining 1 inch of fall per 8 linear feet, until the pipe surfaces. The outlet end of the pipe will be approximately 45 feet downslope of the last line of the repair septic system.

Attached is the septic system layout and supporting information for this lot. I trust that this report provides all the information that you require at this time. If you have any questions or need additional information, please contact me at your convenience.

Sincerely,

Hal Owen

Hal Owen
Licensed Soil Scientist

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Henry Lewis Spears Lot B1

On-Site Wastewater Design Specifications

House Footprint: 75ft X 60ft
Foundation Drain Possible
Bedrooms: 3 (360 gpd)

Initial System: 3 X 100ft Shallow Conventional
on contour at 18 inches
LTAR 0.4 gal/day/sqft
Repair System: 2 X 125ft Shallow Innovative
on contour at 18 inches
LTAR 0.4 gal/day/sqft

Prepared By: KDB
Hal Owen & Associates, Inc.
Soil & Environmental Scientists
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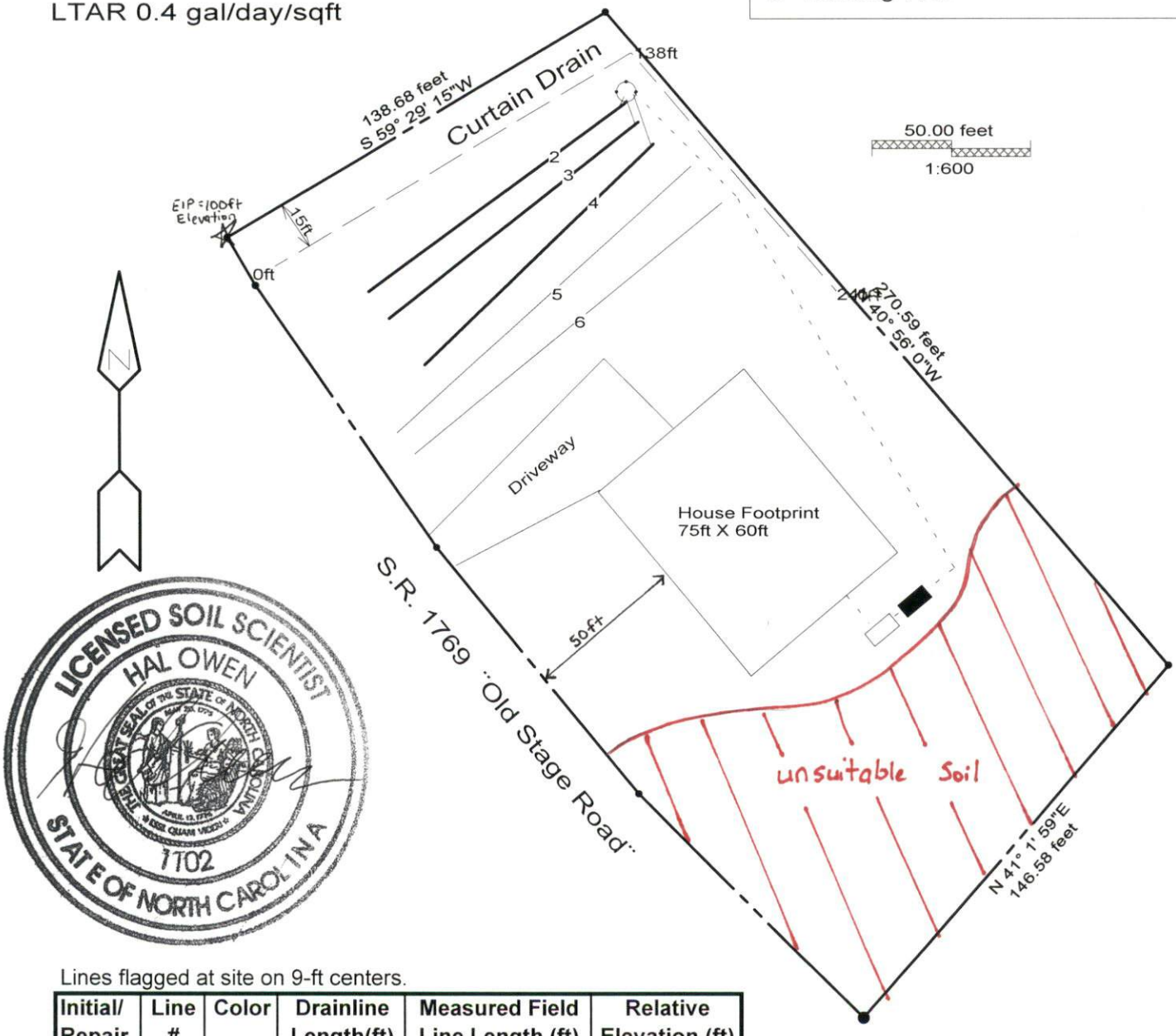
Phone: (910) 893-8743

LEGEND

EIP	Septic Tank
Supply Line	Pump Tank
Proposed Well	D-Box
Existing Well	Pressure Manifold



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THE GREAT SEAL OF THE STATE OF NORTH CAROLINA
1102
STATE OF NORTH CAROLINA

Lines flagged at site on 9-ft centers.

Initial/ Repair	Line #	Color	Drainline Length(ft)	Measured Field Line Length (ft)	Relative Elevation (ft)
-	1	R	-	50	97.11
Initial	2	B	100	116	96.86
Initial	3	W	100	113	96.47
Initial	4	Y	100	116	95.93
Repair	5	R	125	128	95.22
Repair	6	B	125	129	94.57
Pump Tank:					90.43
		Total:	**550**	**652**	**EIP=100**

The unsuitable soil area has been transfered from a hand-drawn map and is approximate.

Pump System Design Criteria

Applicant: Henry Lewis Spears Phone #: (910) 980-1834
Mailing Address: P.O. Box 166, Erwin, NC 28339

PIN: 0589-21-2349 Harnett County Health Dept. file No.: 05-50013666
Site Address: Old Stage Road; Lot#B1 Henry L Spears 1Ac

Bedrooms: 3 Daily Flow: 360 gallons

Septic Tank: 1000 gallons Pump Tank: 1000 gallons

LTAR: 0.4 gpd/sqft

Amt. of Drainline: 900 sqft or 300 linear ft

TRENCHES Length (ft): 100 Depth (in): 18 Stone Depth (in): 12

SUPPLY LINE Length (ft): 200 Diameter: 2" sch 40 pvc

CALCULATIONS:

Dose Volume (gal): 147 w/ Pipe Vol @ 75 Total Flow: 23 gpm

Dose Pump Run Time (min): 6.39 Daily Pump Run Time (min): 15.65

Drawdown: 147 gallons divided by 21 gal/ inch = 7.00 inches

Pump Tank Elevation(ft): 90.43 Pump Elevation (ft): 85.43

Friction Head (ft): 2.94 (supply line length + 70' for fittngs in pump tank)
Elevation Head (ft): 11.43
Total Head (ft): 14.37

Pump to Deliver: 23 gpm @ 14.37 ft head

Simplex Control Panel (SJE Rhombus 112 or equal) with elapsed time meter, cycle counter, alarm, and pump on separate circuits is required. Floats to be determined by type of pump tank used.
A septic filter (Polylok PL-122 or equal) is required.

Possible Pumps Include:
Hydromatic: SW25 1/4H.P. Zoeller:

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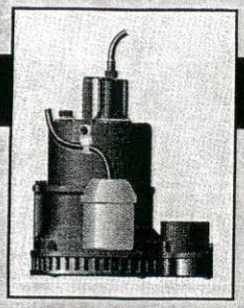
Ph (910) 893-8743 / Fx 893-3594

2/20/2006



ENGINEERING DETAILS - SW25/33

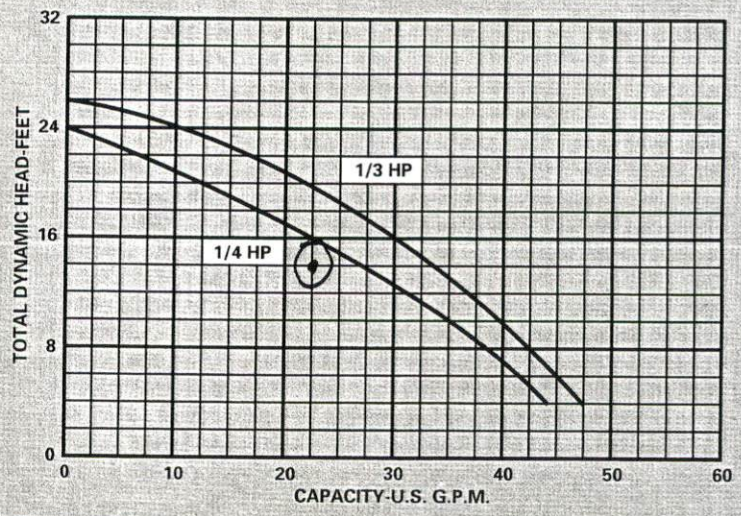
Pump Characteristics

Pump/Motor Unit	Submersible	
Manual Models	SW25M1	SW33M1
Automatic Models	SW25A1	SW33A1
Horsepower	1/4	1/3
Full Load Amps	8.0	10.0
Motor Type	Shaded Pole (4 pole)	
R.P.M.	1550	
Phase Ø	1	
Voltage	115	
Hertz	60	
Operation	Intermittent	
Temperature	120°F Ambient	
NEMA Design	A	
Insulation	Class A	
Discharge Size	1-1/2" NPT	
Solids Handling	1/2"	
Unit Weight	30 lbs.	
Power Cord	18/3, SJTW, 10' std. (20' optional)	

Materials of Construction

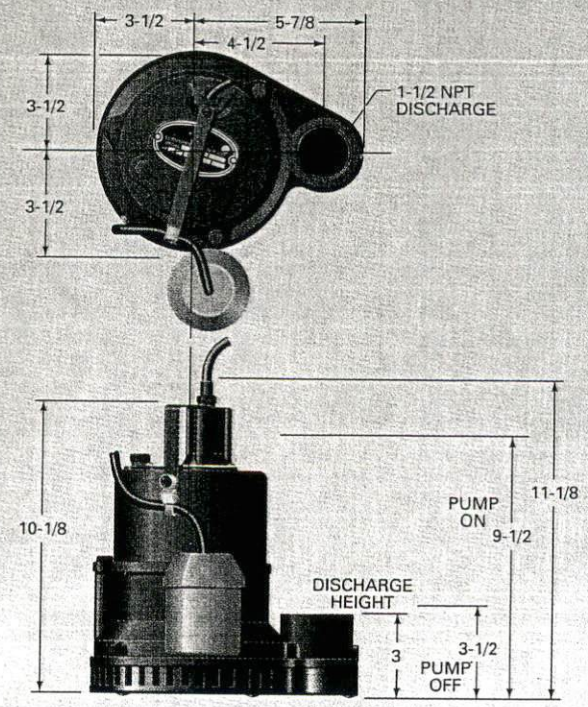
Handle	Steel
Lubricating Oil	Dielectric Oil
Motor Housing	Cast Iron
Pump Casing	Cast Iron
Shaft	Steel
Mechanical Shaft Seal	Seal Faces: Carbon/Ceramic Seal Body: Anodized Steel Spring: Stainless Steel Bellows: Buna-N
Impeller	Thermoplastic
Upper Bearing	Bronze Sleeve Bearing
Lower Bearing	Single Row Ball Bearing
Strainer/Base	Plastic
Fasteners	Stainless Steel

Performance Data



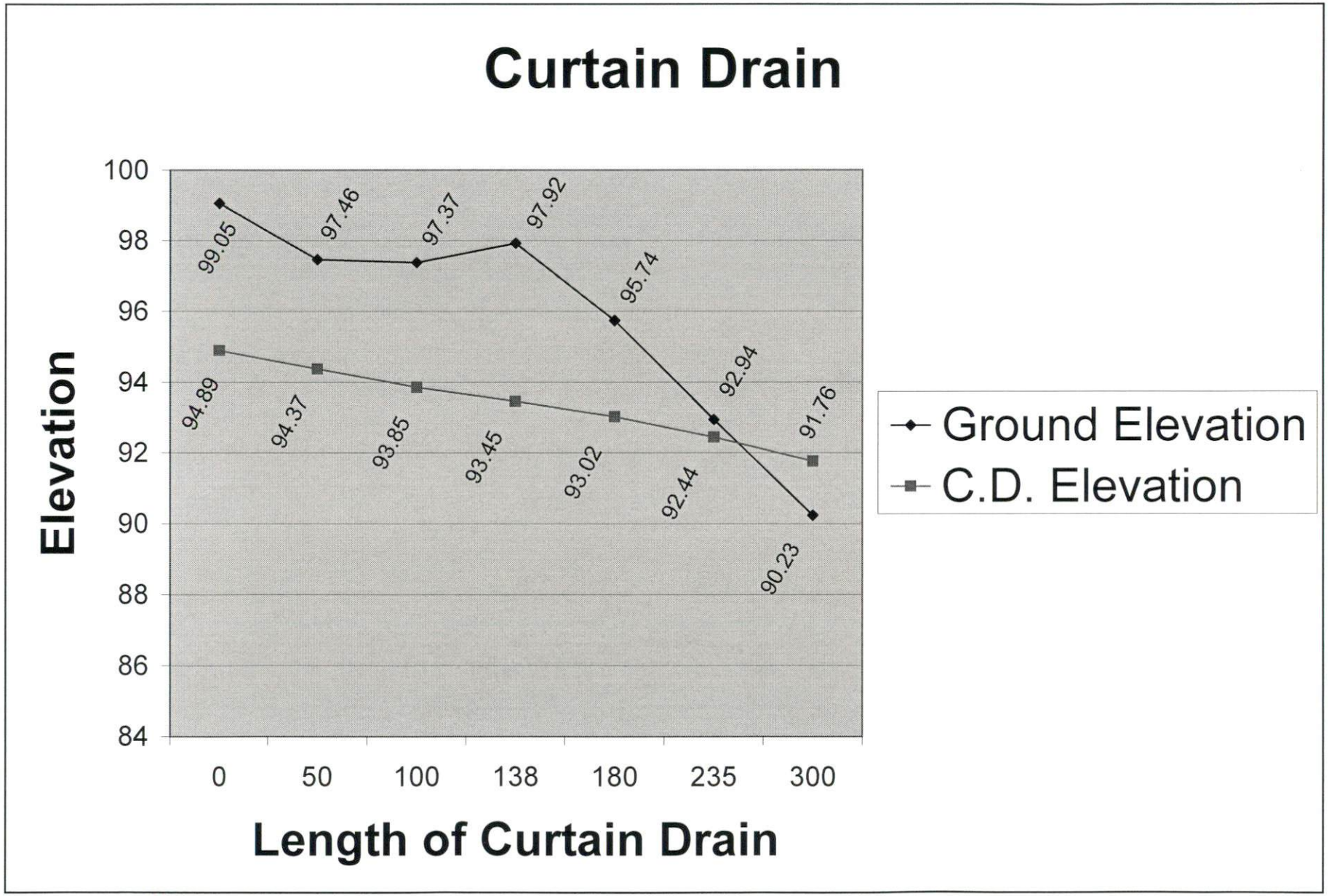
Total Head (feet)		4	6	8	10	12	14	16	18	20	22	24
GPM	1/4 HP	44	41	36	33	29	26	23	18	12	6	0
	1/3 HP	47	45	43	40	37	34	30	26	22	16	10

Dimensional Data



1. All dimensions in inches
2. Component dimensions may vary ± 1/8 inch
3. Not for construction purpose unless certified
4. Dimensions and weights are approximate
5. On/Off level adjustable
6. We reserve the right to make revisions to our products and their specifications without notice

AURORA/HYDROMATIC Pumps, Inc.
1840 Baney Road, Ashland, Ohio 44805
(419) 289-3042


Curtain Drain
Elevation
100
98
96
94
92
90
88
86
84
99.05
97.46
97.37
97.92
95.74
92.94
91.76
90.23
94.89
94.37
93.85
93.45
93.02
92.44
0
50
100
138
180
235
300
Length of Curtain Drain
Ground Elevation
C.D. Elevation