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Attached is a proposed design for an Innovative (25% reduction) Septic System with Pressure Manifold distribution for a 4 bedroom single family residence on Lot #33 Anniston Subdivision, Iredell County, North Carolina.

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May 29, 2007
Project No. 01-1005
Design By: Samuel A. Rollans, LSS

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By

INFORMATION FOR THE INSTALLER:

- The permit should be read very carefully prior to bidding. The following are details that must be considered along with all other considerations.
- Tanks shall be approved by DEHNR, and certification supplied by the manufacturer.
- Tanks shall be water tested prior to installation.
- The installer shall be responsible to the owner for placement of the tanks and to insure that final grades are returned to the original natural grade, with exception of added structural features.
- The supply trench shall be compacted to eliminate 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 is within 2" from the highest to . the lowest points of elevation within the trench. If the bottom elevation needs adjusting after it has been trenched, it will be done by removing high points rather than filling low points. It is extremely important to insure that trenches are not over excavated during initial trenching. All fine grading within the trench will be hand done with a shovel. No loose material will be left in the trench
- All pipe openings in the tanks shall be properly grouted. This also applies to the joints around the riser.
- All tanks shall be properly back filled and compacted to prevent slump at a later date.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral.
- 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 pinflag locations should be checked by the installer prior to beginning trenches.
- Pumptank riser should be 6" above grade, control panel should be 12" above grade.
- Septic tank riser shall be a minimum of 6" above finished grade.
- Design precludes use of foundation drains on the residence.
- System is specified as an innovative 25% reduction installation.
- Repair is specified as a 25% reduction with low pressure distribution installation.
- rake trench walls, lime side-walls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.
- See force main design for pump supply line material specification, elevations and locations (provided by Piedmont Design Associate, PA)

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner: ANNISTON, LLC

Address: 17824 Statesville Rd., Suite 112
Cornelius, NC 28031
Phone: 704 362 5007
County: Iredell
Location: Anniston Lot 33

Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Daily Wastewater Production: 480 gpd
System Flow: 42.66

Design Specifications

Drainfield Size: 600
Loading Rate: 0.2 gpd/ft.^{2}
Depth of Gravel in Trench: NA (25% reduction)
Gravel Size: NA (25% reduction)
Trench Depth: 18 in.
Trench Width: 36 in.
Septic Tank Size: 1000
Pump Tank Size: 1000

Estimated Supply Line Length: 81
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 14.09
Dosing Volume: 250.00
Supply Manifold: 4 in. SCH 80 PVC
Supply Manifold Length: 4 ft. (minimum)
Supply Manifold Volume: N/A

Recommended Float Controls: SJE Sensor Float Control Switches as Required for Control Panel or County Approved Equivalents
Recommended Control Panel: SJE-Rhombus Model 112 (NEMA 4x) Control Panel or County Approved Control Panel.

Pressure Head: 2 ft.
Friction Head: 5.70
Elevation Head: 0.00
Total Dynamic Head: 8.86

Threaded Union: In Tank
Gate Valves: 1 in Tank
1 at Pressure Manifold
Check Valves: In Tank
Anti-Siphon Hole: ~~NO~~ YES

Additional Comments: Soil suitability was performed by Rollans Soil & Environmental Services.

ANNISTON LOT 33
PRESSURE MANIFOLD DESIGN

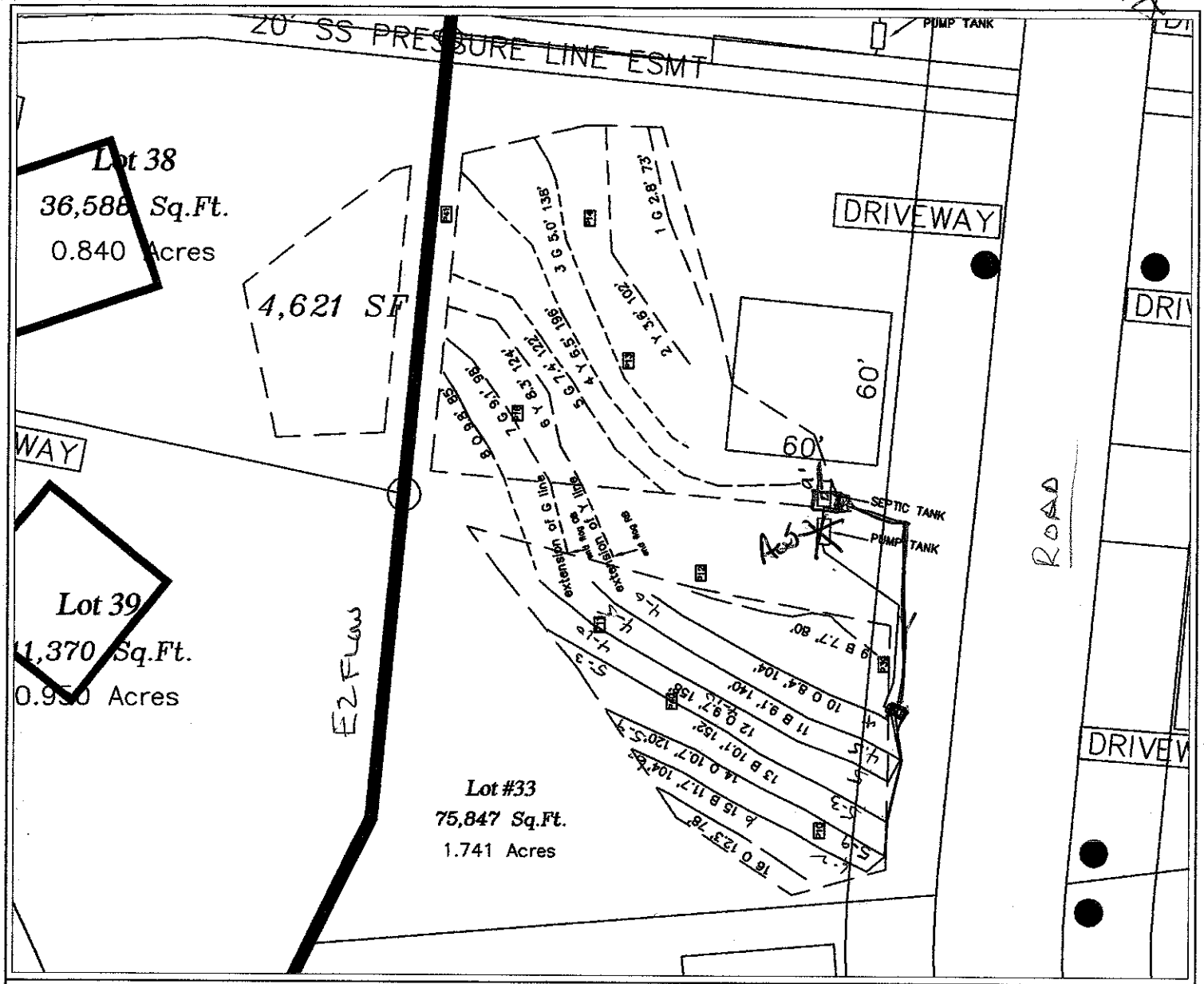
DESIGN FLOW:	480	
SOIL APPLICATION RATE:	0.2 gpd/ft.^{2}	
TOTAL AREA TRENCH BOTTOM:	1800	
TOTAL LATERAL LENGTH:	600	
NUMBER OF FIELDS:	1	
LATERAL LENGTH REQUIRED PER FIELD:	480	
SUPPLY LINE LENGTH:	81	
TOTAL DYNAMIC HEAD:	8.86	
MANIFOLD SIZE:	4 in.SCH 80 PVC	
DOSING VOLUME:	250.00	
PUMP TANK DRAW DOWN*:	11.9	
SEPTIC TANK SIZE:		1000
PUMP TANK SIZE:		1000

**Pump tank draw down based on a volume basis of 21 gallons per inch. Draw down may vary among pump tank manufacturers.*

PRESSURE MANIFOLD TAPSHEET - ANNISTON LOT 33

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	gpd	Trench Area	Line LTAR
10	ORANGE	94.1	100	SCH 40 1/2	7.11	41.67	300	0.14
11	BLUE	93.4	100	SCH 40 1/2	7.11	41.67	300	0.14
12	ORANGE	92.8	100	SCH 40 1/2	7.11	41.67	300	0.14
13	BLUE	92.4	100	SCH 40 1/2	7.11	41.67	300	0.14
14	ORANGE	91.8	100	SCH 40 1/2	7.11	41.67	300	0.14
15	BLUE	90.8	100	SCH 40 1/2	7.11	41.67	300	0.14
	total	feet =	600	gal/min =	42.66			
			Des. Flow	480				
			Pump Run=	5.86				
			soil LTAR	0.2				
			LTAR +5%	0.21				
			LTAR with INNOV.	0.266666667				
			LTAR with INNOV. + 5%	0.28				



LEGEND

- Areas contain soils with 24 inches or more of useable material and have potential for conventional, modified conventional and low-pressure pipe (lpp) septic systems.
- Building Envelope (60' x 60')
- System lines.
- Repair lines.
- Temporary Bench Mark (TBM)
- Well Location.

GRAPHIC SCALE
1" = 60'

60 0 60 120

FOR PRELIMINARY PLANNING PURPOSES ONLY. ALL LOTS WILL REQUIRE FINAL APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A LOT BY LOT BASIS. THIS MAP SHOULD BY USED AS A GENERAL GUIDE, SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND COMPLEX TOPOGRAPHIC FEATURES. THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS.

PLEASE REFER TO ATTACHED SOIL REPORT FOR ADDITIONAL SITE SPECIFIC INFORMATION

ROLLANS SOIL & ENVIRONMENTAL SERVICES
2128 GRAHAM ROAD
MOUNT ULLA, NC 28125
PHONE/FAX: (704)278-0989
ASHLEY ROLLANS, NC LICENSED SOIL SCIENTIST
MOBILE: (704)746-5046
EMAIL: ROLLANSFORTC@AOL.COM

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: RIDGELINE DEVELOPMENT CORP. / ANNISTON PHASE II

LOCATION/DATE: SHERRER CHAPEL ROAD, IREDELL COUNTY, NORTH CAROLINA, AUGUST 2005

JOB #: 01-1005
FILE: C:\JOBS\01-1005
PROJECT MGR.: S.A.R.
FIELD WORK: S.A.R.
DRAWN BY: S.A.R.

CALCULATIONS

Location ANNISTON SUBDIVISION

Project Number 01-1005

Lot No: LOT 33

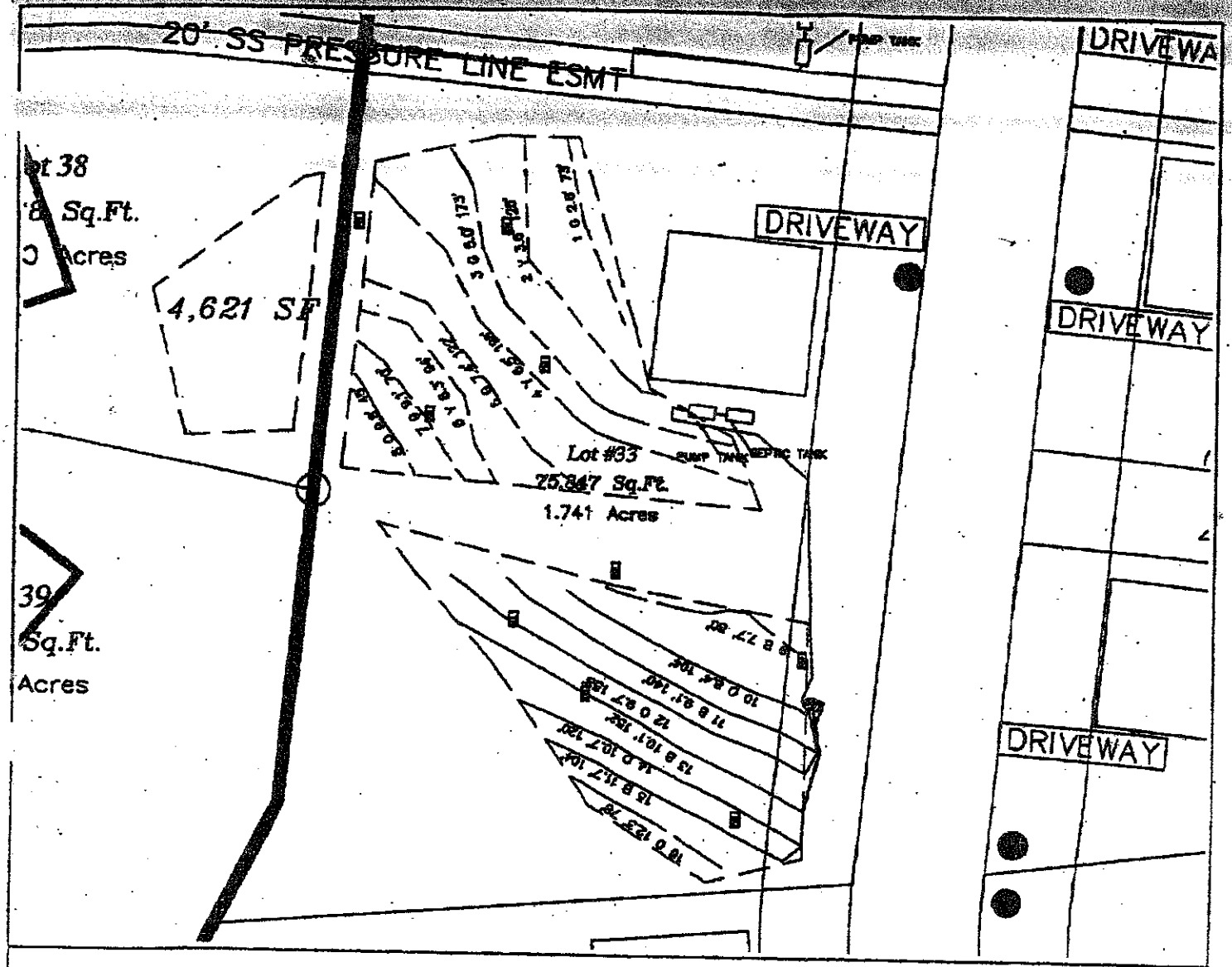
No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.2	$^{gal}/_{ft^2\ day}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	81	ft.
Supply Line Volume	14.094	gal.
Required Feet of Line	480	ft.
Amount of Line from Layout	600	ft.
Gallons per Minute	42.66	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	391.8	gal.
Dosing Volume	250.00	gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	11.9	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.86	minutes
Elevation Head	0	ft.
Pressure Head	2	ft.
Friction Factor	3.48	ft./100 ft. *(From the interpolater.)*
Friction Head	5.70	ft.
Total Dynamic Head (+15%)	8.86	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



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EMAIL: ROLLANSFOREST@AOL.COM

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: [illegible] DEVELOPMENT CORP. / PHASE 1

LOCATION/DATE: [illegible] CHAPEL ROAD
[illegible] COUNTY, NORTH CAROLINA
[illegible] 2007

JOB # : 01-1008
FILE: G:\JOBS\01-1008
PROJECT MGR.: S.A.R.
FIELD WORK: S.A.R.
DRAWN BY: S.A.R.