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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 #34A Anniston Subdivision, Iredell County, North Carolina.

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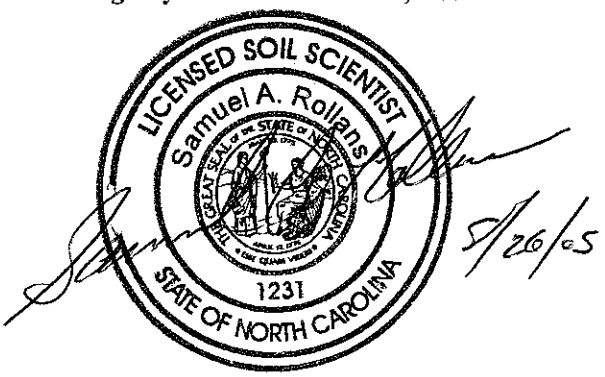
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August 5, 2005
Project No. 01-1005
Design By: Samuel A. Rollans, LSS



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 34A

Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Daily Wastewater Production: 480 gpd
System Flow: 49.77

Design Specifications

Drainfield Size: 525
Loading Rate: 0.25 gpd/ft.^{2}
Depth of Gravel in Trench: NA (25% reduction)
Gravel Size: NA (25% reduction)
Trench Depth: 36 in.
Trench Width: 36 in.
Septic Tank Size: 1000
Pump Tank Size: 1000

Estimated Supply Line Length: 1115
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 194.01
Dosing Volume: 257.12
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: 51.00
Elevation Head: 37.00
Total Dynamic Head: 103.50

Threaded Union: In Tank
Gate Valves: 1 in Tank
1 at Pressure Manifold
Check Valves: In Tank
Anti-Siphon Hole: NA

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

ANNISTON LOT 34A
PRESSURE MANIFOLD DESIGN

DESIGN FLOW:	480	
SOIL APPLICATION RATE:	0.25 gpd/ft.^{2}	
TOTAL AREA TRENCH BOTTOM:	1575	
TOTAL LATERAL LENGTH:	525	
NUMBER OF FIELDS:	1	
LATERAL LENGTH REQUIRED PER FIELD:	480	
SUPPLY LINE LENGTH:	1115	
TOTAL DYNAMIC HEAD:	103.50	
MANIFOLD SIZE:	4 in.SCH 80 PVC	
DOSING VOLUME:	257.12	
PUMP TANK DRAW DOWN*:	12.2	
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.*

ANNISTON LOT #34A

Project #: 01-1005

LAYOUT FOR 4 BEDROOM HOME — JULY 29 2005

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		2.5			100.00		
INSTR. 1			102.50				
1	***BLUE***			***2.20***	***100.30***	***75***	***75***
2	***ORANGE***			***2.80***	***99.70***	***75***	***75***
3	***BLUE***			***3.30***	***99.20***	***75***	***75***
4	***ORANGE***			***4.00***	***98.50***	***75***	***75***
5	***BLUE***			***4.80***	***97.70***	***75***	***75***
6	***ORANGE***			***5.40***	***97.10***	***75***	***75***
7	***BLUE***			***6.20***	***96.30***	***75***	***75***
8	ORANGE			7.10	95.40	75	75
9	BLUE			8.00	94.50	75	75
10	ORANGE			8.90	93.60	75	75
11	BLUE			10.00	92.50	75	75
12	ORANGE			11.10	91.40	75	75
13	BLUE			11.90	90.60	45	45
					Total	**945**	**945**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
** System*	***525***	***0.25***	*INNOV.*	***0.25***	***25% RED.***	**PRESSURE MANIFOLD**
Repair	***420***	0.25	*MOD.*	0.25	PPBPS	LOW PRESSURE

Notes:

** TBM located on top of ground @eip Lots 23A/34A (see site plan)
**TBM is assumed to be 100'
**All measures in feet
**Nitrification lines are demonstrated on contour via colored pin flags
**BS, HI, and FS indicate rod readings

PRESSURE MANIFOLD TAPSHEET - ANNISTON LOT 34A

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	gpd	Trench Area	Line LTAR
1	BLUE	100.3	75	SCH 40 1/2	7.11	68.57	225	0.30
2	ORANGE	99.7	75	SCH 40 1/2	7.11	68.57	225	0.30
3	BLUE	99.2	75	SCH 40 1/2	7.11	68.57	225	0.30
4	ORANGE	99.5	75	SCH 40 1/2	7.11	68.57	225	0.30
5	BLUE	97.7	75	SCH 40 1/2	7.11	68.57	225	0.30
6	ORANGE	97.1	75	SCH 40 1/2	7.11	68.57	225	0.30
7	BLUE	96.3	75	SCH 40 1/2	7.11	68.57	225	0.30
	total	**feet =**	**525**	**gal/min =**	**49.77**			
			Des. Flow	**480**				
			Pump Run=	**9.64**				
			soil LTAR	**0.25**				
			LTAR +5%	**0.2625**				
			LTAR with INNOV.	**0.333333333**				
			LTAR with INNOV. + 5%	**0.35**				

CALCULATIONS

Location ANNISTON SUBDIVISION

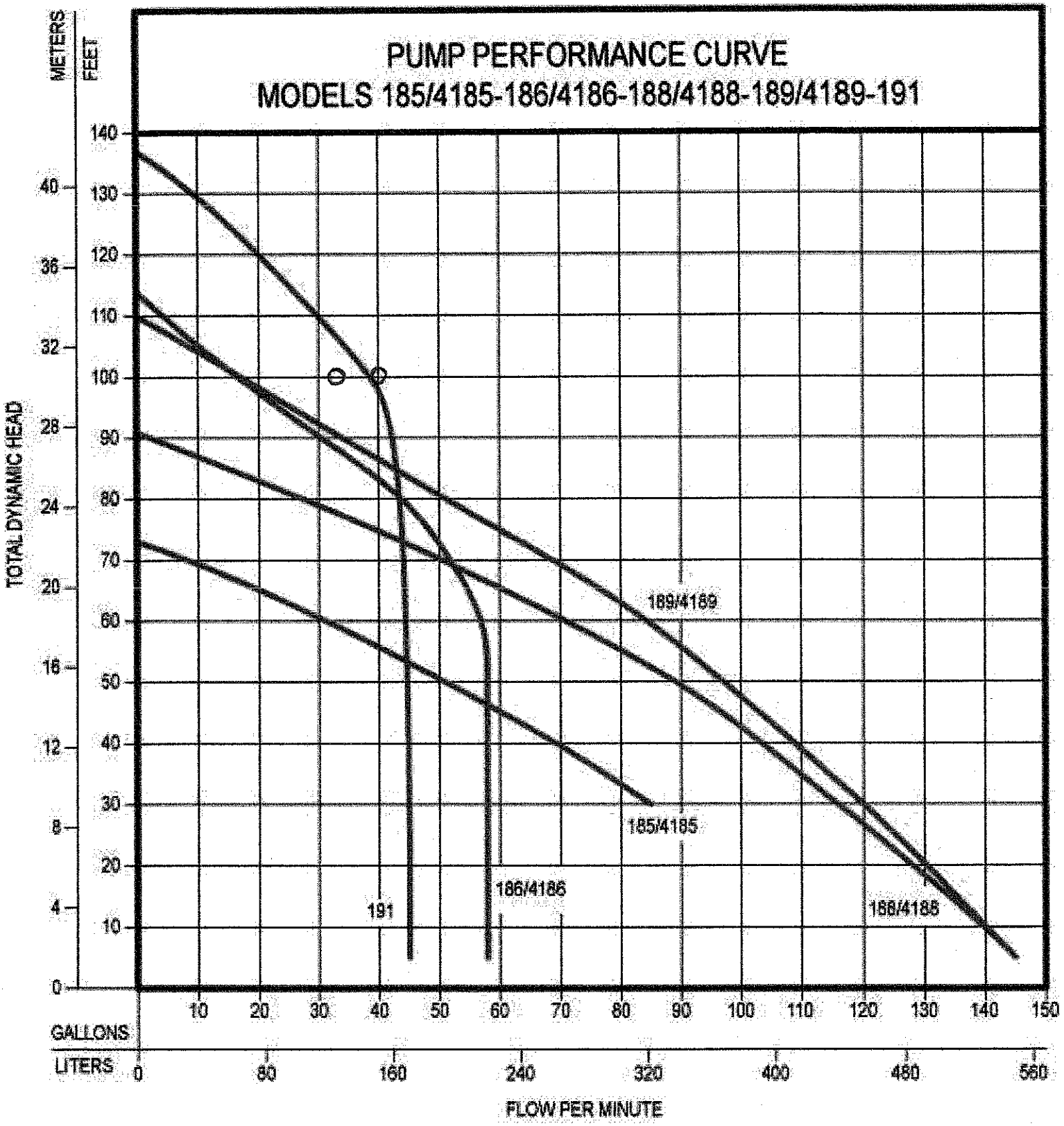
Project Number 01-1005

Lot No: LOT 34A

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.25	$^{gal}/_{ft^2\,day}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	1115	ft.
Supply Line Volume	194.01	gal.
Required Feet of Line	480	ft.
Amount of Line from Layout	525	ft.
Gallons per Minute	49.77	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	342.825	gal.
Dosing Volume	257.12	gal.
	Note: Dosing Volume based on70% of lateral line volume	
Tank Draw Down	12.2	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.17	minutes
Elevation Head	37	ft.
Pressure Head	2	ft.
Friction Factor	1	ft./100 ft. *(From the interpolater.)*
Friction Head	51.00	ft.
Total Dynamic Head (+15%)	103.50	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


PUMP PERFORMANCE CURVE
MODELS 185/4185-186/4186-188/4188-189/4189-191
METERS
FEET
TOTAL DYNAMIC HEAD
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
40
36
32
28
24
20
16
12
8
4
189/4189
185/4185
186/4186
191
186/4186
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
GALLONS
LITERS
0
80
160
240
320
400
480
560
FLOW PER MINUTE

MODELS		185/4185		186/4186		188/4188		189/4189		191	
Feet	Meters	Gal.	Liters	Gal.	Liters	Gal.	Liters	Gal.	Liters	Gal.	Liters
5	1.5	--	--	58	220	145	549	145	549	45	170
10	3.0	--	--	58	220	140	530	140	530	45	170
20	6.1	--	--	58	220	128	484	130.5	494	45	170
30	9.1	85	322	58	220	116	439	120	454	45	170
40	12.2	70	265	58	220	103.5	392	109	413	45	170
50	15.2	51	193	58	220	90	341	97	367	45	170
60	18.3	32	121	58	220	71	269	85	322	45	170
70	21.3	9	34	52	197	51	193	69	261	45	170
80	24.4	--	--	45	170	28	106	51	193	45	170
90	27.4	--	--	30.5	115	2	8	34	129	45	170
100	30.5	--	--	16	60	--	--	17	64	40	151
110	32	--	--	4	15	--	--	--	--	30	114
120	36.6	--	--	--	--	--	--	--	--	20	76
130	39.6	--	--	--	--	--	--	--	--	10	38
Shut-off Head		73 ft. (22m)		114 ft. (35m)		91 ft. (28m)		110 ft. (34m)		137 ft. (42m)	