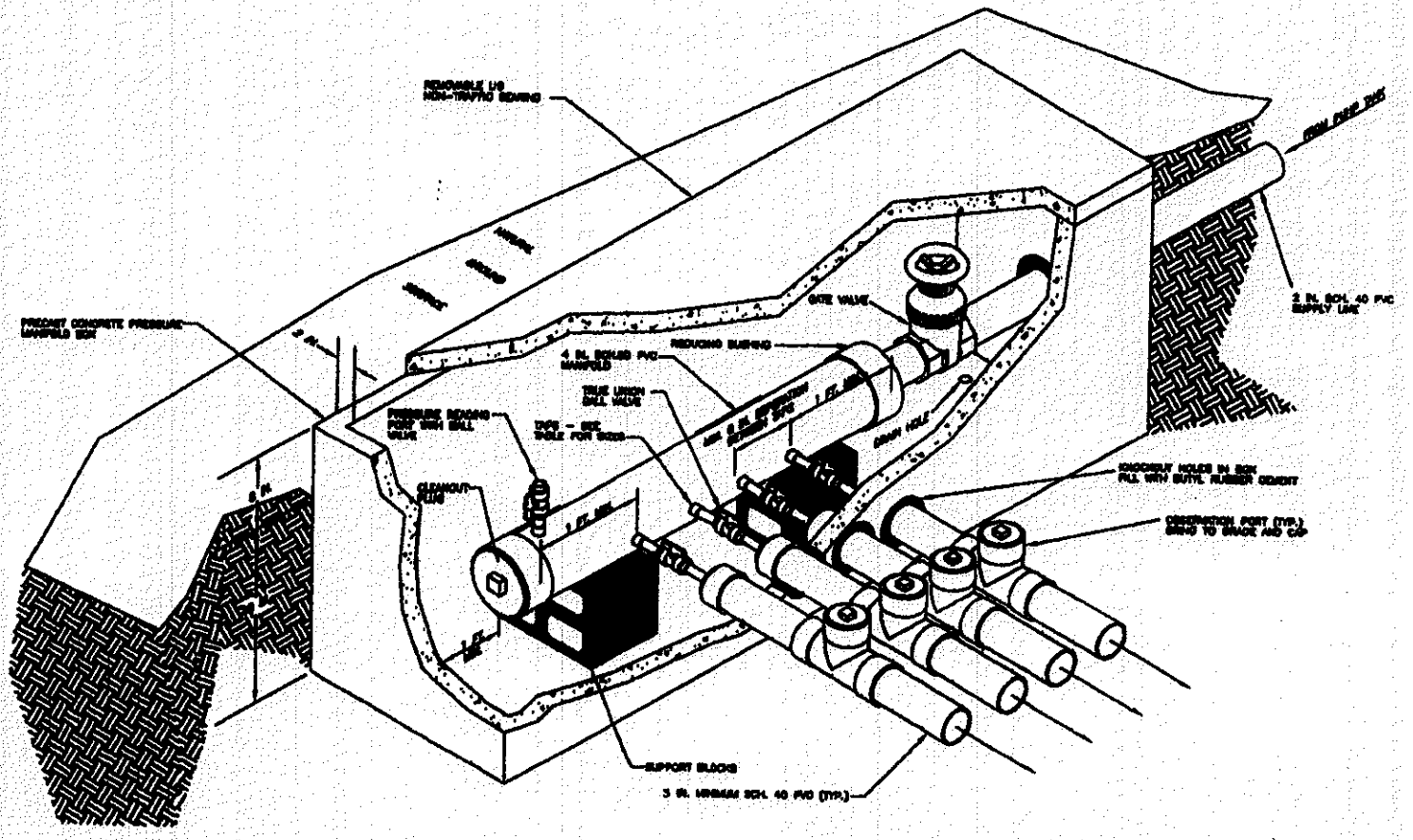
INFORMATION FOR THE INSTALLER:

- 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 DENR, 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.
- System is specified as an innovative 25% reduction installation.
- Repair is specified as a PPBPS with low pressure distribution installation.
- Backfill against house for positive drainage and keep foundation drains<12"below grade.

TYPICAL PRESSURE MANIFOLD DETAIL



CALCULATIONS

Location LAKEWOOD CROSSING SUBDIVISION

Project Number 01-1973

Lot No: Lot 14

No. of Bedrooms	5	
Design Flow	600	$^{gal}/_{day}$
LTAR	.3 gpd/ft²	
25% RED.? (YES OR NO)	YES	
Supply Line Length	150	ft.
Supply Line Volume	26.1	gal.
Required Feet of Line	500	ft.
Amount of Line from Layout	518	ft.
Gallons per Minute	32.29	$^{gal}/_{min}$
Required Septic Tank Capacity	1500	gal.
Minimum Standard Tank Size	1500 gal.	
Lateral Line Volume	338.254	gal.
Dosing Volume	236.78	gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	8.2	*Generic Draw Down of 29 gal.per in.*
Pump Run Time	7.33	minutes
Elevation Head	16	ft.
Pressure Head	2	ft.
Friction Factor	2.05	ft./100 ft. *(From the interpolater.)*
Friction Head	3.08	ft.
Total Dynamic Head (+15%)	24.24	ft.

FRICTION FACTOR INTERPOLATER
2" SCH 40 PVC

GPM	*f*
20	0.84
	-0.88
25	1.27
	-1.28
30	1.78
32.3	2.05
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

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner:	Lakeside Homes
Address:	P.O. Box 32264 Charlotte, NC 28232
Phone:	704.506.4841
County:	Iredell
Location:	Lakewood Crossing Subdivision Lot #14
Source of Wastewater Flow:	5 Bedroom Single Family Residence
Estimated Daily Wastewater Production:	600 gpd
System Flow:	32.29

Design Specifications

Drainfield Size:	518
Loading Rate:	.3 gpd/ft²
Depth of Gravel in Trench:	NA (25% reduction)
Gravel Size:	NA (25% reduction)
Trench Depth:	30-36 in.
Trench Width:	36 in.
Septic Tank Size:	1500 gal.
Pump Tank Size:	1500 gal.
Estimated Supply Line Length:	150
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	26.10
Dosing Volume:	236.78
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:	3.08
Elevation Head:	16.00
Total Dynamic Head:	24.24
Threaded Union:	In Tank
Gate Valves:	1 in Tank 1 at Pressure Manifold
Check Valves:	In Tank
Anti-Siphon Hole:	NA
Additional Comments:	

LAKEWOOD CROSSING SUBDIVISION LOT 14
PRESSURE MANIFOLD DESIGN

DESIGN FLOW:	600
SOIL APPLICATION RATE:	.3 gpd/ft²
TOTAL AREA TRENCH BOTTOM:	1554
TOTAL LATERAL LENGTH:	518
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	500
SUPPLY LINE LENGTH:	150
TOTAL DYNAMIC HEAD:	24.24
MANIFOLD SIZE:	4 in.SCH 80 PVC
DOSING VOLUME:	236.78
PUMP TANK DRAW DOWN*:	8.2
SEPTIC TANK SIZE:	1500 gal.
PUMP TANK SIZE:	1500 gal.

**Pump tank draw down based on a volume basis of 29 gallons per inch. Draw down may vary among pump tank manufacturers.*

LAKEWOOD CROSSING LOT #14

Project #: 01-1973

LAYOUT FOR 5 BEDROOM HOME

May 13, 2014

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		3.5			100.00		
TANK		17.00	86.50				
HOUSE		12.00	91.50				
INSTR. 1			103.50				
1	YELLOW			1.80	101.70	67	67
2	PINK			2.00	101.50	89	88
3	BLUE			4.10	99.40	134	134
4	ORANGE			5.90	97.60	130	130
5	***PINK***			***6.90***	***96.60***	***128***	***116***
6	***BLUE***			***7.50***	***96.00***	***114***	***114***
7	***ORANGE***			***8.60***	***94.90***	***110***	***110***
8	***PINK***			***9.80***	***93.70***	***95***	***88***
9	***RED***			***11.20***	***92.30***	***56***	***56***
10	***ORANGE***			***12.60***	***90.90***	***34***	***34***
					Total	**957**	**937**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
****System***	***518***	***0.30***	*ACCEPT.*	***0.30***	***25% RED.***	**PRESSURE MANIFOLD**
Repair	419	0.25	*MOD.*	0.25	PPBPS	LOW PRESSURE

Notes:

** TBM located on corner of lot 14 and 15 (see site plan)

**TBM is assumed to be 100'

**All measures in feet

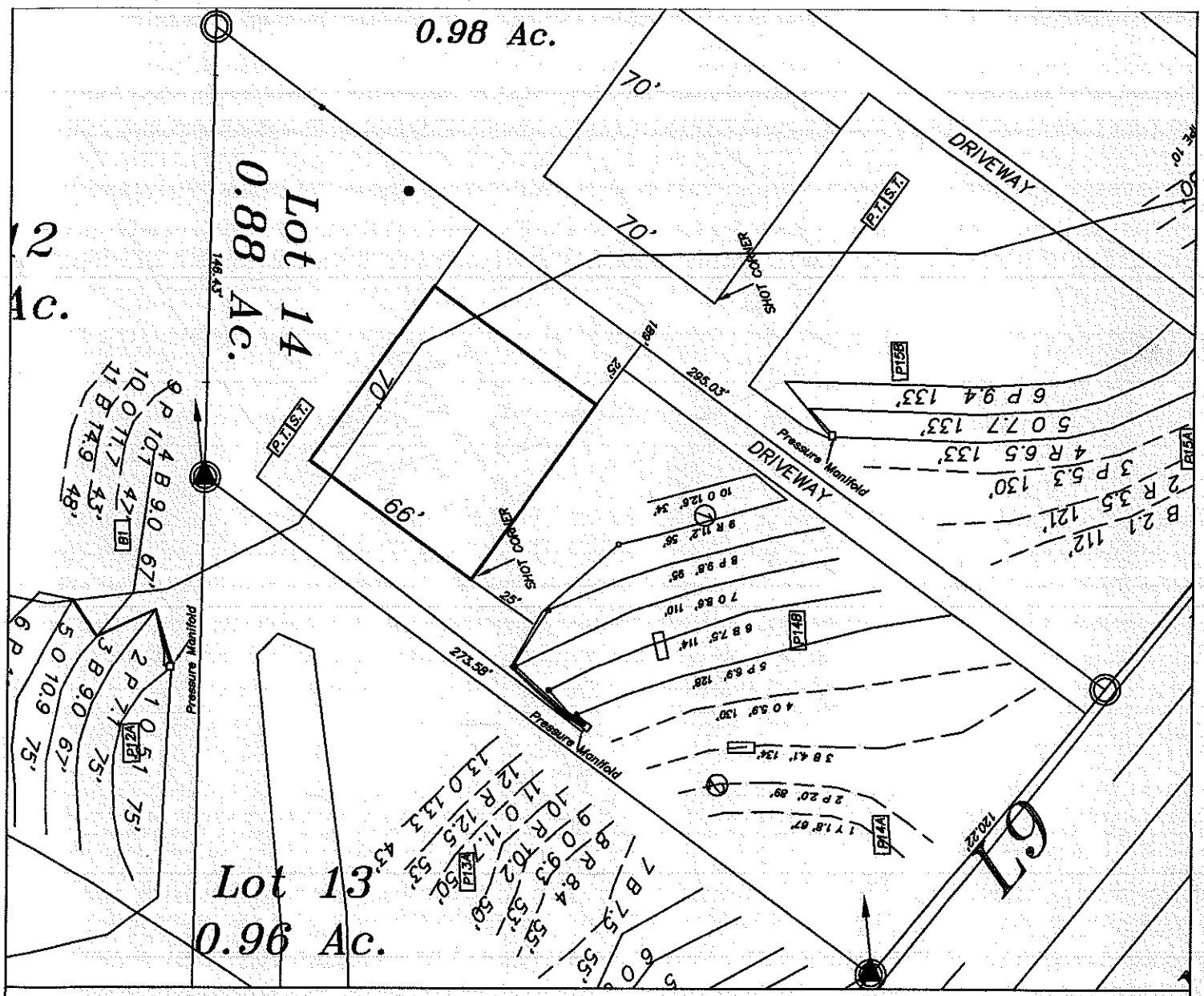
**Nitrification lines are demonstrated on contour via colored pin flags

**BS, HI, and FS indicate rod readings

PRESSURE MANIFOLD TAPSHEET - LAKEWOOD CROSSING LOT#14

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area	Line LTAR
5	*PINK*	96.6	**116**	SCH 40 1/2	**7.11**	348	**0.15**
6	*BLUE*	96	**114**	SCH 40 1/2	**7.11**	342	**0.15**
7	*ORANGE*	94.9	**110**	SCH 40 1/2	**7.11**	330	**0.16**
8	*PINK*	93.7	**88**	SCH 80 1/2	**5.48**	264	**0.15**
9+10	***R + O***	92.3	**90**	SCH 80 1/2	**5.48**	270	**0.15**
	total	**feet =**	**518**	**gal/min =**	**32.29**		
			Des. Flow	**600**			
			Pump Run=	**7.33**			
			soil LTAR	**0.3**			
			LTAR +5%	**0.315**			
			LTAR with ACCEPTED	**0.4**			
			LTAR with ACCEPTED + 5%	**0.42**			



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.

House Footprint

System lines.

Repair lines.

Temporary Bench Mark (TBM)

Well Location.

MAP TITLE:

GRAPHIC SCALE
1" = 50'

50 0 50 100

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
2120 GRAHAM ROAD
MOUNT ULLA, NC 28125
PHONE/FAX: (704) 278 - 0989
ASHLEY ROLLANS, NC LICENSED SOIL SCIENTIST
MOBILE: (704) 746 - 5046
EMAIL: ROLLANS.ASHLEY@YAHOO.COM

SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: LAKESIDE HOMES / LAKEWOOD CROSSING LOT# 14

LOCATION/DATE: FERN HILL ROAD, IREDELL COUNTY, NORTH CAROLINA, APRIL 2014

JOB # : 01-1973
FILE: C:\JOBS\01-1973
PROJECT MGR.: S.A.R.
FIELD WORK: S.A.R. & W.O.
DRAWN BY: S.A.R.

PARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
/ISION OF ENVIRONMENTAL HEALTH
-SITE WASTEWATER SECTION

Sheet 1 of 1
PROPERTY ID #: 4639 202480
COUNTY: Iredell

9

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

WNER: [redacted] Lakeside Homes APPLICATION DATE 4/11/14
DDRESS: [redacted] PO Box 32264 Charlotte NC 28232 DATE EVALUATED: 8/05 & 4/14
OPOSED FACILITY: [redacted] SBR PROPOSED DESIGN FLOW (.1949): [redacted] 609 PROPERTY SIZE: 0.88ac
OCATION OF SITE: Lakewood Crossing lot 14 5pd PROPERTY RECORDED: yes
ATER SUPPLY: ☑ Private ☐ Public ☑ Well ☐ Spring ☐ Other
/ALUATION METHOD: ☑ Auger Boring ☑ Pit ☐ Cut TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	LINEAR 5-10%	0-10	LtBL GR/WSBK	FRI SSSP SEXP	N/A	54"	N/A	N/A	PS .3 GPD/FT2
		10-28	RC MSBK	FRI SSSP SEXP					
		28-54	RCL FWSBK	FRI SSSP SEXP					
2	LINEAR 5-12%	0-32	RC SBK	FRI SSSP SEXP	COMMON SAP 32-56	56"	N/A	N/A	PS .3 GPD/FT2
		32-56	RCL WSBK	FRI SSP SEXP					
B1	L/13%	0-6	LtB sl sr	Fr SSSP SEXP	f sap	40"	-	-	PS 0.3
		6-11	B cl wmsbk	" " " "					
		11-35	RC wmsbk	" " "					
		35-48	BRcl wmsbk	" " " "					
B2	L/21% (BEAM)	0-15	RB SL Gr	VFr NS NP	Y	48"			PS 0.3
		15-22	BR SCL wmsbk	Fr SS SP					
		22-42	R C wmsbk	Fr SS SP (22-30) Fow					
		42-48	R CL WMSBK	Fr SS SP					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	[redacted] PS	[redacted] PS
System Type(s)	ACCEPT.	PPBPS
Site LTAR	.3 GPD/FT2	.3 GPD/FT2

OTHER FACTORS (.1946):
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: Rollans Soil & Environmental Services
OTHER(S) PRESENT: Wendell Overby

COMMENTS:

LAKEWOOD CROSSING LOT #15

Project #: 01-1089

LAYOUT FOR 4 BEDROOM HOME

October 7, 2005

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		1.0			100.00		
TANK		18.90	82.10				
HOUSE		14.50	86.50				
INSTR. I			101.00				
1	BLUE			2.10	98.90	112	112
2	RED			3.50	97.50	121	121
3	PINK			5.30	95.70	130	130
4	***RED***			***6.50***	***94.50***	***133***	***133***
5	***ORANGE***			***7.70***	***93.30***	***133***	***133***
6	***PINK***			***9.40***	***91.60***	***133***	***133***
					Total	**762**	**762**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
** System*	*399*	*0.30*	*ACCEPT.*	*0.30*	*25% RED.*	**PRESSURE**
Repair	363	0.30	*MOD.*	0.30	PPBPS	**MANIFOLD** LOW PRESSURE

Notes:

** TBM located on corner of lot 15 and 16 (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

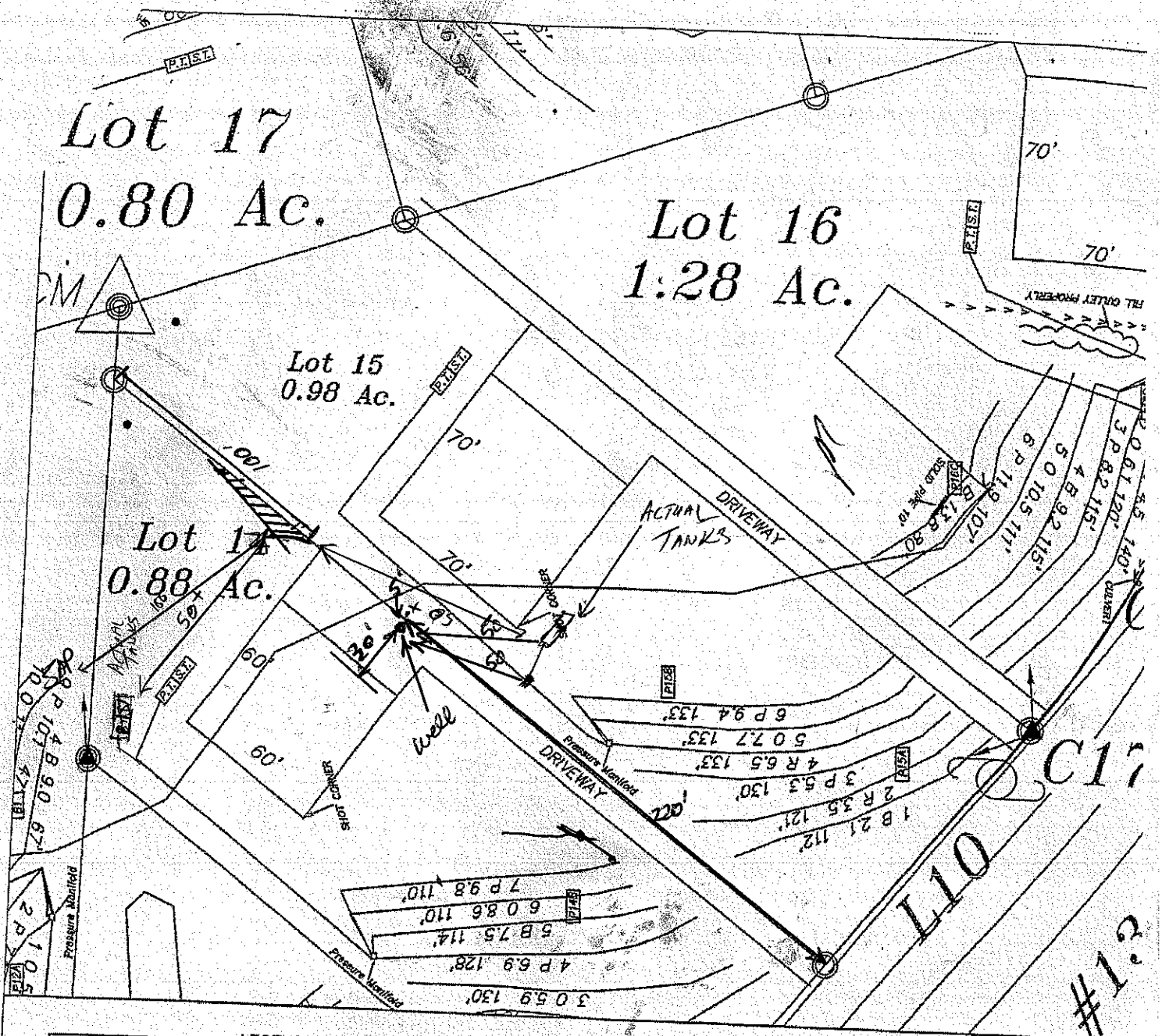
PRESSURE MANIFOLD TAPSHEET - LAKEWOOD CROSSING LOT#15

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area
4	*RED*	94.5	133	SCH 40 1/2	7.11	399
5	*ORANGE*	93.3	133	SCH 40 1/2	7.11	399
6	*PINK*	91.6	133	SCH 40 1/2	7.11	399

total	feet =	399	gal/min =	21.33
		Des. Flow	480	
		Pump Run=	8.55	
		soil LTAR	0.3	
		LTAR +5%	0.315	
		LTAR with ACCEPTED	0.4	
		LTAR with ACCEPTED + 5%	0.42	

1" = 60'



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.
- Unsuitable areas.
- 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
2120 GRAHAM ROAD
ASHLEY ROLLANS, NC LICENSED SOIL SCIENTIST

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

JOB # : 01-1005

CALCULATIONS

Location LAKEWOOD CROSSING SUBDIVISION

Project Number 01-1089

Lot No: Lot 15

No. of Bedrooms 4

Design Flow 480 $^{gal}/_{day}$

LTAR .3 gpd/ft²

25% RED.? (YES OR NO) YES

Supply Line Length 96 ft.

Supply Line Volume 16.704 gal.

Required Feet of Line 400 ft.
Amount of Line from Layout 399 ft.

Gallons per Minute 21.33 $^{gal}/_{min}$

Required Septic Tank Capacity 1000 gal.
Minimum Standard Tank Size 1000

Lateral Line Volume 260.547 gal.

Dosing Volume 182.38 gal.
Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down 8.7 *Generic Draw Down of 21 gal.per in.*

Pump Run Time 8.55 minutes

Elevation Head 19.4 ft.
Pressure Head 2 ft.
Friction Factor 1.27 ft./100 ft. *(From the interpolater.)*
Friction Head 1.22 ft.

Total Dynamic Head (+15%) 26.01 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

LAKEWOOD CROSSING SUBDIVISION LOT 15
PRESSURE MANIFOLD DESIGN

DESIGN FLOW:	480
SOIL APPLICATION RATE:	.3 gpd/ft²
TOTAL AREA TRENCH BOTTOM:	1197
TOTAL LATERAL LENGTH:	399
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	400
SUPPLY LINE LENGTH:	96
TOTAL DYNAMIC HEAD:	26.01
MANIFOLD SIZE:	4 in.SCH 80 PVC
DOSING VOLUME:	182.38
PUMP TANK DRAW DOWN*:	8.7
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.*

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

Sheet 1 *of* ____
PROPERTY ID #: ____
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Nation Land Company LLC APPLICATION DATE ____
ADDRESS: 4330 Sterilite Street SE Massillion, OH 44646 DATE EVALUATED: 8/05
PROPOSED FACILITY: Res PROPOSED DESIGN FLOW (.1949): 480gpd PROPERTY SIZE: ____
LOCATION OF SITE: Lakewood Crossing lot 14 PROPERTY RECORDED: yes
WATER SUPPLY: ☑ Private ☐ Public ☐ Well ☐ Spring ☐ Other ____
EVALUATION METHOD: ☐ Auger Boring ☑ Pit ☐ Cut TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
B 1	LINEAR 5-10%	0-10	LtBL GR/WSBK	FRI SSSP SEXP	N/A	54"	N/A	N/A	PS .3 GPD/FT2
		10-28	RC MSBK	FRI SSSP SEXP					
		28-54	RCL FWSBK	FRI SSSP SEXP					
A 2	LINEAR 5-12%	0-32	RC SBK	FRI SSSP SEXP	COMMON SAP 32-56	56"	N/A	N/A	PS .3 GPD/FT2
		32-56	RCL WSBK	FRI SSP SEXP					
3	11.1.05 8% L	0-4	gr brwn scl	fr sssp	fair/poor wetness				025 to 289 728-.3
		4-28	ABK RC	FR SSSP					
		28-58	wKSBK cl	fr sssp					
4		0-7	gr brwn sl scl	fr sssp					.3
		7-38	SBK Red C	FR SSSP SExP					
		38-49	wKSBK cl +SAP	fr sssp					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	1200 FTSQ	706 FTSQ
System Type(s)	ACCEPT.	PPBPS
Site LTAR	.3 GPD/FT2	.3 GPD/FT2

OTHER FACTORS (.1946): ____
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: Rollans Soil & Environmental Services
OTHER(S) PRESENT: ____

COMMENTS: ____