**ROLLANS** ***Soil & Environmental Services***

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**Attached is a proposed design for a PPBPS Septic System with low pressure distribution for a 4 bedroom single family residence on Lot 96 in Anniston Subdivision Iredell County, North Carolina.**

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**December 22, 2006**
**Project No.01-1005**
**Design By: Rollans Soil & Environmental Services**

# 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.
- 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.
- Design precludes foundation drains.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as a PPBPS installation.
- Repair is specified as a PPBPS installation.
- Backfill 4 - 6" of material (County Approved) over panels, rake trench walls, lime side-walls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.
- FRENCH DRAIN TO BE INSTALLED 48" DEEP ABOVE DRAINFIELD AND RAN OUT TO GRADE AS SHOWN ON PLAN.

# LP PPBPS SYSTEM
# FOR WASTEWATER TREATMENT

**Owner/Applicant:** Anniston LLC

**Address:** 17824 Statesville Rd STE 112
Conover, NC 28031

**Phone:**

**County:** Iredell

**Location:** Anniston Subdivision Lot 96

**Source of Wastewater Flow:** 4 Bedroom Single Family Residence

**Estimated Daily Wastewater Production:** 480 gpd

**System Flow:** 32.80

## Design Specifications

**Drainfield Size:** 350

**Loading Rate:** .25 gpd/ft.$^2$

**Depth of Gravel in Trench:** NA (PPBPS )

**Gravel Size:** NA (PPBPS )

**Trench Depth:** 36 in.

**Trench Width:** 36 in.

**Septic Tank Size:** 1000

**Pump Tank Size:** 1000

**Estimated Supply Line Length:** 107

**Supply Line Diameter:** 2 in. SCH 40 PVC

**Supply Line Volume:** 18.62

**Dosing Volume:** 192.96

**Supply Manifold:** N/A

**Supply Manifold Length:** N/A

**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:** 2.54

**Elevation Head:** 14.20

**Total Dynamic Head:** 21.55

**Threaded Union:** In Tank

**Gate Valves:** 1 in Tank
1 per lateral

**Check Valves:** In Tank

**Anti-Siphon Hole:** NA

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

## ANNISTON LOT 96
## LP PPBPS

| | |
|---|---|
| **DESIGN FLOW:** | 480 |
| **SOIL APPLICATION RATE:** | .25 gpd/ft² |
| **TOTAL AREA TRENCH BOTTOM:** | 1050 |
| **TOTAL LATERAL LENGTH:** | 350 |
| **NUMBER OF FIELDS:** | 1 |
| **LATERAL LENGTH REQUIRED PER FIELD:** | 320.00 |
| **SUPPLY LINE LENGTH:** | 107 |
| **TOTAL DYNAMIC HEAD:** | 21.55 |
| **MANIFOLD SIZE:** | N/A |
| **DOSING VOLUME:** | 192.96 |
| **PUMP TANK DRAW DOWN*:** | 9.2 |
| **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 96

Project #:01-1005

LAYOUT FOR 4 BEDROOM HOME

| LINE # | FLAG COLOR | BS | HI | FS | ELEVATION | FLAGGED LINE LENGTH | ############## DESIGN LINE LENGTH |
|---|---|---|---|---|---|---|---|
| TBM | | 0.7 | | | 100.00 | | |
| INSTR. 1 | | | 100.70 | | | | |
| HOUSE CNR | | | | 4.00 | 96.70 | | |
| P. TANK | | | | 11.10 | 89.60 | | |
| *1* | ***BLUE*** | | | ***1.90*** | ***98.80*** | ***70*** | ***70*** |
| *2* | ***ORANGE*** | | | ***3.50*** | ***97.20*** | ***75*** | ***75*** |
| *3* | ***RED*** | | | ***4.60*** | ***96.10*** | ***80*** | ***80*** |
| *4* | ***PINK*** | | | ***5.80*** | ***94.90*** | ***85*** | ***85*** |
| *5* | ***BLUE*** | | | ***7.30*** | ***93.40*** | ***40*** | ***40*** |
| 6 | BLUE | | | 7.30 | 93.40 | 40 | 40 |
| 7 | ORANGE | | | 9.50 | 91.20 | 96 | 96 |
| 8 | RED | | | 11.30 | 89.40 | 103 | 103 |
| 9 | PINK | | | 13.40 | 87.30 | 109 | 109 |
| | | | | | **Total** | **698** | **698** |

| | LINE LENGTH | LTAR GPD/FT2 | SYSTEM TYPE | SOIL LTAR | TRENCH SYSTEM | DISTRIBUTION |
|---|---|---|---|---|---|---|
| ****System*** | ***350*** | ***0.25*** | ***MOD.*** | ***0.250*** | ***PPBPS*** | ***LOW PRESSURE*** |
| Repair | 348 | 0.25 | MOD. | 0.25 | PPBPS | LOW PRESSURE |

Notes:

** TBM located top of ground (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

# LP PPBPS TAPSHEET - Anniston Lot 96

## SYSTEM

| Line # | Color | Elevation | Length | Hole Size | Flow/hole | Trench Area | Number of Panels |
|---|---|---|---|---|---|---|---|
| *1* | *BLUE* | 98.8 | *70* | 0.156 | **0.41** | 210 | 16 |
| *2* | *ORANGE* | 97.2 | *75* | 0.156 | **0.41** | 225 | 17 |
| *3* | *RED* | 96.1 | *80* | 0.156 | **0.41** | 240 | 18 |
| *4* | *PINK* | 94.9 | *85* | 0.156 | **0.41** | 255 | 20 |
| *5* | *BLUE* | 93.4 | *40* | 0.156 | **0.41** | 120 | 9 |
| | **total** | **feet =** | **265** | **gal/min =** | **32.8** | | 80 |
| | | | **Des. Flow** | **480** | | | |
| | | | **Pump Run=** | **5.88** | | | |
| | | | **soil LTAR** | **0.25** | | | |
| | | | **LTAR +5%** | **0.2625** | | | |
| | | | **LTAR with mod.** | **0.27** | | | |
| | | | **LTAR with mod.. + 5%** | **0.2835** | | | |

**.156 equals 5/32 inch hole**

## CALCULATIONS

Location Anniston Subdivision

Project Number 01-1005

Lot No: Lot 96

| | | |
|---|---|---|
| No. of Bedrooms | 4 | |
| Design Flow | 480 | $^{gal}/_{day}$ |
| LTAR | 0.25 | $^{gal}/_{ft^2\ day}$ |
| PPBPS? (YES OR NO) | YES | |
| Supply Line Length | 107 | ft. |
| Supply Line Volume | 18.618 | gal. |
| Required Feet of Line | 320 | ft. |
| Amount of Line from Layout | 350 | ft. |
| Gallons per Minute | 32.8 | $^{gal}/_{min}$ |
| | *Note: Flow/hole (.41gpm) x # of panels* | |
| Required Septic Tank Capacity | 1000 | gal. |
| Minimum Standard Tank Size | 1000 | |
| Panel Volume | 3.6 | gal. |
| # of Panels | 80 | |
| Dosing Volume | 193 | gal. |
| | *Note: Dosing Volume based on 67% of # of panels times 3.6 gal/panel* | |
| Tank Draw Down | 9.2 | *Generic Draw Down of 21 gal.per in.* |
| Pump Run Time | 5.88 | minutes |
| Elevation Head | 14.2 | ft. |
| Pressure Head | 2 | ft. |
| Friction Factor | 2.37 | ft./100 ft. *(From the interpolater.)* |
| Friction Head | 2.54 | ft. |
| Total Dynamic Head (+15%) | 21.55 | 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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| *4* | *PINK* | 94.9 | *85* | 0.156 | **0.41** | 255 | 20 |
| *5* | *BLUE* | 93.4 | *40* | 0.156 | **0.41** | 120 | 9 |
| | **total** | **feet =** | **350** | **gal/min =** | **32.8** | | 80 |

| | |
|---|---|
| **Des. Flow** | **480** |
| **Pump Run=** | **5.88** |
| **soil LTAR** | **0.25** |
| **LTAR +5%** | **0.2625** |
| **LTAR with mod.** | **0.27** |
| **LTAR with mod.. + 5%** | **0.2835** |

**.156 equals 5/32 inch hole**