# ROLLANS *Soil & Environmental Services, Inc.*

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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 #1008 in The Pointe, Iredell County, North Carolina.**

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**February 20, 2008**
**Project #: 01-1462**
**Design By: Rollans Soil & Environmental Services**

# LP PPBPS SYSTEM
# FOR WASTEWATER TREATMENT

| | |
|---|---|
| **Owner/Applicant:** | Warren Smith |
| **Address:** | PO Box 3190<br>Mooresville, NC 28117 |
| **Phone:** | 704-363-1622 |
| **County:** | Iredell |
| **Location:** | The Pointe Lot 1008 |
| **Source of Wastewater Flow:** | 4 Bedroom Single Family Residence |
| **Estimated Gallons Per Day Flow:** | 480 |
| **System Flow:** | 27.88 |

## Design Specifications

| | |
|---|---|
| **Drainfield Size:** | 295 |
| **Loading Rate (gpd/ft.$^2$):** | 0.3 |
| **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:** | 66 |
| **Supply Line Diameter:** | 2 in. SCH 40 PVC |
| **Supply Line Volume:** | 11.48 |
| **Dosing Volume:** | 164.02 |
| **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:** | 1.17 |
| **Elevation Head:** | 4.70 |
| **Total Dynamic Head:** | 9.06 |
| **Threaded Union:** | In Tank |
| **Gate Valves:** | 1 in Tank<br>1 per lateral |
| **Check Valves:** | In Tank |
| **Anti-Siphon Hole:** | YES |
| **Additional Comments:** | Soil suitability was performed by Rollans Soil & Environmental Services |

## The Pointe Lot 1008

## LP PPBPS

| | |
|---|---|
| **DESIGN FLOW (gpd):** | 480 |
| **SOIL APPLICATION RATE (gpd/ft.$^2$):** | 0.3 |
| **TOTAL AREA TRENCH BOTTOM:** | 885 |
| **TOTAL LATERAL LENGTH:** | 295 |
| **NUMBER OF FIELDS:** | 1 |
| **LATERAL LENGTH REQUIRED PER FIELD:** | 266.6666667 |
| **SUPPLY LINE LENGTH:** | 66 |
| **TOTAL DYNAMIC HEAD:** | 9.06 |
| **MANIFOLD SIZE:** | N/A |
| **DOSING VOLUME:** | 164.02 |
| **PUMP TANK DRAW DOWN*:** | 7.8 |
| **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.*

# The Pointe Lot 1008

Project #: 01-1462

LAYOUT FOR 4 BEDROOM HOME

February 20, 2008

| LINE # | FLAG COLOR | BS | HI | FS | ELEVATION | FLAGGED LINE LENGTH | DESIGN LINE LENGTH |
|---|---|---|---|---|---|---|---|
| TBM | | 4.1 | | | 100.00 | | |
| INSTR. 1 | | | 104.10 | | | | |
| HOUSE CNR | | | | 6.00 | 98.10 | | |
| P. TANK | | | | 12.40 | 91.70 | | |
| 1 | ORANGE | | | 2.40 | 101.70 | 50 | 50 |
| 2 | BLUE | | | 3.40 | 100.70 | 70 | 70 |
| 3 | PINK | | | 4.30 | 99.80 | 52 | 52 |
| 4 | RED | | | 9.80 | 94.30 | 50 | 50 |
| 5 | BLUE | | | 11.40 | 92.70 | 90 | 90 |
| ***6*** | ***ORANGE*** | | | ***12.70*** | ***91.40*** | ***100*** | ***100*** |
| ***7*** | ***PINK*** | | | ***14.70*** | ***89.40*** | ***96*** | ***95*** |
| ***8*** | ***RED*** | | | ***16.40*** | ***87.70*** | ***63*** | ***60*** |
| ***9*** | ***BLUE*** | | | ***17.00*** | ***87.10*** | ***40*** | ~~40~~ 25' |

| | LINE LENGTH | LTAR GPD/FT2 | SYSTEM TYPE | SOIL LTAR GPD/FT2 | TRENCH SYSTEM | DISTRIBUTION |
|---|---|---|---|---|---|---|
| **** System*** | ~~295~~ 280 | ***0.30*** | ***MOD.*** | ***0.30*** | ***PPBPS*** | ***LOW PRESSURE*** |
| Repair | 312 | 0.3 | MOD. | 0.30 | PPBPS | LOW PRESSURE |

Notes:
** TBM located top of ground at EIP at corner of lot (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 -THE POINTE LOT#1008

## SYSTEM

| Line # | Color | Elevation | Length | Hole Size | Flow/hole | Trench Area | Number of Panels |
|---|---|---|---|---|---|---|---|
| *6* | *ORANGE* | *91.40* | *100* | 0.156 | **0.41** | 300 | 23 |
| *7* | *PINK* | *89.40* | *95* | 0.156 | **0.41** | 285 | 22 |
| *8* | *RED* | *87.70* | *60* | 0.156 | **0.41** | 180 | 14 |
| *9* | *BLUE* | *87.10* | ~~40~~ 25' | 0.156 | **0.41** | 120 | ~~9~~ 6 |
| | | | | | | | 68 |
| | **total** | **feet =** | **295** | **gal/min =** | **27.88** | | |
| | | | **Des. Flow** | **480** | | | |
| | | | **Pump Run=** | **5.88** | | | |
| | | | **soil LTAR** | **0.3** | | | |
| | | | **LTAR +5%** | **0.315** | | | |
| | | | **LTAR with mod.** | **0.6** | | | |
| | | | **LTAR with mod.. + 5%** | **0.63** | | | |

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

## CALCULATIONS

| | | |
|---|---|---|
| Location | The Pointe | |
| Project Number | 01-1462 | |
| Lot No: | Lot 1008 | |
| No. of Bedrooms | 4 | |
| Design Flow | 480 | $^{gal}/_{day}$ |
| LTAR | 0.300 | $^{gal}/_{ft^2\,day}$ |
| PPBPS? (YES OR NO) | YES | |
| Supply Line Length | 66 | ft. |
| Supply Line Volume | 11.484 | gal. |
| Required Feet of Line | 266.6667 | ft. |
| Amount of Line from Layout | 295 | ft. |
| Gallons per Minute | 27.88 | $^{gal}/_{min}$ |
| Required Septic Tank Capacity | 1000 | gal. |
| Minimum Standard Tank Size | 1000 | |
| Panel Volume | 3.6 | gal. |
| # of Panels | 68 | |
| Dosing Volume | 164.02 | gal. |

*Note: Dosing Volume based on 67% of # of panels times 3.6 gal/panel*

| | | |
|---|---|---|
| Tank Draw Down | 7.8 | *Generic Draw Down of 21 gal.per in.* |
| Pump Run Time | 5.88 | minutes |
| Elevation Head | 4.70 | ft. |
| Pressure Head | 2 | ft. |
| Friction Factor | 1.78 | ft./100 ft. *(From the interpolater.)* |
| Friction Head | 1.17 | ft. |
| Total Dynamic Head (+15%) | 9.06 | 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 |