



Blue Water Works LLC

212 Lakeshore South  
Oualaska, Texas 77360

936-646-5115

Blue Water Works

To: Dennis Moore and Sons

Owner:

Rhonda McDaniel

Address:

P.O.Box 1175  
Livingston, Texas 77351  
Work Number 1-936-327-4341  
Home Number 1-936-365-3986  
Cell Number 1-936-425-5336

Physical Property Address:

431 Holly Hill Rd.  
Livingston, Texas 77351

Date Saturday, April 19, 2008

Item	Quantity	Description	Rate	Amount
1	1	Site Evaluation and Septic Design		300.00

Total	Non - Taxable in Texas	<u>\$300.00*</u>
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Make check payable to ' Ronald Cobb ' or ' Blue Water Works '



936-646-5115

## On Site Sewage Facilities

Planning Documents  
Site evaluation and Septic Design

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Physical Property Address:

431 Holly Hill Rd.  
Livingston, Texas 77351

Polk Lisa Andreas TCEQ Designated Representative

GPS Location:

Latitude 30.66866 Degrees North and Longitude 94.91155 Degrees West

Legal Description:

Lots 14,5,16,17 Section 6 Block 19, Holly Hills Subdivision, Polk County,  
Livingston, Texas.

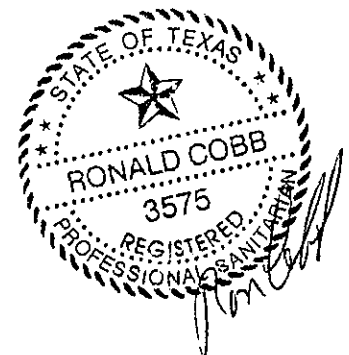
Property Description: Approximate Acres =.67

Recently cleared lot with mature trees and a natural drainage feature.

Recommended On-Site Sewage Facility Surface Application - Secondary Treatment

Site Inspection Date 04/15/2008

Job Number - S041508\_1\_McDaniel\_

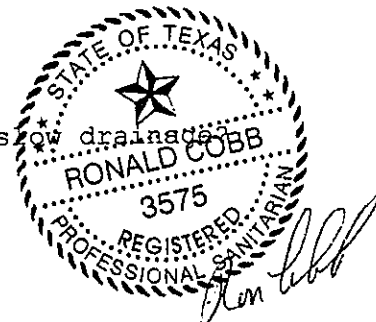


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Owner Interview

Site status at the time of the evaluation.

- Yes - Will there be more than one piece of property used?  
Yes - Are you the owner of all properties involved?
- Yes - Was the property plated before 1988?
- No - Are there abandoned or active private water wells on your property?
- No - Are there public wells on neighboring properties? (150ft)
- No - Do you have any cisterns or underground tanks on your property
- Yes - Is property serviced by a public water supply?  
Yes - If yes can you locate meter?
- No - Is there an existing on site sewage system?
- No - Is there underground drainage on the property?
- Yes - Is there underground water supply lines?  
No - If yes can you locate?
- No - Is there underground gas supply lines?
- No - Is there underground electrical lines?
- No - Is there a sprinkler system installed on any part of the property?
- Yes - Do you understand that new disposal areas will limit future land use of those areas?
- Yes - Does your home use water saving devices?
- No - Does any part of the properties exhibit poor or slow drainage?



OSSF Soil/Site Evaluation Form

04/15/2008

Bore Number 1

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From Surface to 6 inches                      Dominate Soil Class is Ib  
Description: Sand

-----  
From 6 inches to 60 inches                      Dominate Soil Class is IV  
Description: Red Clay

-----  
No signs of a water table were noticed in this bore.

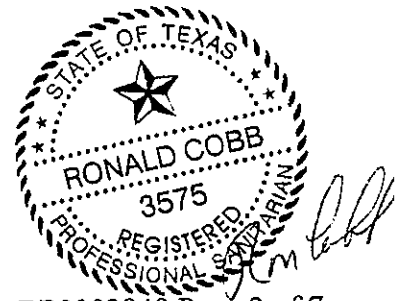
Bore Number 2

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From Surface to 4 inches                      Dominate Soil Class is Ib  
Description: Sand

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From 4 inches to 60 inches                      Dominate Soil Class is IV  
Description: Red Clay

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No signs of a water table were noticed in this bore.



Design

Waste Volume - Facility Type

The type of facility as listed in Chapter 285.91 Table III is Single Family Dwelling (three bedrooms) - less than 2500 ft<sup>2</sup>. The base usage rate with water saving devices in use is 240 gallons per day.

Single Family Dwelling (three bedrooms) - less than 2500 ft<sup>2</sup> = 240  
Q - Total Design Flow 240

Application Criteria (Chapter 285.91 Table V)

Slope of the site in the application area is %.  
Restrictive horizons were not encountered in the borings made in the proposed application area.  
No signs of a seasonal high water table were noted during the soil borings.  
No free water was noted during the soil borings.  
The site is not in the 100 year floodplain and is not in a floodway.  
Site acreage is in compliance with requirements of Chapter 285.

Site Data

Public water supply is available to the property and is being supplied to the site.

Public water lines do cross the site

The property does not have water borders. (Streams, Ponds, Lakes, or Creeks)

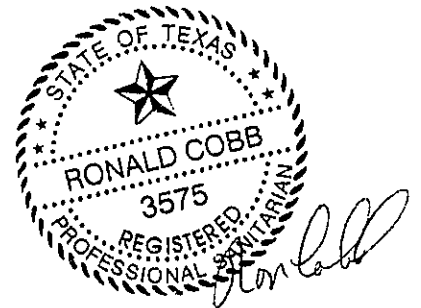
The property does not have steep slopes that could be the source of seeps.

Soil Type

Controlling soil type is Soil Class IV

OSSF

Recommended On-Site Sewage Facility Surface Application - Secondary Treatment



Treatment Equipment

The pipe from the sewer stub-out to the treatment system should be watertight Schedule 40 PVC or SDR 26. Slope of the line should be no less than 1/8 inch per foot(1%). A two-way cleanout plug is required between the sewer stub out and the treatment tank. An additional cleanout plug should be provided every 50 feet on long runs of pipe and within five feet of 90 degree bends. The minimum inside diameter is three inches.

Trash/Pre-treatment tank - 500 gallon tank

Aerobic Treatment unit - 500 gallon per day Aerobic tank

(A multi purpose aerobic plant rated in excess of the daily flow may be used to replace the pretreatment and/or pump tank if approved by the state for this service.)

Any state approved system listed at [http://www.tnrcc.state.tx.us/cgi-bin/enforcement/ossf\\_approved.pl](http://www.tnrcc.state.tx.us/cgi-bin/enforcement/ossf_approved.pl) may be used if rated at or above daily loading.

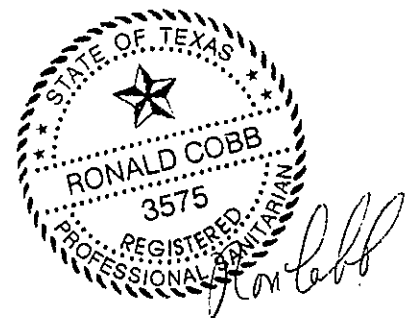
Approved chlorinators are required.

Pump Tank - 500 gallon tank

An audible and visible high water alarm, on an electric circuit separate from the pump, must be provided.

Pump should be controlled by a commercial irrigation timer to operate when exposure to people in the area is at a minimum. An audible and visual high level should also be installed.

Set Alarm-on Level at least 80 gallons below the bottom of the inlet pipe.  
Set Pump-on Level at least 240 gallons below the alarm-on level.



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Application Calculations

(Ri) per 285.90(1) Application Rate = 0.041 Gal/Ft2/Day  
 Application area required for 240 / 0.041 = 5854 Ft2.

Number Of Nozzles	Nozzle Radius Ft	Nozzle Degrees	Nozzle flow GPM(each)	Application Area Covered Ft2	Overlap Ft2	Net Area Ft2	Total Flow GPM
1	25	360	1.7	1,964		1,964	1.7
4	25	180	1.7	3,927		3,927	6.8
Totals						5,891	8.5

Pressure supply line -  
 Size 1" PVC.

Line flow losses  
 Head loss in 1" PVC is 4.1 ft/100 ft for a flow of 8.5 GPM.  
 Pipe length is 150 ft +10% for fittings is 165 ft.  
 Head loss in supply pipe = (4.1 ft/100 ft) X 150. ft = 6.1 ft.

Hydraulic Lift  
 Lift required from pump off to distribution manifold is 5 ft.

Nozzle Operating Pressure  
 Nozzles should be operated at the maximum allowable pressure of 40 psig or 92.3 ft of head.

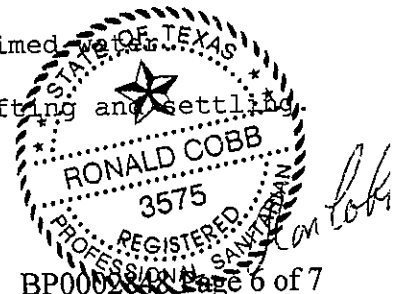
Pump -  
 Total pump head required = 6.1 ft + 5 ft + 92.3 ft  
 Total pump head required = 103 ft

Pump -  
 Pump flow required is 8.5 gpm.  
 Installed pump capacity should meet or exceed 103 ft of head at 8.5 gpm.

A gate valves should be used at entrance to distribution piping to reduce operating pressure at nozzles to 40 psig.

Nozzles -  
 Per Chap 285.33(d) 2Gi nozzles should be low angle less than 15 degrees.  
 such as: Hunter PGP LA with #4 Nozzle - Gray

Nozzles should be fitted with purple tops indicating reclaimed water.  
 Nozzles should be installed in compacted soil to resist shifting and settling.



Owner Notes:

Broken or non-rotating spray heads should be promptly repaired. Purchase of a replacement nozzle at the time of installation should be considered.

A non-functioning air supply to the system should be addressed ASAP.

Although an occasional light odor is not unusual any persistent odor should be considered a serious problem.

Reasonable efforts have been made to assure that this septic design is within your property boundaries. We do not represent ourselves as professional surveyors and can only provide approximate locations of property corners with meets and bounds information. We do not assume any responsibility for misunderstandings or errors. Please review the drawing and notify the designer if you even suspect that any part of this septic design is located on property not owned by you.

It is recommended that you keep this design along with all equipment information with other important papers. Photos of the installation can prove valuable in later years should maintenance be required.

Installer Notes:

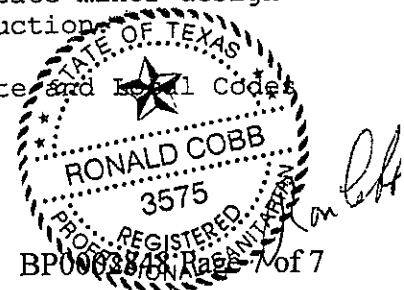
Plastic tanks if installed must be protected from flotation. Buoyancy calculations and installation instructions should be obtained from manufacture and supplied to inspector and designer.

The location of tanks and sprays may be moved with reason without adversely effecting the operation of this design.

This system must be installed and maintained in accordance with all standards set by the Texas Commission on Environmental Quality and Local officials. This consultant / designer does not represent or warrant the material, installation, operation or proper performance of this system for any period of time. Every attempt has been made to accurately depict the location of lines, plants, tanks, sprinklers, etc. Construction realities may necessitate minor design changes. Any major changes will be submitted before construction.

All Construction methods must be in accordance with all State and Local Codes effecting the installation of On-Site Sewage Facilities

Ronald F Cobb RS 3575 OS0019171 LI0006066 S012005 OS0021999



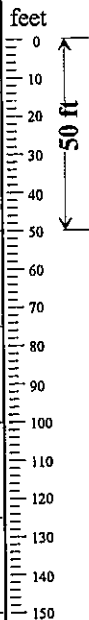
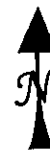


Sleeve water line or sewer line any place where they are closer than 10 feet.

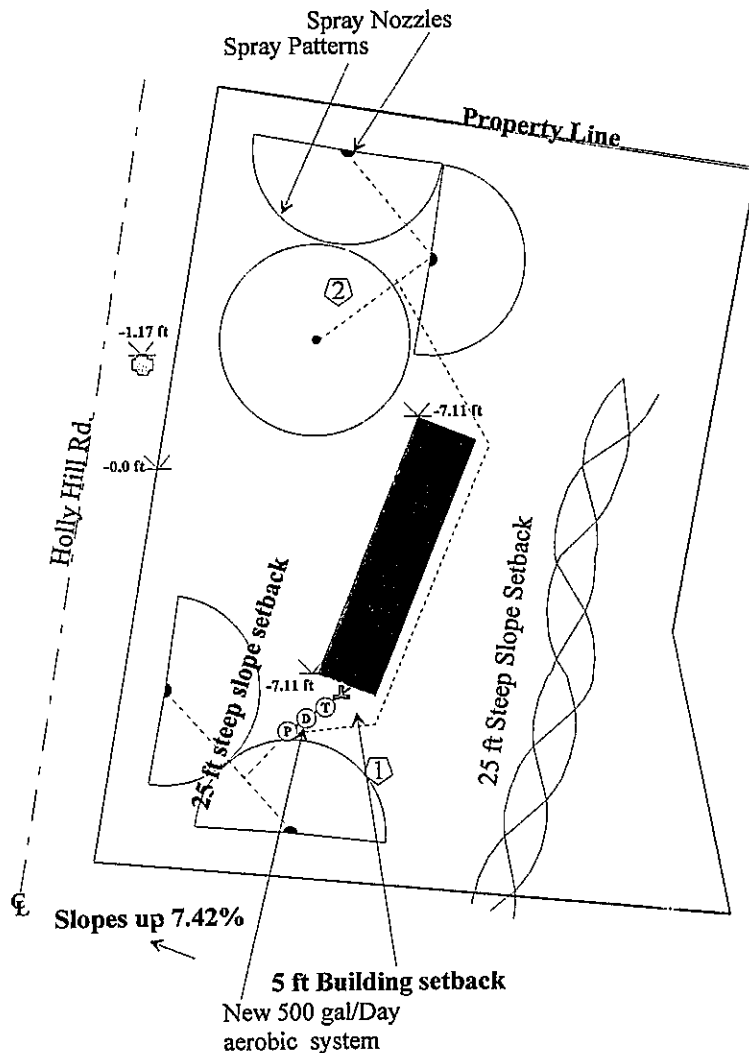
Tanks may be moved within reason to expedite installation and minimize damage to hardscapes.

Nozzles may be moved with reason minimize damage to trees and hardscapes

Set exact trenches locations to minimize damage to mature trees



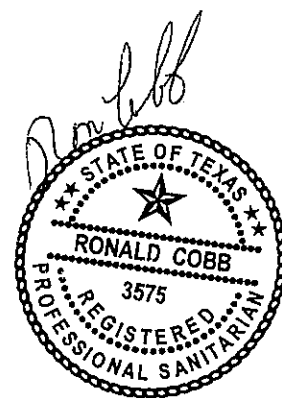
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Elevations are relative to the location marked -0.0 ft

Selected Setbacks Shown in Gray

Icon Key: Not to Scale	
	Gate Valve
	Clean Out
	Inspection Port
	Water Meter
	P - Pump Tank
	Boring
	D - Digestion Tank
	Elevations
	T - Trash Tank
	Tr - Tree



Blue Water Works L. L. C.	
Ronald F. Cobb R. S. #3575 L. I. #6066	
Job Number:	County:
S041508 McDaniel	Polk
Location: 431 Holly Hill Rd.	
Subdivision: Holly Hill	
GPS North 30.66866	West 94.91155

