Residential Subsurface Wastewater Treatment and Disposal System Proposal

for

Forest Creek, Phase II – Lots 22 and 23
162 Forest Creek Drive
Statesville, North Carolina

Tax Parcel #'s 4706863663.000 and 470686542.000
June 27, 2016

Prepared for:

Sarah and Christopher Gray
138 Village View Drive, Apt 208
Mooresville, NC 28117
704-609-8251



Prepared by:

Larry Thompson, REHS, LSS
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Midland, NC 28107-0541
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info@thompsonenv.com



Details

Sarah and Christopher Gray have contracted with Thompson Environmental Consulting, Inc. (TEC) to develop a proposal for an on-site wastewater treatment and disposal system to serve the 3-bedroom single family residence to be located on Lots 22 and 23 of Forest Creek subdivision – Phase II (162 Forest Creek Drive).

Based upon a soil and site evaluation performed by TEC, it was determined that a sufficient amount of "Suitable" Group IV soils are available on this property for the installation of an accepted system with a state approved 25% reduction in the required drainline length for both the initial system as well as the repair system (repair system would require an effluent pump). The property would be served by a municipal water supply.

The Grays would like to request that Iredell County Environmental Health (ICEH) consider issuing an Improvement Permit and Construction Authorization for a 3-bedroom residence based upon the following proposal.

Location

The subject property is located at 162 Forest Creek Drive, Statesville, North Carolina. From downtown Statesville, travel north on NC 115 approximately 3.7 miles and turn left onto Scotts Creek Road. In 4.6 miles turn right onto Forest Creek Drive. 162 Forest Creek Drive will be located 0.3 of a mile on your right, just prior to the cul-de-sac.

References

Laws and Rules for Sewage Treatment and Disposal Systems, 15A NCAC 18A, Section .1900, Department of Environment and Natural Resources, Division of Environmental Health, On-Site Wastewater Section, October 2011.

Innovative Wastewater System No. IWWS-1993-2-R13; North Carolina Department of Environment and Natural Resources, Division of Environmental Health, On-Site Wastewater Section, May 1, 2015.

Primary Investigator's Credentials

NC Registered Sanitarian No. 1208
NC Licensed Soil Scientist No. 1287
SC Professional Soil Classifier No. 111
Professional Wetland Scientist No. 1346
NC Subsurface Septic System Operator No. 22199
NC Grade IV Wastewater System Installer No. 1762
NC Certified Wastewater System Inspector No. 17621

Plans and Specifications

A. Septic Tank

1. The septic tank shall be State approved (Section .1953 of 15A NCAC 18A), watertight, structurally sound, and 1000 gallons in capacity.
2. The septic tank will be fitted with an approved effluent filter.
3. It is the responsibility of the septic contractor to thoroughly inspect the septic tank prior to accepting delivery to assure that the tank has had time to properly cure and is free of cracks or other structural deficiencies.

C. Pipes and Fittings

1. All piping, connectors and supply lines should be made of SCH 40 PVC.
2. All joints must be properly "welded" utilizing the appropriate PVC cement for each application.
3. The supply line from the septic tank to the first drainline shall be 4-inch Schedule 40 PVC.

D. Distribution Method

1. TEC is proposing to use serial distribution via end caps and splash pads for the chamber system.

E. Drain Field Installation

1. The drainfield has been previously laid out on-site utilizing metal stemmed flags. Once this area has been approved by the ICEH, the property owner/builder should mark this area and isolate it as much as possible from construction traffic. Prior to the system installation, the septic contractor shall contact the ICEH for a preconstruction conference at which time the drainfield area will be re-verified.
2. Under no circumstances shall any construction take place within the drainfield area while the soil is in a wet condition. If the installer has doubts as to whether or not the drain field area is dry enough to begin construction, the ICEH should be contacted for permission to proceed with the installation.
3. The specified system the shallow placed innovative wastewater system **"Biodiffuser" ARC 36** or other systems with a 25% reduction approval granted by the state.
4. The drainfield consists of three (3) lateral trenches to be constructed 3-foot wide by 100 feet long.
5. The maximum trench depth for this system shall be **30 inches**.
6. The drainlines are to be fed serial distribution.
7. The laterals are to be installed on contour with the land, keeping the individual trench bottoms level from beginning to end.
8. The trenches should be left open for the final inspection by the ICEH.

F. Final Landscaping

1. Final cover over the drainfield shall a **minimum of 12 inches deep**.
2. The drainfield shall be shaped to shed rainwater and be free from low spots.
3. The drainfield area should be planted with grass as soon as possible to prevent erosion. The soil should be properly tilled, limed (if necessary) and fertilized prior to planting. After applying grass seed, the area should be heavily mulched with straw or other suitable material.

G. Utility Conflicts

1. The builder and property owner must take special care in planning for any additional utilities such as water, power, gas, telephone and cable lines. These utilities shall be kept clear of all parts of the septic system and the proposed repair area. Improper planning for underground utilities can negatively impact the installation and, in some cases, cause irreparable damage and permit revocation. If there are any questions regarding preferred routes, contact the ICEH as soon as possible.
2. Please note that water lines must be routed a minimum of 10 feet off of any part of the proposed septic system and repair areas.
3. Lawn irrigation should not be placed over the drain field area.

Maintenance

H. In General

1. The homeowner must maintain the drainfield area through periodic mowing. The drainfield must not be allowed to become overgrown.
2. The septic tank should be pumped every 4 years or when the solids within the septic tank reach an elevation that is equivalent to 25 percent of the volume of the tank. In some situations, the tanks may need to be pumped more frequently. If using a garbage disposal, it is recommended that the homeowner has the septic and pump tanks cleaned out annually.
3. When it becomes necessary to clean the effluent filter, the filter should be removed and the accumulated debris washed back into the septic tank – not onto the lawn.
4. Any damp areas, leakages or malfunctions in the drainfield area should be addressed immediately.
5. Divert gutter downspouts and surface water runoff away from the septic and pump tanks.

I. Suggestions to the Homeowner

1. As previously mentioned, if you plan to use a garbage disposal in your home you should plan to have your septic and pump tanks cleaned out annually. The ground up garbage adds large amounts of solids into a septic tank that tend to degrade at a very slow rate.

2. Grease, cooking oils, coffee grounds and non-degradable solids (disposable diapers, cigarettes and solid paper wastes) should never be put into a septic tank.
3. Used motor oil or any oily liquids should not be disposed of in a septic tank.
4. Be aware of the amount of water that you are using in your home. Water saving fixtures and devices can be installed on sinks, toilets and showers to reduce the volume of wastewater that you are sending to your drain field.
5. Run dishwashers and washing machines only when you have a full load.
6. Use liquid detergents. Powdered detergents have binding agents in them that tend to solidify in the wastewater disposal system.
7. Repair leaky faucets and toilets. Small drips equal large volumes of water over time and can over burden your drain field.
8. Do not use chemical additives in your system. Studies have indicated that they do not increase the biological activity that naturally occurs in the septic system and in some cases certain additives have been found to be detrimental to the life of a system.

Design Specifics

Daily Design Flow:	360 GPD (3-bedroom house)
Septic Tank Size:	1000 Gallons (minimum)
Effluent Loading Rate:	Design = 0.3 GPD per sq. ft.
Drain Field Type:	Accepted 25% Reduction
Distribution Method:	Serial Distribution – End Caps
Splash Plates Required:	Yes
Number of Drainlines:	3
Drain Lines:	(3) 3' Wide x 100' Long
Total Trench Length:	300 Linear Feet
Drainline Spacing:	9 Feet On Centers
Maximum Trench Depth:	20 Inches
Final Cover Requirement:	12 inches (minimum)

Repair Specifics

Pump Tank Size:	1000 Gallons (minimum)
Effluent Loading Rate:	0.3 GPD per sq. ft.
System Type:	Accepted 25% Reduction

Maximum Trench Depth:	30 Inches
Drainline Spacing:	9 Foot on Centers
Total Length of Drainline:	300 Feet

* See septic layout for site locations and more details.

* This is a proposed septic layout and is not intended to serve as a legal survey.

Department of Environment, Health, and Natural Resources
Division of Environmental Health
On-site Wastewater Section

Property ID:
Lot #: 22 and 23
File #:
AppID:

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

Owner: Sarah and Christopher Gray
Applicant:
Address: 138 Village View Drive, Apt. 208, Mooresville, NC 28117
Date Evaluated: 5/9/2016 and 7/10/2016
Proposed Facility: Residence Design Flow (.1949) 360 GPD
Property Size: 0.92 Acre
Location of Site: 162 Forest Creek Drive, Statesville, NC
Property Recorded:
Water Supply: [X] Public [ ] Individual [ ] Well [ ] Spring [ ] Other
Evaluation Method: [X] Auger Boring [ ] Pit [ ] Cut
Type of Wastewater: [X] Sewage [ ] Industrial Process [ ] Mixed

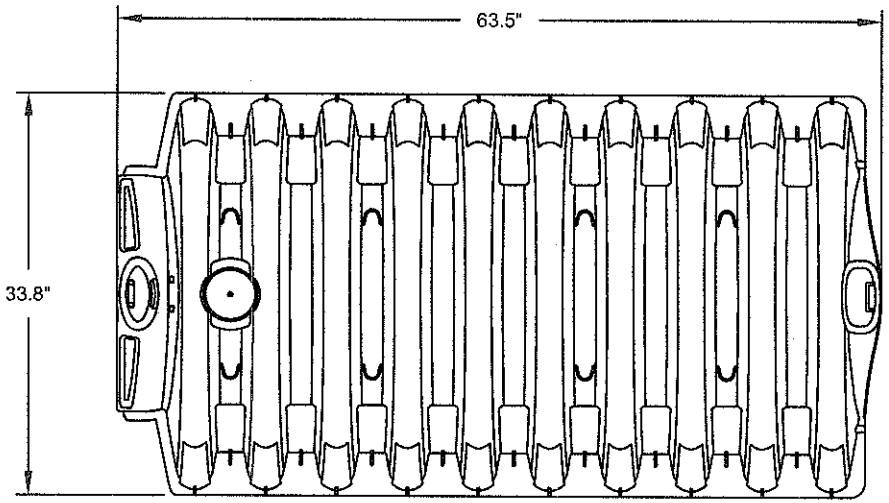
PROFILE #	.1940 Landscape Position/ Slope%	Horizon Depth (IN.)	SOIL MORPHOLOGY .1941 .1941 Structure/ Texture	.1941 Consistence Mineralogy	b PROFILE FACTORS .1942 Soil Wetness/ Color	.1943 Soil Depth (IN.)	.1956 Sapro Class	.1944 Restr Horiz	Profile Class & LTAR
1	LS 12%	0-8	SBK/SCL	FR/SEXP/SS/SP	> 37" TO SOIL WETNESS	37"	US/III	N/A	PS/IV 0.3
		8-37	SBK/C	FI/SEXP/S/P					
		37+	SBK/CL	FR/SEXP/SS/SP					
2	LS 9%	0-9	SBK/SCL	FR/SE/SS/SP	> 40" TO SOIL WETNESS	40"	US/III	N/A	PS/IV 0.3
		9-40	SBK/C	FI/SEXP/S/P					
		40+	SBK/CL	FR/SEXP/SS/SP					
3	LS 9%	0-6	SBK/SCL	FR/SE/SS/SP	> 44" TO SOIL WETNESS	44"	US/III	N/A	PS/IV 0.3
		6-44	SBK/C	FI/SEXP/S/P					
		44+	SBK/CL	FR/SEXP/SS/SP					
4	LS 10%	0-6	SBK/SCL	FR/SE/SS/SP	>35" TO SOIL WETNESS	35"	US/III	N/A	PS/IV 0.3
		6-35	SBK/C	FI/SEXP/S/P					
		35+	SBK/CL	FR/SEXP/SS/SP					
5	LS 10%	0-7	SBK/SCL	FR/SE/SS/SP	> 48" TO SOIL WETNESS	48"+	N/A	N/A	S/IV 0.3
		7-48	SBK/C	FI/SEXP/S/P					

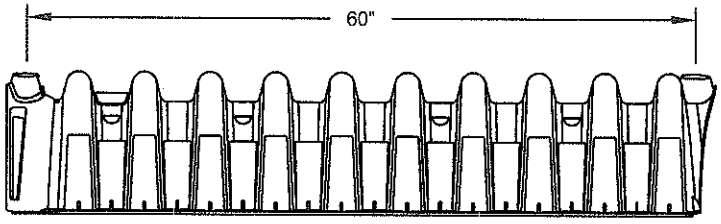
Description	Initial System	Repair System
Available Space (.1945)	PS	PS
System Type(s)	Type II	Type IIIb
Site LTAR	0.3	0.3

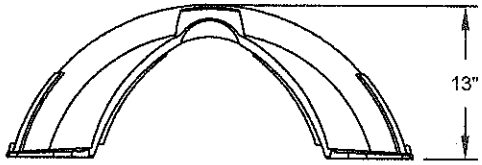
Other Factors (.1946):
Soil Evaluation By: Larry Thompson, LSS
Others Present:
Site Classification (.1948):
Site Evaluation By:
Others Present:

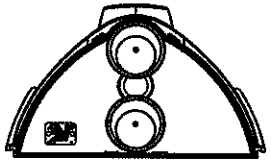
SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM
CONTINUED

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 (IN.)	.1956 Sapro Class	.1944 Restr Horiz	Profile Class & LTAR
6	LS	0-6	SBK/SCL	FR/SEXP/SSSP					S/IV
	9%	6-48	SBK/C	FI/SEXP/S/P	> 48" TO SOIL WETNESS	48"	N/A	N/A	0.3
7	LS	0-7	SBK/SCL	FR/SE/SS/SP					PS/IV
	9%	7-43	SBK/C	FI/SEXP/S/P					
		43+	SBK/CL	FR/SEXP/SS/SP	> 43" TO SOIL WETNESS	43"	US/III	N/A	0.3
8	LS	0-7	SBK/SCL	FR/SE/SS/SP					PS/IV
	10%	7-43	SBK/C	FI/SEXP/S/P					
		43+	SBK/CL	FR/SEXP/SS/SP	> 43" TO SOIL WETNESS	43"	US/III	N/A	0.3
9	LS	0-9	SBK/SCL	FR/SE/SS/SP					S/IV
	10%	9-48	SBK/C	FI/SEXP/S/P	> 48" TO SOIL WETNESS	48"	N/A	N/A	0.3





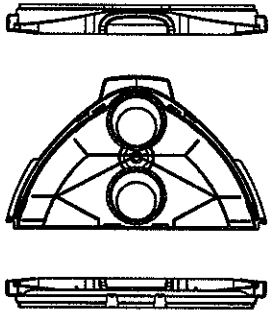




END CAP
FRONT VIEW



END CAP
SIDE VIEW



END CAP
REAR/TOP VIEW

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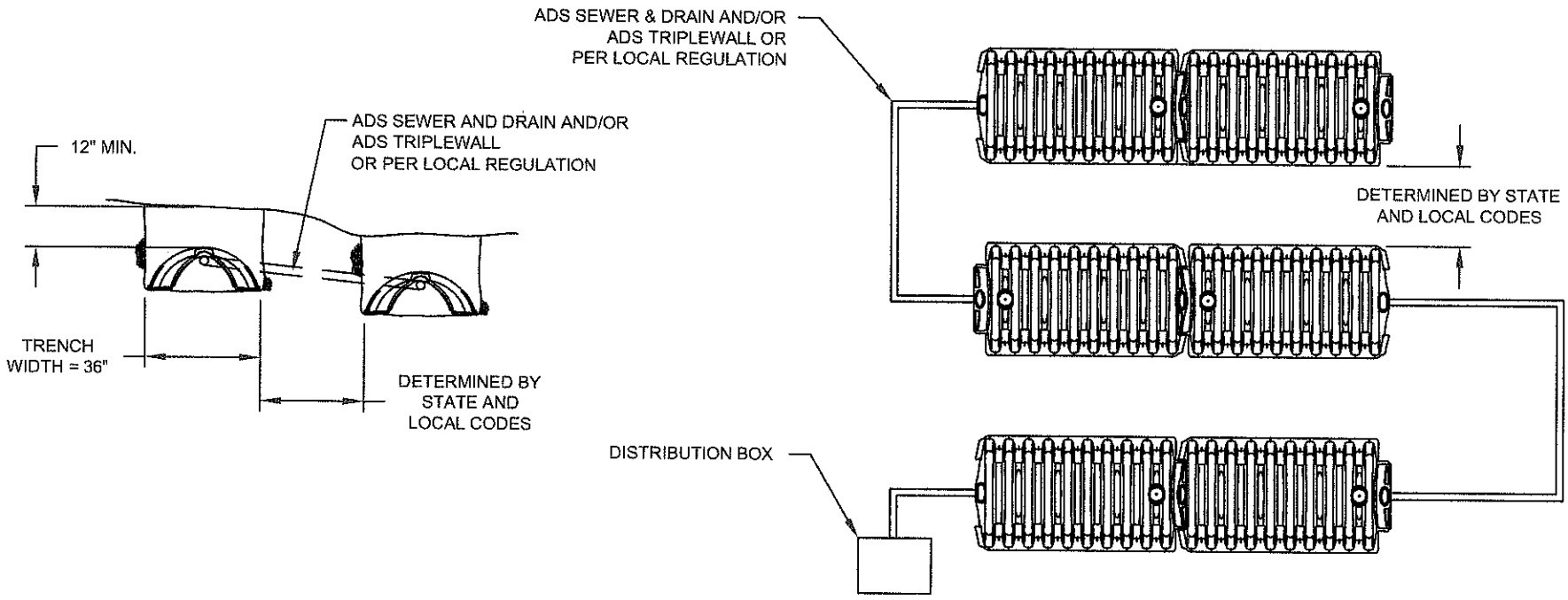
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ARC 36 CHAMBER & END PLATES

DRAWING NUMBER: STD-903

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DATE	5.15.07
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NOTES:

1. EXCAVATE TRENCHES TO PROPER WIDTH, AND PROPER DEPTH AS REQUIRED BY STATE AND LOCAL CODES.
2. SMOOTH IRREGULARITIES IN THE EXCAVATION. A LEVEL, FLAT SURFACE IS REQUIRED.
3. ASSEMBLE ARC LEACHING CHAMBERS AND UNIVERAL ENDPLATES TOGETHER IN TRENCH(ES).
4. INSTALL UNIVERSAL END CAPS AND SECURE IN PLACE WITH BACKFILL.
5. PUNCH OUT PIPE HOLE OPENINGS IN THE END PLATES AS NEEDED AND CONNECT INLET PIPES.
6. FILL SIDEWALL AREA TO TOP CHAMBERS WITH NATIVE SOIL (COARSE SAND OR FINE GRAVEL MAY ALSO BE USED: NO HEAVY CLAY, SILT OR DEBRIS SHALL BE INCLUDED).
7. "WALK IN" FILL TO COMPACT SOIL ALONG SIDES OF ARC CHAMBER. THIS IS VERY IMPORTANT TO ACHIEVE LOAD RATING.
8. COVER ARC LEACHING CHAMBERS TO A MINIMUM OF 12" OF GRANULAR COVER AFTER CONSOLIDATION FOR H-10 APPLICATIONS. AVOID LARGE ROCKS OR DEBRIS IN COVER MATERIAL. COVER HEIGHTS AND LIVE LOADING LIMITS ARE IMPACTED BY BOTH SOIL TYPE AND COMPACTION REQUIREMENTS. CONTACT ADS WHEN POOR SOILS ARE ENCOUNTERED AND FOR MAXIMUM FILL HEIGHTS.

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ARC 36 CHAMBER STANDARD SERIAL MODE INSTALLATION

DRAWING NUMBER: STD-906C

ARC™

DRAWN BY	TJR
DATE	09/05/07
CHK'D BY	CKS
SCALE	NTS
SHEET	OF

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