Engineers and Soil Scientists

Agri-Waste Technology, Inc.
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Soil Suitability for Sewage Treatment and Disposal Systems

348 Raymond Tharrington Rd
Louisburg, NC 27549
(Franklin County Parcel: 012940)

Prepared For:	Valerie Summerlin, Client
Prepared By:	Trent Bostic, Senior Soil Scientist
Report Date:	March 11, 2025

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348 Raymond Tharrington Rd, Louisburg, NC 27549

PREPARED FOR: Valerie Summerlin

PREPARED BY: Trent Bostic

DATE: March 11, 2025

Soil suitability for domestic sewage treatment and disposal systems was evaluated on February 25, 2025, for property located at 348 Raymond Tharrington Rd in Louisburg, NC. Trent Bostic, Heath Clapp, and Brent Purdum of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. The detailed soil evaluation of the land area will follow. Property reference maps are in Attachment 1. A review of the soil and landscape characteristics that dictate soil suitability for domestic sewage treatment and disposal systems can be found in Attachment 2.

The parcel is mostly wooded with a few scattered trails. The property is approximately 33.5 acres and contains an existing single-family residence and septic system. A creek also runs through the property.

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

The aerial map in Attachment 3 details the approximate property boundaries, soil boring locations, soil types, and soil areas for septic systems. Numerous soil borings were advanced on the property (Attachment 3). This evaluation was merely a preliminary review to determine what potential this land might have for domestic sewage treatment and disposal systems. Therefore, specific types of septic systems, exact locations of future drainfields and repair areas, plus buffers from property lines (current and potential future lot lines), building foundations, wells, etc. are not fully considered. These things will need to be more fully considered as the plans develop for the potential future of this site.

Areas 1, 2, and 3 exhibited soil characteristics and soil depths (24” or greater) that are suitable for conventional or shallow conventional septic systems. These areas are shown

on the map in Attachment 3. Typical profile descriptions of the suitable soil for this property are in Attachment 4.

Areas 4, 5, and 6 exhibited soil characteristics and soil depths (13" or greater) that are suitable for drip septic systems. These areas are shown on the map in Attachment 3. Typical profile descriptions of the suitable soil for this property are in Attachment 4.

The suitable soil borings had the following characteristics. Soil texture was suitable and was estimated to be sandy loam in the soil surface (A and E horizons) and clay in the subsoil (B horizons). The soil structure was suitable and was estimated to be granular near the soil surface (A and E horizons) and subangular blocky in the subsoil (B horizons).

The major soil types on this property are the Wake-Wateree-Wedowee (WbD), Wake-Saw-Wedowee (WaB), Helena sandy loam (HeB), and Vance sandy loam (VaB). The Franklin County Soil Survey indicates that severe to moderate limitations exist for the installation of septic systems in these soil types.

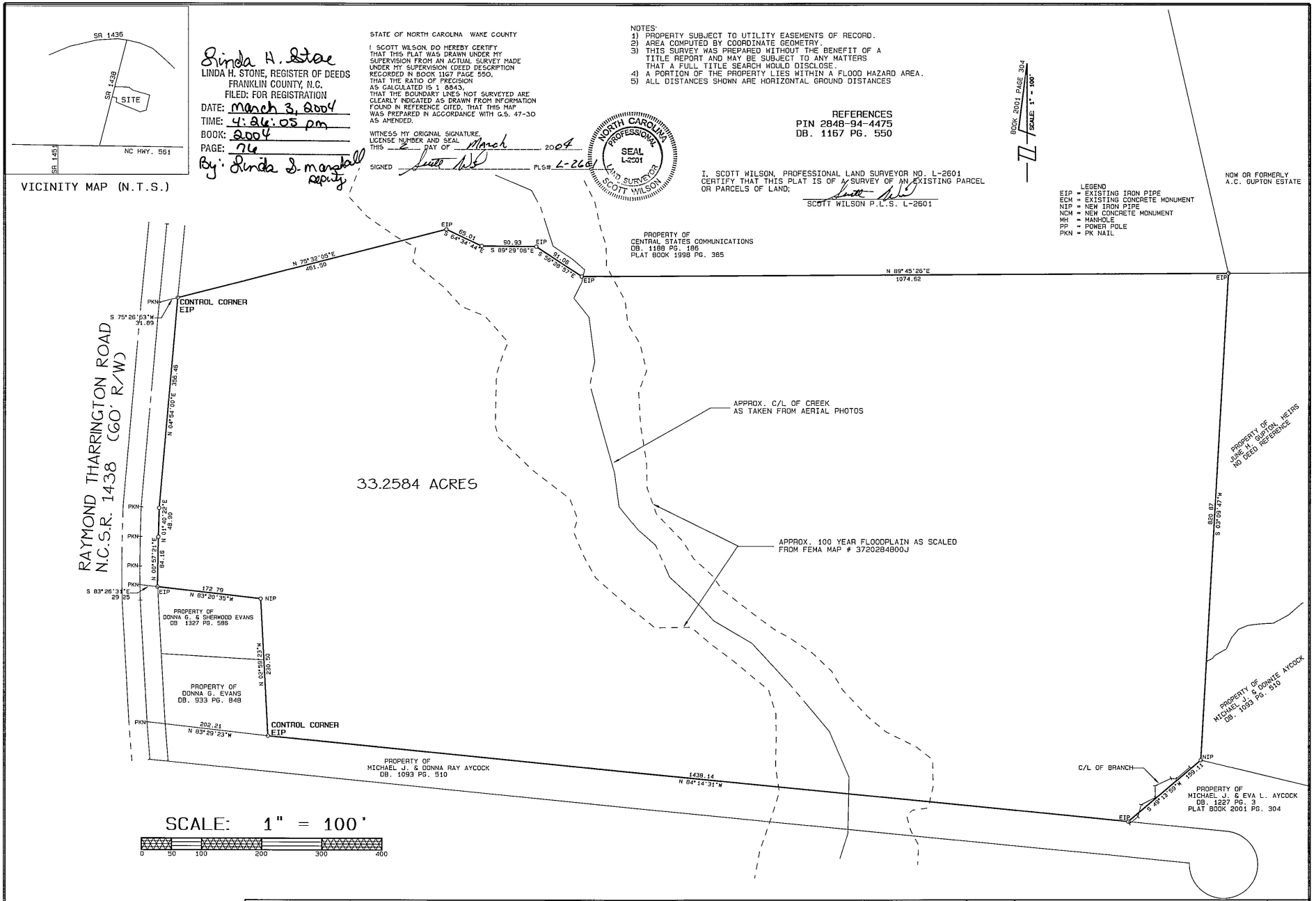
The land area required for a conventional septic system is calculated based on the size of the proposed facility and the Long-Term Acceptance Rate (LTAR) of the soil. The LTAR range for the provisionally suitable soils on this property is 0.1-0.4 GPD/ft^2 based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT for the majority of the suitable soil is 0.25 GPD/ft^2, but the final LTAR for specific septic system types and septic drainfield locations will be set by the permitting entity. Detailed computations showing space requirements are in Attachment 5.

The land area required for a drip septic system is calculated based on the size of the proposed facility and the Long-Term Acceptance Rate (LTAR) of the soil. The LTAR range for the provisionally suitable soils on this property is 0.05-0.15 GPD/ft^2 based on the most restrictive soil texture in the subsoil. The LTAR suggested by AWT for the majority of the suitable soil is 0.1 GPD/ft^2, but the final LTAR for specific septic system types and septic drainfield locations will be set by the permitting entity. Detailed computations showing space requirements are in Attachment 5.

Conclusions

Based on the results of this evaluation, the installation of conventional and drip septic systems is probable in the areas shown on the attached evaluation maps. Additional detailed analysis and design work will be needed prior to obtaining septic permits.

We appreciate the opportunity to assist you in this matter. Please contact us with any questions, concerns, or comments.



JOB #	BOOK #	REV.	DATE	DESCRIPTION

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD
SUITE 250
RALEIGH, NORTH CAROLINA 27607
919-851-4422 FAX 919-851-8968

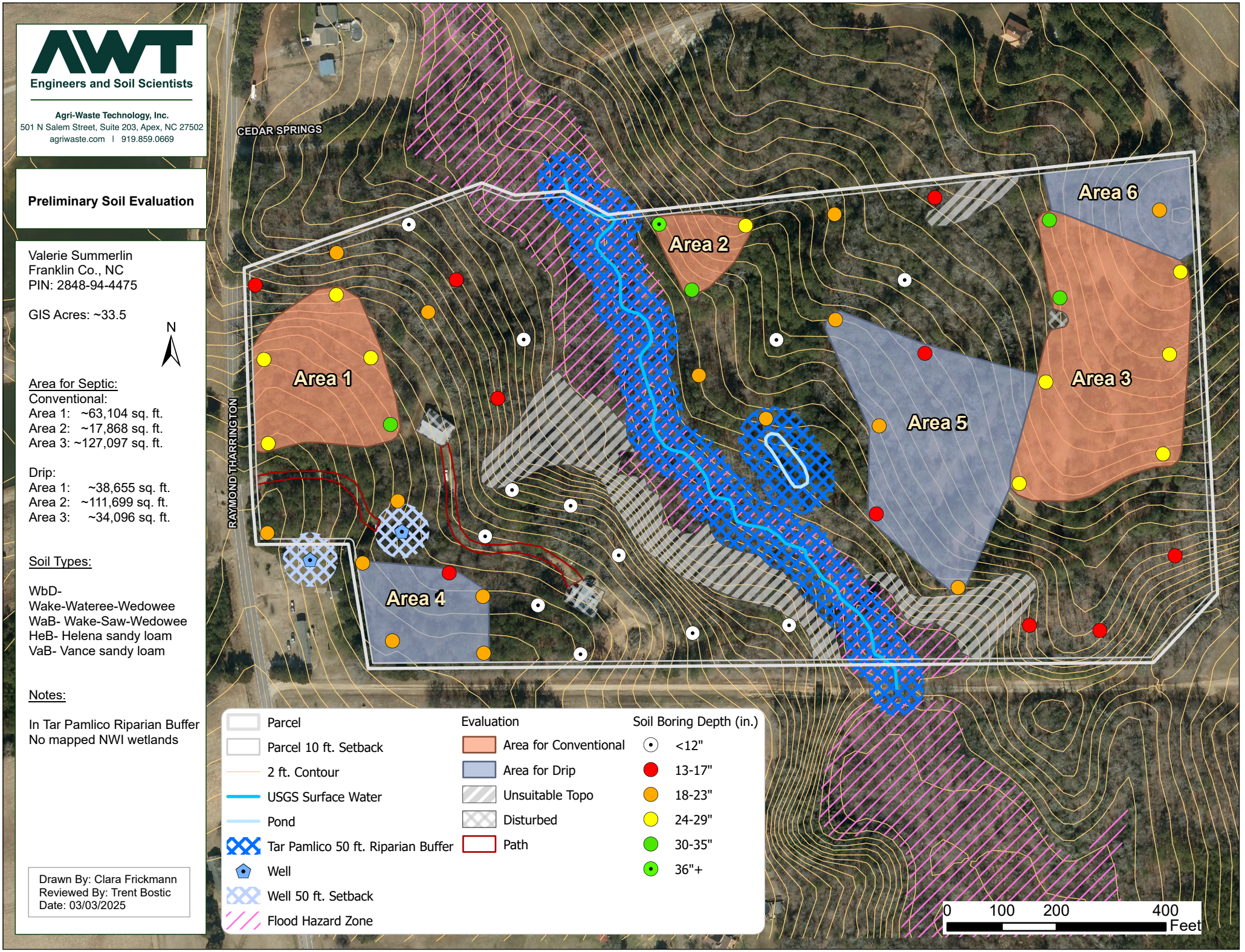
SURVEYED BY	DRAWN BY	CHECKED BY	DATE
JGS	GSW	GSW	2/26/04

PROPERTY TO BE ACQUIRED BY
JOSEPH GLENN SUMMERLIN
& WIFE, VALERIE SUMMERLIN
GOLD MINE TWNSHP. FRANKLIN CO N.C.

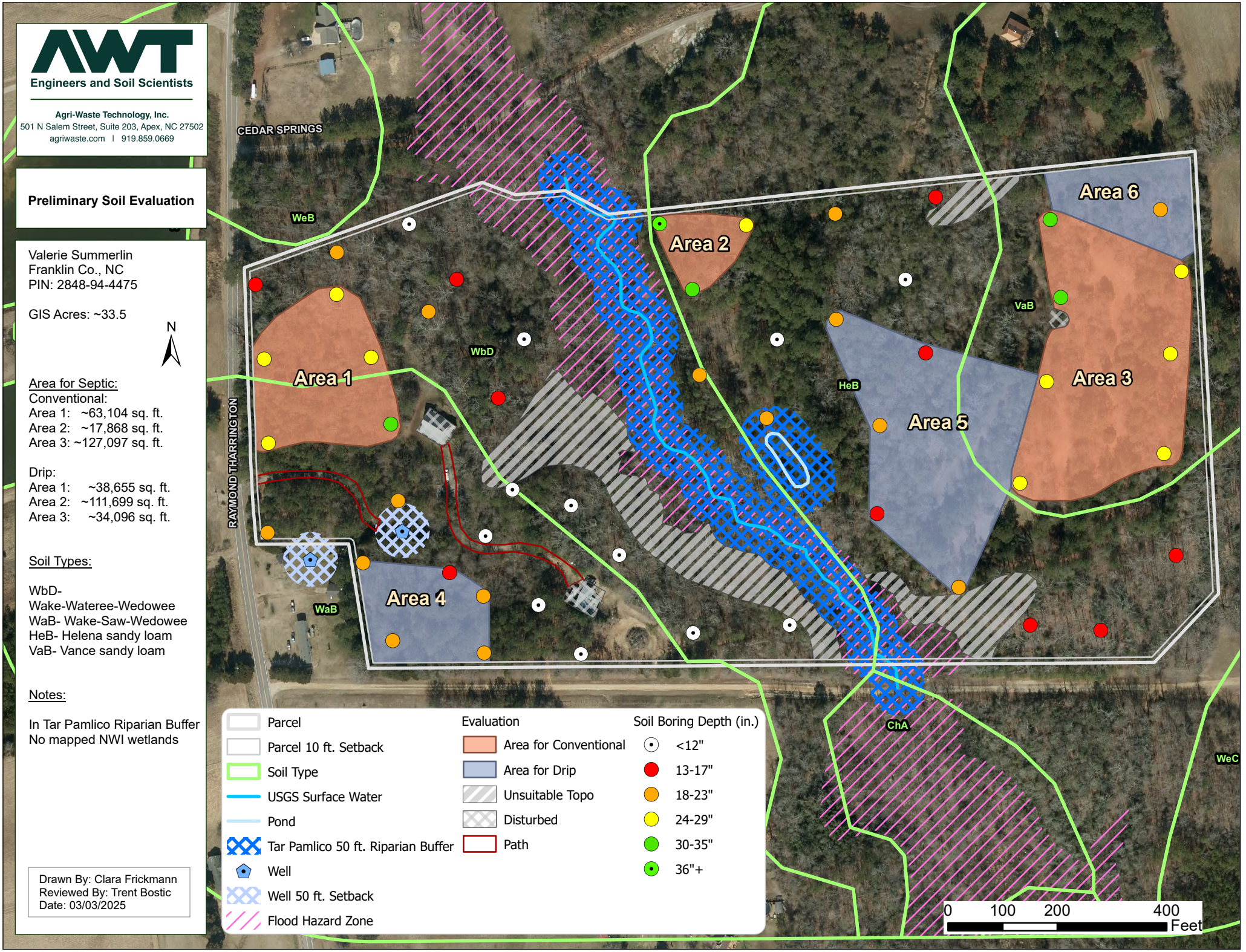
SHEET OF

FINAL BNK BOUNDARY FOR CLOSING - 54[0,826]PF: 04105 1100 02-Mar-04 02:02 PM / S04105000-1

Book 2004 page 76 3-3-04



Surface water and/or bad topo areas have not been officially evaluated for stream ID according to local regulatory requirements. This map is intended for preliminary purposes only and not to be used as a plat/survey or can it be assumed all streams are identified on this property.



Surface water and/or bad topo areas have not been officially evaluated for stream ID according to local regulatory requirements. This map is intended for preliminary purposes only and not to be used as a plat/survey or can it be assumed all streams are identified on this property.

Property ID#: 012490
Property Recorded: _____
County: Franklin

SOIL/SITE EVALUATION
FOR
ON-SITE WASTEWATER SYSTEM

Location Site: 348 Raymond Tharrington Rd, Louisburg, NC
Water Supply: On Site Well X Comm. Well___ Public___ Other___ Evaluation Method: Auger Boring: X Pit___

PROFILE 1: Typical Profile Description

Horizon/ Depth (IN)	Matrix	Mottles	Mottle Abundance / Contrast	(a)(1) Texture	(a)(2) Structure	(a)(3) Minerology	Consistence (Wet)	Consistence (Moist)
A 0-4"	**10YR 5/2**	**-**	**-**	**S**	**Gr**	**NEXP**	**NS, NP**	**Fr**
Bt1 4-16"	**10YR 5/8**	**-**	**-**	**S**	**SBK**	**SEXP**	**SS, SP**	**Fi**
Bt2 16-28"+	**7.5YR 5/6**	**2.5YR 5/8**	**1, f, P**	**S**	**SBK**	**SEXP**	**SS, SP**	**Fi**

.1940 Landscape Pos/Slope %	S	Profile LTAR	0.25
.1942 Wetness Condition	S	System Type	Conventional
.1943/.1956 Saprolite	S		
.1944 Restrictive Horizon	S		
.1948 Profile Classification	S		

Comments:

PROFILE 2: Typical Profile Description

Horizon/ Depth (IN)	Matrix	Mottles	Mottle Abundance / Contrast	(a)(1) Texture	(a)(2) Structure	(a)(3) Minerology	Consistence (Wet)	Consistence (Moist)
A 0-4”	**10YR 5/2**	**-**	**-**	**S**	**GR**	**NEXP**	**NS, NP**	**Fr**
Bt1 4-16”	**10YR 5/8**	**-**	**-**	**S**	**Gr**	**SEXP**	**SS, SP**	**Fi**
BC 16”+	**7.5YR 5/6**	**2.5YR 5/8**	**2, m, D**	**US**	**M**	**NEXP**	**NS, NP**	**Fr**

.1940 Landscape Pos/Slope %	S	Profile LTAR	0.1
.1942 Wetness Condition	S	System Type	Drip
.1943/.1956 Saprolite	S		
.1944 Restrictive Horizon	S		
.1948 Profile Classification	S		

Comments:

EVALUATED BY: Trent Bostic

COMMENTS: _____

Table 11.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
RmA*:					
Riverview	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Fair: thin layer.
Buncombe	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Poor: seepage, too sandy.
RoA*:					
Roanoke	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Wahee	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
RwC*:					
Rock outcrop	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Wake	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, seepage, small stones.
StA	Moderate: flooding, wetness, percs slowly.	Severe: seepage.	Severe: seepage, wetness.	Moderate: flooding, wetness.	Fair: too clayey, thin layer.
TaD	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
TaE	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Ud	Variable	Variable	Variable	Slight	Variable.
Udorthents					
VaB	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
VaC	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
VgB	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack, small stones.

See footnote at end of table.

Table 11.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
VnB Varina	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
VnC Varina	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
WaB*:					
Wake	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, seepage, small stones.
Saw	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
WaB*:					
Wedowee	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: small stones.
WbD*:					
Wake	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, seepage, small stones.
Wateree	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
Wedowee	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
WcE*:					
Wake	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
Wateree	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
WdE*:					
Wateree	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
Rion	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.

See footnote at end of table.

LEGEND OF ABBREVIATIONS FOR SOIL/SITE EVALUATION FORM

LANDSCAPE POSITION
CC – Concave Slope
CV – Convex Slope
DS – Debris Slump
D – Depression
DW – Drainage Way
FP – Flood Plain
FS – Foot Slope
H – Head Slope
I – Interfluve
L – Linear Slope
N – Nose Slope
P – Pocosin
R – Ridge
S – Shoulder
T – Terrace

STRUCTURE
G – Single Grain
M – Massive
CR – Crumb
GR – Granular
SBK – Subangular Blocky
ABK – Angular Blocky
PL – Platy
PR – Prismatic
(w in front denotes "weak")

MOTTLES
1 – Few
2 – Common
3 – Many

f – Fine
m – Medium
c – Coarse

F – Faint
D – Distinct
P – Prominent

MOIST CONSISTENCE
VFr – Very Friable
Fr – Friable
Fi – Firm
VFi – Very Firm
EFi – Extremely Firm

WET CONSISTENCE
NS – Non Sticky
SS – Slightly Sticky
S – Sticky
VS – Very Sticky

NP – Non Plastic
SP – Slightly Plastic
P – Plastic
VP – Very Plastic

MINERALOLOGY
NEXP – Non Expansive
SEXP – Slightly Expansive
EXP – Expansive

TEXTURE GROUP	TEXTURE CLASS	.1955 LTAR (gal/day/sq.ft.)
I	S – Sand LS – Loamy Sand	1.2 – 0.8
II	SL – Sandy Loam L – Loam	0.8 – 0.6
III	SCL – Sandy Clay Loam CL – Clay Loam SiL – Silt Loam Si – Silt SiCL – Silty Clay Loam	0.6 – 0.3
IV	SC – Sandy Clay SiC – Silty Clay C – Clay	0.4 – 0.1

Conventional Septic System Area Computation

Created by: TB
Created on: 3/11/2025

Client Name:	*Summerlin*	
Number Bedrooms:	***3***	
Design Flow (gal/day):	360	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.25*	
Trench Bottom Area (ft^2):	1440	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	480	(Conventional - Pipe & Gravel)
Minimum Field Area Required (ft^2):	4320	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	3240	(25% reduction)
Minimum Field Area Required (Panel Block) (ft^2)	2160	(50% reduction)
Total Field Area Required (ft^2)$^{(1)}$:	10800	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	8100	(25% reduction from above)
Total Field Area Required (Panel Block) (ft^2)$^{(1)}$:	5400	(50% reduction)
Total Field Area Required (ft^2)$^{(1)}$:	12960	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	9720	(25% reduction from above)
Total Field Area Required (Panel Block) (ft^2)$^{(1)}$:	6480	(50% reduction)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.

Client Name:	*Summerlin*	
Number Bedrooms:	***4***	
Design Flow (gal/day):	480	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.25*	
Trench Bottom Area (ft^2):	1920	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	640	(Conventional - Pipe & Gravel)
Minimum Field Area Required (ft^2):	5760	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	4320	(25% reduction from above)
Minimum Field Area Required (Panel Block) (ft^2)	2880	(50% reduction)
Total Field Area Required (ft^2)$^{(1)}$:	14400	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	10800	(25% reduction from above)
Total Field Area Required (Panel Block) (ft^2)$^{(1)}$:	7200	(50% reduction)
Total Field Area Required (ft^2)$^{(1)}$:	17280	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	12960	(25% reduction from above)
Total Field Area Required (Panel Block) (ft^2)$^{(1)}$:	8640	(50% reduction)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.

Client Name:	*Summerlin*	
Number Bedrooms:	***5***	
Design Flow (gal/day):	600	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.25*	
Trench Bottom Area (ft^2):	2400	(Design flow/LTAR)
Trench Width (ft):	3	
On-center distance between trenches (ft):	9	
Trench Bottom Length (ft):	800	(Conventional - Pipe & Gravel)
Minimum Field Area Required (ft^2):	7200	(Trench Bottom Length*Trench on-center distance)
Minimum Field Area Required (Innovative) (ft^2):	5400	(25% reduction from above)
Minimum Field Area Required (Panel Block) (ft^2)	3600	(50% reduction)
Total Field Area Required (ft^2)$^{(1)}$:	18000	(Minimum field area*2.5)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	13500	(25% reduction from above)
Total Field Area Required (Panel Block) (ft^2)$^{(1)}$:	9000	(50% reduction)
Total Field Area Required (ft^2)$^{(1)}$:	21600	(Minimum field area*3)
Total Field Area Required (Innovative) (ft^2)$^{(1)}$:	16200	(25% reduction from above)
Total Field Area Required (Panel Block) (ft^2)$^{(1)}$:	10800	(50% reduction)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.

Drip Septic System Area Computation

Created by: TB
Created on: 3/12/2025

Client Name:	*Summerlin*	
Number Bedrooms:	*3*	
Design Flow (gal/day):	360	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.1*	
Trench Bottom Area (ft^2):	3600	(Design flow/LTAR)
Trench Width (ft):	0	
On-center distance between trenches (ft):	2	
Trench Bottom Length (ft):	1800	
Minimum Field Area Required (ft^2):	3600	(Trench Bottom Length*Trench on-center distance)
Total Field Area Required (ft^2)$^{(1)}$:	9000	(Minimum field area*2.5)
Total Field Area Required (ft^2)$^{(1)}$:	10800	(Minimum field area*3)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.

Client Name:	*Summerlin*	
Number Bedrooms:	*4*	
Design Flow (gal/day):	480	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.1*	
Trench Bottom Area (ft^2):	4800	(Design flow/LTAR)
Trench Width (ft):	0	
On-center distance between trenches (ft):	2	
Trench Bottom Length (ft):	2400	
Minimum Field Area Required (ft^2):	4800	(Trench Bottom Length*Trench on-center distance)
Total Field Area Required (ft^2)$^{(1)}$:	12000	(Minimum field area*2.5)
Total Field Area Required (ft^2)$^{(1)}$:	14400	(Minimum field area*3)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.

Client Name:	*Summerlin*	
Number Bedrooms:	*5*	
Design Flow (gal/day):	600	(120 gal/day/bedroom, minimum 240 gal/day/dwelling)
LTAR (gal/day/ft^2)	*0.1*	
Trench Bottom Area (ft^2):	6000	(Design flow/LTAR)
Trench Width (ft):	0	
On-center distance between trenches (ft):	2	
Trench Bottom Length (ft):	3000	
Minimum Field Area Required (ft^2):	6000	(Trench Bottom Length*Trench on-center distance)
Total Field Area Required (ft^2)$^{(1)}$:	15000	(Minimum field area*2.5)
Total Field Area Required (ft^2)$^{(1)}$:	18000	(Minimum field area*3)

(1) Provides for reserve area and soil irregularity, 2.5 to 3 is multiplier.