



OSE/PE Report For:

- Construction Permit
 Repair Permit
 Voluntary Upgrade Permit
 Certification Letter
 Subdivision Approval

Property Location:

911 Address 118 Waller Point Dr. City, State, Zip: Stafford, VA 22554
 Lot: 13 Section: _____ Subdivision: Arkendale
 GPIN or Tax Map #: 32-13 Health Dept. ID #: _____
 Latitude: _____ Longitude: _____

Owner :

Name: Micheal Shamari
 Address: 6723 Georgetown Pi. McLean, VA 22101

Prepared by:

OSE Name: Danny R. Hatch License # 1940-001123
 Address: 13282 Sillamon Rd, Goldvein, VA 22720
 PE Name: _____ License # _____
 Address: _____

Date of Report: 8/10/2018 Date of Revision #1: 9/13/2018
 OSE/PE Job # 3903 CL Date of Revision #2: _____

Contents/Index of this report:

<u>1. Cover Sheet</u>	<u>10 - 12. Soil Summary & Profiles</u>	_____
<u>2 - 3. Site Sketches</u>	<u>13. Well Location Statement</u>	_____
<u>4 - 5. Abbreviated Designs</u>	<u>14. Survey</u>	_____
<u>6 - 9. Water Mounding Evaluation</u>		_____

Certification Statement






I hereby certify that the evaluations and/or designs contain herein were conducted in accordance with the applicable provisions of the Sewage Handling & Disposal Regulations (12VAC5-610), the Private Well Regulations (12VAC5-630), the Regulations for Alternative Onsite Systems (12VAC5-613) and all other applicable laws, regulations, and policies implemented by the Virginia Department of Health. I further certify that I currently possess any professional license required by the laws and regulations of the Commonwealth that have been duly issued by the applicable agency charged with licensure to perform the work contained herein. The potential for both conventional and alternative onsite sewage systems has been discussed with the owner/applicant.

- The work attached to this cover page has been conducted under an exemption to the practice of engineering, specifically the exemption in Code of Virginia Section 54.1-402.A.11

I recommend that a: Construction Permit Subdivision Approval be: **Issued**
 Certification Letter Repair Permit Voluntary Upgrade **Denied**

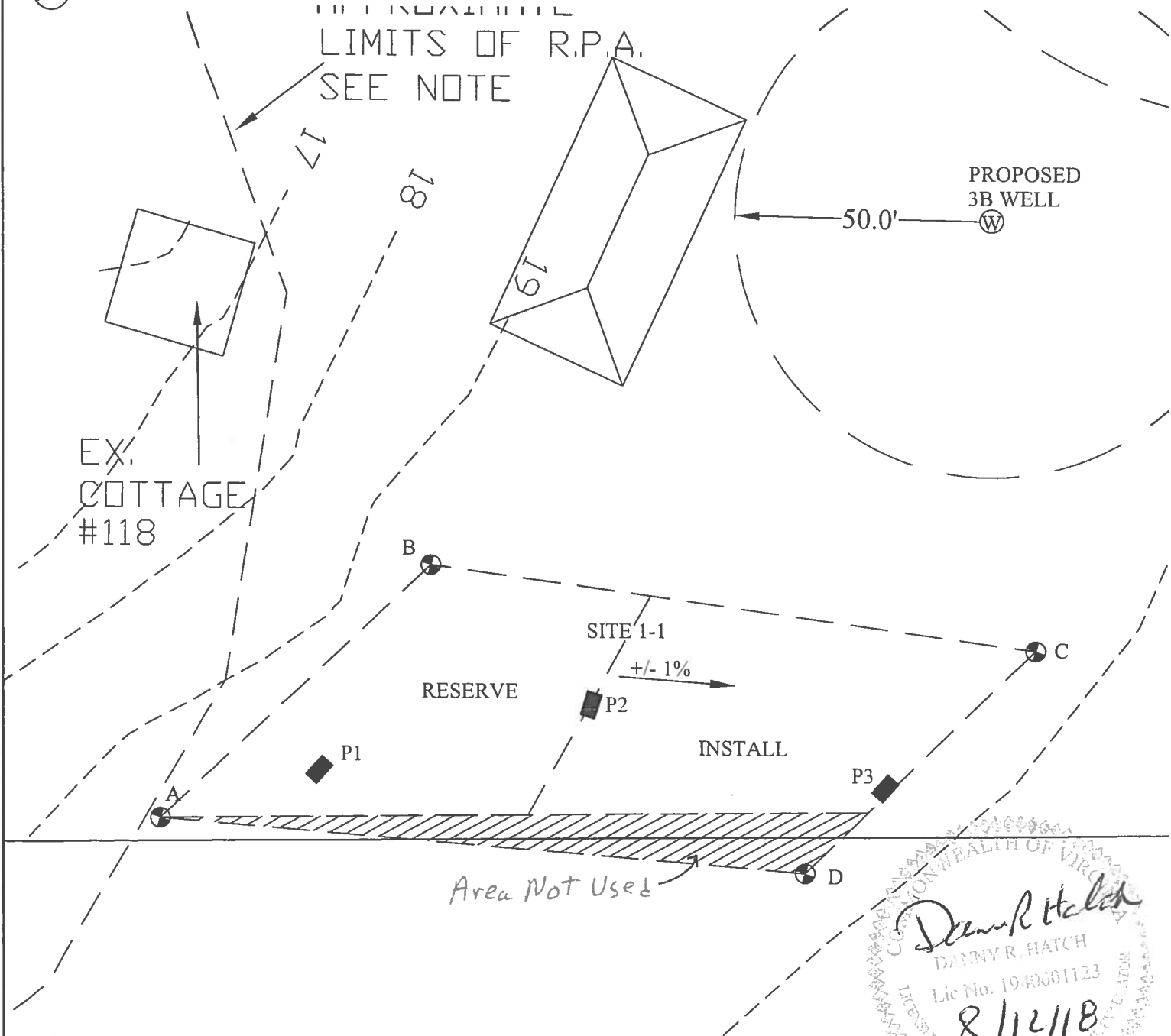
OSE/PE Signature: Danny R. Hatch Date: 9/13/18

SITE SKETCH 118 WALLER POINT DR. STAFFORD COUNTY, VA

-  BORE #
-  PIT #
-  SLOPE DIRECTION
-  (A-F) DRAINFIELD CORNERS
-  PROPOSED III B WELL

ALL KNOWN WELLS & DRAINFIELD SITES WITHIN 200' OF THE PROPOSED DRAINFIELDS ARE SHOWN.

LIMITS OF R.P.A.
SEE NOTE



Danny R. Hatch
DANNY R. HATCH
Lic No. 1940001123
8/12/18
COMMONWEALTH OF VIRGINIA
LICENSED ALTERNATIVE ON-SITE SOIL CLEANER

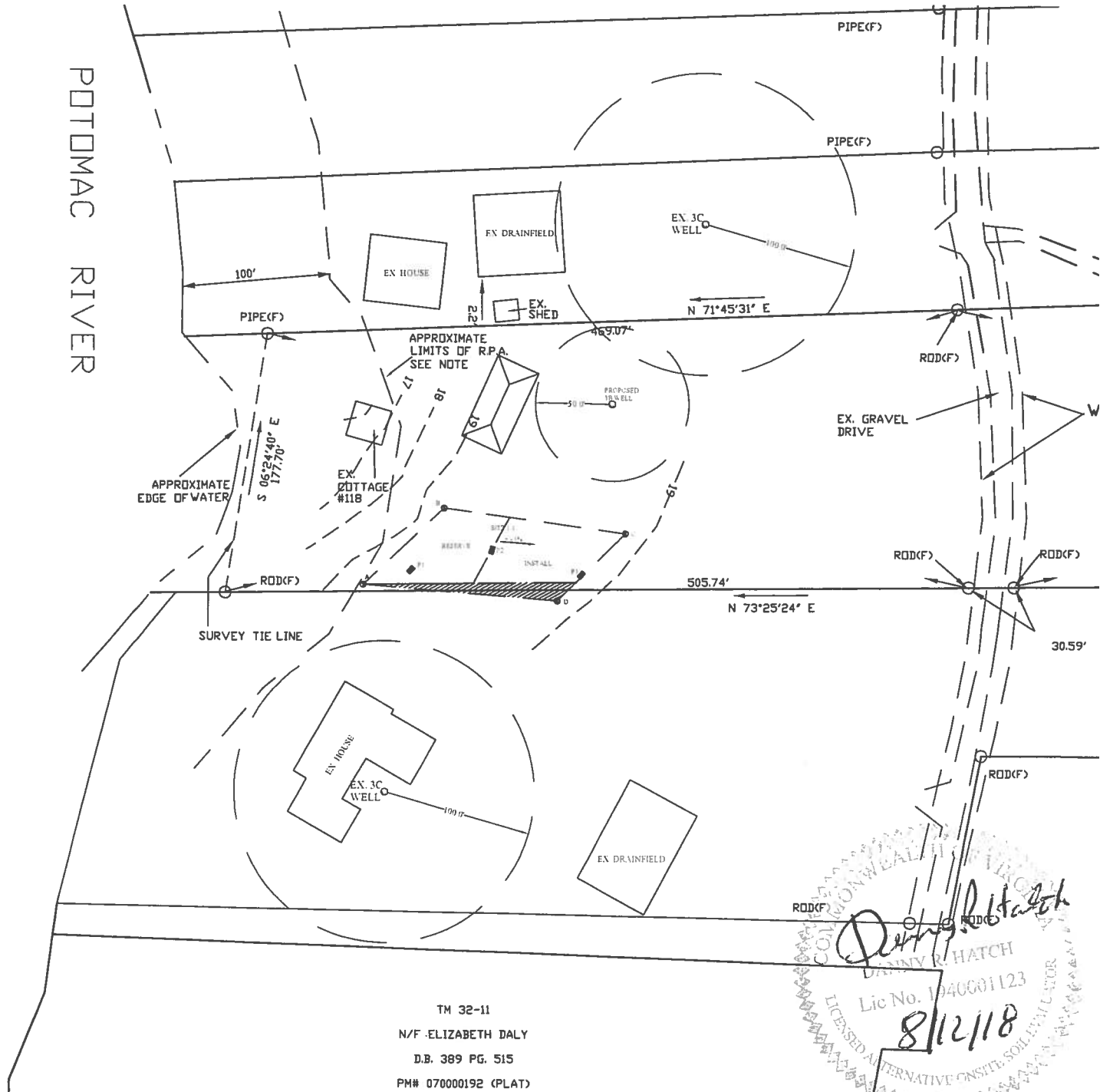
JOB NUMBER: 3903CL
August 10, 2018
DRAWN BY: pmp



SITE SKETCH 118 WALLER POINT DR. STAFFORD COUNTY, VA

- ⊕# BORE #
- PIT #
- SLOPE DIRECTION
- (A-F) DRAINFIELD CORNERS
- ⊙ PROPOSED IIIB WELL

ALL KNOWN WELLS & DRAINFIELD SITES WITHIN 200' OF THE PROPOSED DRAINFIELDS ARE SHOWN.



TM 32-11
N/F ELIZABETH DALY
D.B. 389 PG. 515
PM# 070000192 (PLAT)

JOB NUMBER: 3903CL
August 10, 2018
DRAWN BY: pmp



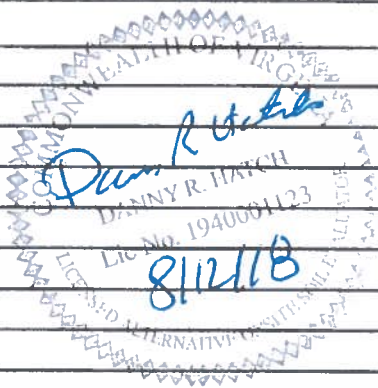
**Abbreviated Design -TL3 to Drip Disposal
118 Waller Point Dr. - Site 1-1 - PRIMARY DESIGN**

A.	a. Percolation design rate. (minutes per inch)*	80		
	b. Recommended drip tubing installation. (inches)	2		
	c. Depth to impervious strata/ or water table/ or limit of evaluation. (inches)	58	14	58
	d. Minimum separation distance required. (inches)	12	12	12
	e. Separation distances in inches provided in design (Ac-Ab).	56	12	56
	f. Slope (percentage)	1		
	g. Is the slope greater than 10, 20 or 30%?	No		
	i. If Ag is Yes, does 24 inches or greater to rock/impervious strata exist below Ab?	Yes		
	j. If no to Ai, add 17% more area for 10-19% slope, 33% for 20-29% slope, or 50% for 30-39% slope. If yes to Ai, add 17% more area for 20-29% slope, 33% for 30-39% slope, or 50% for 40-50% slope.	0		
B.	a. Design Type?	Advantex		
		Advantex		
	b. Soil Loading Rate, gpd/ft ²	0.21		
C.	a. Number of bedrooms.	4		
	b. Gallons per day in design	600		
D.	a. Average Length of run. (feet)	51		
	b. Length of available area. (feet)	48-52		
E.	Width of drip tubing. (inch)	1		
F.	Number of runs.	29		
G.	Center-to-center spacing. (feet)	2		
H.	a. Width required (G(F-1)+1) (feet)	57		
	b. Width of available area. (feet)	60		
I.	a. Total square footage required	2857		
	b. Total square footage with slope increase $I_a \times A_j$	2857		
	c. Total square footage in design ($D_a \times H_a$)	2907		
J.	a. Linear feet of drip tubing required	1429		
	b. Linear feet of drip tubing provided	1479		
K.	a. Is a reserve area required?	Yes	X	No
	b. Percent required	100%		
	c. Percent available	100%		
<p>Notes: Estimated infiltration rate is 45 mpi. System to be designed on 80 mpi.</p>				

DANNY R. HATCH
 Lic No. 1940001123
 8/12/18

**Abbreviated Design -TL3 to Drip Disposal
118 Waller Point Dr. - Site 1-1 - RESERVE DESIGN**

A.	a. Percolation design rate. (minutes per inch)*	80		
	b. Recommended drip tubing installation. (inches)	2		
	c. Depth to impervious strata/ or water table/ or limit of evaluation. (inches)	58	14	58
	d. Minimum separation distance required. (inches)	12	12	12
	e. Separation distances in inches provided in design (Ac-Ab).	56	12	56
	f. Slope (percentage)	1		
	g. Is the slope greater than 10, 20 or 30%?	No		
	i. If Ag is Yes, does 24 inches or greater to rock/impervious strata exist below Ab?	Yes		
	j. If no to Ai, add 17% more area for 10-19% slope, 33% for 20-29% slope, or 50% for 30-39% slope. If yes to Ai, add 17% more area for 20-29% slope, 33% for 30-39% slope, or 50% for 40-50% slope.	0		
B.	a. Design Type?	Advantex		
		Advantex		
	b. Soil Loading Rate, gpd/ft ²	0.21		
C.	a. Number of bedrooms.	4		
	b. Gallons per day in design	600		
D.	a. Average Length of run. (feet)	64		
	b. Length of available area. (feet)	51-76		
E.	Width of drip tubing. (inch)	1		
F.	Number of runs.	23		
G.	Center-to-center spacing. (feet)	2		
H.	a. Width required (G(F-1)+1) (feet)	45		
	b. Average Width of available area. (feet)	47		
I.	a. Total square footage required	2857		
	b. Total square footage with slope increase $Ia \times Aj$	2857		
	c. Total square footage in design ($Da \times Ha$)	2880		
J.	a. Linear feet of drip tubing required	1429		
	b. Linear feet of drip tubing provided	1472		
K.	a. Is a reserve area required?	Yes	X	No
	b. Percent required	100%		
	c. Percent available	100%		
	Notes: Estimated infiltration rate is 45 mpi. System to be designed on 80 mpi.			





Dominion Soil Science

Water Mounding Evaluation Report

Date: August 10, 2018

Property Address: 118 Waller Point Dr., Stafford, VA

GPIN or Tax Map ID: 32-13

References:

Virginia Department of Health GMP 1995-02 (aka GMP #72)

Case Conditions:

The proposed sewage absorption areas are adjacent to one another with 1% slope. Redoxymorphic features were identified in the soil at 14".

A K₂ infiltration rate of 100 mpi has been estimated for the purpose of the water mounding evaluation.

The active and reserve area have been evaluated independent of each other.

Sewage Absorption Area Data:

Active Area, Site

Average L_c = 51'

Average L_f = 60'

A = 1.18

Q = J = gpd = 80.21 ft³/day

Estimated Average K₁ = 0.33 ft/day

Estimated Average K₂ = 0.12 ft/day

Maximum Slope = 0.01

Reserve Area, Site

Average L_c = 47'

Average L_f = 64'

A = 1.36

Q = J = gpd = 80.21 ft³/day

Estimated Average K₁ = 0.33 ft/day

Estimated Average K₂ = 0.12 ft/day

Maximum Slope = 0.01

13282 Sillamon Road, Goldvein, VA 22720

Phone: 540-737-1003 Fax: 540-737-1006

Calculations:

The analysis was performed using spread sheet calculations for the "Kahn" solution. The attached spread sheet indicates that water mounding will not occur under the proposed absorption areas.

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P 8 00 14

Khan et al. (1976) Analytical Solution
 Guidance for Evaluation of Potential Groundwater Mounding Associated
 with Cluster and High-Density Wastewater Soil Absorption Systems
 Colorado School of Mines; Golden, CO; January, 2005

Volume of Effluent Dispersed per Day = 600 gpd
 Number of Trenches in Dispersal Field (DF) = 1
 Dispersal Area Width (down slope) = 60 ft
 Dispersal Area Length (across slope) = 51 ft
 Center-to-Center Trench Spacing = 0 ft
 Vadose Zone Permeability (K1) = 0.3300 ft/day (Approx. 45 mpi)
 Restrictive Layer Permeability (K2) = 0.1200 ft/day (Approx. 100 mpi)
 Enter "1" for Drip or Pad K2 = 36.38% of K1 K2 = 457.81% of q.
 Enter "0" for Drip or Pad

Installation Depth (see note to right for positive vs. negative) = 0.17 ft
 Depth to SHWT or WT = 1.17 ft
 Minimum Vertical Separation Required: Total = 1.00 ft
 In situ Soil = 0.50 ft
 Maximum Allowable Mound Height = 0.00 ft

If Nearby Slope Cuts Through Restrictive Layer
 Horizontal Distance from Center of DF to Exposed Restrictive Layer (Ls) = 0 ft

If Nearby Slope Does Not Cut Through Restrictive Layer
 Horizontal Distance from Center of DF to Base of Slope (Xs) = 0 ft
 Restrictive Layer Depth at Base of Slope (Hs) = 0.00 ft

Lateral Extent of Mound from DF Center (L) = N/A ft
 Maximum DF Half-Width to Prevent Slope Breakout (Wmax) = N/A ft
 Maximum DF Width to Prevent Slope Breakout (Wmax) = N/A ft

Distance Increment	Distance from Center of DF	Mound Height	(x ²)/(w ²)	(q ² /K2)-(x ²)/(w ²)
Center of DF	0.0	0.00	0	0.218432849
	1.0	0.00	0.001111111	0.217321738
	2.0	0.00	0.004444444	0.213988405
	3.0	0.00	0.01	0.208432849
	4.0	0.00	0.017777778	0.200655071
	5.0	0.00	0.027777778	0.190655071
	6.0	0.00	0.04	0.178432849
	7.0	0.00	0.054444444	0.163988405
	8.0	0.00	0.071111111	0.147321738
	9.0	0.00	0.09	0.128432849
	10.0	0.00	0.111111111	0.107321738
	11.0	0.00	0.134444444	0.083988405
	12.0	0.00	0.16	0.058432849
	13.0	0.00	0.187777778	0.030655071
	14.0	0.00	0.217777778	0.006655071

DF Width (W) = 60 ft
 DF Half-Width (w) = 30 ft
 DF Length = 51 ft
 DF Area = 3,060 sqft
 Effluent Volume = 80.21 cuft/d
 Effective Infil. Rate (q) = 0.0262 ft/day
 K2/K1 = 0.3636
 q/K2 = 0.2184
 (q/K2)-1 = -0.7816
 K2/q = 4.5781
 (K2/K1)*0.5 = 1.6583
 For 0 ≤ x ≤ w:
 H = w(((K2/K1)(q/K2)-1)(q/K2)-(x²/w²))^{0.5}
 For w ≤ x ≤ L:
 H = ((K2/K1)*0.5)(L-x)

Khan et al. (1976) Analytical Solution
 Guidance for Evaluation of Potential Groundwater Mounding Associated
 with Cluster and High-Density Wastewater Soil Absorption Systems
 Colorado School of Mines; Golden, CO; January, 2005

Volume of Effluent Dispersed per Day = 600 gpd
 Number of Trenches in Dispersal Field (DF) = 1
 Dispersal Area Width (down slope) = 47 ft
 Dispersal Area Length (across slope) = 64 ft
 Center-to-Center Trench Spacing = 0 ft

Vadose Zone Permeability (K1) = 0.3300 ft/day
 Restrictive Layer Permeability (K2) = 0.1200 ft/day

Enter "1" for Drip or Pad
 Enter "0" for Drip or Pad

(Approx. 45 mpi)
 (Approx. 100 mpi)
 K2 = 36.36% of K1 K2 = 450.03% of q'

Installation Depth (see note to right for positive vs. negative) = 0.17 ft
 Depth to SHWT or WT = 1.17 ft
 Minimum Vertical Separation Required: Total = 1.00 ft
 In situ Soil = 0.50 ft
 Maximum Allowable Mound Height = 0.00 ft

If Nearby Slope Cuts Through Restrictive Layer
 Horizontal Distance from Center of DF
 to Exposed Restrictive Layer (L_s) = 0 ft

If Nearby Slope Does Not Cut Through Restrictive Layer
 Horizontal Distance from Center of DF
 to Base of Slope (X_s) = 0 ft
 Restrictive Layer Depth at Base of Slope (H_s) = 0.00 ft
 Lateral Extent of Mound from DF Center (L) = N/A ft

Maximum DF Half-Width to Prevent Slope Breakout (W_{max}) = N/A ft
 Maximum DF Width to Prevent Slope Breakout (W_{max}) = N/A ft

Distance Increment	Center of DF	Distance from Center of DF	Mound Height	H (ft)	(x ²)/(w ²)	(q'/K2)-(x ²)/(w ²)
1.00 ft	0.0	0.0	0.00	0.00	0	0.222208949
Center of DF	1.0	0.001810774	0.00	0.00	0.001810774	0.220398175
	2.0	0.007243096	0.00	0.00	0.007243096	0.214965853
	3.0	0.016296967	0.00	0.00	0.016296967	0.205911982
	4.0	0.028972386	0.00	0.00	0.028972386	0.193236563
	5.0	0.045269353	0.00	0.00	0.045269353	0.176939596
	6.0	0.065187868	0.00	0.00	0.157021081	0.157021081
	7.0	0.088727931	0.00	0.00	0.133481018	0.133481018
	8.0	0.115889543	0.00	0.00	0.115889543	0.106319406
	9.0	0.146672703	0.00	0.00	0.146672703	0.075536246
	10.0	0.181077411	0.00	0.00	0.181077411	0.041131538
	11.0	0.219103667	0.00	0.00	0.219103667	0.003105282
	12.0	0.260751471	0.00	0.00	0.260751471	-0.0385642522
	13.0	0.306020824	0.00	0.00	0.306020824	-0.083811875
	14.0	0.354911725	0.00	0.00	0.354911725	-0.132702776

DF Width (W) = 47 ft
 DF Half-Width (w) = 23.5 ft
 DF Length = 64 ft
 DF Area = 3,008 sqft
 Effluent Volume = 80.21 cuft/d
 Effective Infil. Rate (q') = 0.0267 ft/day
 K2/K1 = 0.3636
 q'/K2 = 0.2222
 (q'/K2)-1 = -0.7778
 K2/q' = 4.5003
 (K1/K2)^{0.5} = 1.6583

For 0 ≤ x ≤ w:
 H = w((K2/K1)((q'/K2)-1)((q'/K2)-(x²/w²))^{0.5}

For w ≤ x ≤ L:
 H = ((K2/K1)^{0.5})(L-x)

SOIL SUMMARY REPORT

GENERAL INFORMATION

Date: 6/18/2018 Submitted to: Stafford County Health Department
 Owner: Micheal Shamari Telephone Number: (703) 587-4147
 Address: 6723 Georgetown Pi. McLean, VA 22101
 Agent: Micheal Shamari Address: 6723 Georgetown Pi. McLean, VA 22101
 Property Location: 118 Waller Point Dr. Tax Map/GPIN: 32-13
 Subdivision: Arkendale Blk/Sec: _____ Lot: 13

1. Position in Landscape Satisfactory: Yes No
 Describe: Summit
2. Slope: +/- 1 %
3. Depth to Rock or Impervious Strata: Max. >58" Min. _____ None
4. Depth to seasonal water table (gray mottling or gray color): Not Observed Yes 14
5. Free Water Present? No Yes Range: _____ inches
6. Soil Percolation rate estimated: Yes No Texture Group: I II III IV
 Estimated rate: 45 mpi
7. Permeability Test Performed? No Yes
 If yes, note type of test performed and attached results. Test Type: NA

- Site Approved. Drainfield to be placed at 2 " depth at site designated on permit.
 Site Disapproved. See reasons for rejection.

Reasons for rejection:

- 1 Position in Landscape subject to flooding or periodic saturation.
- 2 Insufficient depth of suitable soil over hard rock.
- 3 Insufficient depth of suitable soil to seasonal water table.
- 4 Rates of absorption too slow.
- 5 Insufficient area of suitable soil for drainfield and/or reserve area.
- 6 Proposed system too close to well.
- 7 Other (Specify Below. Add additional pages if necessary)

Additional Notes: Site # 1-1, Note: design system on 80 mpi due to landscape & potential for water mounding.

Dominion Soil Science

T: (540)737-1003 F: (540)737-1006

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SOIL PROFILE DESCRIPTION REPORT

Date of Evaluation 6-18-18 Job. No. 3903 Site Number 1-1

Where the local health department conducts the soil evaluation, the location of profile holes may be shown on the schematic drawing on the construction permit or the sketch submitted with the application. If soil evaluations are conducted by a private soil scientist, location of profile holes and sketch of the area investigated including all structural features, i.e., sewage disposal systems, wells, etc., within 100 feet of site (See Section 4) and reserve site shall be shown on the reverse side of the this page or prepared on a separate page and attached on this form.

See application sketch

See construction permit

See sketch on reverse side or page attached to this form.

Hole #	Horizon	Depth (inches)	Description of color, texture, etc	Texture Group
P-1	A	0-4	black (2.5Y2.5/1) very fine sandy loam; weak medium granular structure; friable.	llb
	E	4-10	light olive brown (2.5Y5/4) very fine sandy loam; weak coarse subangular blocky structure; friable.	llb
	Bt1	10-17	red (2.5YR5/6) loam; weak medium subangular blocky structure; few faint clay films; friable.	llb
	Bt2	17-25	light olive yellow (2.5Y5/6) clay loam; few medium distinct light brownish gray (10YR6/2) iron depletions and few fine prominent yellowish red (5YR5/6) iron concentrations; moderate coarse prismatic structure; common faint clay films; friable.	lll
	BCtg	25-37	gray (2.5Y6/1) iron depletions loam; common coarse distinct light olive yellow (2.5Y5/6) (parent material) mottles; weak coarse subangular blocky structure; few faint clay films; friable.	llb
	C1	37-61	light gray (10YR7/2) iron depletions and yellowish brown (10YR5/8) sandy loam; massive structure; very friable.	llb
	P-2	A	0-3	black (2.5Y2.5/1) very fine sandy loam; weak medium granular structure; friable.
E		3-9	light olive brown (2.5Y5/4) very fine sandy loam; weak coarse subangular blocky structure; friable.	llb
Bt1		9-14	red (2.5YR5/6) loam; weak medium subangular blocky structure; few faint clay films; friable.	llb
Bt2		14-22	light olive yellow (2.5Y5/6) loam; few medium distinct light brownish gray (10YR6/2) iron depletions and few fine prominent yellowish red (5YR5/6) iron concentrations; moderate medium subangular blocky structure; common faint clay films; friable.	llb
BCtg		22-34	gray (2.5Y6/1) iron depletions loam; common coarse distinct light olive yellow (2.5Y5/6) (parent material) mottles; weak coarse prismatic structure; few faint clay films; friable.	llb
C1		34-58	light gray (10YR7/2) iron depletions and yellowish brown (10YR5/8) fine sandy loam; massive structure; very friable.	llb

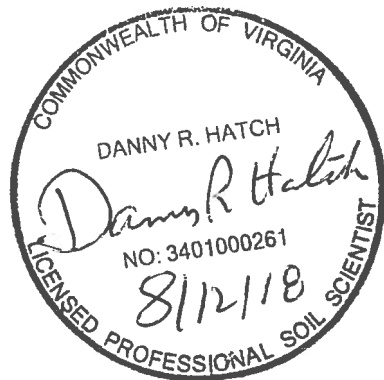
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SITE 1-1 CONTINUED

Hole #	Horizon	Depth (inches)	Description of color, texture, etc	Texture Group
P-3	A	0-3	black (2.5Y2.5/1) very fine sandy loam; weak medium granular structure; friable.	IIb
	E	3-11	light olive brown (2.5Y5/4) very fine sandy loam; weak coarse subangular blocky structure; friable.	IIb
	Bt1	11-16	red (2.5YR5/6) loam; weak medium subangular blocky structure; few faint clay films; friable.	IIb
	Bt2	16-26	light olive yellow (2.5Y5/6) loam; few medium distinct light brownish gray (10YR6/2) iron depletions and few fine prominent yellowish red (5YR5/6) iron concentrations; moderate medium subangular blocky structure; common faint clay films; friable.	IIb
	BCtg	26-43	gray (2.5Y6/1) iron depletions clay loam; common coarse distinct light olive yellow (2.5Y5/6) (parent material) mottles; weak coarse prismatic structure; few faint clay films; friable.	III
	C	43-58	light gray (10YR7/2) iron depletions and yellowish brown (10YR5/8) fine sandy loam; massive structure; very friable.	IIb



Addendum to AOSE/PE Certification Statement
For Private Well Construction Permit

Page 13 of 14

The proposed well site shown herein,

1. Is located a minimum of 50 feet from all property lines.
2. Is located within 50 feet of the adjacent property line(s) but I have determined that the adjacent property is not used for an agricultural operation.
- i. Written affirmation from the adjacent property owner(s) that their property is not used for an agricultural operation.
- ii. Other confirmation that land use is not an agricultural operation, please describe:
- _____
- _____
- _____
3. Is located within 50 feet of the adjacent property line where the property is used for an agricultural operation. For confirmation, I have attached the appropriate documentation pursuant to § 32.1-176.5:2 of the *Code of Virginia*. (check one below)
- i. Written permission from the adjacent property owner(s) for the well construction.
- ii. I certify that no other site on the property complies with the Board's Regulations for the construction of a private well.

Proposed Well Site is located within 50 feet of an Adjacent Property Line(s)

Property is not used for an Agricultural Operation

Statement for Adjacent Property Owner(s):

I affirm that my property is not used for an Agricultural Operation as defined in § 3.1-22.29 of the *Code of Virginia*.

Signature of Property Owner

Date

Proposed Well Site is located within 50 feet of an Adjacent Property Line

Property is used for an Agricultural Operation

Appropriate documentation to comply with § 32.1-176.5:2 of the *Code of Virginia*:

Written Permission

I grant permission for the construction of the proposed private well described herein which is within 50 feet of my property line.

Signature of Property Owner

Date