AMERICAN ENGINEERING, INC.

CIVIL ENGINEERING / LAND SURVEYING / LAND PLANNING

OWNER/APPLICANT:

Habitat For Humanity For Rhode Island, South County, Inc.

Pole #100-4 Moorsefield Road
South Kingstown, Rhode Island

BEING A.P. 24, Lot 6

SOUTH KINGSTOWN, RHODE ISLAND

ENGINEER'S NARRATIVE

CONTACT:

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February 11, 2022

2/16/22

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ENGINEER'S NARRATIVE

Habitat For Humanity - Residential site

A.P. 24, Lot 6

Project Description

This report addresses many of the technical aspects of the above referenced project and should be reviewed with the erosion control site plans in hand. This report is intended to be part of the site plans. Specific notes have been included on the plans and are referenced in this report.

The purpose of this report is to guide in the construction of a 936 sf 3-bedroom dwelling to be serviced by an onsite wastewater treatment system. The lot is located at Pole #100-4 Moorsefield Road (RI Route 138) in South Kingstown. The proposed dwelling is to be serviced by a private drinking water well and public utilities.

The property consists of 1.5 Acres of land with existing ground covers woods in good condition, grass in good condition, and an existing gravel drive. The area within the limit of disturbance is 8,957 sf. The site is located entirely within an R-40 zoning classification as defined by the latest zoning map of the Town of South Kingstown. The site has been developed in a manner that minimizes the potential for soil erosion.

Access to the site will be from the proposed driveway/construction entrance in the northwesterly portion of the lot on the southeasterly side of Mooresfield Road (Route 138).

The drainage design for the proposed development has been designed to create no increase in runoff/volume from the Type III 24 hour 25-year storm from the existing conditions found on site. The impervious areas on site have been routed to the proposed rain garden to provide water quality treatment and capture the increase in runoff volume. The attached HydroCAD report shows the calculations for the existing and proposed conditions. The proposed drainage system has been designed to mimic existing drainage conditions to the greatest extent possible. The hydrological report is attached to the end of this narrative.

Existing Site Conditions

As stated earlier in this report, the project area is located at Pole #100-4 Moorsefield Road (RI Route 138) in South Kingstown. The topography is based on an assumed datum with the site sloping easterly towards the freshwater wetlands located easterly of the area to be developed. The existing site is mostly wooded with areas of existing lawn and an existing gravel drive. There are no major constraints to development. The existing slope within the limit of disturbance ranges from 4% to 18%.

The project area is located entirely within a "Zone X (Unshaded)" flood designation as delineated on the Flood Insurance Rate Map, dated April 2, 2020 (FIRM Map No. 44009C0185 J).

Soil Classification:

There is one soil classification withing the area to be disturbed. Its description is as follows:

SdB—Scio very stony slit loam, 0 to 8 percent slopes.

This nearly level to gently sloping, moderately well drained soil is on glacial till plains. Stones and boulders cover 2 to 10 percent of the surface. Areas are irregular in shape and range mostly from 5 to 30 acres. Typically the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is 22 inches thick. The upper 6 inches is dark brown silt loam, and the lower 16 inches is yellowish brown and light olive brown, mottled silt loam. The substratum extends to a depth of 60 inches or more. It is gray, mottled silt loam in the upper part and grayish brown, mottled fine sandy loam in the lower part. Included with this soil in mapping are small areas of well drained to moderately well drained Bridgehampton soils and moderately well drained Wapping, Tisbury, and Sudbury soils. Also included are small areas of soils that do not have stones or boulders on the surface. Included areas make up abut 10 percent of this map unit. The permeability of this soil is moderate in the surface layer and subsoil and slow through rapid in the substratum. Available water capacity is high, and runoff is slow or medium. This soil has a seasonal high water table at a depth of about 20 inches from late fall through midspring. The soil is very strongly acid through medium acid. This soil is suitable for community development but is limited by the seasonal high water table. Onsite sewage disposal systems need special design and installation. If suitable outlets are available, subsurface drains can be used to help prevent wet basements. Roads and streets need careful design to prevent frost heaving, and the stones and boulders on the surface need to be removed for landscaping. The use of straw bale sediment barriers and quickly establishing plant cover help to control erosion during construction. This soil is suited to trees, and most

areas are in woodland. The soil is not suited to cultivated crops. The stones and boulders on the surface severely hinder the use of farming equipment. This soil is suited to woodland wildlife habitat. It is not suited to openland wildlife habitat. The soil is poorly suited to wetland wildlife habitat because it is too dry in summer. Capability subclass VIs; woodland group 3o.

Erosion and Sedimentation Control Measures

This report addresses some of the more specific or critical soil and erosion control concerns. For a more general description refer to the erosion control and soil stabilization program outlined on the site plans.

In general, all permanent and temporary erosion and sediment control measures are outlined on the site plans and conform to all state and local regulations. Unless otherwise stated, all work performed shall be governed by the Rhode Island Standard Specifications for Road and Bridge Construction, 2013 amended 2013 and the Rhode Island Standard Details, June 15, 1998, as amended by revision. Reference should be made to the Rhode Island Soil Erosion and Sediment Control Handbook for additional measures or guidance as applicable.

Specific areas of concern are as follows:

1. Sequence of construction.
2. The immediate stabilization and control of the existing stormwater runoff.
3. Soil and erosion control in the area of the proposed OWTS and proposed dwelling.
4. Construction and stabilization of the driveway.
5. Permanent stabilization of all disturbed areas and slopes.
6. Schedule of maintenance.

The site is to be developed in such a manner as to minimize land disturbances. The following is a discussion of some of the more specific construction strategies and techniques.

- A sequence of construction has been outlined in a later section of this report. Strict adherence to the provisions set forth in that section are critical to the success of the project.

- Construction traffic is prohibited from entering the area beyond the limit of disturbance and should be limited to specific areas of construction.

- The construction superintendent shall have sole responsibility for the design implementation. He/she shall also be responsible for ensuring that all construction workers and sub-contractors are aware of the provisions of the plans and this report.

- Topsoil over the area of the proposed development should be stripped and stockpiled for later use. All stockpile areas are to be protected from erosion by surrounding the piles with a haybale/silt fence barrier and by applying a temporary vegetative cover as outlined on the plans.

- All areas to be excavated, filled and or regraded during the initial phase of construction shall be temporarily seeded with a suitable groundcover as outlined on the plans.

- The contractor shall be responsible for maintaining all aspects of the design prior to the final acceptance by the Town of South Kingstown. During that time, all erosion and sedimentation control measures shall be checked on a weekly basis as well as after each significant rainfall. All such measures shall be cleaned or replaced as necessary.

- A permanent planting scheme has been developed and is outlined on the plans. There shall be no disturbance outside the limit of disturbance. Specific areas include the seeding of the proposed lawn area.

- Additional soil and erosion control measures and permanent soil stabilization procedures have been outlined on the plans and in the sequence of construction and maintenance sections of this report.

Sequence of Construction

There are many ways in which this project could be successfully constructed. This section is not meant to be a step by step construction specification, nor is it meant to be a substitute for good management practices. The purpose of this section is as a general guide to construction precedence.

First, the silt fence shall be installed where indicated on the plans. Then, the loam should be stripped from areas to be developed and stockpiled in the designated stockpile area. A perimeter of siltfence should be placed around the stockpile as outlined on the plans. Construction of the dwelling can proceed under generally accepted construction practices. The proposed siltfence will be utilized throughout construction to control stormwater runoff and erosion. Any disturbed areas that remain inactive for an extended period of time shall be seeded with a temporary ground cover. Throughout the construction process strict adherence to the provisions set forth in the site plans shall be followed. All erosion and sediment control measures shall remain in place until such time that a desirable stand of grass or ground cover has been established and the project receives a favorable approval for the final acceptance from the Town.

Maintenance and Responsibility

The construction superintendent shall have the sole responsibility for the design implementation. He shall also be responsible for ensuring that all construction workers and sub-contractors are aware of the provisions of the plans and this report. The contractor shall be responsible for maintaining all aspects of the design prior to final acceptance by the Town of South Kingstown. During that time, all erosion and sedimentation control measures should be checked on a weekly basis as well as after each significant rainfall. All such measures should be cleaned or replaced as necessary. Upon final approval of the project by the Town of South Kingstown, the owner shall be responsible for the upkeep and maintenance of the site. Replanting, regrading or other repairs necessary as a result of erosion and sedimentation should be done promptly. All vegetation not surviving at least one full growing season shall be replaced at the owner's expense.

Existing

Proposed

Subcat Reach Pond Link

Routing Diagram for 121142_Habitat
Prepared by {enter your company name here}, Printed 2/11/2022
HydroCAD® 10.00-20 s/n 06264 © 2017 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: Existing

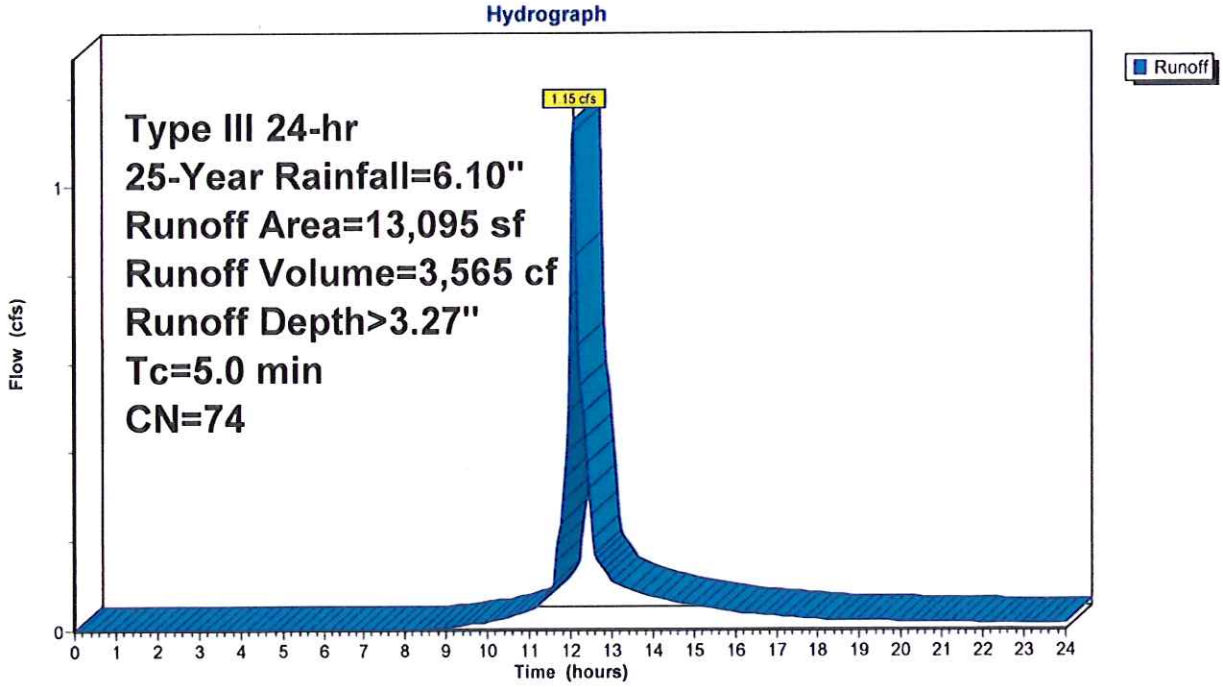
Runoff = 1.15 cfs @ 12.08 hrs, Volume= 3,565 cf, Depth> 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.10"

Area (sf)	CN	Description
6,320	70	Woods, Good, HSG C
5,661	74	>75% Grass cover, Good, HSG C
1,114	96	Gravel surface, HSG C
13,095	74	Weighted Average
13,095		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: Existing



Summary for Subcatchment 2S: Proposed

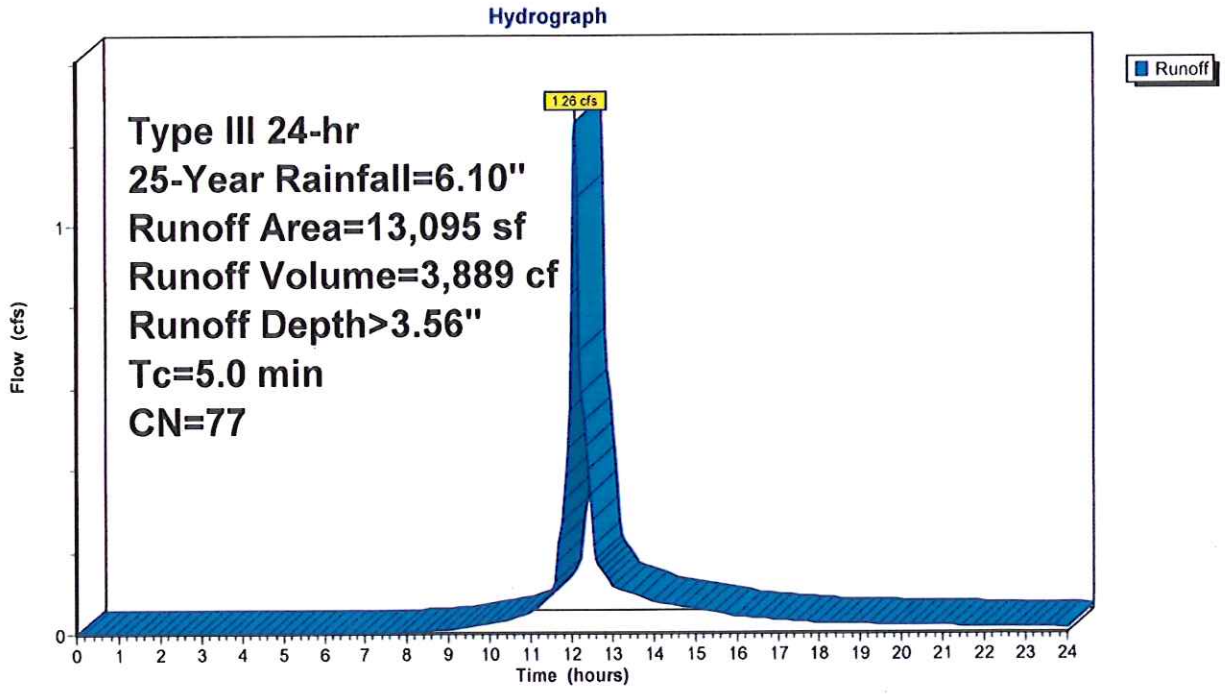
Runoff = 1.26 cfs @ 12.08 hrs, Volume= 3,889 cf, Depth> 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.10"

	Area (sf)	CN	Description
	2,608	70	Woods, Good, HSG C
	8,332	74	>75% Grass cover, Good, HSG C
	936	98	Roofs, HSG C
*	1,219	98	Paved Driveway, HSG C
	13,095	77	Weighted Average
	10,940		83.54% Pervious Area
	2,155		16.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 2S: Proposed



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description Application Number 2132-1087

Property Owner: Habitat for Humanity
Property Location: Moolesfield Road AP 24, Lot 6
Date of Test Hole: 8/31/21
Soil Evaluator: Matthew Costa License Number: D4044
Weather: Cloudy 80° Shaded: Yes ☒ No ☐ Time: 9:30

TH 1 Horizon	Depth	Horizon Boundaries: Dist	Horizon Boundaries: Topo	Soil Colors: Matrix	Soil Colors: Re-Dox Features	Re-Dox: Ab. S. Contr.	Texture	Structure	Consistence	Soil Category
Ap	0-7	g	s	10YR 2/2			SiL	1-M-pl	FR	5
Bw1	7-18	g	w	2.5Y 4/4			SiL	1-M-Sbk	VFR	5
Bw2	18-36	g	s	2.5Y 5/4	10YR 5/6 5Y 6/2	C-M-P	SiL	1-M-Sbk	VFR	5
2C	36-76"	—	—	10YR 3/4	10YR 5/6	C-M-P	Cbl<05	0-M	FR	6M

TH 2 Horizon	Depth	Horizon Boundaries: Dist	Horizon Boundaries: Topo	Soil Colors: Matrix	Soil Colors: Re-Dox Features	Re-Dox: Ab. S. Contr.	Texture	Structure	Consistence	Soil Category
Fill	0-6									
Apb	6-15	g	s	10YR 2/2			SiL	1-M-pl	FR	5
Bw1b	15-27	g	w	2.5Y 4/4			SiL	1-M-Sbk	VFR	5
Bw2b	27-36	g	s	2.5Y 5/4	10YR 4/6 5Y 6/2	C-M-P	SiL	1-M-Sbk	VFR	5
2C	36-46"	—	—	10YR 3/4	10YR 4/6	C-M-F	Cbl<05	0-M	FR	6M

TH 1 Soil Class Loess over EC's Cont Total Depth 7'-6" Impervious/Limiting Layer Depth 7'-6" (og) GW Seepage Depth 3'-6" SHWT 18" (og)

TH 2 Soil Class " Total Depth 4'-6" Impervious/Limiting Layer Depth 4' (og) GW Seepage Depth 4'-3" SHWT 21 (og)

Comments:

Part B

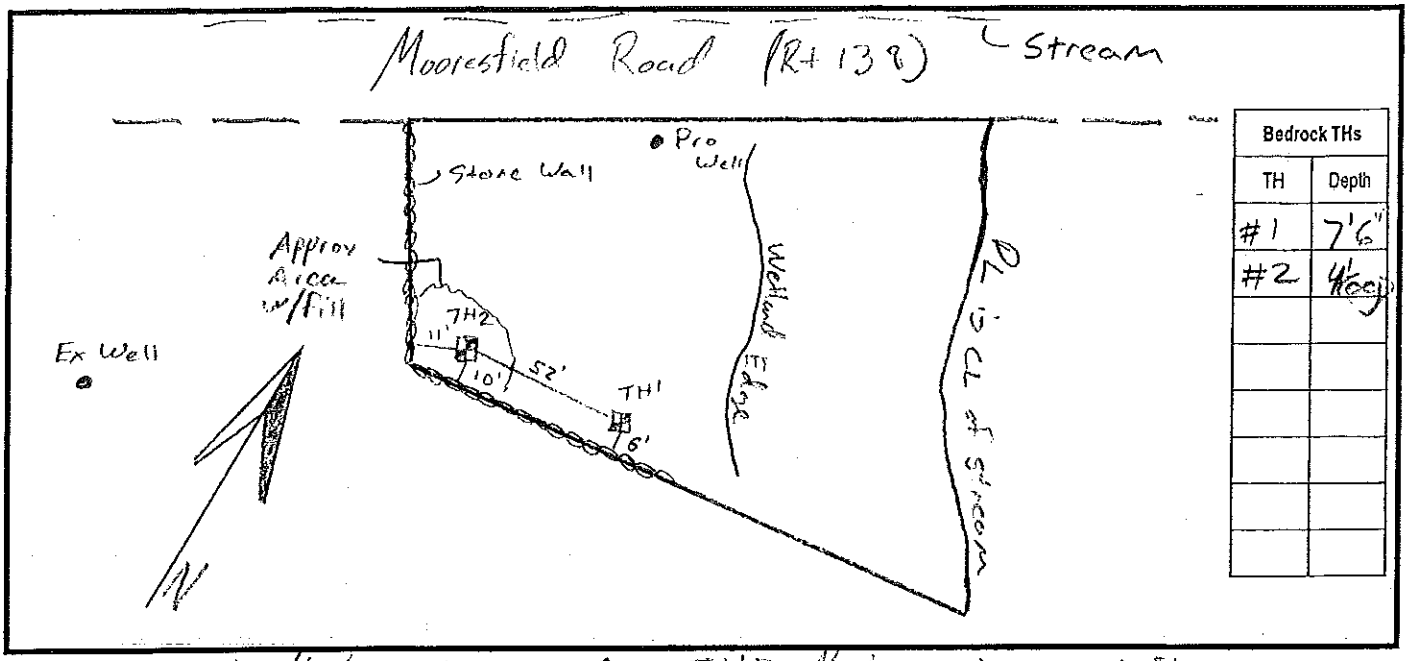
Site Evaluation – to be completed by Soil Evaluator or Class II or III Designer

Please use the area below to locate:

1. Test holes and bedrock test holes,
2. Approximate direction of due north,
3. Offsets from all test holes to fixed points such as street, utility pole, or other permanent, marked object.*

*OFFSETS MUST BE SHOWN

Key:
- Approximate location of test holes
- Approximate location of bedrock test holes
- x% Estimated gradient and direction of slope
- N Approximate direction of due north



Bedrock THs	
TH	Depth
#1	7'6"
#2	4' (ledge)

1. Relief and Slope: TH1 Northeasterly @ 10%, TH2 Northeasterly @ 3.8%
2. Presence of any watercourse, wetlands or surface water bodies, within 200 feet of test holes? If yes, locate on above sketch. NO ☐ YES ☒
3. Restrictive Layer or Bedrock within 4' below original ground within 25 feet of test hole? Provide all test hole locations & depths above. NO ☐ YES ☒
4. Presence of existing or proposed private drinking water wells within 200 feet of test holes? If yes, locate on above sketch. NO ☐ YES ☒
5. Public drinking water wells within 500 feet of test holes? If yes, locate on above sketch. NO ☒ YES ☐
6. Is site within the watershed of a public drinking water reservoir or other critical area defined in Rule 6.42? NO ☒ YES ☐
7. Has soil been excavated from or fill deposited on site? If yes, locate on above sketch. NO ☐ YES ☒
8. Site's potential for flooding or ponding: NONE ☐ SLIGHT ☒ MODERATE ☐ SEVERE ☐
9. Landscape position: Side slope
10. Vegetation: Lawn
11. Indicate approximate location of property lines and roadways.
12. Additional comments, site constraints or additional information regarding site: _____

Certification

The undersigned hereby certifies that all information on this application and accompanying forms, submittals and sketches are true and accurate and that I have been authorized by the owner(s) to conduct these necessary field investigations and submit this request.

Part A prepared by: _____ (Signature) _____ (License #)

Part B prepared by: _____ (Signature) _____ (License #)

DO NOT WRITE IN THIS SPACE

Witnessed Soil Evaluation Decision: Concur ☐ Inconclusive ☐ Disclaim ☐

Unwitnessed Soil Evaluations Decision: Accept ☐ Inconclusive ☐ Disclaim ☐

Wet Season Determination required ☐ Additional Field Review Required ☐

Explanation: _____

_____

_____

_____ (Signature Authorized Agent) _____ (Date)

Eco-Tech Supply, Inc.
400 South County Trail – Suite A201
Exeter, RI 02822

Phone: (401)-267-0000
Fax: (401)-294-3625
Email: EcoTechSupply@cox.net

3-Year Operations and Maintenance Agreement

Eco-Tech Supply, Inc. proposed to perform the maintenance requirements prescribed for your SeptiTech Treatment System and Drainfield (Pressurized or non-pressurized) on property stated below.

Property Owner(s) Name
Site Address

RIDEM Permit #
Eco-Tech Job #
Phone Contact for System Emergencies

SeptiTech Panel #

Permanent Mailing Address

E-Mail Address

Inspection to include

1. Inspect/Clean processing tank and treatment components.
2. Inspect Control Panel for proper operation, including all floats, pumps and communication as applicable. Make appropriate adjustments if required.
3. Inspect/Clean discharge pump station and controls.
4. Inspect/Clean pressurized drainfield, as applicable.
5. Respond in a timely manner to system notifications received through telemetry modules, where applicable, and notify owner(s) of any corrective action taken to regulate system performance.
6. If UV filter is present, Inspect/Clean UV basin and components. UV Bulb to be replaced every two years unless failure occurs before that time. UV Bulb is not included in contract price and will be billed at list price at time of replacement.
7. Evaluate condition and operation of overall system, and record/report findings.
8. Take sludge readings from the Primary Tank and recommend pumping based on results.
9. Inspect/Clean the Primary Tank filter and visually check for any other abnormalities.

Responsibility of Owner(s)

1. Provide access to water at the SeptiTech tank.
2. Easy & unrestricted access to the system and control panel year- round
3. Notify Eco-Tech Supply, Inc. of all alarm conditions or problems that may occur throughout the year, immediately.
4. If the system has a Telemetry Module, the Owner(s) shall arrange for the installation of a telephone line to the panel and maintain telephone service to the system address at all times.
5. Remove any vegetative growth that may occur within a BSF (Bottomless Sand Filter) where applicable.
6. If pumping is required for any reason, Owner(s) will schedule an appointment with a pumping company & notify Eco-Tech Supply, Inc. the date and time of that appointment.
7. Record this document with their local Town/City Hall Clerk, if requested by Town/City Hall Officials or by Eco-Tech Supply, Inc.
8. To <u>never</u> introduce materials to the septic system that will diminish and/or damage performance, including but not limited to, feminine hygienic products, flushable wipes, and paper towels. Please refer to www.septitech.com for further details of restrictive practices. This information is under the "Products Tab", residential link, technical downloads section (FAQ).

Items <u>NOT</u> covered by this service Agreement

1. Corrective and/or repair maintenance if necessary
2. Effluent sampling and/or analysis if required.
3. The cost of tank pumping if required and scheduling of pumping service
4. Any emergency and/or any other unscheduled maintenance and/or service calls to the system address.

Maintenance will be performed semi-annually (twice a year) for a yearly fee of three hundred dollars ($300.00). We (Eco-tech Supply, Inc.) will bill this fee for the upcoming year's maintenance. All maintenance services within the "Items <u>NOT</u> Covered by this Maintenance Agreement" section will be performed at the hourly rate of ninety dollars ($90.00) in addition to parts and travel. All invoices shall be due within 30 days of the invoice's date, unless agreed otherwise with an Eco-Tech Supply, Inc. Representative. Outstanding balances may be subject to a service charge of 1.5% per month at Eco-Tech Supply, Inc's discretion.

Owner(s) will hold Eco-Tech Supply, Inc. harmless for any claims, actions, issues, or damages that may occur inside the house. The Owner(s) will also hold Eco-Tech Supply, Inc harmless for any claims actions, issues, or damages resulting from the work of installers or installation subcontractors.

The undersigned agrees to the terms of this Agreement and understands that it is required for perpetuity. The initial owner(s) will be responsible to have the original signed Agreement recorded at their local Town/City Hall at the expense of the owner. In the event of a transfer of ownership, the responsibilities of this Agreement will transfer to the subsequent Owner(s). The current owner(s) understand it is the responsibility and obligation of the current owner(s) and/or all parties involved in a transference of ownership, to disclose this Agreement to the future Owner(s). It will also be the current owner(s) responsibility to provide a copy of this document if requested by any/all parties. This contract is valid for three years from the date of system start-up and is renewable at the end of the three years.

Owner	*Date*	*Eco-tech Supply Representative*	*Date*