Preliminary Consultation
MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION
STAFF REPORT

Address:	4901 Brookeville Rd., Brookeville	**Meeting Date:**	6/27/2018
Resource:	**Bon Secours** *Master Plan Site #23/54*	**Report Date:**	6/20/2018
Applicant:	Amy and Angelo Falcone	**Public Notice:**	6/13/2018
Review:	Preliminary Consultation	**Tax Credit:**	N/A
Case Number:	N/A	**Staff:**	Michael Kyne
PROPOSAL:	New construction of an accessory structure		

STAFF RECOMMENDATION:

Staff recommends that the applicants make any revisions based on the Commission's recommendations and return with a complete HAWP application. When submitting a formal application, the applicants should provide full details for all proposed work items, in accordance with the staff report and the Commission's guidance.

ARCHITECTURAL DESCRIPTION

SIGNIFICANCE: Master Plan Site
STYLE: Italianate
DATE: 1861

Except from *Places from the Past*:

Bon Secours survives as an excellent example of an intact, mid-19th-century rural estate. The striking Italianate-style dwelling, set well back from Brookeville Road, is reached by a semi-circular, tree-lined drive, and is surrounded by cultivated fields. Nicholas R. Griffith, who named the property "Hollywood" for its trees, built the impressive Italianate-style dwelling in early 1861. A well-established tobacco broker in Baltimore, Griffith apparently intended to use the house as a summer retreat. With the outbreak of the Civil War, however, the family, described by historian Roger Brooke Farquhar as Southern sympathizers, occupied the house immediately upon its completion. The frame structure and wood siding are said to be constructed of fir imported by "Clipper" from the West Coast, thence hauled from Baltimore by oxen.

Bon Secours, which consists of a principal, three-bay main block and contemporaneous rear wing to the north, is set upon an uncoursed stone foundation and has a cross gable roof. Original German siding remains intact at the second story of the front façade. Unusual in Montgomery County are the Italianate-style round-arched windows. Cohesively grouped behind the main dwelling are several outbuildings, including two corncribs, two barns, a stone pumphouse, a detached kitchen, and a poultryhouse.

PROPOSAL

- Construction of an accessory structure.

APPLICABLE GUIDELINES

In accordance with Section 1.5 of the Historic Preservation Commission Rules, Guidelines, and Procedures (Regulation No. 27-97) ("Regulations"), in developing its decision when reviewing a Historic Area Work Permit application for an undertaking at a Master Plan site the Commission uses section 24A-8 of the Montgomery County Code ("Chapter 24A"), the *Secretary of the Interior's Standards and Guidelines for Rehabilitation* ("Standards"), and pertinent guidance in applicable master plans. [Note: where guidance in an applicable master plan is inconsistent with the Standards, the master plan guidance shall take precedence (section 1.5(b) of the Regulations).] The pertinent information in these documents, incorporated in their entirety by reference herein, is outline below.

Sec. 24A-8. Same-Criteria for issuance.

(b) The commission shall instruct the director to issue a permit, or issue a permit subject to such conditions as are found to be necessary to insure conformity with the purposes and requirements of this chapter, if it finds that:

(1) The proposal will not substantially alter the exterior features of an historic site or historic resource within an historic district; or

(2) The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site or the historic district in which an historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter; or

(3) The proposal would enhance or aid in the protection, preservation and public or private utilization of the historic site or historic resource located within an historic district in a manner compatible with the historical, archeological, architectural or cultural value of the historic site or historic district in which an historic resource is located; or

(4) The proposal is necessary in order that unsafe conditions or health hazards be remedied; or

(5) The proposal is necessary in order that the owner of the subject property not be deprived of reasonable use of the property or suffer undue hardship; [emphasis added] or

(6) In balancing the interests of the public in preserving the historic site or historic resource located within an historic district, with the interests of the public from the use and benefit of the alternative proposal, the general public welfare is better served by granting the permit.

(c) It is not the intent of this chapter to limit new construction, alteration or repairs to any 1 period or architectural style.

(d) In the case of an application for work on an historic resource located within an historic district, the commission shall be lenient in its judgment of plans for structures of little historical or design significance or for plans involving new construction, unless such plans would seriously impair the historic or architectural value of surrounding historic resources or would impair the character of the historic district. (*Ord. No. 9-4, § 1; Ord. No. 11-59.*)

Secretary of Interior's Standards for Rehabilitation

The Secretary of the Interior defines rehabilitation as "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features, which convey its historical, cultural, or architectural values." Because the property is a Master Plan Site, the Commission's focus in reviewing the proposal should be the *Secretary of the Interior's Standards for Rehabilitation.* The *Standards* are as follows:

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

STAFF DISCUSSION

The applicants propose to construct a 100' long by 40' deep greenhouse at the rear of the subject property (behind the historic house and existing accessory structures). The applicants have indicated that the height of the building will depend on the depth of the water table at the subject property, which has not yet been determined. The greenhouse will be constructed from metal and glass, with its primary (south) elevation being mostly glazing. The rear (north) elevation of the greenhouse will be built into a berm. A geothermal system will be installed under the greenhouse, and solar panels will be installed on the roof.

Staff is conceptually supportive of the applicants' proposal, finding that the location, scale and massing, and design of the proposed greenhouse, as depicted in the available information, is generally compatible with the subject property. The proposed greenhouse is consistent with the agricultural characteristics of the subject property and will encourage the continuation of the original use of the subject property. However, staff finds that additional information is required before determining the impact of the proposed greenhouse on the historic house and contributing accessory structures at the subject property. Specifically, the following information is required:

- The height of the proposed greenhouse.
- Information regarding excavation.
- Information regarding the proposed creation of a berm on the north side of the proposed greenhouse.
- A storm water management plan.

Staff asks the Commission to provide any guidance regarding the proposed greenhouse to ensure that the proposal will not remove or alter the historic character-defining features of the subject property, in accordance with *Standards #2* and *#9*, and that the proposed greenhouse, berm, and associated features can be removed in the future without impairing the historic integrity of the subject property, in accordance with *Standard #10*.

STAFF RECOMMENDATION

Staff recommends that the applicants make any revisions based on the Commission's recommendations and return with a complete HAWP application. When submitting a formal application, the applicants should provide full details for all proposed work items, in accordance with the staff report and the Commission's guidance.

DPS - #8

HISTORIC PRESERVATION COMMISSION
301/563-3400

APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Email: amy@bellantafarm.com Contact Person: Amy Falcone
Daytime Phone No.: 301-332-8225

Tax Account No.:

Name of Property Owner: Amy + Angelo Falcone Daytime Phone No.: 301-332-8225

Address: 4901 Brookeville Rd Brookeville MD 20833
Street Number City Steet Zip Code

Contractor: Phone No.:

Contractor Registration No.:

Agent for Owner: N/A Daytime Phone No.:

LOCATION OF BUILDING/PREMISE

House Number: 4901 Street: Brookeville Rd

Town/City: Brookeville Nearest Cross Street: Zion

Lot: Block: Subdivision:

Liber: 32420 Folio: 711 Parcel: P850

840796

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CHECK ALL APPLICABLE:

☒ Construct ☐ Extend ☐ Alter/Renovate

☐ Move ☐ Install ☐ Wreck/Raze

☐ Revision ☐ Repair ☐ Revocable

CHECK ALL APPLICABLE:

☐ A/C ☐ Slab ☐ Room Addition ☐ Porch ☐ Deck ☐ Shed

☐ Solar ☐ Fireplace ☐ Woodburning Stove ☐ Single Family

☐ Fence/Wall (complete Section 4) ☒ Other: Agricultural greenhouse

1B. Construction cost estimate: $ 250,000

1C. If this is a revision of a previously approved active permit, see Permit #

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 ☐ WSSC 02 ☒ Septic 03 ☐ Other: Not really required

2B. Type of water supply: 01 ☒ WSSC 02 ☐ Well 03 ☐ Other:

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height _____ feet _____ inches

3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:

☐ On party line/property line ☐ Entirely on land of owner ☐ On public right of way/easement

I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

Amy Falcone 6/4/18
Signature of owner or authorized agent Date

Approved: For Chairperson, Historic Preservation Commission

Disapproved: Signature: Date:

Application/Permit No.: Date Filed: Date Issued:

Edit 6/21/99

SEE REVERSE SIDE FOR INSTRUCTIONS

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THE FOLLOWING ITEMS MUST BE COMPLETED AND THE REQUIRED DOCUMENTS MUST ACCOMPANY THIS APPLICATION.

1. **WRITTEN DESCRIPTION OF PROJECT**

   a. Description of existing structure(s) and environmental setting, including their historical features and significance:

   Manor home 1860's
   Bank Barn w/ shed
   Corn Crib
   Chicke Coop
   smoke house
   garage type shed
   Old Barn in field
   historical trust # M-23-54

   b. General description of project and its effect on the historic resource(s), the environmental setting, and, where applicable, the historic district:

   This is a new structure out behind all out buildings and adjacent to old barn that can no longer be used or insured due to its condition
   This is an aquaponics greenhouse 4000sf (40x100)

2. **SITE PLAN**

   Site and environmental setting, drawn to scale. You may use your plat. Your site plan must include:

   a. the scale, north arrow, and date;

   b. dimensions of all existing and proposed structures; and

   c. site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

3. **PLANS AND ELEVATIONS**

   You must submit 2 copies of plans and elevations in a format no larger than 11" x 17". Plans on 8 1/2" x 11" paper are preferred.

   a. ***Schematic construction plans***, with marked dimensions, indicating location, size and general type of walls, window and door openings, and other fixed features of both the existing resource(s) and the proposed work.

   b. Elevations (facades), with marked dimensions, clearly indicating proposed work in relation to existing construction and, when appropriate, context. All materials and fixtures proposed for the exterior must be noted on the elevations drawings. An existing and a proposed elevation drawing of each facade affected by the proposed work is required.

4. **MATERIALS SPECIFICATIONS**

   General description of materials and manufactured items proposed for incorporation in the work of the project. This information may be included on your design drawings.

5. **PHOTOGRAPHS**

   a. Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.

   b. Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

6. **TREE SURVEY**

   If you are proposing construction adjacent to or within the dripline of any tree 6" or larger in diameter (at approximately 4 feet above the ground), you must file an accurate tree survey identifying the size, location, and species of each tree of at least that dimension.

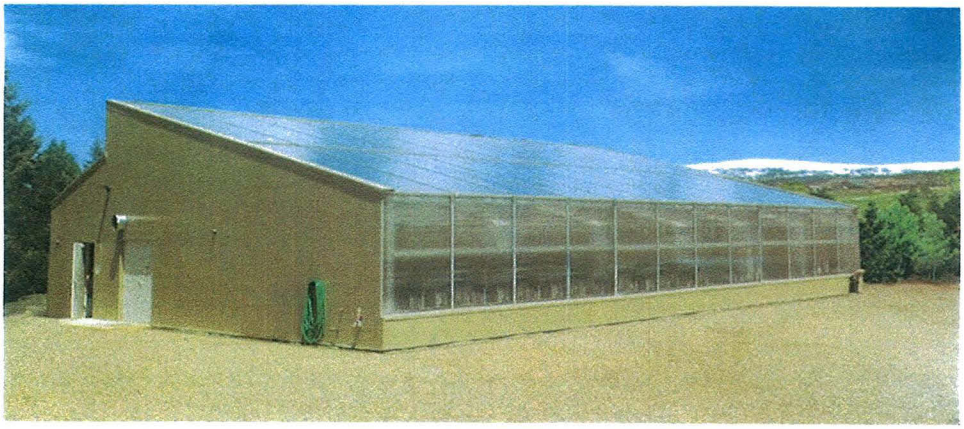
7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

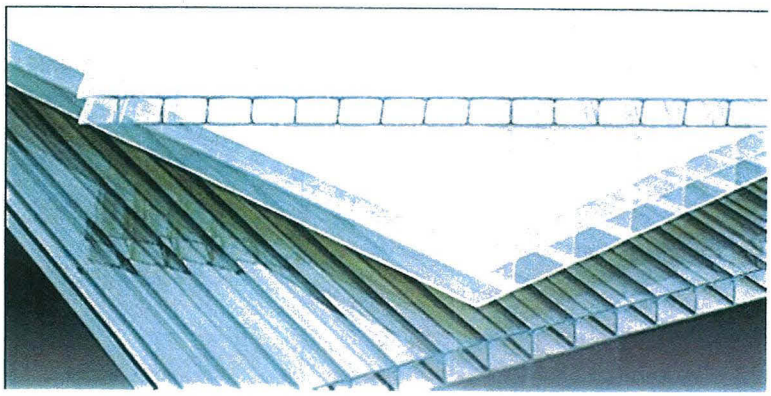
   For **ALL** projects, provide an accurate list of adjacent and confronting property owners (not tenants), including names, addresses, and zip codes. This list should include the owners of all lots or parcels which adjoin the parcel in question, as well as the owner(s) of lot(s) or parcel(s) which lie directly across the street/highway from the parcel in question.

PLEASE PRINT (IN BLUE OR BLACK INK) OR TYPE THIS INFORMATION ON THE FOLLOWING PAGE.
PLEASE STAY WITHIN THE GUIDES OF THE TEMPLATE, AS THIS WILL BE PHOTOCOPIED DIRECTLY ONTO MAILING LABELS.

A Conceptual view below of the Planned 4000 SF Greenhouse with approximate Dimensions of 100 FT L to R X 40 FT. Front to Back with front Southern Exposure (Source - https://www.ceresgs.com/applications/aquaponics/)

Design Pg 1





This project involves the construction of a new state-of-the-art highly energy efficient Controlled Environment Agriculture (CEA) greenhouse. The greenhouse is planned to be 4000 square feet with a footprint of approximately 40 feet wide x 100 feet long x 14 feet tall. It will have a southern exposure for its sun-lighted surfaces and will be bermed into the earth on its north side for energy efficiency purposes. The greenhouse will be heated primarily by the sun with secondary heat from a forced air system. There will be thermal mass heat and cooling storage system under the greenhouse to store heat for nighttime winter heating and to store cool air for daytime summer cooling. The indoor temperature of the greenhouse will be kept at near 70 degrees F. on a year around basis.

Much like the Greenhouse, the food production will involve a very earth friendly and alternative technology based approach.

Framing

The Greenhouse framing will be a metal framed structure with a conceptual look and design like the structures we depicted in the image below. The building will have a southern light exposure with primarily glazing. The glazing will stop at a stem wall below which we will mount a solar panel photovoltaic array on the ground.

The east wall will be a traditionally framed solid wall metal with both a man door and a vehicle entry door. The north wall will be a traditional framed solid wall with possible additional

Amy Malone

Design pg 2

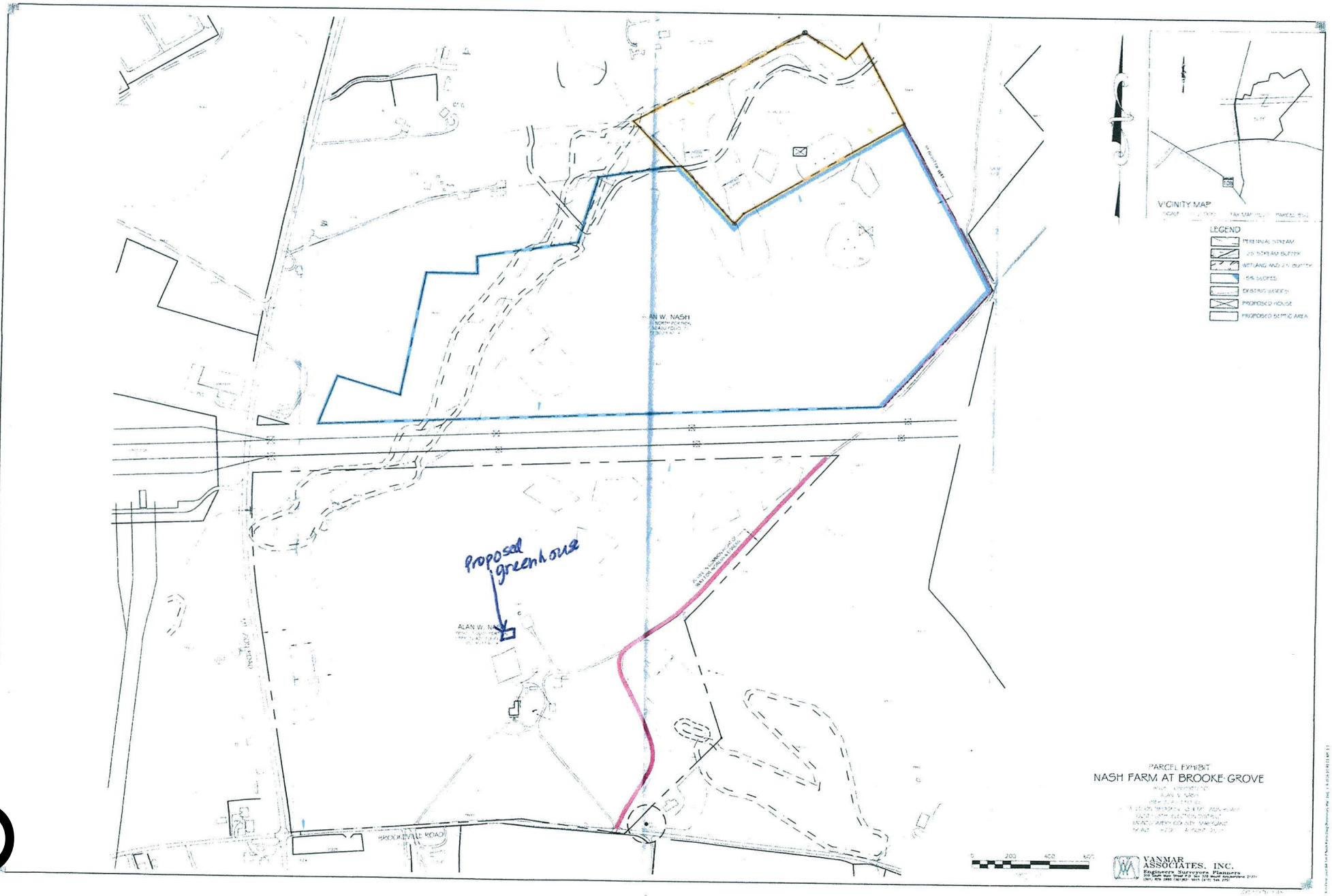
strengthening do to berming that will occur behind it. The west wall will primarily be a glazed wall with the same short stem wall near the ground. The rear portion of it will be solid like the east wall with a man door entrance. Again, traditional framing will be used.

Glazing

We plan to use a double layered clear polycarbonate glazing for the primary skin of the greenhouse. There are many choices for this application, and we will make our final material choice based on our professional judgement and the recommendations of our greenhouse framing contractor.

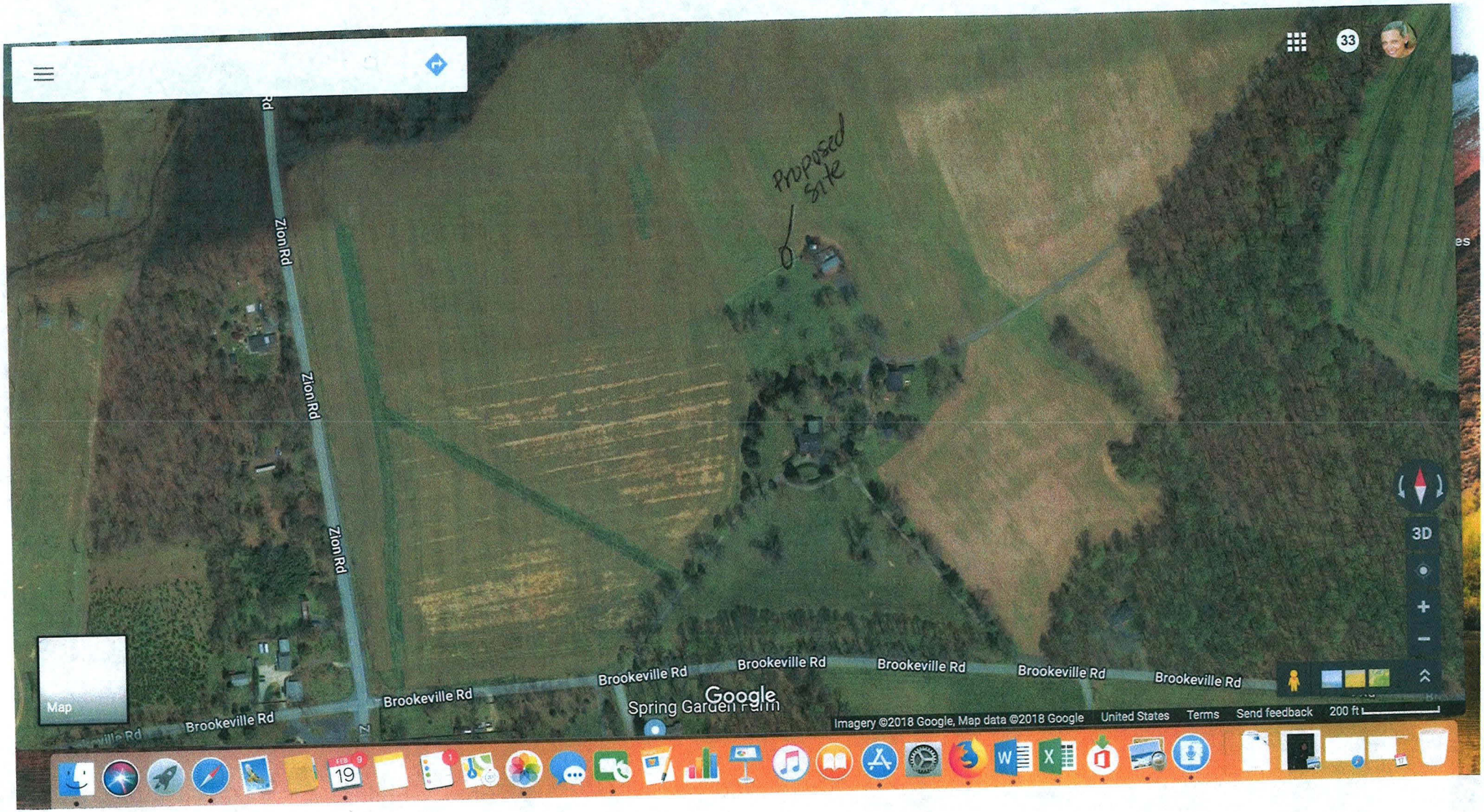
We are working closely with the County Agriculture Office and the Soil Conservation District for this process. Please feel free to talk with them about this project.

Amy Falcone


VICINITY MAP
LEGEND
PERENNIAL STREAM
25' STREAM BUFFER
WETLAND AND 25' BUFFER
15% SLOPES
EXISTING WOODS
PROPOSED HOUSE
PROPOSED SEPTIC AREA
ALAN W. NASH
Proposed greenhouse
BROOKEVILLE ROAD
PARCEL EXHIBIT
NASH FARM AT BROOKE GROVE
VANMAR ASSOCIATES, INC.
Engineers Surveyors Planners

6

Afalcone


Proposed site
Zion Rd
Zion Rd
Zion Rd
Brookeville Rd
Brookeville Rd
Brookeville Rd
Brookeville Rd
Brookeville Rd
Brookeville Rd
Brookeville Rd
Google
Spring Garden Farm
Map
3D
Imagery ©2018 Google, Map data ©2018 Google
United States
Terms
Send feedback
200 ft

Old barn in field

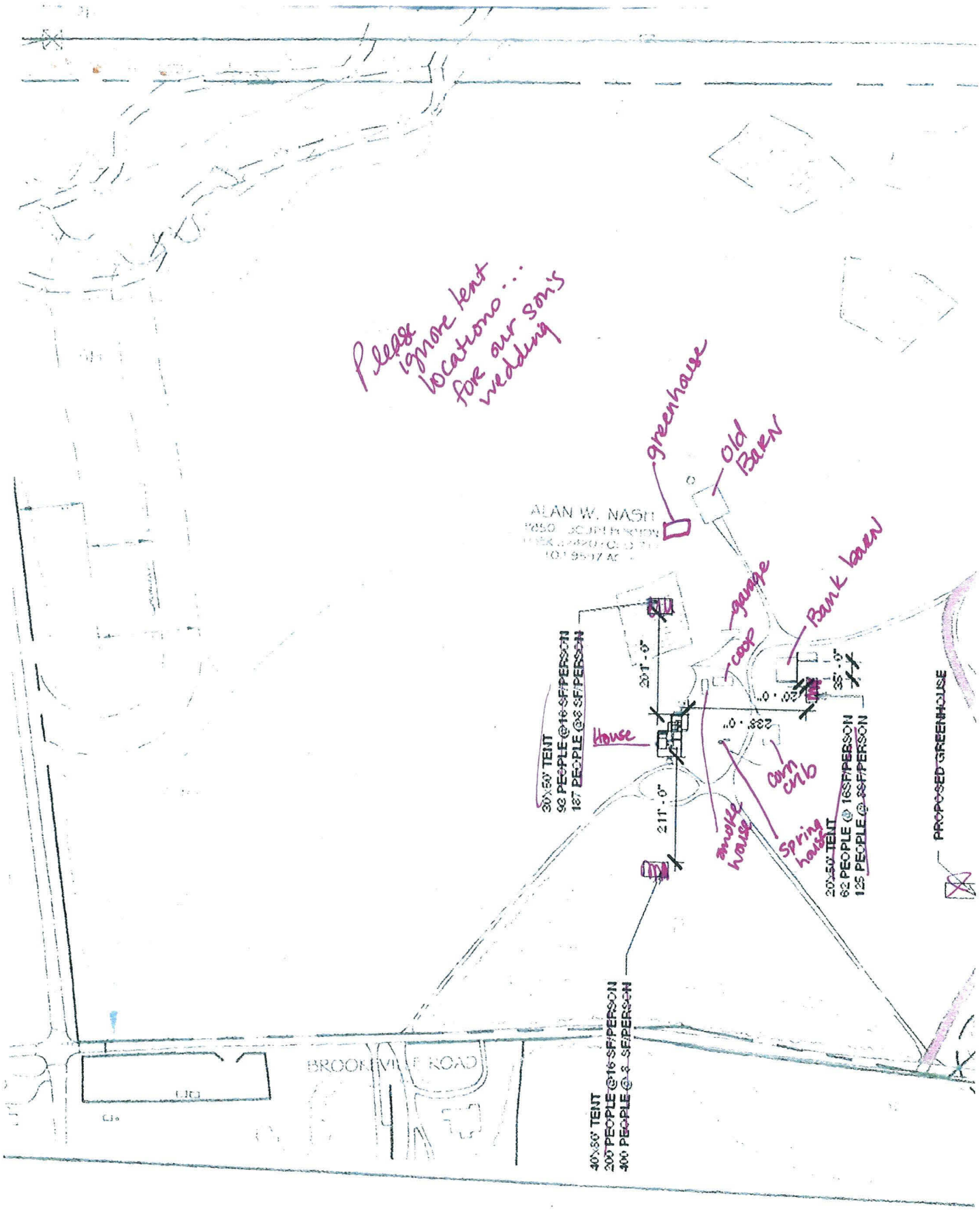
12

13

HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFING
[Owner, Owner's Agent, Adjacent and Confronting Property Owners]

Owner's mailing address	**Owner's Agent's** mailing address
Amy & Angelo Falcone 4901 Brookeville Rd Brookeville, MD 20833	
Adjacent and confronting Property Owners mailing addresses	
Jason Riggs 4900 Brookeville Rd Brookeville, MD 20833	Robert Riggs 4900 Brookeville Rd Brookeville, MD 20833

There are not any neighbors that adjoin close enough to be affected by the position of green house. Everyone is more than 500 yards away.



Addendum to

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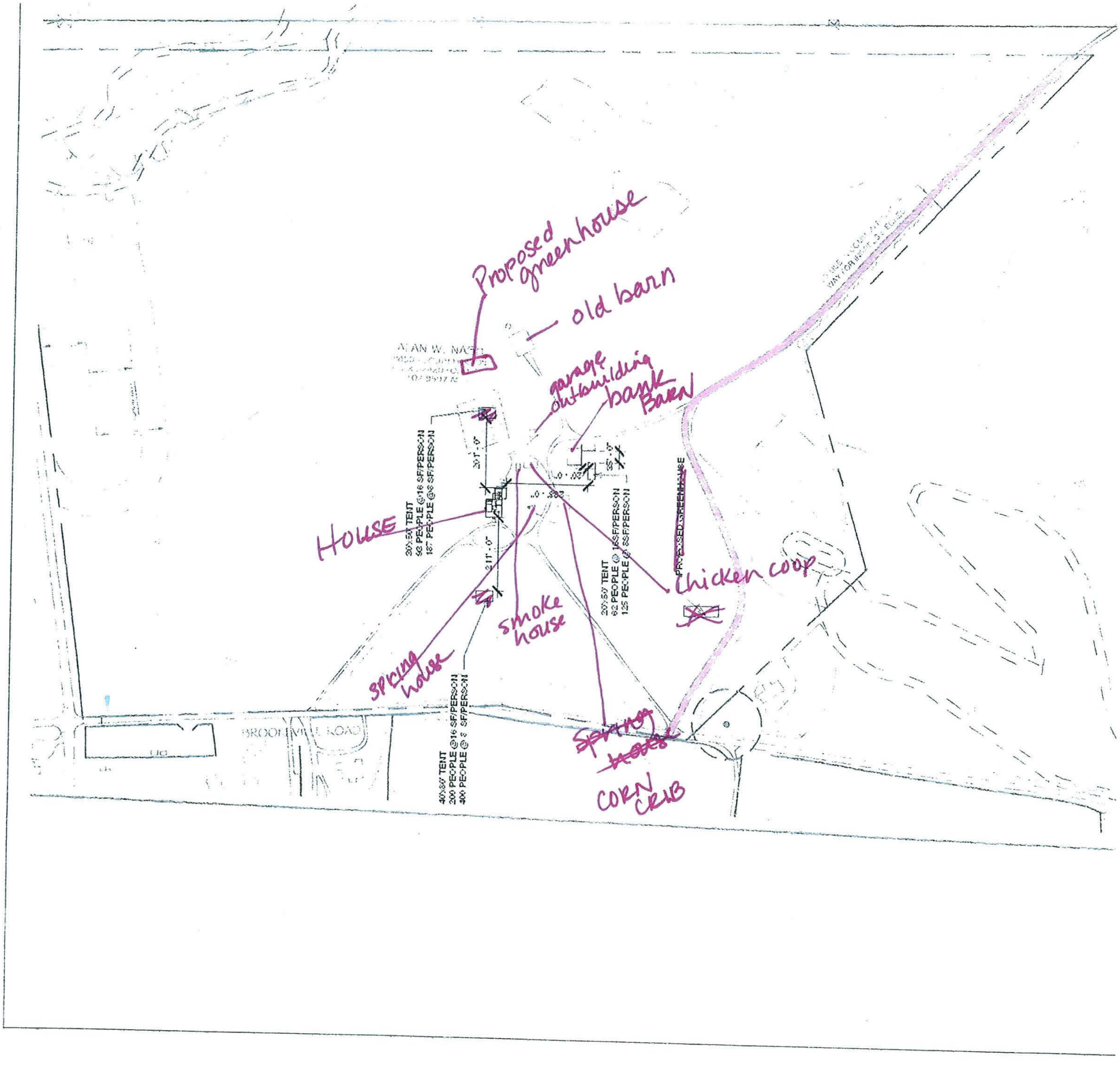
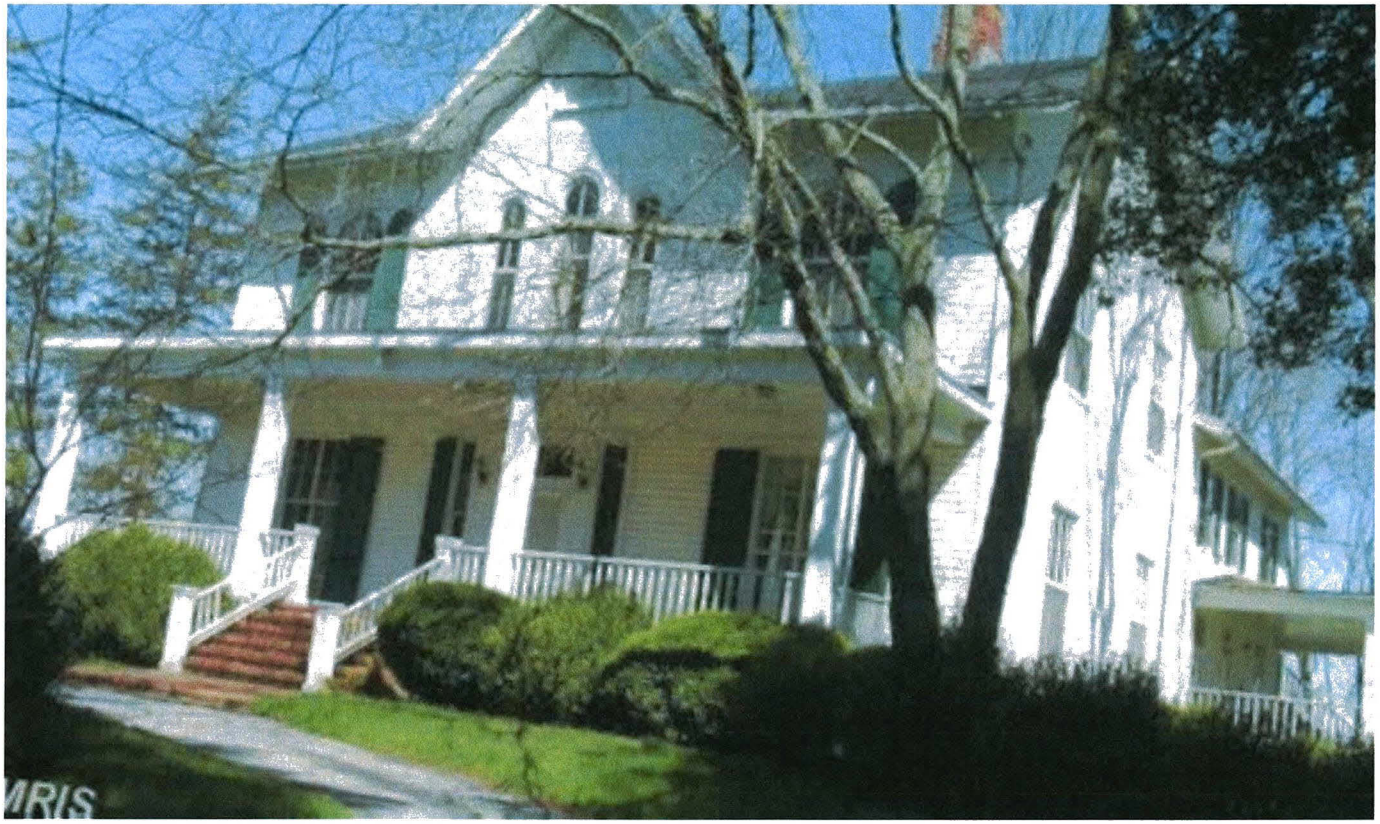

Proposed greenhouse
old barn
garage outbuilding
bank Barn
HOUSE
30'x50' TENT
93 PEOPLE @16 SF/PERSON
187 PEOPLE @8 SF/PERSON
20'x50' TENT
62 PEOPLE @ 16SF/PERSON
125 PEOPLE @ 8SF/PERSON
PROPOSED GREENHOUSE
chicken coop
smoke house
spring house
40'x80' TENT
200 PEOPLE @16 SF/PERSON
400 PEOPLE @8 SF/PERSON
BROOKVILLE ROAD
CORN CRIB

This is our goal to be back to here one day

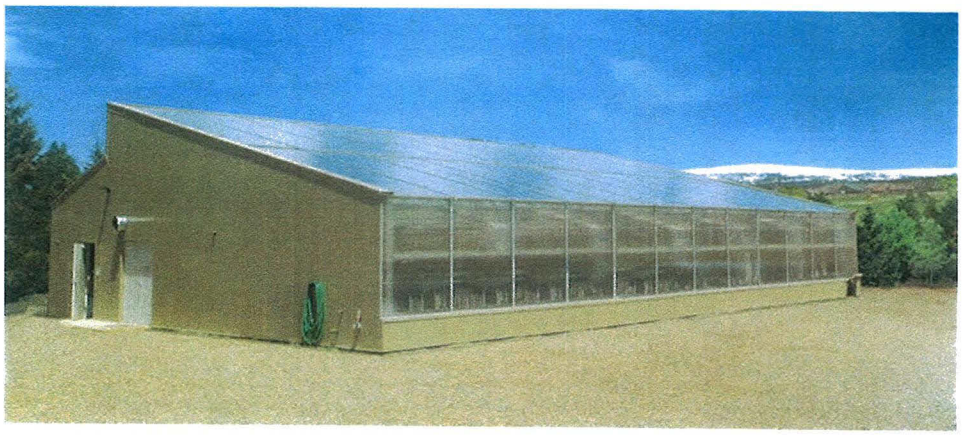
Before 1938



currently there is no gingerbread ↓ the spindles aren't correct

We will be relying on our experienced contracting and construction team to provide us with the specific design and plan for the building, but the images below show a number of the desired elements of the project that can be used by members of our team as they accomplish their portions of the project.

A Conceptual view below of the Planned 4000 SF Greenhouse with approximate Dimensions of 100 FT L to R X 40 FT. Front to Back with front Southern Exposure (Source - https://www.ceresgs.com/applications/aquaponics/)



Elevations

Another Example of the Conceptual Design with Southern Exposure and non-glazed Northern and Eastern Walls (Source -

This is a similar design because we aren't sure locally what materials are available they could vary somewhat

Missing
✓ Elevations
/ close up site plan
/ SWM
Excavation

ENERGY-EFFICIENT
AQUAPONICS GREENHOUSES

dimensions

This will depend on how deep the water table is.

We are modeling to be very similar to this plan

2,880 SQ. FT. GREENHOUSE + AQUAPONICS

PRODUCES:

35,000 LEAFY GREENS PER YEAR
such as lettuce, kale, basil, chard, etc. using deep water culture

1,000 LBS. of FISH PER YEAR
from aquaponic fish tanks

ONGOING HARVESTS
of high-value crops grown in media beds

USES:

50% LESS ENERGY
compared to conventional greenhouses. Greenhouse can be 'self-heating' with Ceres' Ground to Air Heat Transfer (GAHT™) System

90% LESS WATER
compared to conventional agriculture

A Complete Solution

Energy-Efficient DIY GREENHOUSES

ABUNDANT YEAR-ROUND GROWING
Ceres HighYield™ Greenhouse Kits use passive solar design principles, a fully insulated North wall, and triple layer polycarbonate glazing, making them the most energy-efficient commercial greenhouses on the market.

HIGHER YIELDS
Glazing materials have a light transmittance and light diffusion to create a superb growing environment for high-productivity year-round growing.

DURABILITY
Steel frames are rated for high snow and wind loads, ensuring your investment is protected from extreme weather.

DO-IT-YOURSELF ASSEMBLY
Pre-fabricated building kits include all materials for easy, cost-effective assembly.

CROP DIVERSITY
The hybrid aquaponic system integrates three growing methods: media beds for fruiting crops, deep water culture for high production of leafy greens, and wicking beds for root crops.

Four fish tanks allow for ongoing production and harvesting of edible fish such as tilapia, catfish, striped bass or high-value ornamental koi.

ZERO WASTE
No water is discharged from the system. A vortex brewer can be added to capture additional solid waste , used as supplemental natural fertilizer for aquaponics beds, outdoor gardens or house plants.

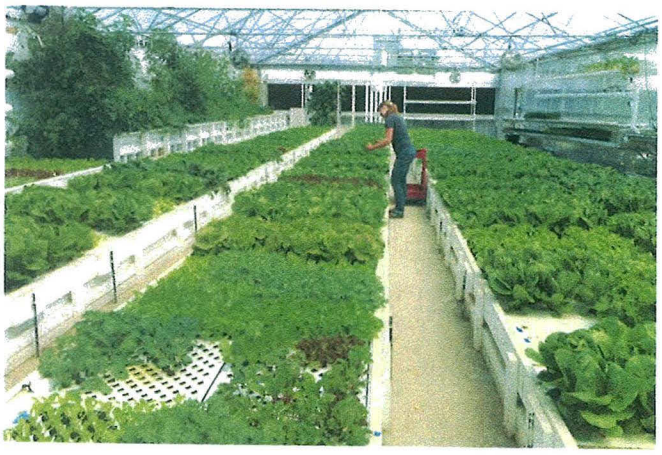
EFFICIENT DESIGN
The greenhouse floor plan maximizes plant production while maintaining convenient workspaces and walkways. A plant nursery and wash station allows for efficient end-to-end production of crops.

+ *Hybrid* AQUAPONICS SYSTEMS

Ceres Greenhouse Solutions is an industry leader in advanced, high efficiency greenhouses. Colorado Aquaponics was founded by JD and Tawnya Sawyer to help businesses and communities design and build successful aquaponic systems. The Sawyers also own The Aquaponic Source and Flourish Farms, a 3,000 sq. ft aquaponics greenhouse in Denver, Colorado (right). Together, Ceres and Colorado Aquaponics work to integrate proven aquaponics systems into high performance greenhouses for truly sustainable year-round growing.

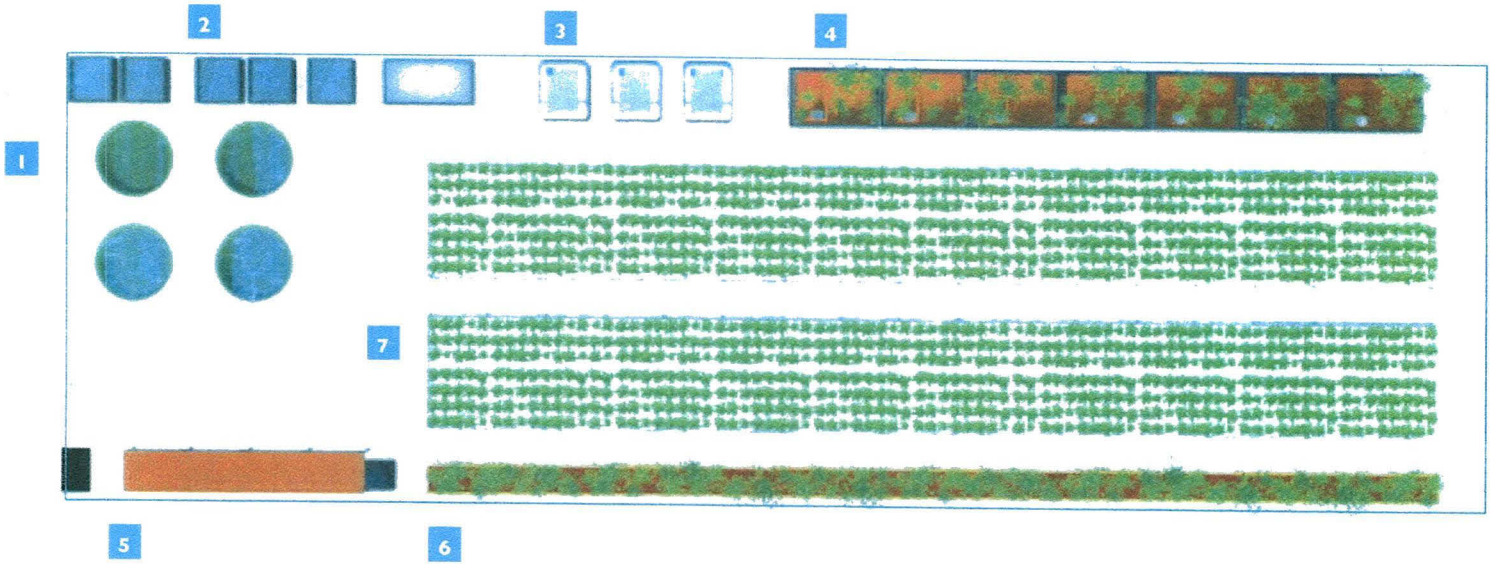
CERES

COLORADO AQUAPONICS



PRE-ENGINEERED AQUAPONICS GREENHOUSES

Example 30' x 96' Greenhouse Floor Plan



SYSTEM COMPONENTS

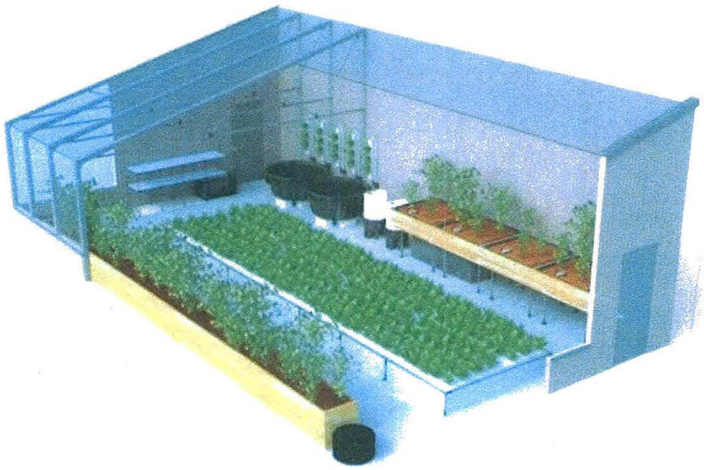
1. 300 GALLON FISH TANKS
2. WATER FILTRATION SYSTEM
3. WATER STORAGE
4. MEDIA BEDS FOR FRUITING CROPS (84 sq. ft.)
5. SEEDLING NURSERY SYSTEM
6. WICKING BEDS (136 sq. ft.)
7. DEEP WATER CULTURE BEDS (1,120 sq. ft.)

"Aquaponics and passive solar greenhouses enable truly sustainable year-round food production. With the right system and the right structure, commercial aquaponnics becomes practical and profitable."

- JD Sawyer, Co-Owner, Colorado Aquaponics and The Aquaponic Source

CERES GREENHOUSE SOLUTIONS
ceresgs.com
info@ceresgs.com
303-495-5006

CERES GREENHOUSE SOLUTIONS



Primary Initial Decisions and Limitations

Construction Planning Elements

We will be using A 10-Step Construction Planning and Operations Process for this Greenhouse Project. Our project planning process also illustrates how we will manage resources and finances, how you handle risks, and how you keep communication flowing. Following is the 10-Step Planning and Operations Process we will use on the Project, and if you are considering becoming a member of our team you should be aware of it:

- **Resource Planning:** This process details the materials, labor, and equipment that we will use in the project, complete with quantities. The resource plan is an important document for determining costs and budgets. Labor projections are a challenging aspect of resource planning. Making up for a labor shortfall is more difficult than coping with an equipment or resource shortfall. Rapid fluctuations in the size of the labor force are a function of poor management. Ideally, we will have the right number of people with the right skills at the right time, since overmanning and undermanning both have negative effects. This concept applies to both skilled and unskilled labor.

- **Communications Planning:** Projects with large numbers of stakeholders can be tricky, since an adequate information flow is critical for building and maintaining trust, ensuring transparency, and keeping everyone aligned. A communications plan formalizes how we will handle communications. It addresses how we convey information (through email, paper documents, meetings, etc.), defines our audience, indicates frequency, and defines who is responsible for handling this information. The information we communicate will vary with the audience. With field crews, we would share operational updates. With project sponsors, we are more likely to discuss high-level information regarding the project's progress.
- **Procurement Planning:** A procurement plan explains where and how we will obtain materials and services that are necessary for the project. Procurement planning involves preparing resource specifications, choosing procurement methods (such as sealed bidding), preparing procurement schedules, and budgeting resources and preventing waste. Procurement planning helps us maintain good supplier and vendor relationships, save money, and ensure transparency on public projects. Procurement planning uses the project schedule to make sure the right resources are available at the right time.
- **Contract Planning:** We will sign contracts with the project's suppliers near the end of the planning phase. This step involves the issuing of tenders, requests for information (RFIs), and requests for proposals (RFPs) before we sign contracts with selected suppliers. To ensure best pricing and satisfy transparency requirements on certain projects, we must be fair when selecting suppliers, and we must be able to produce extensive documentation of this process.
- **Phase Review:** We conduct the phase review at the end of the planning phase to take stock and decide whether the project is ready to move into the next stage of the lifecycle: beginning construction.

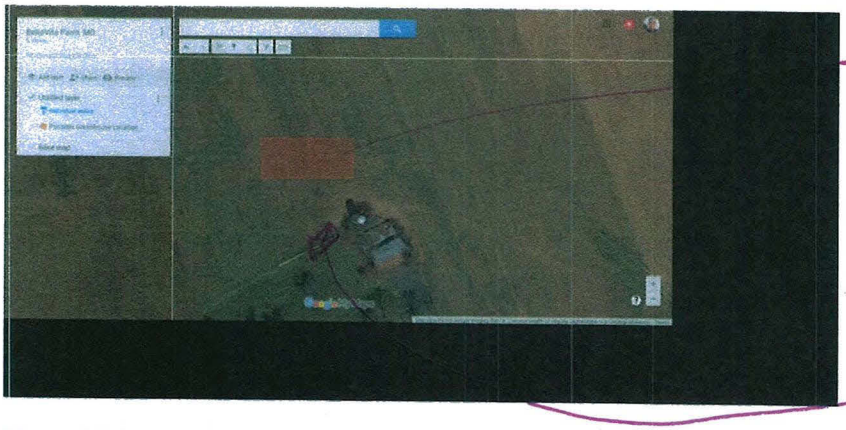
Greenhouse Location

Bella Vita Farm, LLC (BVF), is forming a subsidiary venture, Bella Vita Farm ~~Agriculture~~ Fresh, LLC (BVF~~A~~), that will begin producing a variety of local food types to meet this growing

and vital need for Montgomery County, from its Brookeville, MD, greenhouse and outdoor farm location in 2018.

The first very important food production element for BVF will be this Energy Efficient Holistic Greenhouse Project. The image below shows the approximate location of the planned Greenhouse Project.

Approximate Location of the site of the Planned Greenhouse Project. Just north of the old barn buildings on the property.



The reddish area shows a footprint for the proposed location (bigger than the actual greenhouse itself) The bottom orientation in the image is facing south and will be almost entirely glazed (down to about 4 feet from the ground) with a polycarbonate covering. The west wall is on the right and will also be glazed entirely down to a stem wall at about 4 feet from the ground. The north wall (to the top) will be bermed into the earth with a solid tromp wall and inside thermal mass storage. There will be a battery of photovoltaic solar panels adjacent to the south facing stem wall sloped at an appropriate angle to obtain maximum solar exposure. Entry doors into the greenhouse will be on the solid walled east wall, and will include both a drive in door (rarely opened) and a wide man door.

Pre-Construction Activities

Architectural Design Plans

We will not be using traditional architectural design plans for this Greenhouse Project. Dr. Dorband will be suggesting design plans to the ownership team based on many years of experience designing and building greenhouses and Controlled Environment Agriculture Systems.

We will be asking our potential contractor team members for each of the construction elements to provide specific plans and cost proposals for their work. For example, greenhouse shell installers and/or materials providers will be required to provide all appropriate documentation to fulfill permitting requirements as well as meeting the design desires of ownership.

This ownership/general contractor role being taken by ownership and the lack of needs for architectural plans will save the project at least $20,000 in costs and more likely $30,000 in costs.

Civil, Engineering, and Environmental

Unlike a house of typical commercial building, greenhouses are not very complex in construction elements. There is not much carpentry, minimal finishes, and most interior systems are exposed and can be easily modified in their specific construction details.

We believe we will not need to obtain many permits for this construction. Civil issues will be the responsibility of the excavation, concrete, and grading contractor(s). Engineering issues will be divided among many of the specialist contractors. Finally, there are not really any environmental issues that are anticipated to be encountered during the project. If there do end up being any environmental issues, Dr. Dorband is a world expert in advising regarding construction related environmental issues.

We have budgeted $2000 for a survey, but it is not likely that one will be needed. We have also budgeted $5000 for civil work and we will likely hire a local engineer who has appropriate similar construction experience.

Utility System Determinates and Locates

Before we initiate any construction at the Project Site we will conduct industry appropriate utility determinate and locate procedures. We have budgeted $500 for this process, but it is likely that this will be provided for free by the local utility companies.

Water Review

We will review local geological and hydrological data to assist in determining the groundwater status at the Project Site. We will also dig pits to both assess geotechnical aspects of the Site and to get a direct view of the groundwater situation at the Site. We do not anticipate a water issue, but we will take all appropriate steps to confirm our thoughts. We have included this cost in our excavation cost estimates and will have it completed by our excavation contractor.

Water Service to the Site

We will need to provide a water line to the Site from the existing water service at the Site. We have budgeted $2000 to provide water from the existing water main, which is about 300 feet from the Project site. This should be sufficient funding for this effort. We will hire a local contractor for this job.

Electrical and Gas Service to the Site

Like the water, there is electrical service to Bella Vita farm that terminates about 300 feet from the Project Site. We have budgeted $2000 to provide a 200 amp service to the Project Site. We will hire a local electrician to provide this service.

Building Permits

We currently do not anticipate the need for any building permits for the Greenhouse Project. Local regulators have indicated that construction of an agricultural building (a greenhouse) does not require any permitting.

Site Preparation

Site Grading and Excavation

The current topography of the Project Site is relatively flat and consistent. The Site has most recently been used as a cultivated row crop field (corn). We will start with a rough grading for the Site and then begin to:

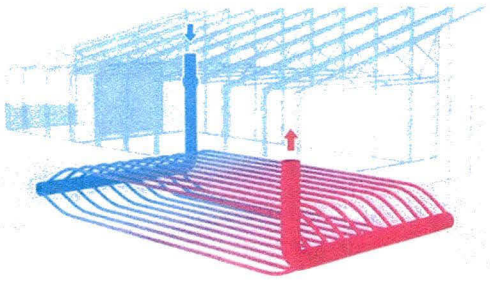
- Accumulate soil to be used for the berm on the north side of the greenhouse.
- Excavate the pit for the installation of the geothermal system and mass for energy storage (rocks). This will also serve as the excavation for the foundation and piers for the greenhouse construction.
- Grade the Site for appropriate stormwater and wastewater drainage.
- Create a roadway into the Site and possible walking paths to the Site.
- Create a parking area for the Site.

We have budgeted $18,000 - $20,000 for site grading and excavation and are confident this will be sufficient. We will hire a local excavation and foundation contractor to conduct this aspect of the Project. It is likely that this contractor will also be our concrete contractor.

Sub Surface Geothermal Mass and System Installation

We are very excited about using a combination of a geothermal heat pump system and a substantial quantity of stone under the slab of the greenhouse to provide our primary heating and cooling for the Greenhouse. We have budgeted $15,000 for this geothermal system with the cost being divided between the subsurface portion of the system and the heat pump portion to be installed inside the building. It is possible that there will not be a local contractor with geothermal greenhouse construction experience. If that is the case, we have connections with several national contractors who will be able to conduct this portion of the project for us.

The image below shows a conceptual depiction of how the geothermal system will be installed.



Foundation and Slab Work

We will use a pier system for the foundation of the greenhouse. This approach will be used because of the geothermal mass system under the building. The slab will be poured using forms associated with the piers also. This is a common construction approach for commercial buildings. We have budgeted $24,000 for the foundation and slab work. We are confident this is a reasonable budget for this project. Our contractor for the greenhouse building construction will probably oversee a local subcontractor to install the forms and pour the concrete for foundation and slab. We will purchase the piers from a local provder.

The image below shows what the "pit" for the geothermal system will look like in association with the foundation piers and insulated border of the geothermal mass location.

Drainage

We would like to collect as much storm water as possible from off the greenhouse and direct it to adjacent garden beds around the greenhouse. We will grade the site to accomplish this goal.

Storm water and Wastewater Management

As described above it is our goal to use as much of the storm water drainage from the greenhouse as possible to irrigate garden spaces around the greenhouse. We have budgeted $5000 for the drainage and storm water management. We would like our excavation and grading contractor to be able to do this work.

There will be minimal wastewater generated from our greenhouse operations. We will be able to reuse all of the water used in our food production systems. We will need to develop a wastewater plan for our greywater and blackwater used in our restroom, food preparation, and cleaning operations. We have not yet determined our approach for this activity.

Building Shell Construction

Bella Vita Farm is a ~103 acre farm located in Brookeville, MD. The Farm was purchased by the Founders in the fall of 2017. The Bella Vita Farm Founders acquired

the farm to restore its historic building and develop its associated land into a regional hub as an agri-tourism center for the region. The goal is to hold regularly scheduled gatherings and activities at the Farm which involve recreation, education, and community fellowship. These events will include:

- weddings
- family reunions
- parties
- festivals
- education
- much more

> a bit lofty & more fluff for business plan aspect

There are multiple existing buildings on the Farm that are currently being restored by the Farm owners to serve as venues for the events and production needs. It is likely that we will convert one of the buildings into a cool, dark, climate controlled area to grow mushrooms. Another building could house a cold storage unit, and a third could be used for other fish production in the future.

This project involves the construction of a new state-of-the-art highly energy efficient Controlled Environment Agriculture (CEA) greenhouse. The greenhouse is planned to be 4000 square feet with a footprint of approximately 40 feet wide x 100 feet long x 14 feet tall. It will have a southern exposure for its sun-lighted surfaces and will be bermed into the earth on its north side for energy efficiency purposes. The greenhouse will be heated primarily by the sun with secondary heat from a forced air system. There will be thermal mass heat and cooling storage system under the greenhouse to store heat for nighttime winter heating and to store cool air for daytime summer cooling. The indoor temperature of the greenhouse will be kept at near 70 degrees F. on a year around basis.

Much like the Greenhouse, the food production will involve a very earth friendly and alternative technology based approach.

Framing

Materials

The Greenhouse framing will be a metal framed structure with a conceptual look and design like the structures we depicted in the image below. The building will have a southern light exposure with primarily glazing. The glazing will stop at a stem wall below which we will mount a solar panel photovoltaic array on the ground.

The east wall will be a traditionally framed solid wall metal with both a man door and a vehicle entry door. The north wall will be a traditional framed solid wall with possible additional

strengthening do to berming that will occur behind it. The west wall will primarily be a glazed wall with the same short stem wall near the ground. The rear portion of it will be solid like the east wall with a man door entrance. Again, traditional framing will be used.

We have budgeted between $55,000 and $85,000 depending upon whether we choose a major greenhouse company for acquisition and installation. These numbers include all costs for materials, supplies, delivery, and installation of the entire structure (framing, glazing, venting, etc.)

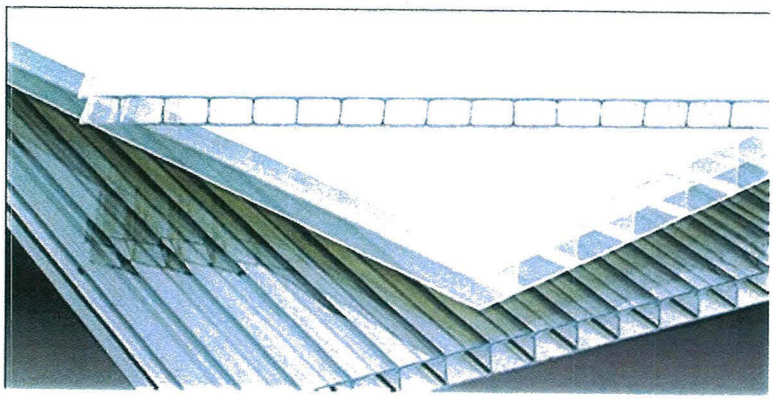
This is the largest spread of costs between these two approaches in our model. We are probably leaning toward the less expensive DIY approach, at this time.

Materials

Glazing

We plan to use a double layered clear polycarbonate glazing for the primary skin of the greenhouse. There are many choices for this application, and we will make our final material choice based on our professional judgement and the recommendations of our greenhouse framing contractor.

The image below shows a depiction of the look for the panels that will likely be used. The budget for the glazing is inside the numbers described for the entirety of the greenhouse shell package in the previous Framing Section.



Materials

Solid Walls

Our solid walls for:

- short stem walls on the south and west sides
- the entire north wall
- the entire east wall, and
- the small northern portion of the west wall

will all be traditional framed metal building type walls. They will all be installed by our chosen greenhouse contractor and their cost is included in the previously provided overall budget for the greenhouse package shown in the Framing Section above.

Entrances and Exits

The greenhouse will likely have three entrance and exit doors. There will be a man door on the northern area of the west wall and a second on the northern portion of the east wall. Both of these doors will be traditionally mounted and will likely be wide doors to allow maximum width for cargo and delivery entries.

We will also have a single vehicle entry door on the solid east wall of the greenhouse (the image below shows what it will look like, but it will not be on a glazed wall as shown).

All three doors are budgeted inside of the entire greenhouse package budget and will be installed by the greenhouse contractor.

Utilities

We have chosen to have the Greenhouse Project be very energy efficient. Most of our heating and cooling, electricity, and other power needs will come from on-site renewable sources. We will have a backup heat and electricity system that will be powered from propane, but it will only

be used in emergency situations. The following Sections describe the plans for all the utility needs of the Project.

Solar Photovoltaic System

The greenhouse will be primarily powered by solar means. The primary source of electricity will come from an array of solar panels mounted on the ground as shown in the image below. This image shows three rows of panels, and we believe our array will only have one row that will cover most of the 100 ft. length of the south wall.

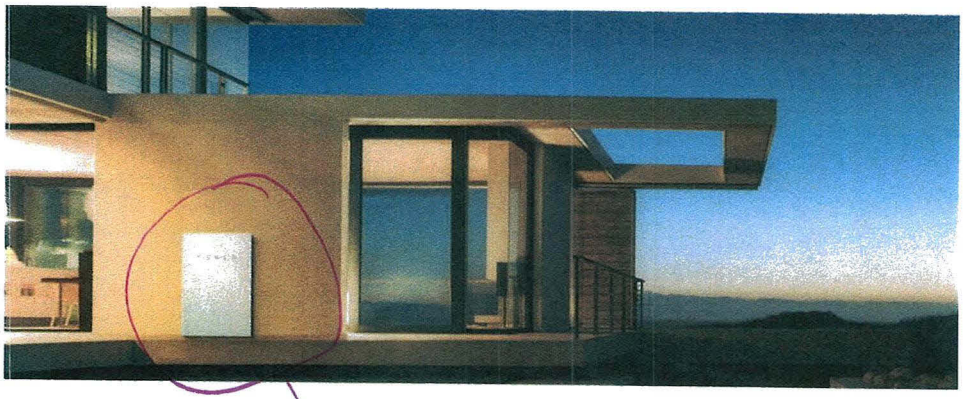
We are not yet sure of exactly how many panels and the total wattage we will require, but we will be determining that number as our greenhouse contractor is chosen and the final design agreed upon. It is likely that the system will be approximately 100 KW in size.

We have budgeted between $17,000 and $25,000 for the entire cost of this system. We will hire a specialized local contractor to provide materials and installation for the system including all the panels, inverters, energizers, and other needed elements.

Tesla Powerwall

Tesla has recently released an industry changing and affordable energy storage system call the Powerwall. We will be using this system for our primary electrical storage system that will store our solar generated electricity to be used on a continuous basis, even when we go for days without any solar gain (cloudy days).

We have budgeted to acquire two Powerwall batteries and they can also be used to provide power throughout the rest of the Bella Vita site. We have included the price for the Powerwall inside our overall solar system budget numbers that we provided in the previous Section. The Powerwall will be installed by our solar system contractor.



Backup Gas Heating

We will be installing propane powered gas heating units call unit heaters in the greenhouse to be used if our electrical power supply is compromised. There are many options for this heating source and we will rely on our contractors suggestions for our choice of system to use. We have budgeted this cost inside our total mechanical system estimate at approximately $6000. We will select a mechanical contractor (likely the solar contractor described earlier) for the installation of this system.

Source - http://www.nexuscorp.com