# Urban Farm Development and Design Manual

## Finding a Farm Site and Guiding Development

Prepared for Boston Farms Community Land Trust & The Urban Farming Institute of Boston
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Thanks to our design and construction partners:
Keith Zaltzberg-Dresdahl, Regenerative Design Group
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## Terms and acronyms

**Boston Farms (CLT)** – Boston Farms Community Land Trust
**BPDA** – Boston Planning and Development Agency oversees Article 89, performs CFR and signage approvals
**BWSC** – Boston Water and Sewer Commission , oversees water connections and required storm water design
**CFR** – Comprehensive Farm Review
**CLT** – Community Land Trust
**CPA** – Community Preservation Act, manages taxpayer fund that awards grants to develop open space
**DIY** – Do It Yourself
**DND** – Department of Neighborhood Development, controls and inventory of vacant lots
**DNI** – Dudley Neighbors Inc., the CLT of Dudley Street Neighborhood Initiative
**HBI** – Historic Boston, Inc.
**HQ** - Headquarters
**ISD** – Inspectional Services Department, reviews plans, issues permits, final inspections
**MDAR** – Massachusetts Department of Agricultural Resources, State agency overseeing agriculture
**NBSS** – North Bennett Street School
**NOFA** – Northeast Organic Farming Association
**RFP** – Request for Proposals
**TPL** – Trust for Pubic Land
**UFI** – Urban Farming Institute
**YBB** – Youth Build Boston

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# Introduction

Many people are surprised when they learn that creating a farm in the City of Boston is similar to building a building – it is a design and construction project regulated, permitted and inspected by the City. While the start of the contemporary farming movement certainly included a DIY element, for better and worse, developing a farm in the city is now a regularized process.

From its inception, the Urban Farming Institute committed to increasing commercial urban farming in Boston by training urban farmers in production farming, demonstrating and honing methods through a farming enterprise, and developing abandoned lots into new farms. Development is a prohibitively expensive, specialized, and time-consuming process, often an impossible challenge for new farmers. Boston Farms Community Land Trust (Boston Farms CLT) was formed by the Urban Farming Institute to assume the work of developing, managing and stewarding urban farm sites for lease by urban farmers.

Community Land Trusts are proven models to maintain local control of land, protect affordability, and prevent displacement. (For some background on the formation of the Boston Farms CLT, see Appendix 1). The Boston Farms CLT governing board is majority people of color who live in or work on behalf of the neighborhoods of Roxbury, Dorchester and Mattapan.

## Urban Farms Development in Boston

Until recently, there was no clear regulatory path for developing commercial urban farms from which to grow and sell food. At the close of 2013, the City of Boston approved an amendment to the zoning resolution known as Article 89 that allowed commercial urban farms as a land use "as of right." This amendment establishes the rules and processes for approvals, which typically take about one year, to build and operate a commercial urban farm in Boston. Because it establishes commercial urban farms as a legitimate land use, the City is able to make potential farm sites available (at nominal cost to a CLT) and can enact policies to promote urban farming. This legalization also opens the door to public and private funders who can offer grants to not for profit organizations to design and construct farms. While there are still many challenges and flaws in the process, it has enabled UFI to acquire and develop six farm sites in six years. These are the farms that Boston Farms now owns.

The City's Department of Neighborhood Development (DND) was an early adopter - ready to turn over small urban lots in its inventory to urban farms. In order to qualify to receive and develop such parcels, UFI formed a partnership in 2014 with the Trust for Public Land (TPL) and Dudley Neighbors Inc (DNI) CLT, to acquire, develop, own and farm three parcels of city owned land. As a new industry and endeavor, the pooled expertise of these three organizations was necessary for the City's vetting process.

Two farms – Garrison-Trotter and Tommy's Rock – were developed under this partnership. By the time Astoria Quarter Acre Farm was ready for development, UFI had developed enough expertise to carry out the fundraising, design, construction and permitting on its own. With the Boston Farms CLT taking over this function, Glenway, which was a city pilot prior to the passage of Article 89, is slated for redevelopment to bring it up to standards; and Westville, obtained by a private donation, currently has a pending application for funding.

This manual is intended to be a basic primer on farm site development and design in Boston. It highlights the lessons learned in the past six years about the evolving process in Boston within the City systems. Bobby Walker, the UFI Farmer Trainer, often says that he teaches farming so that others will not have to make the same mistakes that he did. This manual captures the lessons of farm design and development for the very same reason. It is intended to give UFI and Boston Farms Board members and staff, UFI Trainees, and any curious farmers a working knowledge to empower all to be active participants and advocates in growing urban farms in Boston.

No two projects are identical but experience builds expertise and, at this moment, UFI – and, by extension, Boston Farms CLT - is recognized as having the most experience at farm site development in Boston. In spite of the added clarity that Article 89 lends to the process, it does not ameliorate the inconsistent implementation across the city regulatory agencies. The community of urban farmers and DND are collectively working to take on some of the challenges which have made the process more costly and time consuming. While each of the projects to date has been unique, we have been working to standardize and streamline and can look with some confidence to the Astoria farm, our latest project, as a success at process, budget and timing and a good base from which to continue building!

The manual is organized in the semi linear fashion that the development process follows. Exceptions abound, of course, such as when funding lags or leads; and because outreach and site selection is ongoing and when external circumstances cause one site to leapfrog over another in the pipeline. But, in general, the pattern is choosing the site, developing the preliminary design, securing approvals and full funding, and final design and construction!

# Farm Development and Design

### Farm Site Selection:
**Neighborhood Outreach > Site Analysis > Acquisition**

### Funding:
**Partial > Full funding**

### Farm Design:
**Goals Articulation > Program for Site Development > Program and Site Analysis > Site Design Development**

### Approvals to Usable:
**Permitting > Construction > Production**

# Farm Site Selection

Neighborhood Outreach

Site Analysis

Acquisition

Farm site selection is part of the "pre-development" process in which vacant urban lots are identified, analyzed, vetted and selected for development as an urban farm. It is a process integrated with the property management and stewardship of existing farm sites, because the Community Land Trust (CLT) mission is to develop farms for, and with, the support and participation of adjacent residents and other people affected by the land use. Through constant contact, communication and cooperation, site selection is a continuously occurring process. And it must be, as well, in order to have a pipeline of sites at various stages of development that will produce new sites to lease at a desired interval.

Sources of farm sites: To date, farm sites have consisted of both city-owned vacant lots and privately owned properties. In addition, we explored long term tenure within a private development. In one case, neighborhood residents approached UFI requesting the development of a farm; in other examples, UFI initiated the development of particular sites.

In 2016, a preliminary decision was made to locate new sites within a half mile of the current (existing or in development) sites – creating clusters that would allow for cooperative farming and more efficient management. Based on location, size minimum (1/4 acre) and a few other technical criteria, several potential new sites were identified in the Department of Neighborhood Development (DND) database of city owned sites.

Sources for sites:

- City of Boston DND vacant property database
- Other Public Agencies e.g. BPDA
- Private owners
- Existing and new Housing developments
- Local knowledge of potential sites

## Farm Site Selection – Listening to the Neighbors

At the time UFI was an all-volunteer organization, the neighbors of the Tommy's Rock Farm approached a member of the Board with a proposal. There was a vacant lot in their neighborhood that they wanted to protect as open space and would be glad to see it developed as a farm. The City had proposed to build housing on the lot and having a committed farm site developer was good leverage. Thus began a process that has, indeed, resulted in a farm – the first one that will be leased out to new farmers. But the back story is there were numerous delays, obstacles and challenges to its development. The topography (hilly) and geology (rocky) of the site is far from ideal for a farm which added significant cost and reduced the amount of arable land; the two lots that made up the site were owned by two different city agencies and coordinating the transfers added significant time. The development partner had some restrictions on what they could execute which added time and cost. But, in the end, the desires and unending support of the neighbors made it well worth the learning experience!

Tommy's Rock before

After

# Neighborhood Outreach

The importance of continual outreach and education cannot be minimized. Urban Farms are still a new land use in Boston and their benefits and advantages are still being learned. The growth and spread of urban farm sites will continue if residents see farms as neighborhood assets, places that are welcoming and bring social interaction as well as food. Since many of these sites have long been abandoned lots, new, productive landscapes have been a welcome change.

The CLT mission of stewardship and local control calls for regular and ongoing contact with residents and other stakeholders in the neighborhoods where farms are located. Learning what people want on farm sites during the off season will be an important outreach activity.

Community Land Trusts are also a new idea to most people. The potential of Community Land Trusts to preserve, protect and develop desirable land uses for and by the people affected by them is still developing. One of the valuable results of interactive outreach will be to capture and circulate an understanding of the impact farms are having on the lives of neighborhood residents. Reciprocal learning takes place at both formal and informal events which, in turn, can inform the site selection process.

### Questions to be explored through outreach might include:

- What neighborhoods have expressed an interest in a farm?
- Where do we need to build interest through outreach / education?
- Where would it be beneficial to grow a cluster of farms?
- What is UFI's experience with particular neighborhoods?
- What kinds of farms are UFI trainees looking for?
- Is there a farmer who wants us to build a farm in their neighborhood?
- What neighbors would support our acquisition of a vacant lot to the City?
- Where is there vacant city owned land?
- What partnerships or relationships do we want to build?
- What are the management and stewardship practices that are most beneficial to the neighbors?
- Are there activities that a farm site can support during the off season?

### Sample contact methods

- Door to door – knocking on adjacent neighbors doors for feedback
- Formal meeting – around a particular action or issue of a farm
- Farm visits and tours – especially in area without a farm, to see what it's like
- Informal conversation – farmers have with neighbors passing by
- Workshops –a way to work on a design or involve in a farm project
- Events on farms – when it involves food (and music), people will come
- Neighborhood association meetings – good way to learn about local priorities
- Participation in neighborhood planning – developing relationships with government

## Neighborhood Outreach – Activity and Engagement

In 2017, the Astoria farm was an unused lot on the corner of Flint and Astoria streets, just two blocks from the ongoing construction of the historic Fowler Clark Epstein Farm. Given the focus on the flagship farm, UFI wanted to assure the neighborhood that this lot was not being ignored, as well as offer a taste of what was to come with both urban farms. With a small seed grant from DND, UFI purchased wood for growing boxes, fabric bio barrier, soil and seedlings; organized food and a DJ to play music. On a March Saturday, drawn by flyers, volunteer organizing and the commencement of activity 75 people joined the work and festivity, putting together 16 raised beds, filling them with soil and planting seedlings. Throughout the season, there was an abundance of fresh vegetables and a new advocates happy to sign our funding support petition to build the permanent farm which relocated and incorporated those original beds.

**Building a farm in a day!**

## Site Analysis / Feasibility

Just because a neighborhood or an individual is advocating for a farm doesn't mean a neighborhood is ready or perfect for a farm. And just because there is a vacant lot available doesn't mean it will make a good farm site. Sometimes a negative can be mitigated, but it will cost more money and sometimes the negative means the site just can't work.

**Technical Analysis:** Site and context information from zoning district to local access to basic services

**Social analysis:** Knowledge of the people and neighborhood past and present

**Political Analysis:** Support of local elected and other institutional leaders; neighborhood plans

The purpose of an analysis based on these kinds of topics is to assess the potential success of a particular site for urban farming in terms of its physical characteristics, the social and urban context. From such an analysis, relative cost, time and ease of development can be projected.

Please see Appendix 2 for a sample checklist of factors for consideration when evaluating a new site.

# Acquisition

Acquisition is the process by which the CLT gains long term, permanent control of a property. It is the fundamental purpose of the CLT – to control the use of property for the benefit of those who are affected by its land use. While there may be an exception, the expectation is that the CLT will become the owner of the farm sites it intends to develop. Appendix 3 shows sites owned at close of 2020.

**Cost**

- City owned property (DND, BPDA): nominal cost for property; due diligence and legal costs
- Other publicly owned property: may be market price; due diligence and legal costs
- Private ownership:
  - If sale/purchase, likely to be market price plus due diligence and legal costs
  - If donation, due diligence and legal costs

**Process**:

- City owned property (DND): Targeted Request for Proposals (RFP); Public Facilities Commission; closing
- Other Publicly owned: varying processes. BPDA transfers to DND and then DND process ensues
- Private Ownership:
  - Sale / purchase: typical real estate transaction
  - Donation: agreement, due diligence, closing

**Time:** In all cases, there is no set timing. None are ever likely to happen in less than 6 months; one year is a good estimate and, in our experience, they have taken 1-2 years. It takes active project management on the part of both parties for a transaction to happen in a timely and predictable time table.

## Acquisition – Gaining Permanent Ownership

To date UFI has explored several different acquisition options. In the end, all but one of the sites currently owned by Boston Farms were acquired from the city. In the case of Tommy's Rock and Garrison-Trotter, our team identified the site and the city was agreeable. In the case of Astoria, the city identified the site and suggested it to us because of the proximity to Fowler Clark Epstein Farm. Glenway was a site the city licensed to UFI (and its predecessor City Growers) as part of a pilot program on urban farming. Next, the Department of Neighborhood Development puts out a "targeted" RFP and conducts a public review process after it accepts an application. The property then goes through an internal process for conveyance via a vote at the Public Facilities Commission. This entire process can easily take a year. The Westville property was a private donation which required appropriate due diligence to ensure the donor has free and clear title. Finally, we explored some long-term leases of vacant property owned by a church as well as the possibility of long term use of acreage on a housing development. There is room for more options!

# Funding

**Partial**

**Full Funding**

To date, farm sites have been developed with private, philanthropic funding as well as public funds from MDAR, DND and CPA to pay for the acquisition, design and construction of farms. Historically most funders, of any sort, do not fund design unless they are assured that something will be built. Paradoxically, it is hard to prove that something that has not yet been designed will be built. A good design process results in verifiable building costs, and funders are reluctant to fund projects without firm and verifiable construction costs.

The funding sources that TPL called on for the Garrison-Trotter Farm were private philanthropy. At the Tommy's Rock farm, they were similarly philanthropic as well as MDAR for specific, purchasable items such as soil and even the kit and assembly of the greenhouse. Astoria Quarter Acre Farm, the only farm developed solely by UFI, some preliminary design funds were granted by DND which allowed us to present a credible and realistic proposal for final design and construction to the Community Preservation Act (CPA) program. Additional in-kind funding came from a partnership with Youth Build Boston who built a shed and sign as part of their Designery and Day of Service Programs. Please see Appendix 4 for a sample construction budget.

The sample schedule (Appendix 5) shows this staggered funding pattern where enough funding was received to do a credible preliminary design to obtain a solid estimate for final design as well as construction. In addition, it should be noted that it is often necessary to get several sources of funds and therefore to think about how to phase construction if necessary, thinking about what gets enough done to start farming i.e., farm beds and water source are #1!

## Funding and Scheduling – Always intertwined

Funding and scheduling are mutually dependent. The sample schedule explores hypothetical examples of this. At the Astoria Farm, we were able to get needed preliminary funding to develop a credible design, but the CPA funding, which was paying for construction, was delayed by several months. That is, we were informed that we would be funded but it didn't come through until many months later. Having no cash or credit, construction could not proceed until the funds were released. This uncertainty also meant we were unable to ask the contractor to commit to a specific schedule. Although construction was a relatively short duration, it took longer as the contractor worked our project in and around his other prior commitments.

Astoria farm under construction

In cultivation

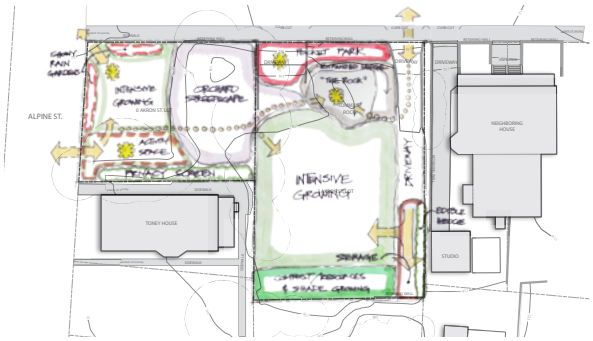
# Farm Design Development

## Tommy's Rock Ground Level Urban Farm

Roxbury, MA 2016-2018

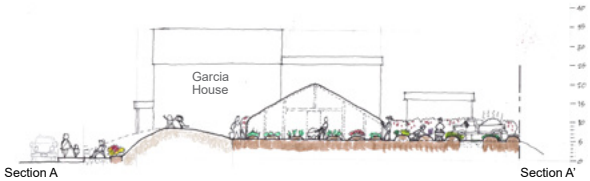
### Conceptual Design

Analyisis of existing site conditions and clarification of the functions and purpose of the farm.

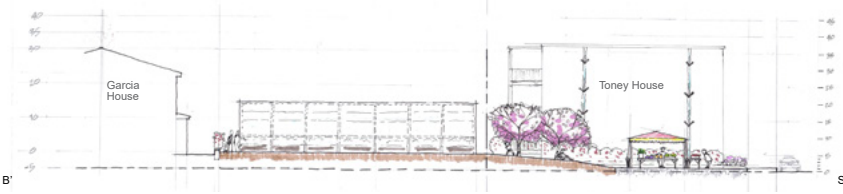



### Design Development

Refinement of the conceptual design and long-term vision of the farm.




Section A Section A'

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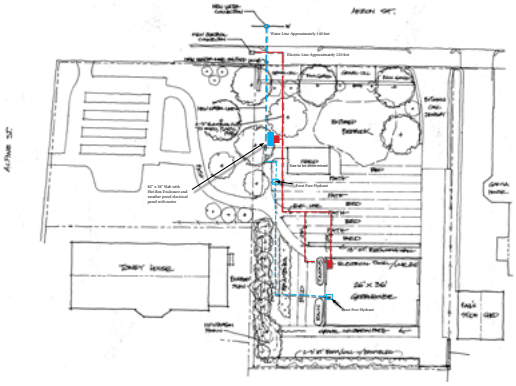
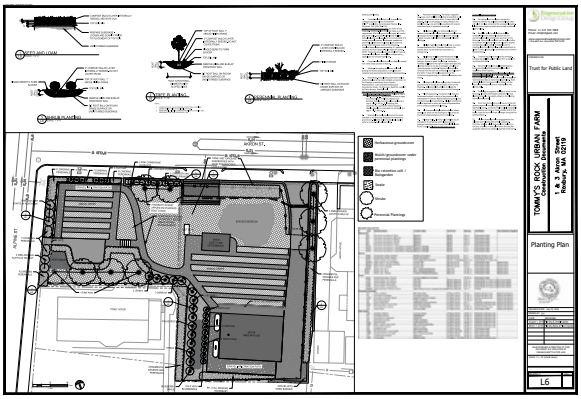


### Construction Documents

Drawings and plans that are suitable for construction purposes, regulatory review, and/or permitting.




URBAN FARMING INSTITUTE

Regenerative DesignGroup
productive landscapes resilient communities

Graphic Illustration of Farm Design Process created for 2015 Urban Farming Conference workshop

# Farm Design

Goals Articulation

Program for Site Development

Program and Site Analysis

Site Design Development

*NOTE: This section is excerpted from a workshop at the Urban Farming conference. This manual is intended to familiarize trainees as well as CLT and UFI Board members and staff with the development and design process. While this audience may not develop a farm themselves, understanding the design process will empower everyone to be active, knowledgeable and influential participants. The full workshop exercise can be found in Appendix 7.*

The CLT may focus on developing a standard production farm design, but there are many reasons why each farm should be subjected to some form of this process. Farming is evolving and an evaluation of a previously developed site will inform each new site. Or there may be variations because a farmer or a neighborhood approaches the CLT to own and develop a site on their behalf for a specific purpose.

Design is a process that synthesizes the ideas, wishes and wants for a farm with the technical realities of the site, regulations and budget, and creates a design – a plan drawing and written instructions – that is a coordinated description of what needs to be built in order to make a functional farm site.

The drawing may be quite simple or it may be complex but it should represent the best conceptual thinking and technical knowledge of the user (the farmer) and the designer (a professional) and any other stakeholders. It is a collaborative process and product among them.

While the BPDA will accept a hand drawn and non-professional sketch for their review, Boston Water and Sewer Commission review and subsequent ISD approvals need engineered drawings. Only the first farm – Garrison-Trotter - actually tested (successfully) the BPDA review of a sketch. All the other farms were designed by a professional landscape architecture consultant – Keith Zaltzberg-Dresdahl and his company Regenerative Design Group - who are knowledgeable about urban farms in general and in Boston in particular, and have led the design process, produced necessary drawings and supported the construction. Hiring experienced professionals is highly valued and can guide the process from Goals Articulation through Construction.

## Goals Articulation

The purpose of goals articulation is to define the essential requirements and desired elements to be incorporated into the farm. This includes the needs of the farmers, property manager, volunteers and other users of the site, and should consider neighbors, customers, governing agencies, and other stakeholders.

Goals articulation addresses the **functions and purposes** of the farm, rather than **things**, such as particular materials, structures, or farm objects. It is the process of considering how the farm should perform in the short-term and the long-term. This first step clarifies the vision, and provides a point of reference for the rest of farm planning process. It may also help identify new opportunities, leave less to chance, and ensure that the vision for the farm is realized. These are important and pragmatic benefits of the design process.

**Sample Goal:** "Grow Healthy Food for Local Sales and Distribution Year-round"
Sample questions to articulate the goal:

- What are the top 5 priorities of the farm?
- Will the farm have other uses in addition to food production? If so, what?
- What (kinds of) crops are planned for this site?
- Are crops grown for sale at market? To restaurants? Other types of customers?
- Does the farm need a business plan?

Articulated Goals are statements, for example:

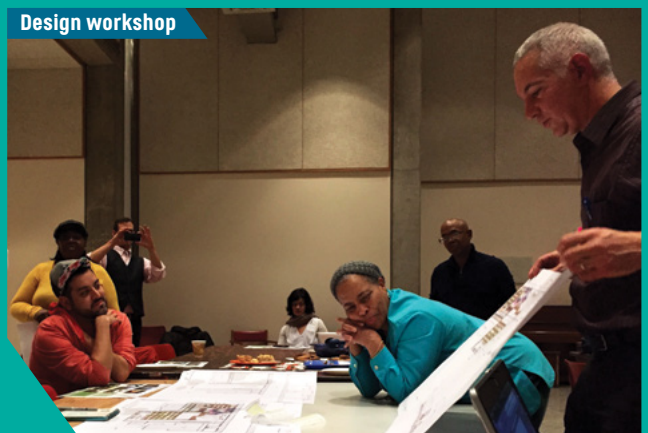
- The farm is a production farm where harvests be delivered to a local restaurant and farmers market
- The farm sustains itself financially
- Production is managed by 2 full-time, 3 part-time seasonal employees, with the help of volunteers
- Tours and workshops provide opportunities for agricultural education

## Farm Design – Participatory process

The best design comes from an inclusive process that gets ideas and hears concerns from a wide range of people.
At the same time, the idea of providing a complete slate – all the components that a farmer needs to get started – and offering the farmer a place that can be tailored to their particular needs has benefits, especially as a commercial farm is a visual and social amenity in a neighborhood more than it is a public space.
A design must incorporate all the regulatory requirements of Article 89 zoning, the building codes, BPDA design review, BWSC water connection and storm water codes and Public Health soil requirements. Some locations may have additional requirements.
Over the past few years, working with Regenerative Design Group, our farms have become more streamlined and cost effective to build. But it could not have evolved without the involvement of neighbors and farmers in design workshops and review.

Tommy's rock site visit

Design workshop



## Program for Site Development

Once goals have been articulated, the next step is to name the specific activities and uses of the farm and what's needed to make them happen. The program specifies the nature of each activity and how form (size and shape) can connect with function. As with the Goals, the Program will guide the design process to ensure that the essential uses of the site are continually informing and driving the design and become well-accommodated in the plan. A program can be a written document with associated technical information as in the Sample (Appendix 6).

**Program Elements:** Identify the key activities and uses of the farm, what they entail, and how they will work together, for example:

- When will key activities and uses occur? How often, and for how many people?
- How will resources such as space, time, money, and labor will be allocated to the different elements of the program? (For example, an Educational Farm might allocate more resources to gathering and learning, and less to food production)
- How will these uses work together and with the farm's goals?

**Sample Program Element:** "Season extension for food production"

**Infrastructure and facilities:** Identify the basic physical and organizational structures needed to accommodate program elements:

- What infrastructure and facility specifications are needed to serve programmatic goals?
  - How big?
  - How many?
  - What kind, etc.?

**Sample Infrastructure:** 24' x 30' Nor'easter Greenhouse with corrugated polycarbonate glazing for season extension; a table that seats 10 people; a shed that can hold [name its requirements]

## Program & Site Analysis

With your goals and program defined, the next step is to analyze these program elements in relation to the site to understand how it will accommodate the desired functions, purposes, activities and uses. Certain information is almost always needed (some of which will have been gathered and examined during the site analysis) such as property boundaries, topography, solar exposure, existing buildings & infrastructure, vegetation, soil, and water access.

**Program Element Analysis:** Identify the physical conditions, arrangements, proximity and connections to other elements, or outside resources needed by each program element to perform optimally:

- Does the tool shed need electricity? What about vehicular access?
- Does the outdoor classroom need shade in the summer? Does it need lighting at night?
- How much sun do the raised vegetable beds need? Will both wheelbarrow and vehicular access be needed? Should they be located close to the street, or hidden from view?
- What are the adjacent uses that may enhance or inhibit location of functions?

**Sample Program Element Analysis:** The greenhouse requires full sun exposure, wheelbarrow and vehicular access, water for irrigation and electricity for ambient and grow lighting.

**Site Analysis:** Gather essential data about the physical conditions, zoning and other regulations, and character of the site that will significantly impact the farm design:

- Is the site flat or sloped? If sloped, is it gentle, steep, undulating, etc.?
- What is the sun and shade like? What are the annual highs and lows of direct sun?
- Where is the water source for irrigating the outdoor crops?
- What existing trees and shrubs are on site and how will they affect the plan?
- What land uses and activities are legal on this site?
- What are the zoning setbacks?

**Sample Site Analysis**: There are sufficient full sun areas for a greenhouse location that willl also allow wheelbarrow and vehicular access and water for irrigation?"

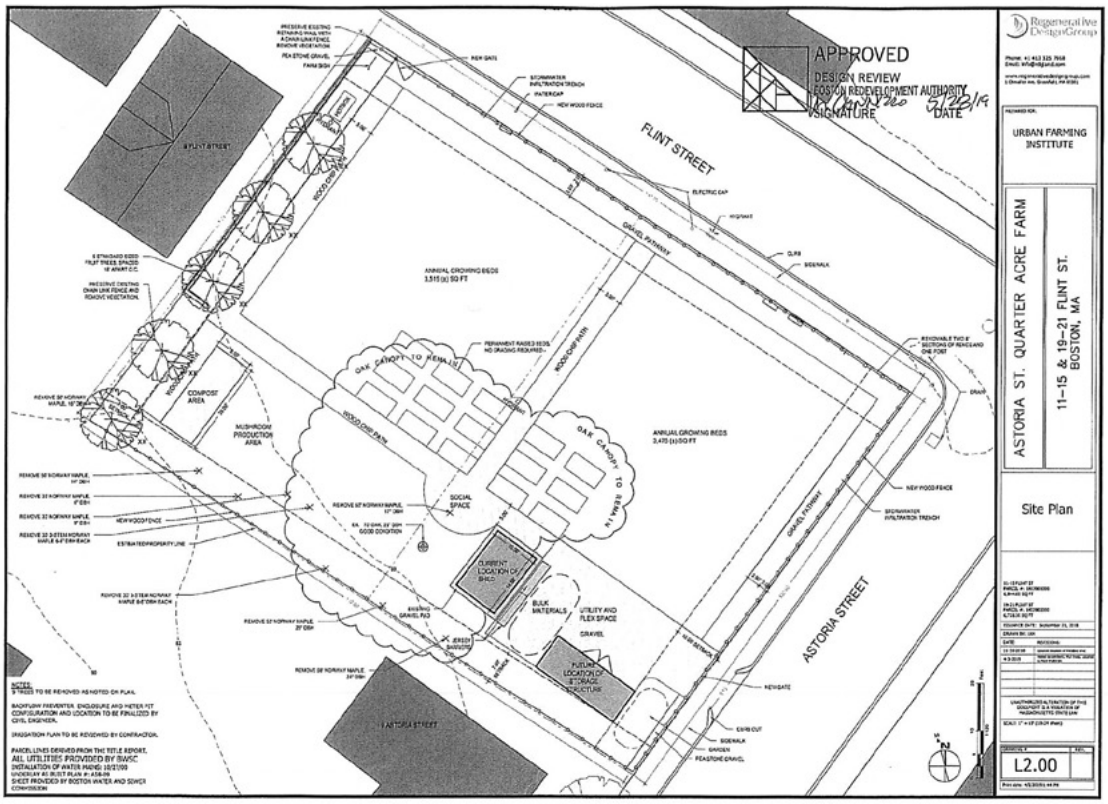
# Site Design Development

By this stage, knowledge has been building of the farm's goals, uses, and needs, and of the site characteristics and conditions. The design process imagines different patterns of form and activity on the site, considering how each "schematic" will suit the goals and program. It may be a creative outpouring that explores all of the possibilities drawn in plans, sections, diagrams, perspective sketches, and possibly a 3D model.

Design work may be done on layers of trace paper over an image of the site, for example, a site survey, an orthographic photo, or a base map. The image should be accurate and at a known scale, so that the forms and activities of the design can be placed and proportioned correctly.

The process of illustrating and considering the possibilities prompts the designer to continually revisit the goals and program. Therefore, it is a circular, iterative process, rather than a linear one, leading to the development of one or more complete "schematic plans" showing the arrangement of buildings, plantings and production areas, paths and driveways, storage, etc.

**Sample Design Development Exercise:** "If the greenhouse flanks the southern property boundary where the solar access is best, the driveway will need to be extended, creating access across the site."




Sample of plan submission to BPDA for Comprehensive Farm Review

# Approvals to Usable

**Permitting**
Regulator Agency Reviews

**Construction**
Building the Farm

**Production**
Growing Food

# Permitting

While Article 89 provides some guidance for regulatory review, its focus is primarily on its (BPDA) own responsibilities and less on the other agencies that interact with the farm site development process. It is also noteworthy that there are fewer regulations from BPDA for a farm smaller than 10K square feet and more for those larger than an acre. To date, our target size falls between the two at around 13 – 14,000 SF, which is the assumed size in this section – large enough to call for CFR, not so large as to require additional zoning review. Below are the typically required reviews for this type of farm.

Other types of activities or farms that may require additional zoning review or review by other agencies include freight containers, aquaponics and aquaculture, bee keeping, chickens, some composting, Historic district.

### Permitting Agencies and Review in Boston:

- Boston Planning and Development Agency: Comprehensive Farm Review (CFR) and sign review
  - Site plan review of all elements of the farm for conformance with Article 89
  - Review of location and details of required informational sign
- Boston Water and Sewer Commission: Water connection and Stormwater management
  - Engineered plans of water connection from street supply to on site hot box
  - Engineered plans to show required storm water retainage and drainage
- Inspectional Services Department: Use of Premises permit for farm development; Building permit for regulated structures
  - Submission of approved plans to receive a "use of premises" permit for site construction and/or for a "building permit" for e.g. a greenhouse or other structures
  - Inspection and sign off to permit "occupancy"
- Boston Public Works
  - Sidewalks, street lights, curb cuts
- Boston Public Health Commission
  - Soil Safety Compliance Certification

## Construction

While UFI farmers can claim the dubious honor of having built some of the pre Article 89 farms, as well as a portion of the first farm – Garrison-Trotter – to be developed under Article 89, the DIY impulse is not conducive to the CLT purpose to turn out fully complete farms for lease by new farmers. The intent is to create the platform for farmers to farm and leave the development and building to others, and a landscape contractor has the appropriate equipment, suppliers and experience to perform this work. It is also highly recommended to involve a landscape contractor through the design process in so far as possible. The "Construction Documents" act as a contract between the owner and the contractor, detailing the scope of work, key design decisions, specifications, cost, timeline, etc. Together the contractor and CLT staff in charge of the project are partners, but the CLT staff should oversee construction by double-checking plans and execution of work with the contractor on a daily basis.

UFI has worked with David Hurst Landscape & Site Services on three farms. Working with the same contractor and standardizing aspects of farms allows the drawings and specs to be "lighter" in detail since the team knows the way the work should proceed.

## Production

At last! The process of design development and site construction is complete. May you realize the invaluable reward of planning and design with an optimally performing farm, in which your systems run smoothly, your maintenance is manageable, and your yields are abundant!

# Appendices

1. Roots of Boston Farms CLT

2. Site analysis checklist

3. Sites list

4. Sample construction budget

5 Sample schedule

6. Sample program

7. Design workshop

# Appendix 1.

## Roots of the Boston Farms Community Land Trust

2016 Application to (X) Foundation (excerpt)

Community Land Trusts (CLT), distant cousins to Conservation Land Trusts, were specifically and deliberately created to address social and economic inequity based on communitarian models of land (distribution/holding/control) from Israel and India. A significant underlying principle is that land is part of "the commons," natural resources that benefit all members of society and, therefore, should be held in common rather than private ownership. A radical notion in a country where wealth is embedded in private property, but some people refer to the New England town "commons" as a precedent.

Many decades in the making, the CLT model was first put into practice with the founding of a five-thousand acre farm and agricultural cooperative called "New Communities" near Albany, Georgia in 1969. In the face of Jim Crow discrimination, African American farmers were losing land and their life-long livelihoods. At New Communities, African American farmers were able to lease individual plots and participate in the democratic governance of the CLT. By 1972, the movement founders wrote down the first guiding principles of the CLT in a handbook, but it was another decade before there were significant new examples which were adaptations of the model.

1980 saw the emergence of what has become the prevailing model and purpose of CLTs in the United States – to protect affordability of housing in cities. The Community Land Cooperative of Cincinnati was established to assure permanent affordability of homes in the face of growing urban gentrification and displacement. With the exponential rise in urban property values in the last twenty-five years, there has been a concomitant growth to more than 250 CLTs in cities across the US. In a CLT, the land is owned in common through the CLT; the improvements (typically housing units) are leased through very long term leases that can be traded among individuals. By removing the land and limiting profit on the improvements, affordability can be maintained when improvements and leases within the CLT are bought and sold. Through the work of the Institute for Community Economics, the Schumacher Center, Burlington Associates and a few other organizational offshoots of the work of the founders of the CLT movement, the model has been honed and adapted to the urban priority of affordable housing preservation to avoid the displacement of lower income urban residents as gentrification has swept through cities. The principle of governance is that everyone has a voice and no one has a majority. In the classic form of CLT, the board is drawn from the users of the land, residents of the catchment area and those protecting the public interest.

As urban agriculture has emerged, land tenure has been cited consistently and persistently as both a significant challenge and a vital component to the success of the industry and movement. Urban land is costly to acquire and develop. CLTs, with their dedication to the stability of low income urban neighborhoods, began to step into the void by helping farmers acquire farmland and holding it in their CLTs, providing access to farmers through long term leases. Our collective research reveals that this will be the first urban CLT formed to hold and support commercial urban farms.

# Appendix 2.
## Site Analysis checklist

TheUrban Farming Institute of Boston / Boston Farms CLT
Site Analysis checklist

**Baseline information**
Address and neighborhood
Zoning district
Acreage and dimensions
Ownership/deed restrictions/easement
Preparation needs & cost

**Natural conditions**
Tree cover
Undergrowth
Invasive species
Ground water and surface water, wetlands
Soil and drainage i.e. geology
Slope
Exposure
Shadows/context – trees and buildings

**Urban conditions**
Previous use
Adjacent uses
Existing Structures on site
Utilities (water /power) supply
Street lighting
Transit access
Vehicular access and street parking
Existing curb cut
Nearby (two block radius) community gardens or farms
Security

**Social environment**
Neighborhood interest or support
Community Organizations
Block Association
Business owners
Abutters and Neighbors

**Political Environment**
Elected officials
Neighborhood Liaison
Potential competing uses for the site (city or neighborhood)

(updated 20.10.31)

# Appendix 3.

## Boston Farms CLT Farm Sites - Dec 2020

**Garrison-Trotter Farm -** 225-227 Harold Street, Boston

- First farm completed under Article 89 zoning amendment
- Developed in partnership with TPL, first farming season 2015
- Transferred to Boston Farms CLT 2020, leased to UFI
- 12,668 square feet

**Astoria Quarter Acre Farm -** 15 Flint Street, Boston

- UFI temporary farm completed 2017
- Construction funded by CPA / DND
- Construction completed 2019, first farming season 2020
- Transferred to Boston Farms CLT 2020, leased to UFI
- 13,721 square feet

**Tommy's Rock -** 1-3 Akron Street, Boston

- Greenhouse construction 2017, funded by MDAR
- Water connection, farm beds and site work 2018-9
- Transferred to Boston Farms CLT 2020
- First farm leased to new farmers 2020
- 13,637 square feet

**Glenway -** 131 Glenway Street, Dorchester

- UFI farm since 2013
- Transferred to Boston Farms CLT 2020, leased to UFI
- Slated for upgrade to Article 89 standards.
- 11,433 square feet

**Westville -** 100-106 Westville St., Dorchester

- First private donation
- Transferred to Boston Farms CLT 2019
- Development pending funding grant
- 5,600 square feet

# Appendix 4.

## Sample Construction Budget

Sample budget based on Astoria Quarter Acre Farm 2019-20
Design and Construction only (i.e. not outreach, acquisition, CLT admin)

### SOURCES

**Source**

| | |
|---|---|
| DND Grassroots Fund (pre development) | $24,550 |
| Youth Build Boston shed (in kind) | $10,000 |
| Community Preservation Act Grant | $135,000 |
| City of Boston water connection (in kind) | $50,000 |
| TOTAL | $219,550 |

### EXPENSES

**Soft costs line items**

| | |
|---|---|
| Landscape design & Cons't support | $28,550 |
| Utility surveyor | $3,000 |
| Civil engineer (stormwater & water connection) | $6,000 |
| CLT project management | $8,000 |
| Land survey; Property Line staking | $4,500 |
| Soft costs total | $50,050 |

**Construction line items**

| | |
|---|---|
| Water Connection | $40,000 |
| Tree removal and stump grinding (12#) | $12,000 |
| Site demolition, excavation, disposal, prep | $25,950 |
| New soil delivered and spread (480 CY) | $27,050 |
| Aluminum edging around beds 300 LF | $4,500 |
| Gravel paths and driveway | $10,375 |
| Stomwater infiltration trench | $5,000 |
| Planting (material and labor) trees & shrubs | $6,000 |
| Fencing and gates 375 LF | $18,375 |
| Shed | $10,000 |
| Sign | $1,000 |
| Misc fees | $1,500 |
| Pest control report | $2,500 |
| Site Furniture | $2,500 |
| Construction subtotal | $166,750 |
| 10% construction contingency | $16,675 |
| PROJECT TOTAL | $216,800 |

# Appendix 5.

## Sample Schedules

Farm Site Development
(planning schedule) 2/4/21

Notes

1. Outreach and engagement with neighborhoods, organizations, agencies and individuals to identify suitable lots.
2. Each piece of land will need to be reviewed, analyzed and agreed upon.
3. May be difficult or impossible to get any funding until site control can be demonstrated; acquisition from the city will include community meetings.
4. Funds are usually raised per project; cash or loan fund can bridge btwn fund commitment and grant distribution.
5. Design/VE/permitting can be off season activities. Design and engineering includes farmer and neighbor meetings for comment and refinement of design.
6. Construction season and growing season are same with perhaps a bit more flexiilbity in the construciton season (some aspects) completing a farm at the end of the fall puts it to bed for winter; preferable to having a farmer plan and prepare for a farm that is delayed by funds release or unexpected construction obstacles or preferable if water connection installation best precedes site construction work.

| | Notes | Ongoing | Year 1 | Year 2 | | | | | | | | | | | | Year 3 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May |
| **Pre-development** | | | | | | | | | | | | | | | | | | | | |
| Boston Farms outreach | 1 | | | | | Growing season | | | | | | | | | | | | Growing season | | |
| Boston Farms site due diligence | 2 | | | | | | | | | | | | | | | | | | | |
| Boston Farms internal approvals | | | | | | | | | | | | | | | | | | | | |
| Acquisition | 3 | | | | | | | | | | | | | | | | | | | |
| **Alternate 1 - funds available** | | | | | | | | | | | | | | | | | | | | |
| Funds raised | 4 | | Prelim | | | | Award | | | | rec'd | | | | | | | | | |
| Design and Engineering | 5 | | | Schematic design and review | | | | | design dev / CDs | | | | | | | | | | | |
| Estimates and VE | 5 | | | | | | | | | | | | | | | | | | | |
| Article 89 CFR by BPDA | 5 | | | | | | 45 days max | | | | | | | | | | | | | |
| BWSC review and permitting | 5 | | | | | | | | | | 6 weeks | | | | | | | | | |
| ISD review and permitting | 5 | | | | | | | | | 4-6 weeks | | | | | | | | | | |
| Construction / inspections | 6 | | | | | | | | | | | | | | | | | | | |
| **Alternate 2 - delays in approvals or funds needed to proceed** | | | | | | | | | | | | | | | | | | | | |
| Funds raised | 4 | | Prelim | | | | Award | | | | rec'd | | | | | | | | | |
| Design and Engineering | 5 | | | Schematic design and review | | | | | | | design dev / CDs | | | | | | | | | |
| Estimates and VE | 5 | | | | | | | | | | | | | | | | | | | |
| Article 89 CFR by BPDA | 5 | | | | | | 45 days max | | | | | | | | | | | | | |
| BWSC review and permitting | 5 | | | | | | | | | | | | 6 weeks | | | | | | | |
| ISD review and permitting | 5 | | | | | | | | | | | 4-6 weeks | | | | | | | | |
| Construction / inspections | 6 | | | | | | | | | | | | | | | | | | | |

# Appendix 6.
## Sample program

**Sample Program for a Quarter acre Farm**

This is primarily a functional description of the different parts of the farm and suggested square footages and perhaps some desirable adjacencies. (For purposes of this manual, it includes some annotations and commentary)

**Introduction and Intention**

The farm will be a commercial production farm with maximum area given to growing and include areas to prepare, store, process and sell produce of the farm.

**Access**

Farms need passenger vehicle and truck access for dropping loads of soil or other bulky supplies, picking up produce or simply for off street parking. The "driveway" can also serve as a staging and storage area. It's a lengthy process to get a new curb cut location approved so an existing curb cut usually determines the drive on location. The driveway needs a lockable gate as wide as the driveway.

| Area or space | Net SF | # | Location | Comments |
|---|---|---|---|---|
| Parking / Loading / Staging & Storage | 200 | 1 | Existing curb cut | Parking likely to be req'd by zoning unless underlying<br>Need space for soil / wood chips etc delivery and storage |

**Growing**

It is a production farm so it is desirable to maximize the amount of farmable area. Soil requirements are regulated. Usual practice is to excavate 18" , lay down a bio barrier and bring in new tested growing soil for all growing areas. Access paths surround the growing beds, typically delineated with wood chips. Farm beds are typically 4' wide (measured from center line to center line of the paths) x 25-30' long. A couple of areas should be designated for compost as it is often desirable to rotate locations over time.

| Area or space | Net SF | # | Location | Comments |
|---|---|---|---|---|
| Growing beds | 10-15,000 | | | Maximize growing area for production |
| Compost | 100 | 1-2 | Multiple | Location regulated by Article 89 |

**Farmer Support**

It is a production farm so it is desirable to maximize the amount of farmable area. Soil requirements are regulated. Usual practice is to excavate 18" , lay down a bio barrier and bring in new tested growing soil for all growing areas. Access paths surround the growing beds, typically delineated with wood chips. Farm beds are typically 4' wide (measured from center line to center line of the paths) x 25-30' long. A couple of areas should be designated for compost as it is often desirable to rotate locations over time.

| Area or space | Net SF | # | Comments |
|---|---|---|---|
| Storage shed | 120 | 1 | Must be < 120 sf or separate ISD bldg permit req'd; setback according to zoning |
| Composting toilet(s) | 50 | TBD | For farmers / volunteers, curtained area in shed |

**Harvesting and Processing**

Depending on needs, can use driveway / staging area but preferably separate area.

| Area or space | Net SF | # | Location | Comments |
|---|---|---|---|---|
| Processing station | 150-300 | 1 | | Cool shady area, requires water |
| Produce storage | | TBD | Shed | Temperature controlled if long term (needs power) |

**Distribution**

If sales to be carried out at the farm

| Area or space | Net SF | # | Location | Comments |
|---|---|---|---|---|
| Farm stand | 100 | N/A | Street | Seasonal structure only per Article 89 |

**Infrastructure**

| Area or space | Net SF | # | Location | Comments |
|---|---|---|---|---|
| Water "hot box" | 10 | 1 | TBD | Water connection from street, feed to spigot(s), BWSC permit |
| Stormwater retention | | | | Typically perimeter gravel trench, BWSC permit |
| Rainwater catchment | | | | Neighboring building or shed; Provision optional |
| Trash & Recycling | | | | Provide facilities for temporary storage |
| Passive seating | 100 | | | Visitors, staff and volunteers |
| Bike Rack | | 1 | TBD | Farmers and visitors, provision optional |
| Perimeter fence/gates | | | | Fence up to 6 feet permitted with out ISD permit, locked gates for vehicles and peds |
| Information sign | | | | Req/d under Article 89, regulated by BPDA |

# Appendix 7.

## Urban Farm Design Workshop 2015

# URBAN FARM DESIGN BASICS

Prepared For

2018 Urban Farming Institute Conference
March 16-17, 2018

Presentation By

**Keith Zaltzberg**, Principal Designer
Regenerative Design Group

**Barbara Knecht**, RA, Project Leader for
Urban Farm Site Development
Urban Farming Institute of Boston

Regenerative DesignGroup

URBAN FARMING INSTITUTE

# 1. Introduction

## Design a Farm?

We all design. Unconsciously or consciously, we all make decisions about our environments and our things; we arrange and rearrange and plan and dream. Designers, such as landscape architects and architects, are professionals who make conscious decisions, usually with experience and technical knowledge about the consequences and feasibility of different decisions. And every designer relies on the invaluable experiential knowledge of the user of the design.

All farms are designed. Unconscious decisions mean some farms "just happen." Successful farms are designed deliberately. Decisions need to be made about the size, shape, and location, and relationships between all of the components of the farm.

A few questions to start your thinking about design:

- What is the area and arrangement of planting beds, and location of sheds or other structures?
- Where do people and vehicles enter, how do they move around the site?
- Where is best place for the compost and storage? What should it be near and what should it be far from?
- Where does the water come from, and how it is distributed? How much is needed and when?
- Is a toilet needed and feasible? What about electricity?

Decisions about the location and relation of these farm components will impact how well your crops grow and will determine the ease and efficiency of running your farm. Design is how a place works as well as how it looks.

These decisions are made in the context of planning, zoning and construction regulations a town or city has for any development within its boundaries. In the end, a farm is as much an urban development project as every building, park, playground, factory or store.

As farmers, farmer advocates, and farming enablers, we are all contributing to the knowledge base about urban farm design. Developing literacy around the processes of design and development in the urban context is the goal of this workshop. We don't expect – nor even encourage – every farmer to design or develop their farms alone. We do encourage farmers to be critical and valuable partners, participants and decision makers in the design and development process.

With a working knowledge of the complexities of developing urban lots for urban farms in cities, farmers can be prepared for the time, cost and – frankly – hassle of the process. Our goal is to enlighten and educate so that together, we can make the best decisions, as well as collectively advocate for reasonable regulations and a streamlined process for the creation and successful operation of urban farms!

# 2. Development Process

## 1. Predesign Phase

This phase encompasses a thorough site analysis and engages project stakeholders to develop a clear design program that responds to the site and provides for the needs of those involved with the project.

The activities of this phase help you understand your site, the regulations that apply to its development, and work with the larger community. This phase may include public forums and workshops, depending on the needs of the project and requirements of the permitting agencies.

A. Research Local Resources
B. Organizational Capacity Building + Visioning
   i. Stakeholder Meetings
C. Site Analysis + Assessment, Due Diligence
D. Design Program Development

## 2. Farm and Systems Design

This phase develops a clear set of drawn and written instructions to direct the planning, permitting, and construction of the project.

A. Conceptual Design: Rough sketch of activity nodes and farm components. Often several alternatives are developed.
B. Design Development: Refined plans and supporting documents to obtain permits and construction cost estimates.
C. Construction Documents: Detailed plans with all of the dimension and materials information for a contractor to install.

## 3. Preconstruction

During this phase, a qualified Site Contractor is selected and all necessary permits are finalized. Final design revisions will be made during this phase based on input from the Contractor, Site Developers, and Reviewing Agencies.

Contractor Selection

A. Utilities
   i. Water + Sewer
   ii. Electrical
   iii. Site and Earthworks
   iv. Building/Greenhouse
B. Permitting: Check your local zoning and building regulations. Examples of applicable permits include:
   i. General Construction Permits:
      a. Sidewalk Obstruction
      b. Utilities: Trenching
      c. Stormwater Management and Water Connection
      d. Building Permit (Greenhouse, Farm, Shed)
      e. Any Special Permits for Construction
C. Local Jurisdiction Reviews
   i. Article 89: Comprehensive Farm Review (Boston)

## 4. Construction Phase Support Services

During this phase the construction is in process. During construction, ongoing activities include permit coordination, troubleshooting and design modifications, and facilitation of neighborhood relations during construction. On-site oversight is often necessary to ensure that the construction methods and conditions match those described in the Construction Documents.

A. Site Construction/ Farm Construction
B. Permit administration
C. Construction Observation
D. Troubleshooting and Design Modifications
E. Stakeholder-Community Relations

# 4. Context Analysis

## Regional and Neighborhood Characteristics

No farm exists in isolation from its context. Zoning regulations, distance to markets, public transportation, and wetlands can impact the final design of a farm. The analysis topics should support the goals for the farm. The analyses can be used to determine the feasibility of a site for the project, or the feasibility of a project for a specific site.

Some of the analysis topics to consider at a neighborhood or regional scale are:

### Physical Environment

- Utilities: What utilities are available in that neighborhood? Are they private or public?
- Accessibility: Is the site accessible by public transportation, by car, by foot, or by bicycle?
- Wetlands: Is the site within a regulated wetland area (river or wetland buffer)?

### Social Environment

- Neighborhood Farms: Are there other farms in a two mile radius? How does your project differ/complement their work?
- Community Organizations: If relevant to the goals, what potential collaborators exist in the neighborhood?
- Business Owners: What businesses might be potential sponsors or clients?
- Competing uses for the space: Does the site have other clear benefits or values such as housing or play space?
- Safety: Do you anticipate safety concerns? What level of security will you need to protect infrastructure, crops, and personnel?

### Market Analysis

- Food Accessibility: Is the neighborhood well supplied with food stores? Is there a local demand for what you are growing?
- Clients /Customers: Who will be purchasing products from the farm? How far will they or the product need to travel?
- Participants / Workers: Who will be participating in work or programming at the farm? How far will they need to travel? What do they expect to gain from participating?

### Regulations

- Regulatory Landscape: What is the zoning district? Is farming permissible? Light industry? Animals? Composting?
- Development: What requirements do new developments require (stormwater, setbacks, utility hookups)?
- Health Codes: What health codes are applicable for your marketing, food processing and employment needs?

# Exercise: Site Evaluation Field Exercise

"Goals guide the Site Analysis, the Site Analysis discovers the Design." -Dave Jacke, author Edible Forest Gardens

## Introduction

Not every site is cut out to host every farm. To determine if an available parcel is the RIGHT SITE for YOUR PURPOSES, be systematic, deliberate, and discerning. By carefully evaluating the characteristics of the available site, you will have a better sense of how complex the development and operations of your farm will be.

## Begin with Purpose:

Review your description of your Farm Purpose. Now imagine you have been offered the Westville Street site to build or expand your farm business/organization.

## Needs:

Imagine the site characteristics you will need to achieve your goals. Most small, ground-level farms that focus on growing annual vegetables require the following characteristics:

- Level or gently sloping land for tilled beds, paths, storage, and meeting space
- Water (1" /week) for 6 months per year
- Sun to grow annual vegetables (more than 6-hours/day during the growing season)
- Site access for pedestrians, farmers with wheelbarrows, and occasional delivery trucks

## Analysis and Evaluation:

Start with the things that are hardest to change and move to those that are easiest. Remember to distinguish between your Observations (measurable like size) and Evaluations (how this characteristic will affect this farms purpose and goals).

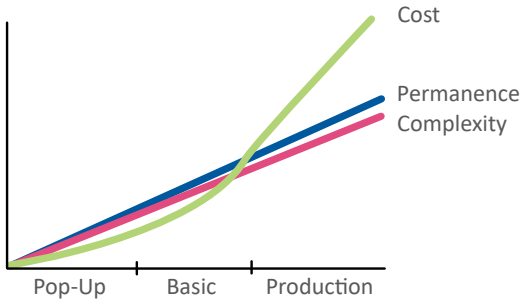
For each of your observations or groups of observations, evaluate how suitable this is for your purposes. For example, in thinking about Sun and Shade, ask 'is there enough sun on your site to suit your purpose? Can you change that? How difficult would that be? What other implications would this change result in?

- Slopes and Flat Areas (on your map, sketch out the location and shape of slopes and flat areas)
  - » Describe the general landform of the site (is it very steep, flat, or a combination?)
  - » Aspect of the slopes (cardinal direction the slope faces)
  - » Where is the top and bottom?
  - » How big are the flat areas? What percent of the site do they occupy?
- Water (existing infrastructure, low spots/puddles, erosion channels)
  - » How much rain falls on this site during a season?
  - » When does it come? Month by month?
  - » Is this precipitation enough to grow the crops you envision?
  - » If not, where will irrigation water come from? Is rainwater collection an option?

# Exercise: Site Design

## Putting the Pieces Together

Farms are made up of many components. Here are a list of combinations of components, starting from the very least you need to be able to grow (pop up or temporary farm) and increasing in complexity, permanence, and cost to a fully functioning basic farm, or a highly efficient productive hub farm. The level of complexity and permanence you design for will depend on your budget, the site characteristics, and the purpose of your farm.




Use the base-map and scaled components provided on page 11 to create a site design for a new farm.

### Pop up

- What do you need to start growing?
  - » Growing beds
  - » Water source
  - » Access point

Pop-up level urban farm. Image: Urban Farming Institute, 2017

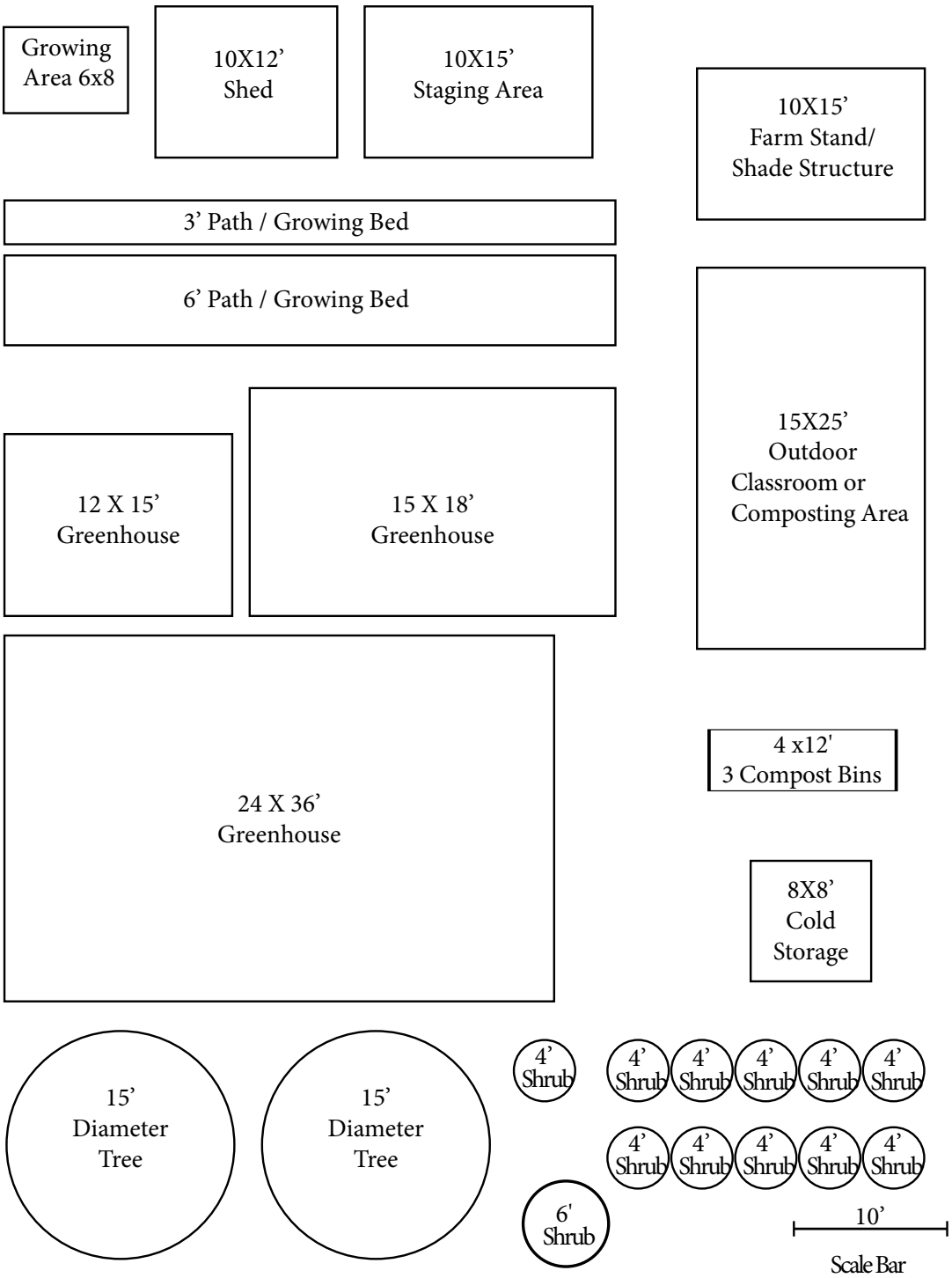
### Basic

- What can you add to make your farm more efficient?
  - » Shed
  - » Staging / processing / gathering area
  - » Paths
  - » Fence and gate
  - » Hoop House / Hoop Tunnel

Basic level urban farm. Image: Gardening the Community

### Production farm

- What components will boost efficiency, yield, and profitability?
  - » Farm stand / shade structure
  - » Greenhouse
  - » Produce storage
  - » Screening / trees / perimeter perennials
  - » Signs
  - » Toilet
  - » Water catchment and storage system
  - » Permanent processing station
  - » Outdoor classroom

Production level urban farm. Image: ReVision Urban Farm

# Exercise: Urban Farm Components