URBAN AGRICULTURE - Redefining urban communities through local growing

by

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AUTHORS DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

In our ever changing world we must constantly look to new ways and new means. Waiting until a change is necessary for our survival is dangerous and costly. Our environment and our communities do not need to be thought of as independent entities. They can work in symbiotic relationships that are mutually beneficial. Sometimes the best solution is the simplest. Urban Agriculture is an ancient practice that once ensured the survival of the practitioner and the community. Like most tried and true methods, urban agriculture, makes obvious sense in our changing world. In response to the needs of the community and juxtaposed against ridiculous development urban agriculture practiced in dense, highly populated places can help to redefine and strengthen communities, people and place. It can encourage health both mental and physical, it can establish food security, it can generate economic strength and it can create self sufficient communities.

Urban agriculture is possible and requires less work than most would think. Local growing makes sense and has proven to be a smart choice for both producers and consumers. Urban agriculture is a new trend in North American societies that should be pursued and encouraged.

ACKNOWLEDGEMENTS

This thesis is dedicated to all those people who helped me get to where I am today. Without the support and encouragement of my parents I would not be the person I am today. My Father taught me logic and determination, my Mother taught me empathy and patience, they both taught me imagination is a good thing. My friends practiced each of these qualities while I endeavored on this journey and I thank them for this.

Thank you Erin, Michelle, Eric, Adam, Chris for being there to challenge me. Thank you to Scott and Jackie for tolerating me.
Thank you to Robert Jan for your assistance and the ever helpful staff at the School of Architecture. I would also like to thank my Advisor, Thomas Seebhom and my committee, Michael Elmitt and Doctor Stephen Murphy.

Finally, this thesis is dedicated to the one person who made all of this possible - Sarah. Without you this would never have been possible.

New Occasions teach new duties;
Time makes ancient good uncouth;
They must upward still, and onward
Who would keep abreast of Truth.
Lo, before us, gleam her camp-fires!
We ourselves must Pilgrims be,
Launch our Mayflower, and steer boldly
Through the desperate winter sea,
Nor attempt the Future's portal
With the Past's blood rusted key

J.R. Lowell, The Present Crisis

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1.0 Introduction

URBAN AGRICULTURE

Redefining urban communities through local growing - Introduction

0.0 Preamble

The very first Garden that comes to mind sat un-assumingly on my grandmother's coffee table. It was simple and small and sported only one actual growing element. In a ceramic white bowl, that was shaped akin to an oyster shell, sat a bed of gravel and peat and one small, but sturdy, Bonsai tree. Probably more a curio and less a tended garden I am sure that my grandmother did little to maintain it. Being young I was first drawn to the garden by what sat in the bowl, on the gravel, surrounding the tree. Little ceramic Asian figures played out everyday roles as the Bonsai tree provided a setting, shade and scale to the entire scene. My world was occupied by the little fisherman who sat on a mirror representing water, the bridge that arched its way over the water, the woodcutter with his heavy burden and the maidens making their way to the temple. All of these little figures provided me with entertainment for hours. It's strange that I still equate, what was basically a knick knack, with the idea of the garden. Maybe it was because that is what my grandmother chose to call it? Maybe it was because the larger connection of nature, and humankind, growth and existence, and the symbiotic relationship was evident in this microcosm; even at such a young age I think the knowledge that all was tied together was an idea I understood implicitly.

The next garden that springs to mind was one that I actually tended as a young man. My parents decided to add an addition to the back of our house in Ottawa. It was a large solarium with ample spots for potted flowers, seedlings and other plants that required heat and sun. It faced south and was kept quite warm through the use of huge windows, skylights and the constantly warm hot tub. Beyond being a great place to take a dip or read a book it was the first stage in what then moved outdoors in the spring. During construction the backyard became almost completely destroyed and what remained was something ready for garden beds and gravel pathways. The gardens held flowers, vegetables and fruits. My job was to help weed and change the earwig traps. At the time I resented having to be a part of something I saw as my parent's pursuit. My tune soon turned as I began to see the results of our work. By the middle of the summer we had so many tomatoes that we had to give them away to neighbours and friends on a daily basis. The zucchini were so huge that we ate them in everything; it's a wonder I don't hate them now. The bounty of the garden was revealed to me that summer. Not that the idea was not already understood but the true power of a little hard work and care was now abundantly evident. If you could put a seed in the ground and take simple steps to provide water and nutrients then you could reap the bounty of the harvest.

The final garden that I remember having any great impact on my life (although I am sure there were many) was when I was 18 years old. Living on my own for the first time and enjoying my freedom I became involved in a strange spiritual and ritualistic form of gardening. My friends and I had convinced someone to rent us their house for a year and we made the most of it. The 3 story semi detached home came equipped with a backyard and alley entrance. Most days and nights were spent experimenting with our new found freedom; to the detriment of our schooling and health. The only reprise in my weekly party came on Sundays when I would slink away to the back yard. The bells of the nearby Gothic church would ring and I would spend the better part of the day puttering around the "Garden" as it existed. Nothing much grew there, at least nothing of much substance, and I spent a good portion of my time trying to determine what was, and wasn't, a weed. There were some bamboo like grasses that grew at an astonishing rate, some nice flowers, a few tomatoes and lots of other things that were of an unknown nature. What was learned about plants in my garden? Well not much to be sure but the meditative nature of the pursuit and the benefits of being outdoors, physically active and occupied served me better than most vacations I've had since. The nurturing ability of the natural world was advanced in my mind. The connection to the environment strengthened and the true benefit of that connection better understood. I can't explain the drive that pushed an 18 year old boy outdoors on a Sunday to play in the garden but I know it was a treasured experience.

1.0 Introduction

"*The trend, now well known, is irreversible; the number of people living in cities will more than double in 35 years. In 1990 the world's urban population stood at 2.4 billion. In 2025 it is expected to reach 5.5 billion, a trend accelerating in the developing countries whose share of the total will rise from 63% in 1990 to 80% in 2025*"
- James Gustave Speth, Administrator, United nations development Programme

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This is NOT a Manifesto

The world is changing. It always is but this time it is a definite change and not just a modification or shift. The way in which our generation, and those proceeding us, understand the earth, our existence on it, and its future is about to drastically change. We have been too reliant on the natural resources that power our world, the way in which we interact with those resources and the idea of the nature of those resources. We live in Suburbs and use our oil powered cars to drive everywhere, we heat our homes and make our electricity with natural gas, our goods are produced on the other side of the world and shipped to us, our palates have grown greedy for the exotic which we have delivered to our door. This isn't a scare tactic, or and admonishment. This is common knowledge; a state of existence that isn't going to develop, it is reality. Read, watch or speak to experts in the field and they will tell you that the resources we rely on everyday are about to peak in production or have already. After the peak comes depletion. If we can no longer locate and harvest the same amount of these natural resources, or better yet an increasing amount of these natural resources, then logic dictates that we are only depleting what is available. Natural gas is said to have already peaked, oil is estimated to peak within the next 20 years. Pessimists say 5-10 years, optimists quote 20 years, realists say that it doesn't matter if it is 1 or 30 it is still inevitable. Once again this isn't meant to try and change minds, or convince people to make a change. This is a statement of fact that is based on study, facts and lessons learned from history. Responsibility is like over coming addiction, you can not convince the population to take responsible steps unless they want to .

Therefore the question arises "What does this mean? and what can be done?" Both answers are interconnected. This means that there is an inevitability that must be addressed. That inevitability is that we will have to re-think our existence or be thrown to the dogs. This also means that by beginning that transformation now, instead of when it is almost too late, we can start to turn the tide and prepare for our future. Instead of relentlessly inhaling resources we can learn how to shift our consumption. By putting into place a system that is about change, in effect slipping it in under the radar, we can introduce new ways of living that become excepted and utilized instead of being dismissed as left wing ecological / environmental saber rattling. This is not intended to be a manifesto, or even a cry for help. This is intended as a start, a beginning, a way of addressing the inevitable. No theoretical future or end of the world scenario need be constructed to make the importance of this intent relevant; life itself is the goal.

Many factors need to be considered if this start is to occur. So many things in our world are interdependent that addressing only one factor could mean failure. But the bigger picture and all the factors involved may also be too much to affectively tackle all at once. By choosing a place to begin and by concentrating on a single factor or set of factors the result will be more effective. The energy crisis and the food crisis and the population crisis are all intertwined complex issues that permeate our society and world; by trying to address them all simultaneously the obvious result is complete failure. The goal should be to introduce ideas and solutions that start to reduce the burden of our present existence and change the way we approach our future. These ideas must accept certain necessities based on the inevitable. Our current situation must be changed. We can not rely on or exist in our present living condition. Specific goals must be addressed by the groundwork we create. The intent of this assessment is to reduce the burden on our natural world, the systems in place at present either disregard responsible usage, disregard foresight, or both and can no longer continue to exist as they do. In order to begin this work some ideas must be understood and excepted as wrote. Like the inevitable change in our world the goals of

the project must also be understood as fact. Those involved in this attempt of change must subscribe to the common goals of community, localized living, and reduction of reliance on vehicles, reliance on long distance commerce, conventional energy production, and amenity so common to our present existence.

The goal of this thesis is not to address every consideration of the greater goal but to propose a specific idea that can begin to transform the way in which we live, work and exist. It intends to support local communities, generate resources, and provide learning opportunities and economic opportunities for local self reliance and growth. The intent is to develop not only responsible living habitats but also the communities that support responsible actions. It is my contention that success lies not only in developing responsible living systems but also developing communities that garner independence, nutritional benefits, positive social interactions, education, economic self sufficiency and other factors through the creation of, and in conjunction with, these living systems.

The most basic need in life is the basis for this thesis. Shelter, activity, culture and social interaction are all survival goals. We need protection from the elements, respite from sedentary life style, something to stimulate the mind and someone to share these pursuits with. Most importantly however, and independent from the other necessities, is food. We must eat to survive; all living things need sustenance. Increasingly our society has moved away from eating out of necessity to eating out of desire. This is not a bad pursuit; food is sensual for a reason. However, what comes with this pursuit is increased reliance on the global economy to provide us those foods we have come to expect in our supermarkets. Our food is grown further and further away from where we eat it. If we want apples in the winter they are grown in New Zealand. North American tomatoes are shipped to Europe and European tomatoes are exported to North America. In turn this reliance on a global market means a greater reliance on global distribution, politics and trade. The argument is not that this system must be stopped but that we can begin to change it now instead of when it is too late. Simply stated; we need to grow what we eat locally. The benefits are numerous and shall be expanded on in later chapters but the simple truth is the systems in place to supply our food are not necessary and are detrimental to our very existence. By growing locally and eating locally we can begin to lessen the burden on our natural resources, provide healthy fresh food and supplement both individual and community incomes. There is no reason to rely on farmers in distant lands to provide us our food; we are more than capable of providing this food for ourselves.

No one is suggesting that entire communities give up their homes and move to the country. Indeed the opposite is the crux of this thesis. We are capable of growing locally, wherever that might be, and for most of us that is an urban center. The disconnection with our natural environment that we face as urban dwellers is astonishing. Most people can not fathom where there food comes from or the means to which it arrived at the local supermarket. A cursory review of produce will show that our green peppers come from Mexico, oranges are from Chile, and indeed much of our produce comes from very far away. By re-assessing our local needs and wants we can see that much of what is required is able to be grown locally. More than this the ability to grow locally also provides for the pursuit of higher goals. Not only does growing locally help tackle the increasing burden on our natural resources and provide the basic necessity of food but it also allows for the establishment of healthy eating, healthy communities, economic growth, strengthened community and strengthened community interactions, self dependence, self worth, independence from detrimental systems already in place and independence from government intervention. In short local food growth increases the economic, environmental and social health of communities.

This thesis intends to study the benefits of growing locally on communities and seeks to strengthen these pursuits through the use of architectural form. Planning, infrastructure and other supports will also be assessed and studied. The ultimate goal is to develop an idea of growing locally that can be implemented in any place in the world. For the sake of this thesis a North American community is used as a test case.

1.1 Framework and Goals:

It would be ideal if a thesis about urban agriculture could be tried and tested in a real world scenario. The examples of urban agriculture studied for this thesis are, indeed, real world projects and organizations but the reality is that the bulk of this thesis must be based in the theoretical.

For this reason a theoretical project must be created. The project site is a section of Brooklyn that I have lived in for some time and the theoretical people created for the thesis are based on people I have met and experiences I have had while living in Brooklyn and greater New York.

Much of my thesis is centered on this theoretical project area and I have included sections on Brooklyn and the neighbourhoods involved because their nature and the realities of the area affect many of the design decisions I have made in my thesis. It is only coincidence that , through study, I have come to find out that the history of Brooklyn is rooted in agriculture. The very nature of the crossroads of Atlantic and Pacific Avenues, the theoretical project center, is also rooted in agriculture and food and much of the existing infrastructure exists as a result of this history.

For those that are unfamiliar with Brooklyn New York I suggest that you visit. Urban agriculture can, and should, be practiced in as many urban centers as possible but Brooklyn is an excellent basis for this thesis and an excellent candidate for urban agriculture. Experiencing the place and the people firsthand will serve to solidify the ideas expressed in this thesis and will make evident the assertion that urban agriculture is possible and should be practiced, can be made to work in a dense urban setting and in fact will strive in large areas such as Brooklyn. The population will not only be served by an urban agriculture project but is a needed component for it's success.

Goals:

This thesis seeks to put forth an argument in support of urban agriculture and to prove that urban agriculture is possible and viable Individual goals of the specific sections of this thesis can be described as the following .

1.) Provide a case for the necessity of urban agriculture.

2.) Describe the history and realities of urban agriculture

3.) Describe the basic requirements for an urban agriculture project.

4.) create a theoretical framework for the establishment of an urban agriculture project.

5.) Prove that an urban agriculture project can establish a foothold both physically and economically.

6.) That this project can grow and develop, expand and be reproduced.

7.) That similar projects can be established in different urban centers and be just as successful.

Through the body of this thesis each of these goals will be developed and reached and the final section will be an analysis and conclusion of the thesis and will re-address these goals.



Part 1 – Urban Agriculture Research and Site Research

2.0 Definitions and History of Urban Agriculture

2.1 What it is

Part 1 – Urban Agriculture Research and Site Research

2.0 Definitions of Urban Agriculture

2.1 What it is

"*The production of food and nonfood plant and tree crops, and animal husbandry, both within and fringing urban areas (UN Organization for Economic Cooperation and Development 1998)***"**

The Definition of Urban Agriculture seems simple. It is most basically growing food in an urban locale. What then separates it from the backyard garden, allotment, or community garden? The simple answer is nothing. Indeed these are all forms of Urban Agriculture or, in the least, localized growing in an urban core. Honestly there is not an obvious division between the backyard garden and the community garden, the allotment and the urban farm. More than a literal definition based in terminology there is a division based on intent. The backyard garden serves as a hobby or a means to supplement grocery costs for a family. The Allotment might just as well be for growing flowers as for growing food. And the community garden can act as a place to grow food or flowers or an aesthetic improvement for a community that hopes to eradicate crime, or poverty or a myriad of other social woes.

Urban Agriculture is, in its intent, created to grow food and earn income. A hobby, tomatoes for a salad and a community center can all be benefits of urban agriculture but are not, and should not, be its primary goals. The Urban Farm takes those functions and results of a typical rural farm and supplants them to the city. The form that these farms take are as varied as their respective outcomes but to be sure they all share a goal of growing food, raising livestock and selling food and food products to earn income in an urban center.

Sometimes the social goals of the project, those intended to serve the community, end up overtaking the goal of income and become the primary focus. Other situations involve existing commercial businesses that locate a function, typically thought of as common place in rural settings, to a city core and still other situations are completely for the purpose of survival.

For the purpose of this thesis the definition that best describes Urban Agriculture is the most basic; growing food for profit in an urban center. The other forms will also be investigated and explained and distinctions between different forms of growing in an urban context will also be explored. For this purpose urban farming can be separated into categories that might better define their similarities and differences.

Income Based Urban Agriculture

Most of the world refers to growing food in urban centers as Urban Agriculture. Do a search of urban farm on the internet and the results are limited. Some refer to the most current form of urban agriculture by the more specific "Entrepreneurial Urban Agriculture" which, in its basic definition, suggests a business with the intent of generating profit and growing and sustaining itself.

"*definitions often specify location (urban, and sometimes suburban sites), activities (such as the production of vegetables and fruits, aquaculture and animal husbandry, or the horticultural production of trees and ornamental plants), stage of production (growth and harvesting, or processing, marketing, and distribution), and purpose (e.g. production for own consumption, or production for sale to others). Thus the concept of entrepreneurial urban agriculture can be broad, not only including the cultivation of food crops in non-rural settings, but processing, marketing and distributing food as well. Producing and selling non-food products such as flowers, trees and fertilizer by community-based organizations can also be found within some definitions.*" (Kaufman-Bailkey_LILP_paper, 2000)

This is the primary goal of the project proposed in this thesis and the reasons will become evident in later sections.



Non Profit Social Urban Agriculture

Many communities initiate urban agriculture projects because they see them as a way to promote community economic growth and create jobs. Other proponents support urban agriculture and see it as consistent with their agendas. Fresh fruits and vegetables provided to the public create food security and better overall health systems. The physical labour involved in planting, tending and harvesting food is great exercise. A farm in a city center becomes a place of social congregation and exchange where youth and adults can find employment and training and expand their own skill set. A community engaged in urban agriculture can become self sufficient, having to rely less on the local government. Unfortunately it seems that when urban agriculture and social activism are combined as two distinct but codependent entities something has to suffer. Some projects have not survived because too much time was given to jobs and training and not enough to farming and sales. Still others must rely on grants and donations but have accepted that profits will be minimal and continue to provide training. Other groups have been successful in creating a sustainable business and training but have had to expand their efforts and move out of the city to survive, even then profits can be modest.

The social and community aspects of urban agriculture should be fostered alongside the economic aspects of a project. Care needs to be taken to avoid favouring one aspect at the cost of another. There is a place for the social and community side of urban agriculture but it needs to be a secondary outcome.

Survival based Urban Agriculture

In many third world and developing countries urban agriculture is less of an experiment and more of a necessity. Growing food along river banks, in disused lots and on rooftops and balconies has become an important part of life for people who have little other resource. Food purchases and living expense can be more than 75% of a family's monthly income. Most people in this situation must grow food or go hungry. In Havana Cuba the local government supports urban agriculture on an almost city wide scale, providing seeds, water, gardening assistance and access to vacant land. With the collapse of the USSR and the continuing US embargo the country has few other options. It is estimated that country wide urban agriculture has helped create 160,000 jobs. (pg 95 eat here) In Argentina the collapse of the economy has meant that once wealthy or, at least, middle class families have had to find new ways to support themselves and do so through growing food. This supplements their income and their diet.

These definitions show the differences between the three distinctions but they all share many of the same goals, aspects and outcomes. Urban agriculture usually takes place on vacant land or vacant space within and urban core, it usually aims to generate a profit or supplement incomes and diet. The people involved are typically middle income to poor and often there are secondary outcomes that benefit the community.

The similarities are numerous and the secondary outcomes myriad. To explore and define them all would be a thesis unto itself. The connections can be easily understood and the depth to which these connections exist is up to the reader to determine. A list of the benefits of urban agriculture and a list of impediments to urban agriculture was included in a paper commissioned by the Lincoln Institute for Land Policy and is as follows.

Benefits:

- Reducing the abundant supply of vacant, unproductive urban land under Management by local governments

- Improving the public image of troubled neighborhoods

- Increasing the amount of neighbor hood green space

- Supplying low income residents with healthier and more nutritious food

- Developing more pride and self sufficiency among inner city residents who grow food for themselves and others

- Revitalizing the poorest neighbor hoods by creating food based employment (particularly for young people) thus bringing more income to residents

- Providing new, non traditional program activities for community based non profit organizations

- Converting the food waste of super markets into compost and fertilizer used in food production

- Reducing food transportation through the greater availability of local produce

- Supporting local and regional food systems in general

Skeptics would list these as current and future impediments to urban agriculture

Impediments:

- Inner city land is too contaminated by the past uses to grow food safely with the cost of cleaning up the land often being prohibitive.

- Few funding sources exist for urban agriculture projects initiated by the resource strapped non profit organi zations

- Key federal agencies, such as the department of agriculture (USDA), and the Department of Housing and Urban Development (HUD), are only remotely attuned to the idea of urban agriculture

(Cont)

- Most city based neighborhood or community development organiza tions lack The interest and know how to grow food, let alone possess the knowledge of how To produce food for urban markets

- Organizations with an interest in the capacity of urban agriculture would encounter significant difficul ties that would impede their efforts, such as vandalism, a lack of mar kets for selling their products, or a shortage of staff with the necessary Technical knowledge to be urban food producers.

- Support for urban agriculture from city officials is sparse – especially noteworthy are the difficulties expe rienced by project initiators in accessing city owned vacant parcels

- And finally, a lack of consensus exists among participants and observers over what constitutes suc cessful urban agriculture projects

Both of these lists contain aspects that need to be considered at the outset of any successful urban agriculture project. They also both contain items that should be ignored or better yet not attempted.

There are two more categories that must be considered when defining urban ag- riculture. All three previous definitions fit into these distinctions on some level.

International Urban Agriculture

"*World wide 800 million people are engaged in urban agriculture. Of these, 200 million are producing primarily for the market, while most urban farmers are raising food for their own families***"**

In Hanoi 80 percent of fresh vegetables, 50 percent of pork, poultry and freshwater fish, 40 percent of eggs are produced in urban and sub-urban areas. In Shanghai 60 percent of vegetables, 50+ percent of pork and poultry and 90+ percent of all milk and eggs are produced locally. Bangkok grows most of its leafy vegetables in the city. In Latin America vegetables, medicinal plants and domestic animals are produced in urban centers. In Havana Cuba urban farmers produced an average of 215 grams of fruits and vegetables per day per person (1999) and that number exceeds 300 grams per person per day in areas outside the immediate city. Havana alone is estimated to have 104,087 small urban, suburban and contributing container gardens.

In St. Petersburg Russia it is estimated that nearly half the city's 5 million residents grow food in either, backyards, rooftops, vacant spaces near houses or dachas on the city edge. Almost 10 percent of London is farmland controlled by 30,000 allotment gardeners and 1000 beekeepers producing an estimated 1/5 of the city's fruits and vegetable intake.

(pg 95 Eat Here, Brian Halweil)

Urban agriculture in an international setting has a better foothold than it does nationally. Often farming operations, gardens and allotments exist symbiotically with the city. In poorer nations it is a necessity and in wealthy nations the idea of growing food in, or near, the city has been in place from the cities inception. Medieval cities had plots of land for growing food within the protective walls of the city, like ancient lords and their castles. In the early 19th century the Parisians used steam heated greenhouses and individual glass cloche (bells shaped covers) to grow lettuce and shipped it as far away as London. London itself was a hotbed of urban farming during the first and second world wars in the form of victory gardens and much of the tradition of local growing carries on today.









National Urban Agriculture

The history of defined urban agriculture on a national level is brief and recent. Only through the last 20 years has a defined idea of urban agriculture been practiced in North America. That is not to say that growing in the city did not exist in the past. In 1895 twenty cities had established gardens for feeding the poor. During the first and second world wars victory gardens were also common. Those victory gardens were the inspiration for contemporary community gardens, gardens that in a 1996 study number 6000 nationally. However urban agriculture as defined above did not exist on the scale that it does today. Now it is finally becoming recognized as a viable economic enterprise and urban agriculture is being incorporated in cities across the United States and Canada. Advocates for food security, community development groups and even local and state (provincial) governments are starting to incorporate the ideas of urban farming in city and state planning and legislation

See - Vancouver city plan and Strategy for Urban Agriculture

http://vancouver.ca/commsvcs/southeast/documents/pdf/urbanagr.pdf

and

Toronto Community Garden Program

http://www.toronto.ca/parks/programs/community.htm

Images, Sources

Pg 9 From unknown source

Pg 12 (Image 1) - *Urban Agriculture in Kumasi Ghana from*

- http://www.communityplanning.net/makingplanningwork/mpwcasestudies/mpwCS25.htm

Pg 12 (image 2) - Urban Agriculture in Hanoi from

- http://www.sandec.ch/UrbanAgriculture/pages/UA-projects_inmupa050606.htm

Pg 12 (Image 3) - Urban Agriculture in Caracas, Venezeula from

- http://www.indybay.org/newsitems/2005/08/07/17582381.php

Pg 13 - Rooftop Garden, Royal York Hotel Toronto from

- http://vancouver.ca/commsvcs/southeast/documents/pdf/urbanagr.pdf

2.0 Definitions and History of Urban Agriculture

2.2 What it is not



Part 1 – Urban Agriculture Research and Site Research

2.0 Definitions and History of Urban Agriculture

2.2 What it is not

This chapter does not necessarily act independently from the definition of urban agriculture. Indeed it lists those aspects of the current system that are NOT urban agriculture but more than that it should be looked at as a contrasting comparison of what is available and what might be available if urban agriculture is practiced.

Agribusiness has both positive and negative connotations. The one definition refers to the various businesses involved in food production, including farming, seed supply, agrichemicals, farm machinery, wholesale and distribution, processing, marketing, and retail sales (wikipedia - http://en.wikipedia.org/wiki/Agribusiness)

This can be considered the business behind the traditional farm, the quaint image of a family farm run for generations and producing wheat, corn milk, eggs and other farm products. For many years the family farm has been a major economic contributor. The family farm has produced food, jobs, stimulated the economy and become part of the collective heritage of the nation. Starting during World War II the nature of the family farm changed. Modern storage, processing and transportation techniques needed for the war effort eventually found their way into farming. The business of farming changed from producing food and feeding communities to producing more food for more people using new techniques and new technology; technologies and techniques meant to better the act of farming and make it more productive, healthier and more profitable. What these technologies have led to is the other meaning of agribusiness.

The other has a more negative meaning and is usually also referred to as corporate farming and industrial agriculture. This is big business with lawyers, lobbyists, huge tracts of land producing monocultures that strip nutrients out of the soil and have to be replaced by massive amounts of fertilizer. Most people defend corporate agribusiness as a necessity in our ever growing and needy world. With the population at the levels it is now the only way to feed everyone is to grow massive amounts of food and on an international scale. The negative affects of monocropping, soil erosion, high pesticide use, genetic engineering and many other aspects of large scale farming are still being documented and studied, the end results are still not known but already look bad.

Traditional farming still has a legitimate place in our current food system and is a necessity. Urban agriculture doesn't aim to replace traditional farming. Traditional farms and family farming is actually encouraged by most proponents of urban agriculture. What is feared and fought hard against is Industrial agriculture controlling the majority of all the food we eat. The result of which is loss of community, the loss of food security, decreased health, damaged ecologies and an ever worsening level of hunger and poverty in the world.




COMMUNITY

Industrial Agriculture and the family farm - Community

"*In the United States, where the vast majority of people were farmers at the time of the American Revolution, fewer people are now full time farmers (less than 1 percent of the population) than are full time prisoners.*" (Eat Here, Halweil, 2004)

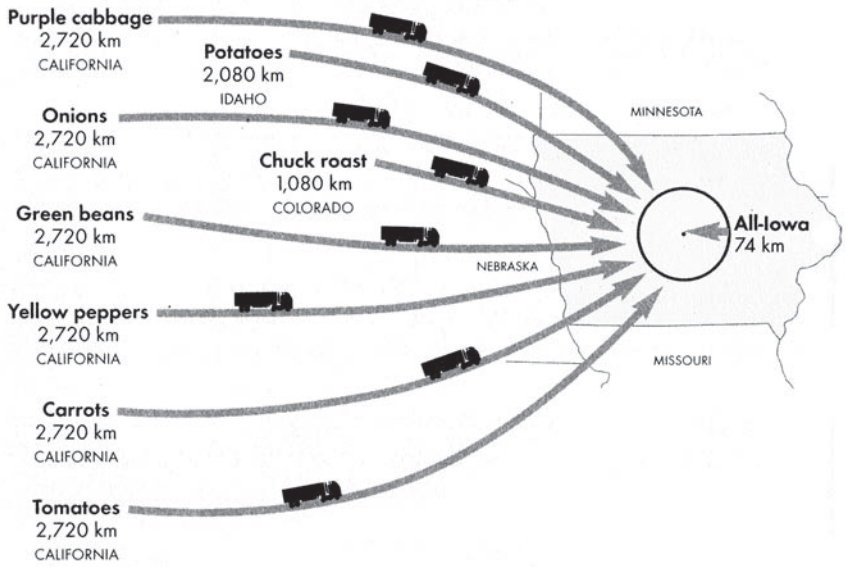
The family farm has not so much as disappeared as it has been absorbed. Moved out by plummeting commodity prices, large scale conglomeration and "vertical integration" the family farm is quickly becoming a quaint idea of the past. The farmer of today no longer sets prices and sells to the end customer. Commodity prices are set by business, food processors, seed and fertilizer companies. Prices are dictated by the middle man and results in such extreme competition that most farmers have become hired hands on their own farms, forced to take out loans, sign exclusive contracts allowing them to plant genetically engineered "super yield seeds" , buy more land, and work harder and bigger to get a lower share of the profits. A typical Iowa farmer's profit margin has dropped from 35 percent in 1950 to 9 percent today.(Eat Here, Halweil, 2004) The farmer either has to increase his farm 4 fold or get part time work somewhere in order to survive. In 2001 farmers in southeastern Minnesota sold $996 million worth of farm products but spent $1,118 million raising this food. Most of the money spent went to agribusinesses like fertilizer companies, pesticides, and other creditors. At the same time residents of the region spent $670 million on food almost exclusively from producers and companies based outside the area. The researchers, Meter and Rosales, who conducted this study, found that this scenario removes 1 billion dollars from the farm and food economy of the region each year. (Eat Here, 2004, Halweil) A vicious cycle has emerged on the family farm where over production has resulted in surplus and decreased profits; this leads to increased production to make up for lost revenues and the cycle starts again; the more produced the more spent on production and the lower the profits. Larger farms can tolerate lower margins, large farms producing at a normal cost can afford to sell at a lower cost but this then benefits not the farmer or the community but rather the food processor or business that purchases the crops. The effect is one that will eventually level out at a low point or worse continue to reduce the amount of profit the large farm sees. The end result is a mass exodus of farmers from rural areas to urban cores. Farm communities have been decimated by current agribusiness practices. Farmers that do survive the onslaught are forced to grow monocultures that can be sold for the best price. This leaves the farmer no room to grow diverse crops that can feed his family and the community. It's a sad irony that the very people who produce our food supply can't afford to buy their own wares and can't grow their own food.

One of the most troubling aspects of Industrial agriculture the practice of "Vertical Integration"

"Vertically integrated companies are united through a hierarchy and share a common owner. Usually each member of the hierarchy produces a different product or service, and the products combine to satisfy a common need." (wikipedia - http://en.wikipedia.org/wiki/Vertical_integration)

In the case of the farmer vertical integration can be devastating. Consider the partnership of Monsanto and Cargill. Between them are owned, seeds, fertilizers, pesticides, farm finance, grain collection, grain processing, livestock feed processing, livestock production and slaughtering and some well know processed food brands. The farmer is forced to use seed, fertilizer pesticides etc from the same company it is also forced to sell his products to. The loans the farmer must take out to purchase the seeds and pesticides and to increase the amount of land he owns, so as to compete on the larger market, are awarded by banks owned by the same companies. Contracts are written and failure to abide by the contract leaves a farmer high and dry without a market for his product or in court fighting big business lawyers. (Fatal Harvest, soybeans, 2002, Kimbrell)

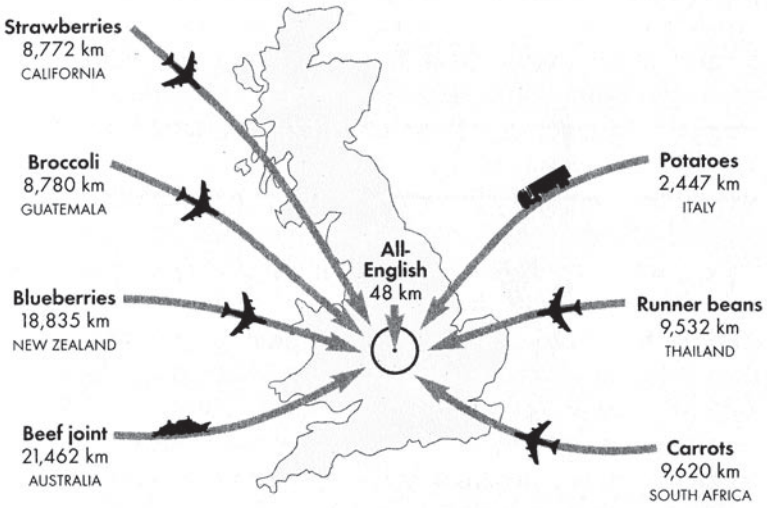
Local Versus Imported Ingredients: Iowa



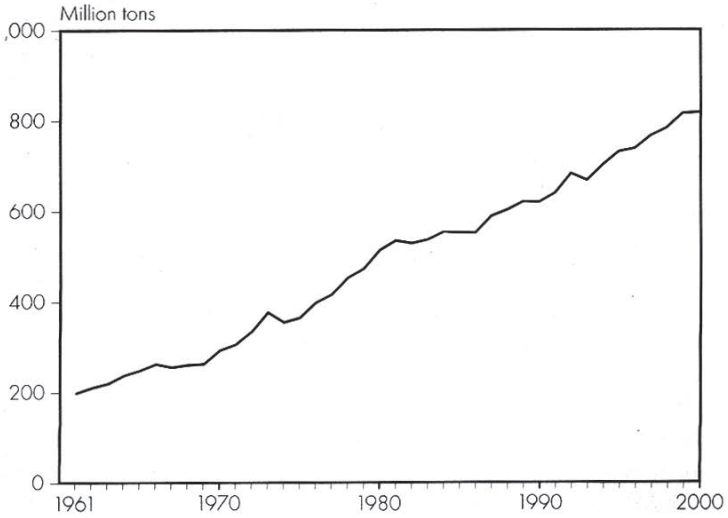
Value of World Agricultural Trade, 1961–2000

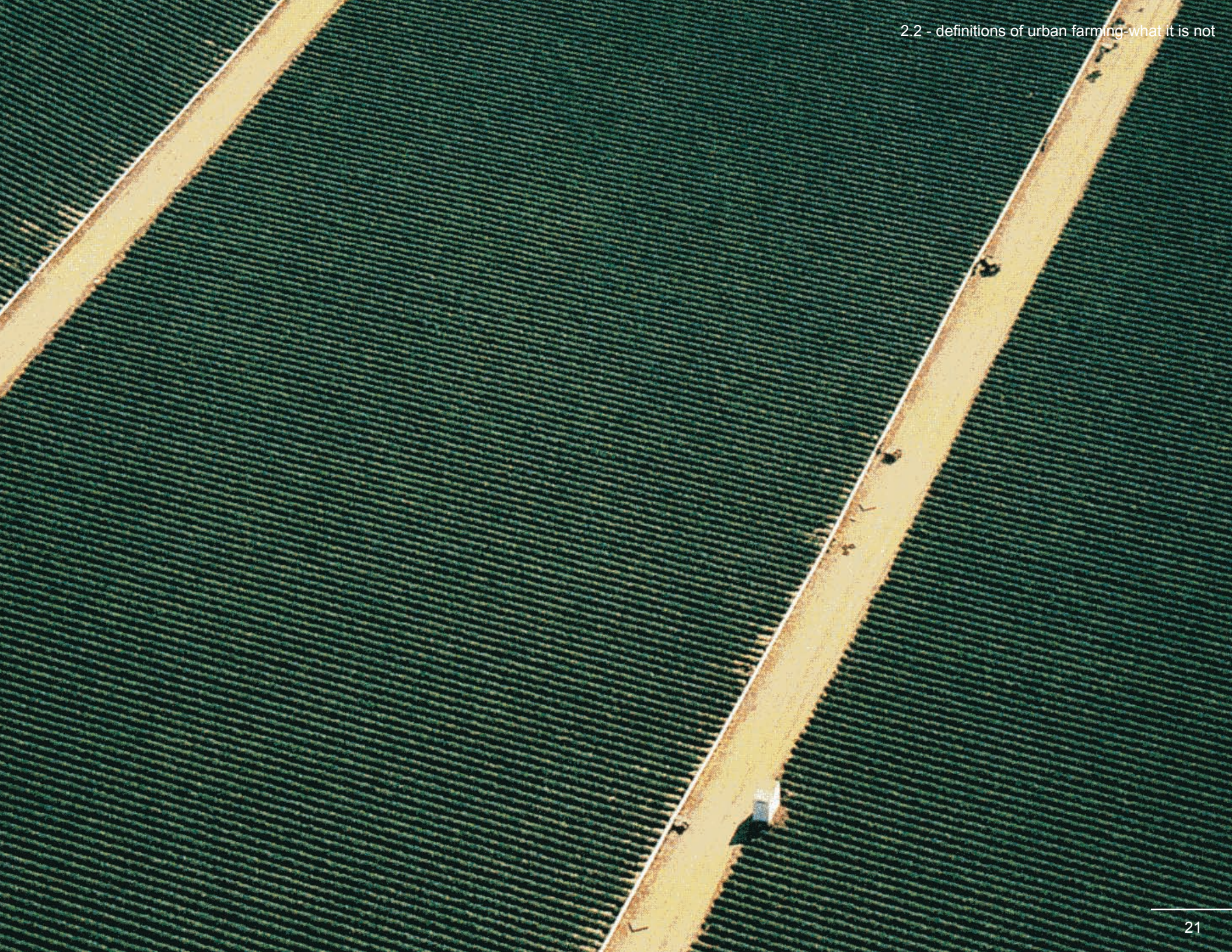


Local Versus Imported Ingredients: England



Volume of World Agricultural Trade, 1961–2000






DIVERSITY

Industrial agriculture – Diversity

"*Every seed and every variety represents not just a storehouse of important genetic information, but also a dynamic history of interrelationship and co-evolution with local ecology that confers critical characteristics of pest and disease resistance, nutrient use, drought tolerance and overall nutrition. Variety in crop plants is what protects against the vagaries of a changing environment*" (pg 71 fatal harvest)

Again the idea of monoculture and polyculture are the issue. Industrial agriculture promotes the idea of increased variety due to its policies because the consumer can get access to whatever food they desire no matter what the growing season, plant geography or uniqueness. This is simply not true. The practice of producing monocultures has meant the eradication of variety on numerous scales. In 2000 nearly 74 percent of all lettuces produced were iceberg, a decidedly bland variety of lettuce consisting of mainly water with little nutritional value. Industrial agriculture's urge to control and manipulate crops and farming has meant that they must also rely on only a few manageable crops and varieties; manageable through the increased use of chemicals, pesticides, fertilizers and herbicides. Unfortunately even this practice has its pitfalls as increased pesticide and herbicide use has created pests that are becoming resistant.

Since 1900 75 types of vegetables are no longer available, the diversity our forefathers planted has been reduced by 97 percent. Since 1903, 93 percent of lettuces, 96 percent of sweet corn, 91 percent of field corn, 95 percent of tomatoes and 98 percent of asparagus varieties have been lost according to a study conducted by the Rural Advancement Foundation International (RAFI)

Seed stores are increasingly threatened by government policy and corporations that replace variety with monoculture hybrids. There is even evidence of replacement and extinction practices where one variety of tomato is grown and seed stores of other varieties are actually disposed of. Monsanto is producing "terminator seeds" that will stop seed saving, a practice hundreds of years old, by making the plants sterile. The resistance of tomatoes is a direct result of wild varieties, natural cross pollination has helped the tomato continue to exist by making it naturally resistant to pests and disease. Seeds, and the plants that come from them, have continued to evolve like everything else. Terminator seeds would make this impossible; creating man made seeds and man controlled evolution.

Variety and diversity not only help protect crops and food supplies naturally they increase our enjoyment of food, the flavors available in the different variety sound almost foreign to those of us who are so used to the current state of things. Listen to a description of the flavors from the different lettuce varieties,

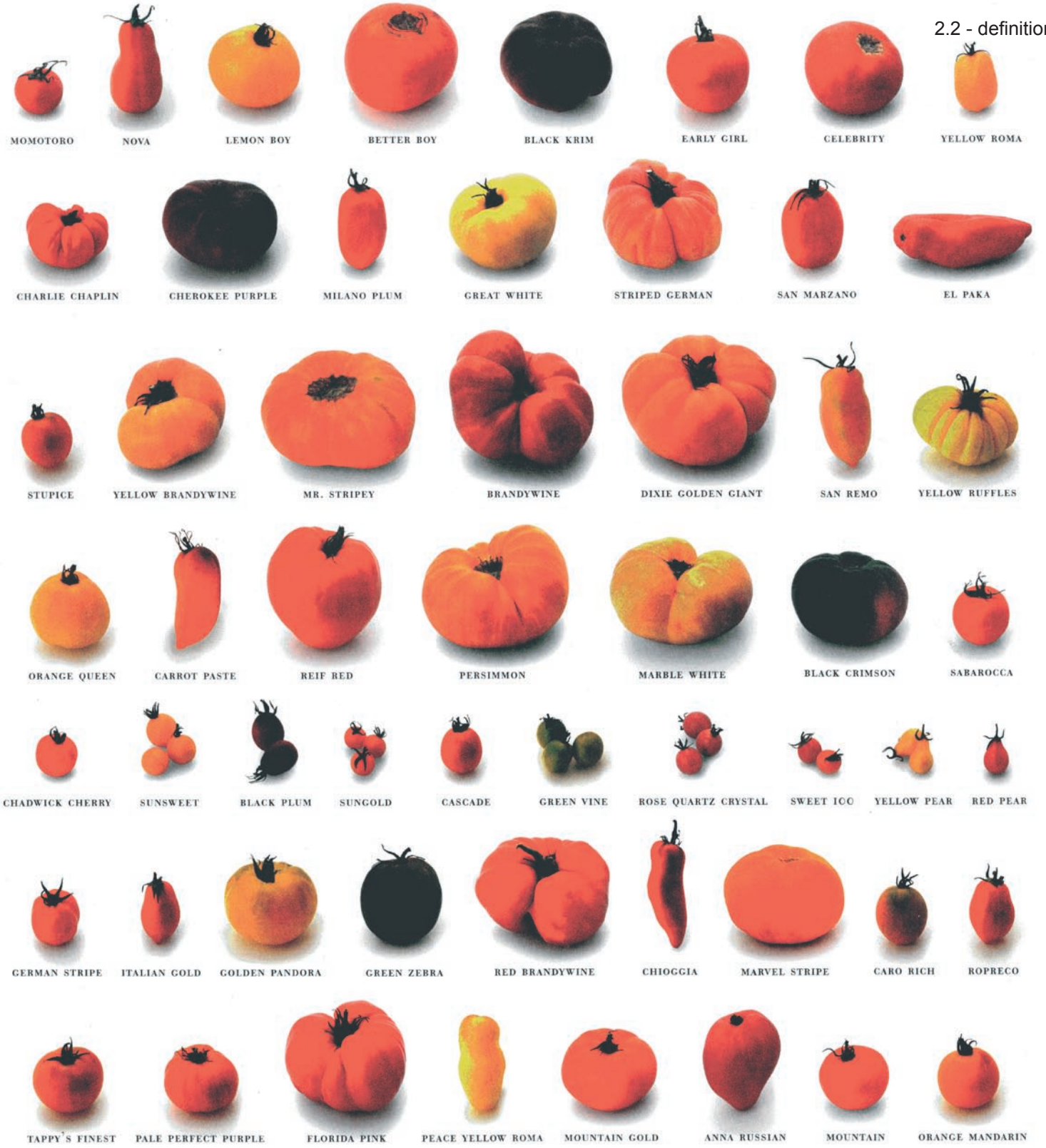
"*…Sweet, bitter, nutty, piquant, anise, grassy, or citrus…*"

They sound delicious and different. Now think of iceberg lettuce and its flavor. It's no wonder that obesity is on the rise and no one eats enough vegetables, they are bland and tasteless.

Animals and livestock are also affected. Gone are the days of farm yard chicken coops, replaced by big business and big production. Animal factories are quick breed, quick sale manufacturing lines. Animals are shot with antibiotics and growth hormone in order to prevent disease and encourage quick growth, and quick turn over. Unfortunately this produces meat and meat products that also contain these growth hormones and antibiotics. The animals tend to get sick due to resilient disease, made so because of the unchecked use of mass quantities of antibiotics. The recent rise of mad cow disease and the effect it has had on international trade and national economies (hoof and mouth in the UK) is just one result of un-mediated livestock management by big business; mad cow is thought to be transmitted by feed mixed with animal matter produced on mass by Industrial agriculture. Along with the animal production comes manure production on a scale that is almost impossible to comprehend. Most would say "manure can be used for composting" but they forget that this manure is also filled with antibiotics and growth hormone, more often than not it is washed into or water supply and we ingest it. Recently in New York State a large amount of animal manure was released into an adjacent river. The manure was in a holding area waiting to be disposed of and heavy rains made the banks of the holding area fail. The manure washed downstream and as a result residents of Kingston Ontario were told to not drink local water. If the diluted manure in thousands of gallons of water is harmful what of the meat?

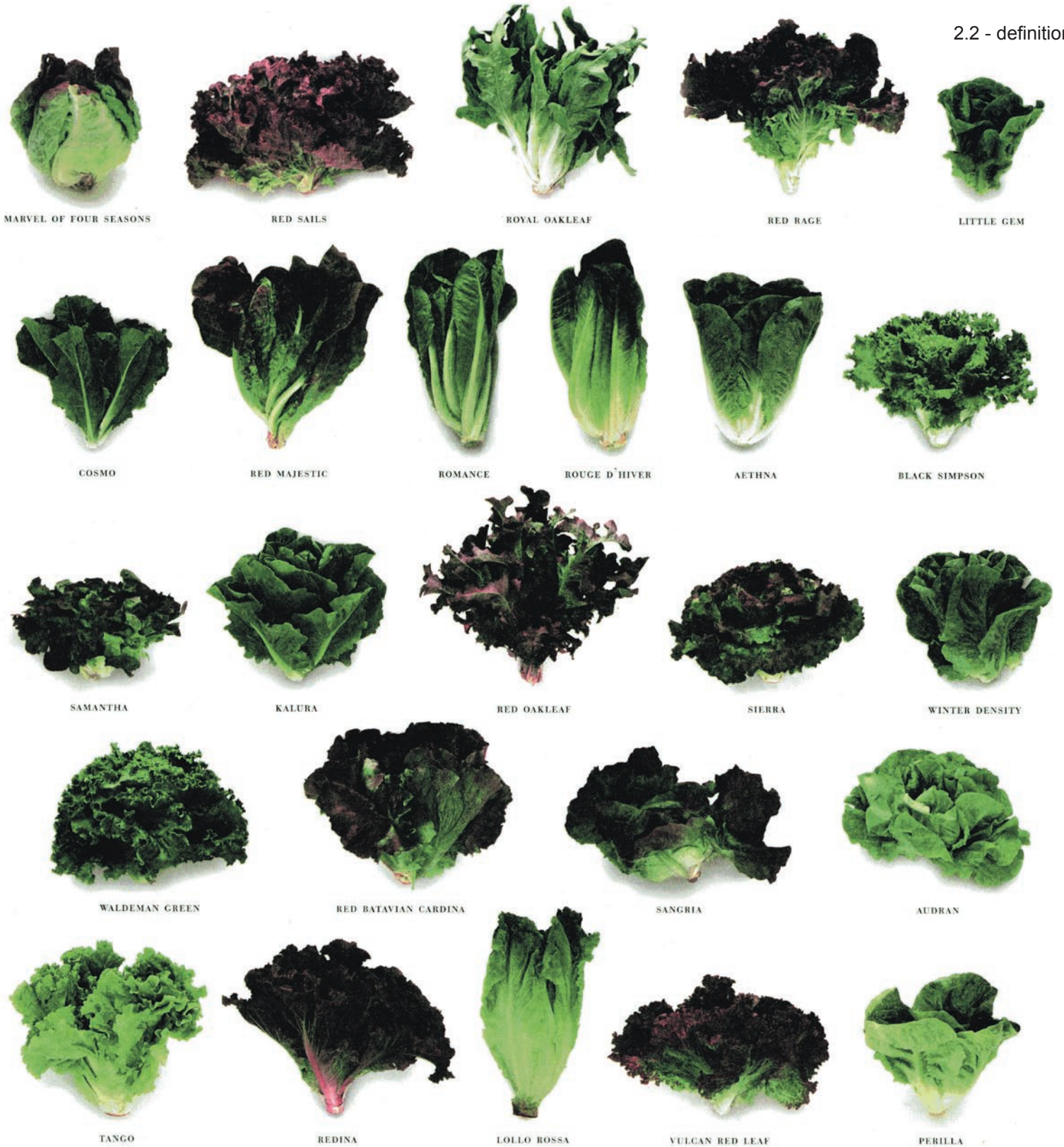


BEEFSTEAK


MOMOTORO
NOVA
LEMON BOY
BETTER BOY
BLACK KRIM
EARLY GIRL
CELEBRITY
YELLOW ROMA
CHARLIE CHAPLIN
CHEROKEE PURPLE
MILANO PLUM
GREAT WHITE
STRIPED GERMAN
SAN MARZANO
EL PAKA
STUPICE
YELLOW BRANDYWINE
MR. STRIPEY
BRANDYWINE
DIXIE GOLDEN GIANT
SAN REMO
YELLOW RUFFLES
ORANGE QUEEN
CARROT PASTE
REIF RED
PERSIMMON
MARBLE WHITE
BLACK CRIMSON
SABAROCCA
CHADWICK CHERRY
SUNSWEET
BLACK PLUM
SUNGOLD
CASCADE
GREEN VINE
ROSE QUARTZ CRYSTAL
SWEET 100
YELLOW PEAR
RED PEAR
GERMAN STRIPE
ITALIAN GOLD
GOLDEN PANDORA
GREEN ZEBRA
RED BRANDYWINE
CHIOGGIA
MARVEL STRIPE
CARO RICH
ROPRECO
TAPPY'S FINEST
PALE PERFECT PURPLE
FLORIDA PINK
PEACE YELLOW ROMA
MOUNTAIN GOLD
ANNA RUSSIAN
MOUNTAIN
ORANGE MANDARIN

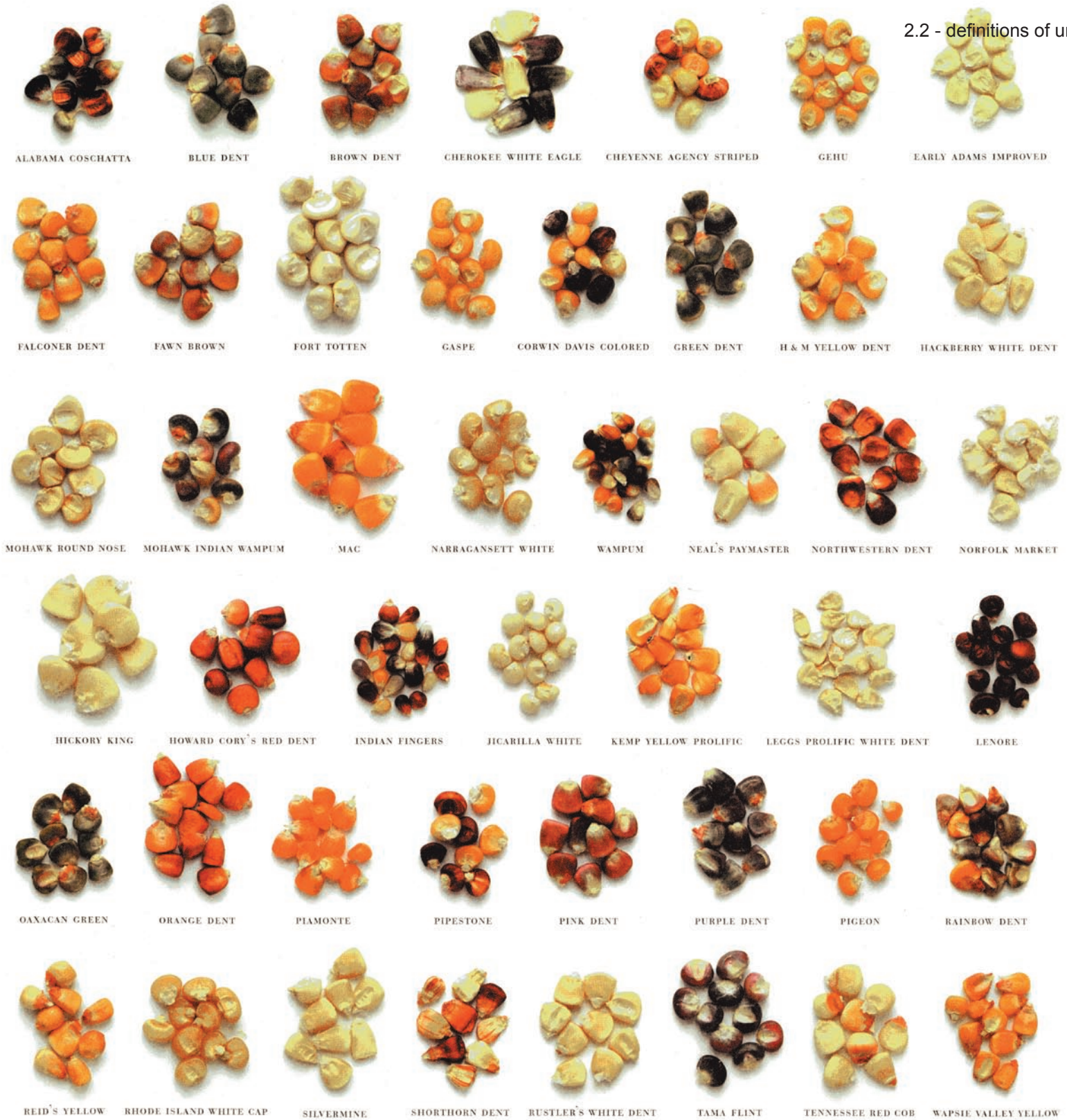


ICEBERG


MARVEL OF FOUR SEASONS
RED SAILS
ROYAL OAKLEAF
RED RAGE
LITTLE GEM
COSMO
RED MAJESTIC
ROMANCE
ROUGE D'HIVER
AETHNA
BLACK SIMPSON
SAMANTHA
KALURA
RED OAKLEAF
SIERRA
WINTER DENSITY
WALDEMAN GREEN
RED BATAVIAN CARDINA
SANGRIA
AUDRAN
TANGO
REDINA
LOLLO ROSSA
VULCAN RED LEAF
PERILLA



STARLINK™


ALABAMA COSCHATTA
BLUE DENT
BROWN DENT
CHEROKEE WHITE EAGLE
CHEYENNE AGENCY STRIPED
GEHU
EARLY ADAMS IMPROVED
FALCONER DENT
FAWN BROWN
FORT TOTTEN
GASPE
CORWIN DAVIS COLORED
GREEN DENT
H & M YELLOW DENT
HACKBERRY WHITE DENT
MOHAWK ROUND NOSE
MOHAWK INDIAN WAMPUM
MAC
NARRAGANSETT WHITE
WAMPUM
NEAL'S PAYMASTER
NORTHWESTERN DENT
NORFOLK MARKET
HICKORY KING
HOWARD CORY'S RED DENT
INDIAN FINGERS
JICARILLA WHITE
KEMP YELLOW PROLIFIC
LEGGS PROLIFIC WHITE DENT
LENORE
OAXACAN GREEN
ORANGE DENT
PIAMONTE
PIPESTONE
PINK DENT
PURPLE DENT
PIGEON
RAINBOW DENT
REID'S YELLOW
RHODE ISLAND WHITE CAP
SILVERMINE
SHORTHORN DENT
RUSTLER'S WHITE DENT
TAMA FLINT
TENNESSEE RED COB
WAPSIE VALLEY YELLOW



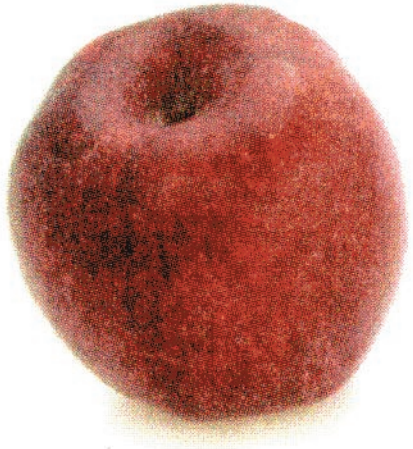
POTATO VARIETIES WORLDWIDE: 5,000+

MAJOR COMMERCIAL VARIETIES GROWN: 4


AUGSBURG GOLD
GERMAN BUTTERBALL
WARBA
PENTA
CAROLA
BINTJE
CARIBE
PURPLE CHIEF
KERRS PINK
BLISS TRIUMPH
CHERRY RED
RHINE GOLD
RUSSIAN BANANA
RED THUMB
BUTTERFINGER
BLUE MAC
OZETTE
HER ROYAL PRINCESSE
MARIS PIPER
RED RUBY
VIKING PURPLE
NOOKSACK
RED CLOUD
GOLD NUGGET
COWHORN
FRENCH FINGERLING
EPICURE
ALL RED
MORNING GOLD
HUCKLEBERRY



GOLDEN DELICIOUS



RED DELICIOUS


ELSTAR
GALA
HOOPLE'S ANTIQUE GOLD
AROMA
CHERRY COX
TYDEMAN'S EARLY
FIESTA
IDA RED
EMPIRE
FAMEUSE'S SNOW APPLE
SPARTAN
QUEEN COX
HUDSON'S GOLDEN GEM
BRAEBURN
RED GRAVENSTEIN
KANDIL SINAP
FREYBURG
ENGLISH GOLDEN RUSSET
CAMEO
COX'S ORANGE PIPPIN
JONAGOLD
BELLFLOWER
KIDD'S ORANGE RED
GRANNY SMITH
RUSSET BEAUTY
SPYGOLD
WHITE WINTER PEARMAIN
ORANGE PIPPIN
ROME
MY JEWEL
WINESAP
PITMASTON PINEAPPLE
ASHMEAD'S KERNEL
FALL PIPPIN
SPITZENBURG
PINK PEARL
HONEY CRISP
SIERRA BEAUTY
KING OF TOMPKINS
BROWN RUSSET
HOOVER
RHODE ISLAND GREENING
BLACK TWIG
CONNELL RED
MUTSU
LIBERTY
CALVILLE BLANC D'HIVER
GOLD RUSH
MCINTOSH
FUJI
MONROE
CRITERION
KINSEI
BELLE DE BOSKOOP
GALA SUPREME
MACOUN



TRADE

Industrial Agriculture – Trade

Shipping food around the world is not exactly a new practice. Consider the simple case of spice traders of the ancient world. Exotic foods and flavors were shipped around the globe to satisfy the bored palettes of Kings and Queens. Wars meant conquered countries were pillaged and the wheat and rice and meat were sent to the victors. Indeed there is still a place for long distance food shipments and specialty items. The problem is that these days common foods, that were once only available “in season”, are being shipped thousands of miles and not on sailing ship, horse or wooden cart. We have become so used to eating what we want when we want it that there is very little that we can’t obtain at a moments notice. Our daily food supply is being shipped from countries that we have never been too, using massive amounts of fossil fuels in the process, our food is being changed and manipulated to withstand this long journey and countries around the world are forced to enter into unfair and insane trade practices or starve.

In 40 years the amount of food shipped around the world annually has risen from 200 million tonnes to 898 million. 442 billion dollars worth of food annually is sent from country to country. In the United Kingdom food travels, on average, 50 percent further than it did 2 decades ago and fruits and vegetables imported by airplane tripled to 120,000 tonnes. In Norway the amount of food being shipped around the country doubled between 1993 and 2002 (eat here page 29) In North America most fruits and vegetables travel between 2500 and 4000 kilometers from farm to market. Technological advances in freezing and preserving foods and lower gar prices has resulted in dramatic changes in the food industry. Shipping food by sea is now 70 percent, 50 percent less by air than it did 20 years ago. Shipping a bushel of wheat from Chicago to London has continued to decrease from 60 cents in 1865 to 10 cents in 1900 and less than 1 cent today. In 1967 the US spent 4 billion shipping food, and 24 billion in 1997 but the percentage of the total food marketing bill has decreased from 7 to 5 percent. Many of these facts and figures seem positive and point to a healthy economy.

What is not being discussed though is the real cost in energy expenditure, tax dollars supporting infrastructure to maintain the shipping standards and the harm it is doing to local farmers. A meal from distant sources, made up of meats, grains fruits and vegetables can utilize four times the energy and produce four times the green house gas emissions that a similar diet from local sources (Anika Carlsson – Kanyama, University of Stockholm, from eat here, pg 37) It is ironic that shipping food is a major cause of greenhouse gas emissions, the one factor that can greatly impact the environment and in turn the very people producing the fruits and vegetables. Also important to consider is the cost to the consumer that isn’t part of the price at the supermarket. Infrastructure must be created and maintained to allow for this shipping and tax dollars typically support that infrastructure. Roads must be built and repaired and subsidies are given to airlines and other companies who routinely profit from food distribution. The very farmers who produce the food being sent around the world can no longer afford to make a living and must be subsidized by the government, sometimes just so they don’t grow something. In the end the cost to the consumer is far higher than they realize.

And how does this food get shipped around the world? How can it withstand the journey? Sometimes it is genetically altered to be more durable. The gene sequence of the standard tomato is changed in order to make the skin stronger so that it can withstand mechanical harvesting, artificial ripening and long distance travel, one scientist is even said to have dropped a genetically altered tomato from a third story window just to see what would happen, it survived. Tomatoes, apples bananas and other fruits and vegetables are picked unripe and sit ready and waiting to be ripened just prior to being put on a market shelf. It is estimated that 80 percent of the tomatoes at market are ripened artificially with ethylene. Traditional methods of pickling, drying and salting are now only used for those products particularly made for such a purpose, pickles, jerky and salt pork. Even something as simple as orange juice has become distorted by long distance food policies. Oranges were once a delicacy and available only in season, now you can get orange juice in a number of forms and concentrations. Concentrated orange juice became such a large part of our food supply that marketing something as “fresh squeezed” became the novelty.

International trade has also been greatly manipulated and influenced by industrial agriculture. Trade data from the United Kingdom shows that they annually export almost as much as they import in the form milk, pork and lamb (as well as other commodities)

Industrial Agriculture – Trade (cont)

Mexico, a country know for its' corn production and corn dependant diet imports 5672095 metric tons of corn each year from the united states and exports 7150 metric tons to the united states each year. The annual production of corn in the United States is 280,220,384 metric tons and the annual production of corn in Mexico is 20,500,000. Why are these two countries trading in these completely differing amounts of corn? Why doesn't each country just keep its own supply? Trade agreements between countries are hardly news but the depth to which some of them reach is nearly obscene. Economists argue that trade helps open up economies and creates work and jobs but the reality is that more often it makes a nation susceptible to the ever changing world markets. Take, for example again, Mexico and it's ever increasing import of corn from other countries; countries with governments that subsidize their respective corn industries like Canada and the United States (NAFTA) This has resulted in 25 percent of the corn consumed in Mexico being from outside the country which, in turn, has lead to a mass exodus of corn farmers from their farms. They leave their rural farms and move to the city to look for work. The exact opposite of what the economists want has happened. Mexico has paid more money to import corn and now has a percentage of its farm work force poor and hungry in the city, no jobs, less money and a burden on society. Extensive trade can be risky. If international commodity prices drop then a countries export revenues are wiped out, the value of their dollar can drop and the price of imports will soar. A strong American dollar or a weak Mexican peso can change the whole scenario in a second. This happened in 1996 when grain prices soared and Mexican farmers were forced to steal and loot grain cars or starve. Since the installation of NAFTA the price of corn in Mexico skyrocketed and the Mexican share of the market dropped, now Mexico is dependant on other countries for a commodity that was once the center of its crop diversity.

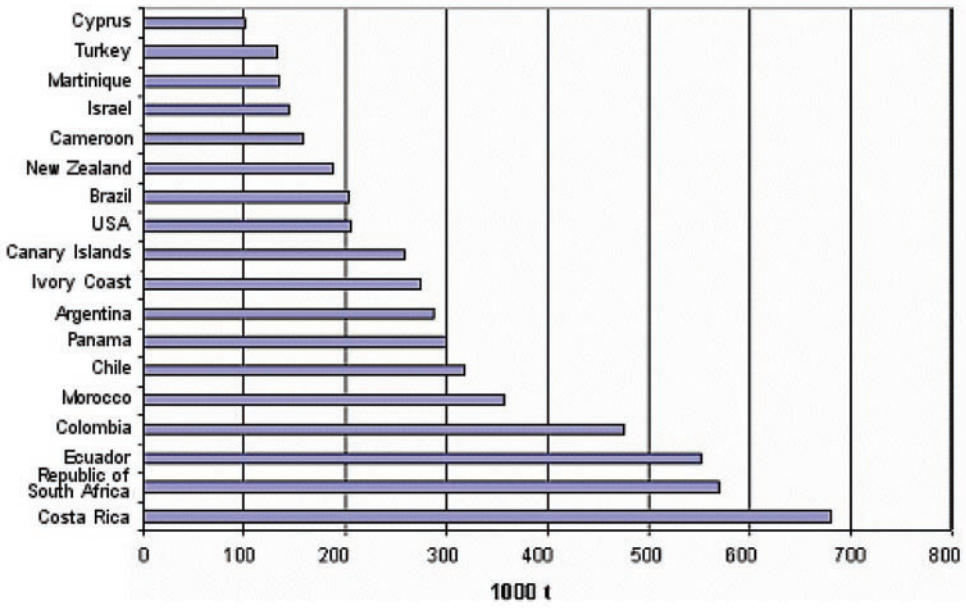
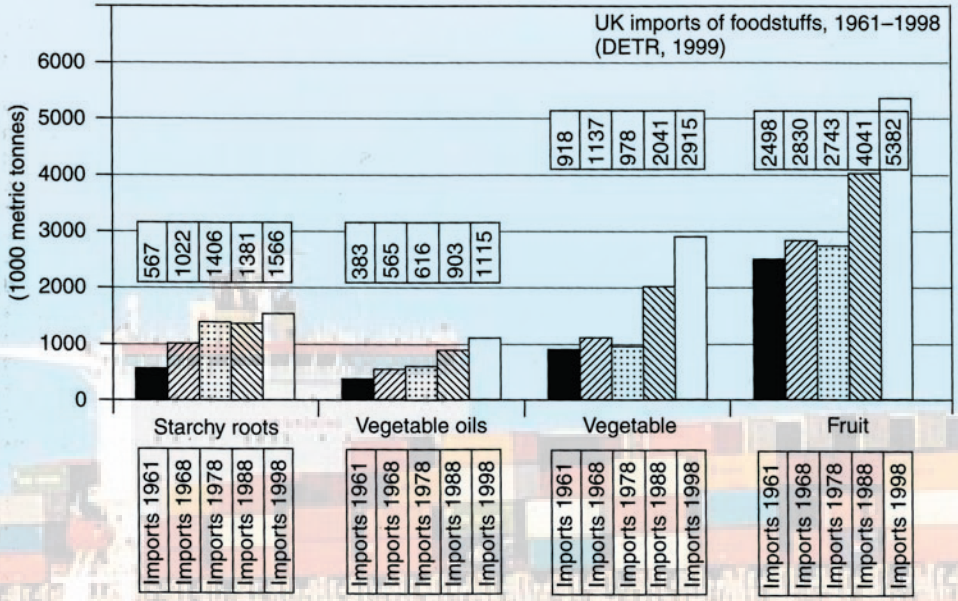
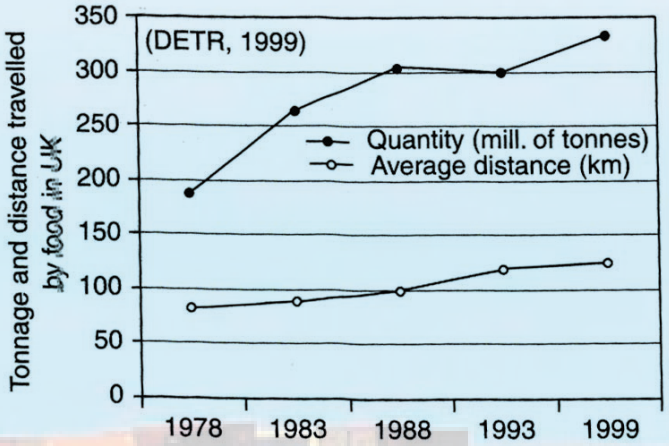
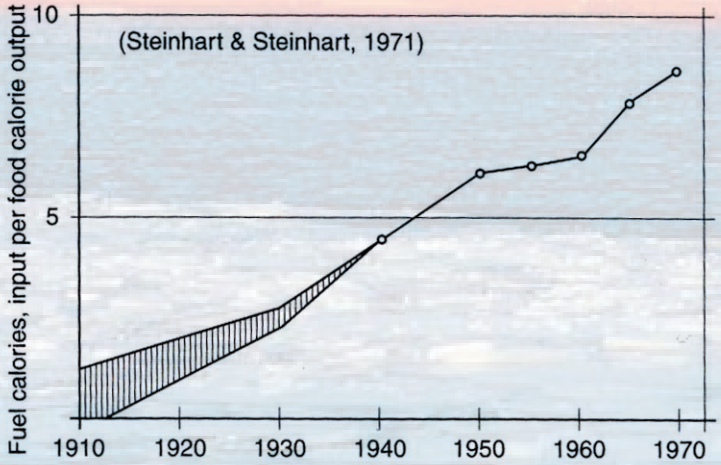
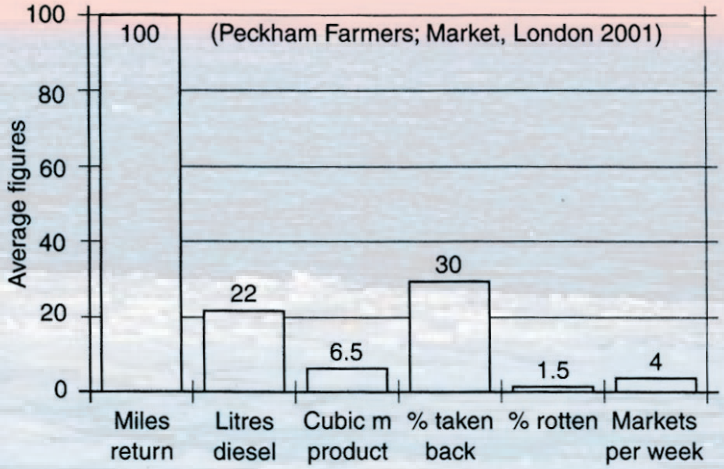


Figure 2: Imports of fresh fruit into the EU by country of origin 1994 [3]


UK imports of foodstuffs, 1961–1998
(DETR, 1999)
(1000 metric tonnes)
6000
5000
4000
3000
2000
1000
0
567 1022 1406 1381 1566
383 565 616 903 1115
918 1137 978 2041 2915
2498 2830 2743 4041 5382
Starchy roots
Vegetable oils
Vegetable
Fruit
Imports 1961
Imports 1968
Imports 1978
Imports 1988
Imports 1998


(DETR, 1999)
Tonnage and distance travelled by food in UK
350
300
250
200
150
100
50
0
Quantity (mill. of tonnes)
Average distance (km)
1978
1983
1988
1993
1999


(Steinhart & Steinhart, 1971)
Fuel calories, input per food calorie output
10
5
1910
1920
1930
1940
1950
1960
1970


(Peckham Farmers; Market, London 2001)
Average figures
100
80
60
40
20
0
100
22
6.5
30
1.5
4
Miles return
Litres diesel
Cubic m product
% taken back
% rotten
Markets per week

Trends in the maritime transport of refrigerated products
Source: Ocean Shipping Consultants 1994

	Bananas	Meat	Citrus	Seasonal fruit	Fish	Dairy products	Other	**Total**	Annual increase
1981	6.78	6.24	5.99	2.23	1.75	1.05	0.15	**24.19**	-
1982	6.77	6.13	6.13	2.14	1.82	1.04	0.20	**24.23**	0.2%
1983	6.07	6.25	6.10	2.45	1.95	0.89	0.21	**23.92**	-1.3%
1984	6.59	5.96	6.14	2.28	2.15	1.01	0.32	**24.45**	2.2%
1985	7.13	6.07	5.76	2.46	2.72	1.05	0.35	**25.54**	4.5%
1986	7.26	6.45	6.27	2.32	2.95	1.10	0.28	**26.63**	4.3%
1987	7.51	6.68	6.50	2.56	3.41	0.95	0.35	**27.96**	5.0%
1988	7.84	7.21	6.80	2.73	3.95	0.95	0.54	**30.02**	7.4%
1989	8.28	7.50	7.05	2.89	4.05	0.95	0.65	**31.37**	4.5%
1990	9.04	7.75	6.88	3.00	4.10	1.05	0.72	**32.54**	3.7%
1991	9.93	8.31	6.79	3.21	4.45	1.12	0.85	**34.66**	6.5%
1992	10.45	8.47	7.14	3.32	4.95	1.16	0.95	**36.44**	5.1%
1993	10.44	8.45	7.08	3.37	5.20	1.10	1.05	**36.69**	0.7%
1994	10.85	8.92	7.34	3.50	5.35	1.21	1.15	**38.32**	4.4%
1995	11.31	9.63	7.61	3.67	5.45	1.38	1.20	**40.25**	5.0%
1996	11.66	10.30	7.82	3.87	5.50	1.42	1.25	**41.82**	3.9%
1997	12.02	11.13	8.13	4.05	5.50	1.50	1.38	**43.71**	4.5%
1998	12.44	12.02	8.42	4.25	5.65	1.56	1.45	**45.79**	4.8%
1999	13.02	12.98	8.59	4.37	5.75	1.72	1.51	**47.94**	4.7%
2000	13.69	14.02	8.78	4.53	6.00	1.95	1.60	**50.57**	5.5%

All values are in million metric tons
Post 1993, values are estimated

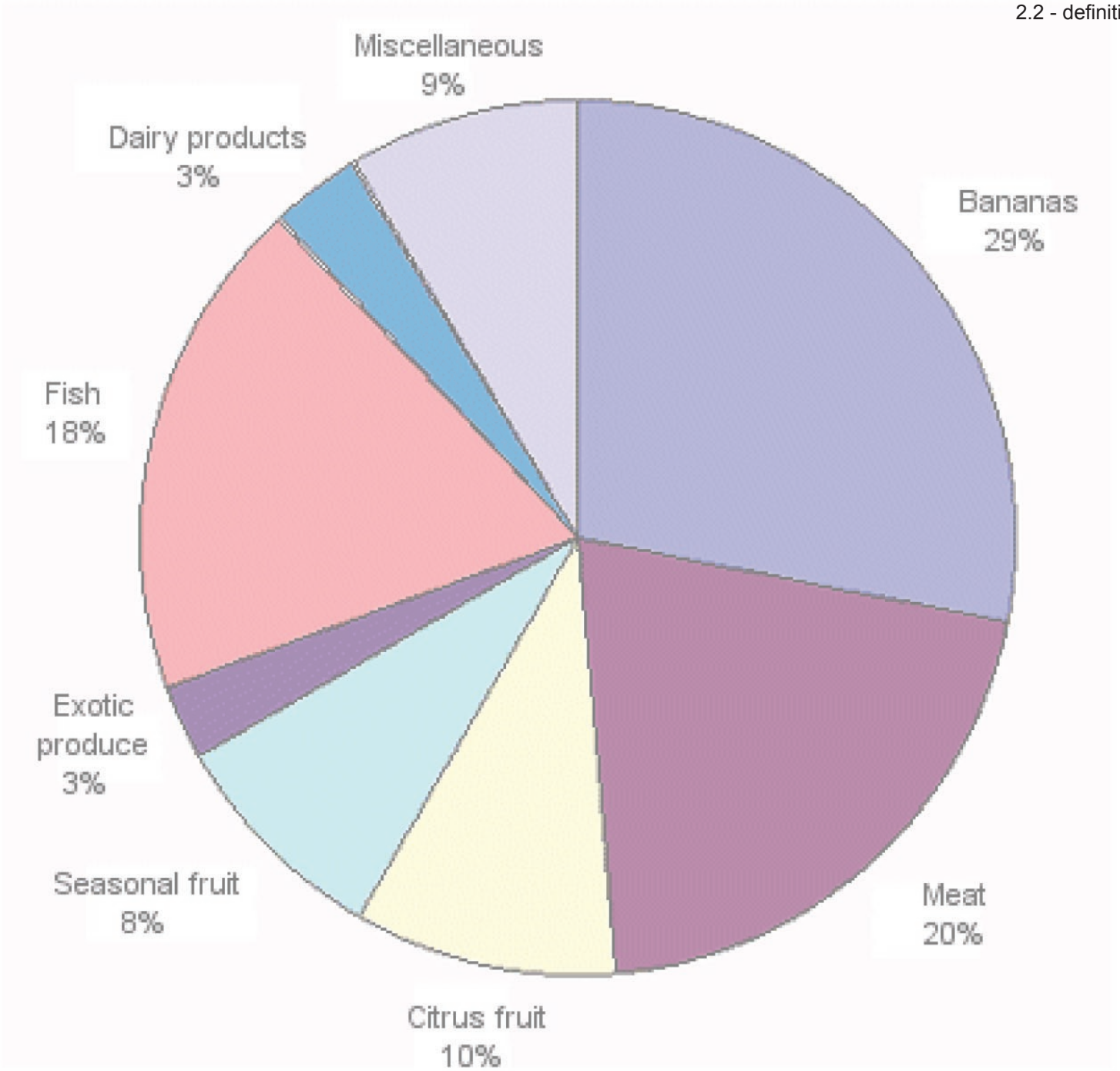


Figure 1: Proportions of the various refrigerated products transported by sea[2]



HUNGER

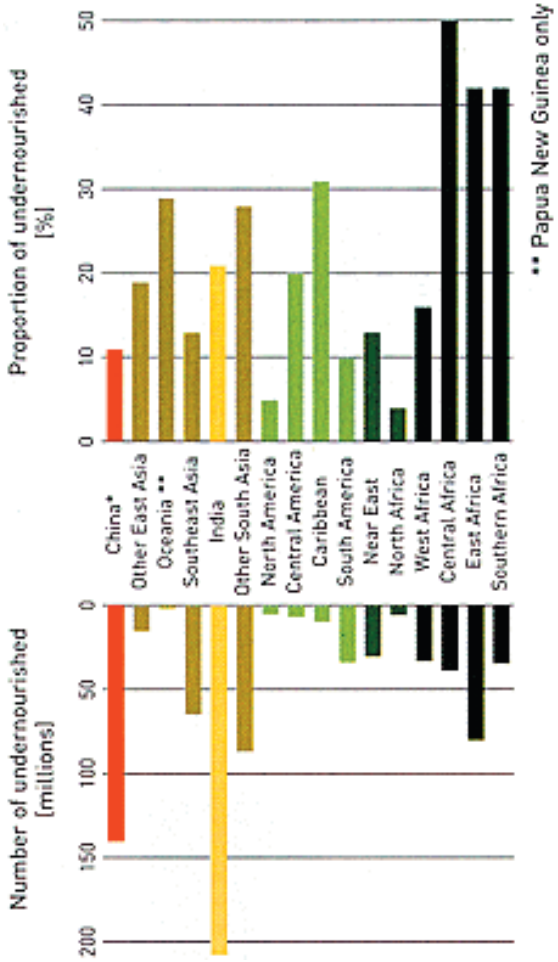
Industrial Agriculture – Hunger

"*We need a major shift in efforts to feed the world, where the focus is on supporting local agriculture, where people live close to (or on) the land, grow food to feed their own communities, and use ecologically sustainable techniques. In other words hunger can only be solved by an agricultural system that promotes food independence*" (Pg 51 fatal harvest)

Advocates of Industrial agriculture promote its policies as necessary in order to feed the world. Increased population growth means increased need of food. Indeed the world might be hungry but why is it? One reason is a result of the practices of Industrial agriculture. A study conducted by the UN food and agriculture association (FAO) found that there was enough food produced in the world to provide 4.3 pounds of food per capita per day, a diverse meal of grains, milk, vegetables, and meats for a total of 3,500 calories. Food production has actually increased 11 percent faster than the world population over the past 50 years. Yet there are still hungry people, an estimated 800 million in fact. Why, if there is a so much are people going hungry?

Agribusiness practices have created a system where the farmer has ceased to become the producer and has ended up poor and hungry. Patented seeds, vertical integration, chemical and technological input have increased the cost of farming and forced the farmer to become increasingly competitive on the pretense of better and higher yields. The price per yield is constantly falling but high production and packaging costs to the middle man means the cost of the product stays high and is passed on to the consumer. High priced luxury crops are in demand and force the farmer to mono – crop his field rather than plant diverse plots to feed himself and the community. Agribusiness dictates the market and this vicious cycle is repeated year after year until the farmer is eventually pushed out, his farm consolidated into a larger farm. Without a skill set the farmer moves to the city and looks for work. The food he once helped to produce is now out of his reach due to cost. Currently half a billion rural people in the third world have become landless. Fifty years ago 18 percent of the worlds population lived in urban centers, as of 2000 it has risen to 40 percent and is predicted to be 56 percent by 2030. Lower profits and higher end costs to consumers mean now that more of our world has less access to food. In the prime years for Industrial agriculture (1970-1999) the number of hungry people in every country in the world (except China) has risen 11 percent. Industrial agriculture has not helped to feed people, if anything it has denied food to the very people who helped produce it.

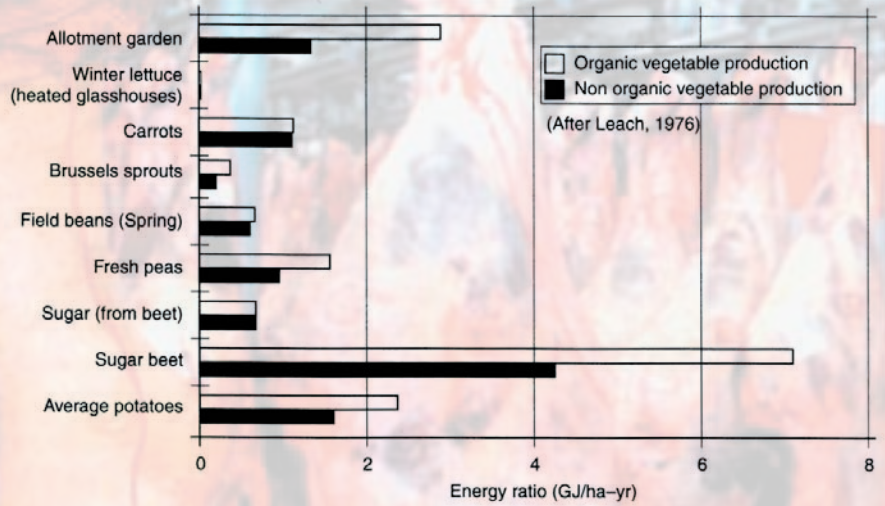
Unfortunately government is fixated on using technology to try and solve the hunger problem, trying to increase yields once again. This is a narrow focus and, as illustrated, a misguided effort.

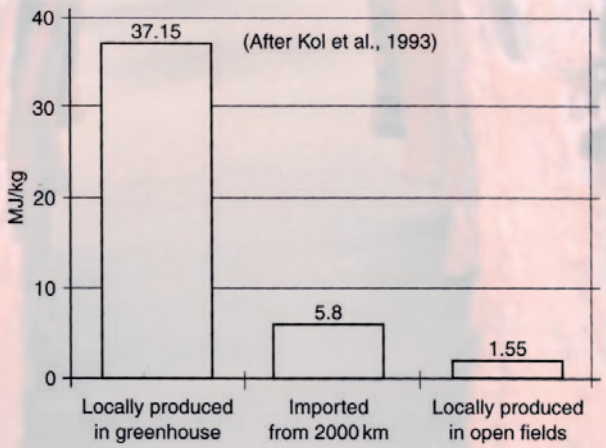


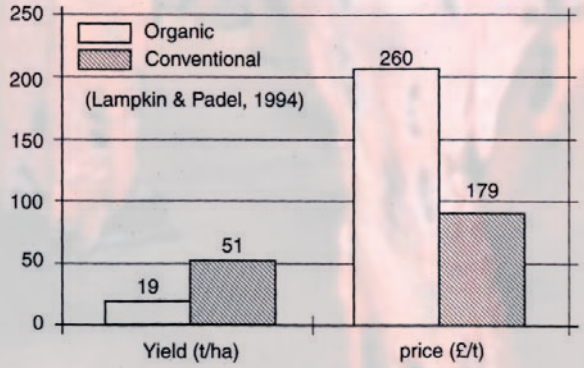
Organic food production: energy expenditure in terms of energy ratios (after Leach, 1976)

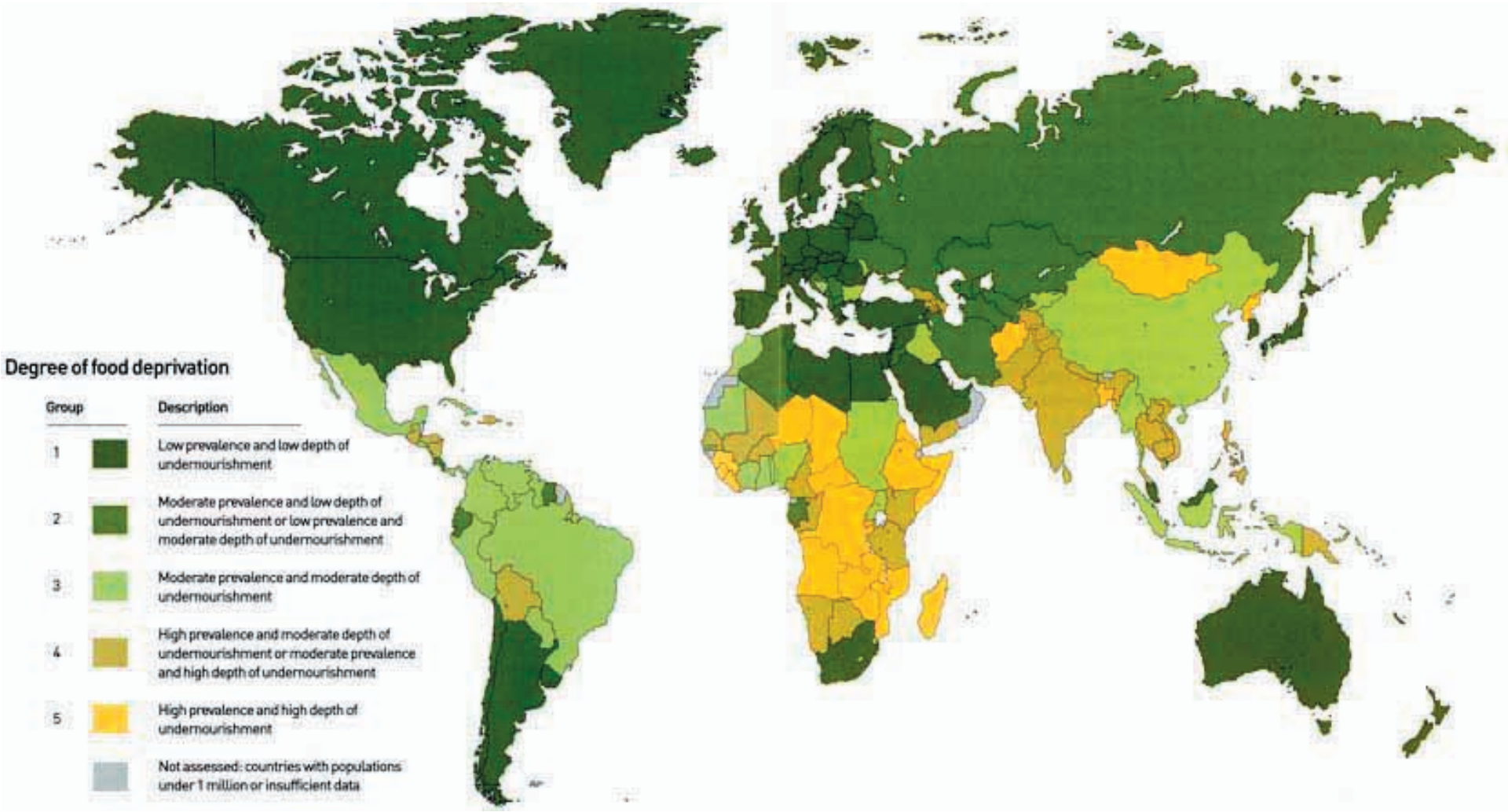
INPUTS		CONVENTIONAL PRODUCTION	ORGANIC PRODUCTION
Fertiliser N, 175 kg		14.00	
Fertiliser P, 175 kg		2.45	
Fertiliser K, 250 kg		2.25	
Field Work, fuels for tractors (to harvest)		2.85	2.85
fuels for harvester, transport		3.38	3.38
Field Work, tractors depreciation and repair		1.14	1.14
harvesters depreciation and repairs		6.70	6.70
Sprays, 13kg		1.24	
Seed shed fuels (620 MJ/t seed)		1.57	1.57
Storage (1,65 kWh/net t)		0.57	0.57
		TOTAL 36.15	TOTAL 16.21
OUTPUTS			
Gross yield	t	26.3	
Net yield (less 2.5t seeds)	t	23.8	
Edible yield	t	17.9	at 66% of conventional 11.9
Energy output (17.9t x 3.18 MJ/kg)	GJ/ha	TOTAL 56.9	TOTAL 37.95
Protein output (17.9t x 2.1% protein)	kgP/ha	376	
RATIOS			
Energy out/in		1.57	2.34

An energy ratio is defined as the edible energy output of food divided by the energy input necessary to produce it.








Degree of food deprivation
Group
Description
1
Low prevalence and low depth of undernourishment
2
Moderate prevalence and low depth of undernourishment or low prevalence and moderate depth of undernourishment
3
Moderate prevalence and moderate depth of undernourishment
4
High prevalence and moderate depth of undernourishment or moderate prevalence and high depth of undernourishment
5
High prevalence and high depth of undernourishment
Not assessed: countries with populations under 1 million or insufficient data



ECOLOGY

Industrial Agriculture – Ecology

We are all part of the ecologies that surround us. To not see ourselves as members of the food chain and contributing members of our environment is ludicrous. The current working process of Industrial agriculture is anything but friendly to our ecosystem and environment.

Chemicals and pesticides used in mass farming have been blamed for the devastation of wild species. The destruction of habitat due to the practice of fence row to fence row planting has been widespread. These same chemicals and pesticides, due to soil erosion and rain water and irrigation run off because of soil erosion, seep into our water systems and end up in our drinking water. Treatment facilities make a dent in decontaminating the water but there are “acceptable levels” for a reason. High nitrogen levels in drinking water have been linked to methemoglobinemia (low blood oxygen levels) in children and to gastric bladder and esophageal cancers in adults (pg198 fatal harvest) The leaching of chemicals might not kill us but nitrogen and phosphorus levels in water systems have resulted in necessary aquatic plant life dying, and as a result the fish and other aquatic animals that feed on these plants also dwindle. The trickle down effect means that those animals that feed on the fish now have less food.

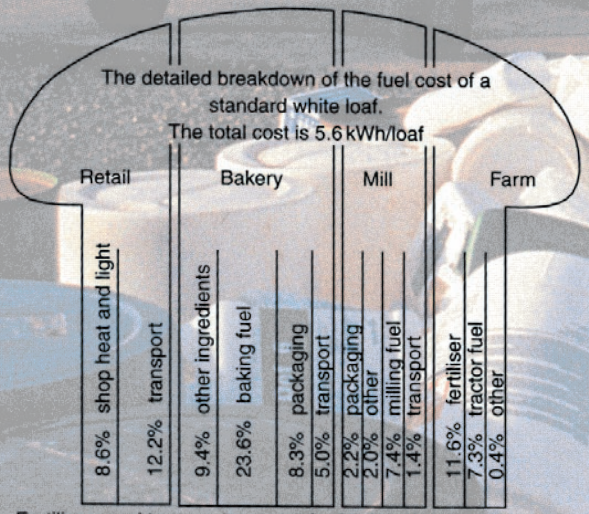
Professor David Pimentel estimates that 672 million birds are affected by pesticide use on farms. He writes that 10 percent die each year. 10 percent is 67 million birds, an astonishing number, due to birds ingesting the same pesticides that can be found on 35 percent of our market vegetables.

Consider that 4 decades ago the farm industry was dependant on internal processes, seed saving, organic waste recycling, winter cropping and crop rotation, built in biological controls like diversity of poly cultures and seed variety. Today fields and farming are plagued by the use of technology. That’s not to say that progress and technology don’t have their place, the tractor was superb addition to the farm and saved many weeks of hard labor. But consider the pesticide and fertilizer of today, primarily derived from petroleum, oil. Seeds developed by big agribusiness now have built in pesticides, seeds have built in oil.

These biotechnologies like genetically engineered seeds and plants are being championed as a way to reduce the harmful effects of industrial agriculture. By creating plants with built in fertilizers and pesticides, the argument goes, there will be less need of intensive use of pesticides and fertilizers on fields. The people who are proponents of biotechnology, those championing the cause, are those very same agribusiness companies that are responsible for the very state of affairs now. Are we to really believe that their motives are ecological and environmental concerns or concerns for profit and continued business? Globally there are 100 million acres devoted to genetically modified plants and seeds. Industrial agricultures reliance on pesticides and chemical inputs has, again and again, proved to be failing. Pests become resistant and weeds evolve, the result is increased usage of pesticides and chemical and the cycle repeats.

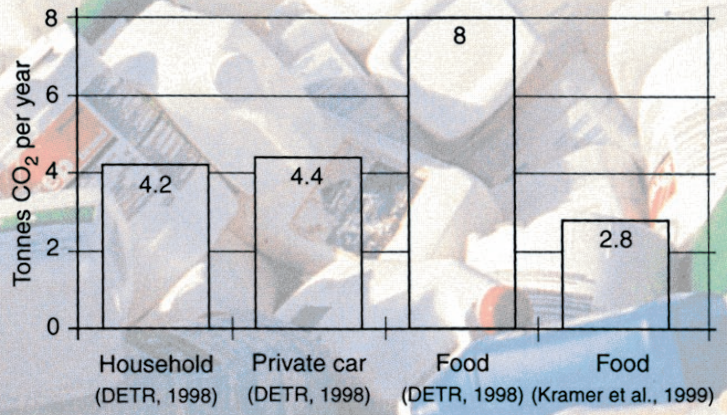
Organic agriculture is an alternative to industrial agriculture and its harmful practices. Yes a farmer has to work harder and more closely with his crops when practicing organic agriculture and they are susceptible to pests and disease but through the practice of poly culture, variety, natural inputs and just simple vigilance they can be very successful. Do we really want to eat lettuce grown from genetically altered seeds that contain toxins that kill insects? Do we want tomatoes that are held in a state of stasis until they are ripened through exposure to ethylene? Why are all the oranges the same color?





Fertilisers and transport account for 37.6% of embodied energy

Embodied energy of bread, primary energy equals using an electric heater for circa 2.5 hours (After Chapman,1975)



ENDOCRINE DISRUPTORS WIDELY USED IN AGRICULTURE			
PESTICIDE	TOTAL POUNDS	ACRES TREATED	NUMBER OF CROPS
Benomyl*	1,309,602	1,762,398	40
Mancozeb*	8,229,524	2,082,382	20
Maneb*	3,355,165	845,309	19
Metriam*	620,887	106,277	2
2,4-D*	33,080,430	66,810,477	29
Alachlor*	55,025,302	27,664,772	8
Atrazine*	63,946,010	48,977,866	7
Metribuzin	4,792,291	12,939,781	12
Trifluralin*	27,005,685	33,241,615	42
Carbaryl	7,238,350	4,564,697	63
Dicofol*	1,701,807	1,170,336	19
Endosulfan	1,926,063	1,369,439	48
Methomyl	2,800,176	4,788,309	59
Methoxychlor	107,722	102,025	12
Parathion	8,054,264	8,135,356	45
Permethrin*	1,103,362	6,018,470	41
Cypermethrin*	183,897	1,564,392	6
Fenvalerate	71,286	400,362	27
Esfenvalerate	277,950	4,216,675	40
Total	**220,829,773**	**226,760,938**	**68**
*Classified as a possible or probable human carcinogen by the EPA.			
Source: Environmental Working Group. Compiled from Resources for the Future: "Insecticides in US Crop Production," "Fungicides in US Crop Production," and "Herbicides in US Crop Production."			

PESTICIDE FAMILIES

The three major families of pesticides are:

Chlorinated hydrocarbons or organochlorines. These pesticides break down chemically very slowly and can remain in the environment for long periods of time. Dieldrin, chlordane, aldrin and helptachlor are pesticides of this type.

Organic phosphates or organophosphates. These pesticides are highly toxic to humans but do not remain in the environment for long periods of time. Parathion, malathion, thimet and trichlorphone are pesticides of this type.

Carbamates compounds. These pesticides are considered highly toxic to humans.

Source: Nancy Blanpied, editor, Farm Policy, the Politics of Soil, Surpluses, and Subsidies *(Washington, DC: Congressional Quarterly Inc., 1984), 69.*

Big Agribusiness and soil

The Tensas River Basin watershed lies in eastern Louisiana and covers 272 000 hectares (672 126acres) in the Mississippi River Alluvial Plain. Historically, 90 per cent of this land was forested. Roughly 85 percent of the forests were cleared during the 1960s and 1970s for the planting of soybeans. Clearing of the forest has exacerbated flooding problems and increased erosion.

As this pair of images reveals, intensive agricultural development has continued in the Tensas River Basin over time. Croplands appear in shades of tan; forests are green. The only remaining large tracts of hardwood forests in the watershed are in isolated wildlife refuges and management areas. Small forest remnants also occur on some private lands. The contrast between the amount of land cover change that has occurred on opposite sides of the Mississippi River in these images is striking. In the state of Mississippi, the forests remain largely intact, possibly due to the absence of lands suitable for cultivation.




Rayville
Delhi
Tallulah
U N I T E D S T A T E S
Winnsboro
Newellton
Port Gibson
Columbia
Ouachita
Wisner
Saint Joseph
L o u i s i a n a
Tensas
M i s s i s s i p p i
Farriday
Natchez
Homochitto National Forest
Kilometres
6 Nov 2001


HEALTH

Industrial Agriculture and food security – Health

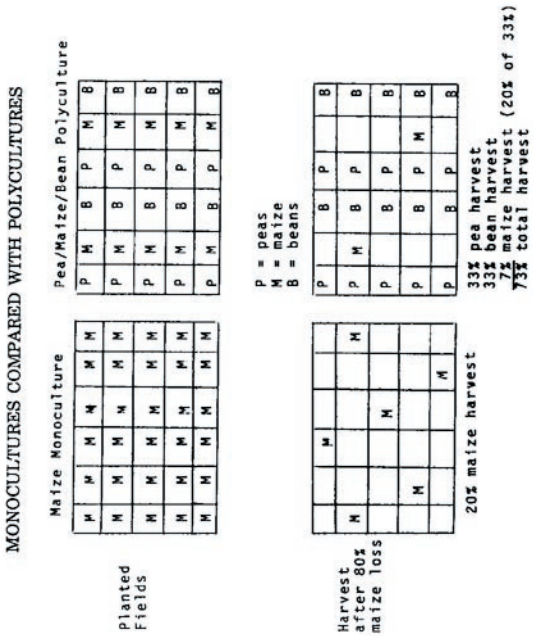
Organic farming is on the verge of a boom. People are increasingly conscious of what is going into the food and food products they eat. This could be a result of an increased awareness of self and a desire to eat better, healthier food. It could also be a response to the worsening food economy stimulated and controlled for so long by Industrial agriculture.

Studies show that 175,000 fast food outlets have opened around the country since 1950. Obesity, high blood pressure, type II diabetes and heart disease are on the rise and have been tied to diet. We eat massive amounts of processed food and convenient pre-made meals, many of these meals contain the same 4 ingredients, corn, rice, wheat and oats. These ingredients are filler, meant to make a meal more filling, more filling at a low price. Look at the variety of breakfast cereals on the market, there are hundreds, and they all share many of the exact same ingredients. Industrial agriculture has made the production of these crops a significant part of its mandate. Vast fields are planted with corn and soy beans, wheat and oats. In the past the food we ate was whole, unprocessed. Farmers grew many varieties of similar crops or a vast number of different crops. Now monocropping is the norm. Farmers have been reduced to planting only a few different crops, all genetically the same or similar. Fields are no longer rotated, they are fortified between yields by massive amounts of fertilizer and the same crop is again grown. Now 6 types of corn occupy 71 percent of the acreage in the US, 2 types of peas occupy 96 percent of the acreage.

Organic produce is a response to Industrial agriculture and the genetically altered crops, hormone and antibiotic laden livestock, massive pesticide residue and irradiated foods it helps create. Pesticide use is up 8 percent since 1989 or 60 million pounds, 53 pesticides in use today are known carcinogenic and a 1998 FDA study found this same pesticide residue on 35 percent of the market vegetables tested. Food borne illness has increased more than ten fold between 1970 and 1999. Outbreaks of salmonella and e-coli only started to emerge once animal factories became commonplace. These factories allow for disease to spread quickly due to the massive amounts of animals in proximity to one another.

Food security is also at risk from the very practice of monocropping. Polycultures help protect from pests, drought and disease through diversity. Mono cropping is stimulated by economic and political motives that push for and allow mono-crops, and economies of scale, so that national agriculture can serve international needs. Mono crops are smorgasbords for pests that feed on them. More than one crop planted together means that pests and disease specific to a plant variety cannot easily pass from one plant to the other until they decimate an entire planting. If the variety of corn planted in a monocrop 1000 acre field is attacked by a corn loving pest then it is obvious that the entire 1000 acres is easy pickings, no pun intended.

Urban farming is not necessarily an answer to food security but healthy organic polycultures grown close to home and controlled by a handful of people instead of a distant faceless corporation seems like the best choice.




MacGREGOR'S TOMATOES
New MacGregor's® Tomatoes
Grown From FLAVR SAVR™ Seeds!
Tomatoes. Summertime Taste...Year-Round!


MAXIMIZER™ TECHNOLOGY
NK
NOVARTIS SEEDS
N7070Bt

Conclusion

It's difficult to list all of these factors and not come off sounding like an ecological warrior or a social activist and to some extent the research has opened my eyes to a lot of problems. More importantly though this chapter should be thought of as a contrasting point of view to urban agriculture. Big farms and technology do have their place. Good things have come out of the practice of industrial agriculture. It's just at a stage now where an alternative needs to be found and practiced. Family Farmers are now realizing that there are other ways to work and grow food and to be productive. In many states farmers are going back to traditional farming and organizing in to co-operatives. They are opening supporting businesses like supermarkets and packaging plants in order to maintain control of their livelihood. In some cases farmers and other influential members of the business community are joining forces and producing food and services that allow them to earn a decent living. Organic farming is becoming more and more popular and finally being seen by many as a viable alternative to industrial agriculture. Local growing and local production are being practiced and finding success as well. Urban agriculture is the next step and has room for many of the experts from the family farm. New markets and new ideas will make urban agriculture a success but not if it doesn't pay attention to the lessons of the past and the experience of the learned.



Page 16, 17, 18, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 40, 44, 45, 46, 47, 50, 52, 53,

All Images from

- Fatal Harvest - The tragedy of industrial agriculture
Andy Kimbrell (editor) - Island Press, 2002 - Washingtonm,DC

Page 20

- Home Grown - The case for local food in a global market
World Watch paper 163, World Watch Institute
Brian Halweil pages 11, 18,19

Page 36

Transport Container Ship

-Images from http://www.ship-technology.com/

Page 36, 38, 39

Maritime Transportation of fresh produce, imports of fresh fruit to the EU by country of origin

-Images from : http://www.containerhandbuch.de/chb_e/wild/wild_06_00.html

Page 37, 42, 46

Charts and Graphs

-Images from CPULS - Continuous productive urban landscapes
Andre Viljoen (editor) - Architectural Press, Burlington MA, 2005
pages -23,24,25,27,28,42,43

Page 43

Map of food Deprivation worldwide

-Images from http://www.povertymap.net/mapsgraphics/index.cfm?data_id=23365&theme=food%20security

Page 41

Undernourished people by number and proportion of population for selected countries

-Images from http://www.povertymap.net/mapsgraphics/index.cfm?data_id=23369&theme=food%20security

Page 48, 49

Tensas river basin comparison

Image from: One Plant Many People, Chapter 3, http://www.na.unep.net/OnePlanetManyPeople/index.php

Page 51

Comparison of Yields from monoculutres and polycultures

- Image from: http://sleekfreak.ath.cx:81/3wdev/VITAHTML/SUBLEV/EN1/EN-VAGRCP.HTM

Other charts and graphs cited are referenced at image

2.0 Definitions and History of Urban Agriculture

2.3 A History of Urban Agriculture

Thus the heavens and the earth were finished, and all the host of them. And on the seventh day God ended his work which he had made; and he rested on the seventh day from all his work which he had made. And God blessed the seventh day, and sanctified it: because that in it he had rested from all his work which God created and made. These are the generations of the heavens and of the earth when they were created, in the day that the LORD God made the earth and the heavens, And every plant of the field before it was in the earth, and every herb of the field before it grew: for the LORD God had not caused it to rain upon the earth, and there was not a man to till the ground. But there went up a mist from the earth, and watered the whole face of the ground. And the LORD God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul. And the LORD God planted a garden eastward in Eden; and there he put the man whom he had formed. And out of the ground made the LORD God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil. And a river went out of Eden to water the garden; and from thence it was parted, and became into four heads. The name of the first is Pison: that is it which compasseth the whole land of Havilah, where there is gold; And the gold of that land is good: there is bdellium and the onyx stone. And the name of the second river is Gihon: the same is it that compasseth the whole land of Ethiopia. And the name of the third river is Hiddekel: that is it which goeth toward the east of Assyria. And the fourth river is Euphrates. And the LORD God took the man, and put him into the garden of Eden to dress it and to keep it. And the LORD God commanded the man, saying, Of every tree of the garden thou mayest freely eat: But of the tree of the knowledge of good and evil, thou shalt not eat of it: for in the day that thou eatest thereof thou shalt surely die. And the LORD God said, It is not good that the man should be alone; I will make him an help meet for him. And out of the ground the LORD God formed every beast of the field, and every fowl of the air; and brought them unto Adam to see what he would call them: and whatsoever Adam called every living creature, that was the name thereof. And Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field; but for Adam there was not found an help meet for him. And the LORD God caused a deep sleep to fall upon Adam, and he slept: and he took one of his ribs, and closed up the flesh instead thereof; And the rib, which the LORD God had taken from man, made he a woman, and brought her unto the man. And Adam said, This is now bone of my bones, and flesh of my flesh: she shall be called Woman, because she was taken out of Man. Therefore shall a man leave his father and his mother, and shall cleave unto his wife: and they shall be one flesh. And they were both naked, the man and his wife, and were not ashamed. Now the serpent was more subtil than any beast of the field which the LORD God had made. And he said unto the woman, Yea, hath God said, Ye shall not eat of every tree of the garden? And the woman said unto the serpent, We may eat of the fruit of the trees of the garden: But of the fruit of the tree which is in the midst of the garden, God hath said, Ye shall not eat of it, neither shall ye touch it, lest ye die. And the serpent said unto the woman, Ye shall not surely die: For God doth know that in the day ye eat thereof, then your eyes shall be opened, and ye shall be as gods, knowing good and evil. And when the woman saw that the tree was good for food, and that it was pleasant to the eyes, and a tree to be desired to make one wise, she took of the fruit thereof, and did eat, and gave also unto her husband with her; and he did eat. And the eyes of them both were opened, and they knew that they were naked; and they sewed fig leaves together, and made themselves aprons. And they heard the voice of the LORD God walking in the garden in the cool of the day: and Adam and his wife hid themselves from the presence of the LORD God amongst the trees of the garden. And the LORD God called unto Adam, and said unto him, Where art thou? And he said, I heard thy voice in the garden, and I was afraid, because I was naked; and I hid myself. And he said, Who told thee that thou wast naked? Hast thou eaten of the tree, whereof I commanded thee that thou shouldest not eat? And the man said, The woman whom thou gavest to be with me, she gave me of the tree, and I did eat. And the LORD God said unto the woman, What is this that thou hast done? And the woman said, The serpent beguiled me, and I did eat. And the LORD God said unto the serpent, Because thou hast done this, thou art cursed above all cattle, and above every beast of the field; upon thy belly shalt thou go, and dust shalt thou eat all the days of thy life: And I will put enmity between thee and the woman, and between thy seed and her seed; it shall bruise thy head, and thou shalt bruise his heel. Unto the woman he said, I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children; and thy desire shall be to thy husband, and he shall rule over thee. And unto Adam he said, Because thou hast hearkened unto the voice of thy wife, and hast eaten of the tree, of which I commanded thee, saying, Thou shalt not eat of it: cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life; Thorns also and thistles shall it bring forth to thee; and thou shalt eat the herb of the field; In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken: for dust thou art, and unto dust shalt thou return. And Adam called his wife's name Eve; because she was the mother of all living. Unto Adam also and to his wife did the LORD God make coats of skins, and clothed them. And the LORD God said, Behold, the man is become as one of us, to know good and evil: and now, lest he put forth his hand, and take also of the tree of life, and eat, and live for ever: Therefore the LORD God sent him forth from the garden of Eden, to till the ground from whence he was taken. So he drove out the man; and he placed at the east of the garden of Eden Cherubims, and a flaming sword which turned every way, to keep the way of the tree of life. - GENSIS 2,3



2.3 A History of Urban Agriculture

We were born into the garden, when we were expelled our punishment was to toil in the ground for our food. Have we been fighting this punishment for our entire existence?

Urban agriculture has been a part of the development of most nations, cities and towns. Up until only recently the notion of purchasing required food from an unknown distant producer was unthought of. The great cities of the past and many that still exist today had little option but to grow the needed food and livestock, to feed its' populations, in close proximity to the city or in the city itself. More recent inventions and developments like the automobile, paved roads, refrigerated transport and others have changed the traditional practice of growing food locally into a matter for policy debate. In fact the age old question of what came first? The chicken or the egg? Can be applied to the idea of urban agriculture and the city.

Was the first development in society a city or a farm? Did people join together to create close nit farming communities or did cities supporting trade pre-date the development of farming? It would seem that farming and growing food was a necessity to all people no matter where, or how, they were settled. Jane Jacobs, in the Economy of Cities, argues that cities were the first social enterprise. Farming grew out of the practice of trade. Hunters and gathers would bring wild crops, game and seed to a city and trade for tools and supplies. In turn the seeds and other gathered materials would be used and stored for other trade. Eventually the connection between the seed and the plant was realized and soon the practice of farming was born. This scenario seems more plausible than the alternative of an individual discovering the science of biology and plant growth, planting crops, feeding themselves and their family and then? What was the drive? The motivation for others joining this community of one? City settlements form along trade routes, in areas with natural resource such as lakes and rivers. The farm is contemporarily understood as being on the outskirts of the city. Why, if farming is the catalyst for the creation of communities, do we not except and understand farming as being an activity central to the city? All of these questions and ideas are speculation. There is evidence and arguments to support both scenarios. One thing is clear however; the city and the farm existed in symbiosis.

Be it in the form of a simple kitchen garden or a large scale project such as the Marais gardens of Paris urban agriculture has been part of the development and survival of many cultures throughout history. Ancient civilizations such as the Mayan and Incan, Egyptian, Persian, Roman, Greek, Chinese and more modern cultures such as the Parisian, English and Mexican (UNDP, 1996) developed agriculture and growing within the city to help feed their populations. Many of these civilizations, in fact, grew with such success and productivity that their techniques are being studied and tested by modern researchers. In some places these ancient techniques are actually being applied (UNDP, 1996 Viljoen, 2005)

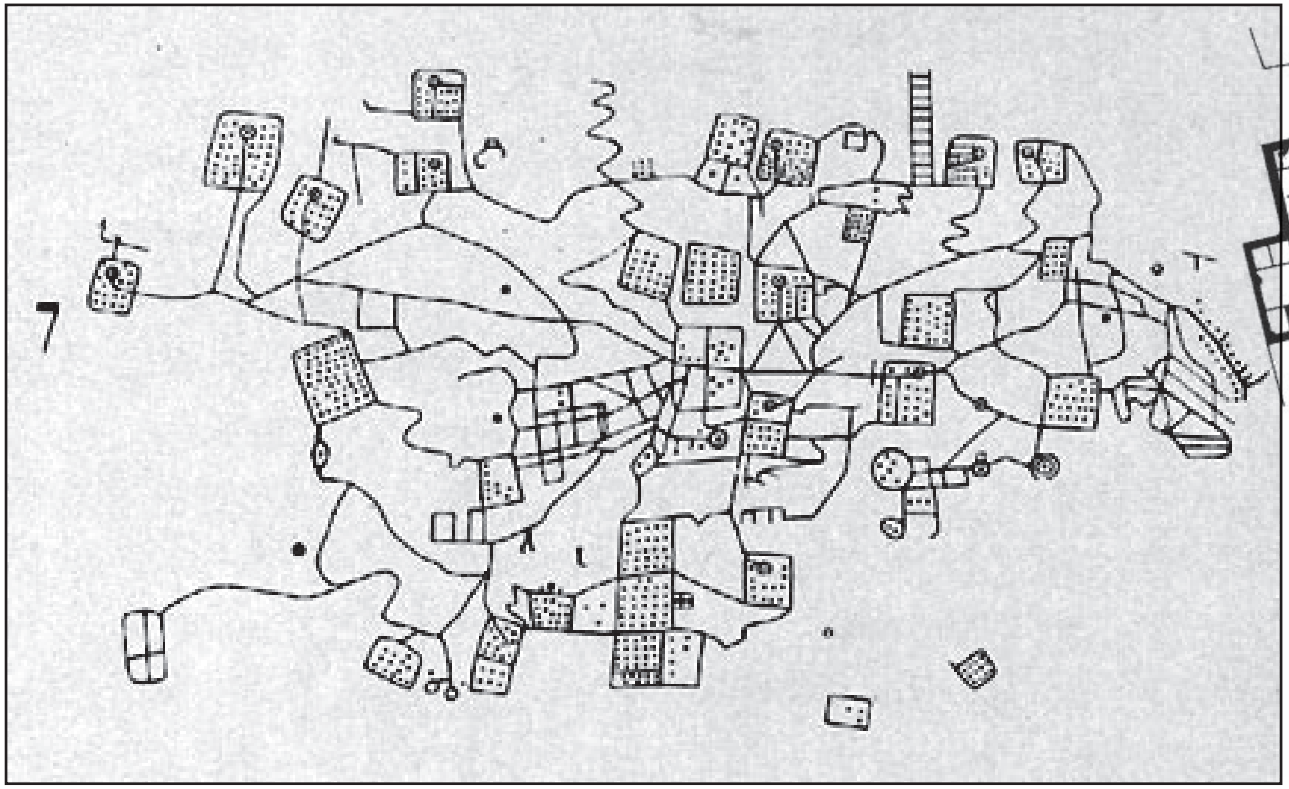
The earliest farming communities are those centered near Jericho and Palestine 8000 BC, Catal Huyuk in modern day Turkey and Jarmo which existed on the border between what is now Iran and Iraq, 6500 BC and Mesopotamia and Crete, 6000 BC. Slightly later were Cyprus and Egypt at 5000 BC China is also noted at the fifth millennium BC and India and parts of South America date to 2500 BC (although India may be even earlier) These farming sites were concentrated around villages and also showed signs of cultivation in the actual settlements (Huxley, Michael 1978)

The ancient Incans of Machu Picchu farmed on terraced plots that fed the people and navigated the steep terrain of the town. Larger suburban plots were located within walking distance for more intensive growing of grains. The techniques of the ancient Incans stretched crop production to two crops a year at high altitudes that had frost most of the year (UNDP, 1996) The ancient city of Tenochtitlan, were present day Mexico city stands, practiced an ancient form of aqua farming known as the Chinampas irrigation system in which floating planting beds comprised of woven reeds and river bed soil and mud were used to grow crops. A system that benefited both aquatic plants and traditional growing these chinampas were extremely productive (UNDP 1996, Huxley 1978)

Medieval towns and ancient castles also kept their gardens close. In a fortified city food is just as important as the people it feeds and gardens were protected within city walls or castle embattlements (Huxley, 1978) A Castle or town could withstand a siege for many months by growing needed food within its protected walls. Storage and



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preservation techniques allowed for storage of food through cold months (Huxley 1978) Many times a garden or small farm plot would serve the court by growing medicinal herbs and spices and providing delicacies for the King or lord (Huxley, 1978) As time progressed and towns no longer had to protect themselves with walls and battlements farms started to develop out side of the city walls.

In the 19th century the Parisians developed a form a growing called the Marais (Marsh) technique. It utilized high inputs of fertilizer and was very intensive. Like most older forms of growing the gardens were fortified using large amounts of horse manure, and human waste products. The technique also used glass covered frames similar to modern greenhouses and glass bell shaped covers called cloche to protect individual heads of lettuce (UNDP 1996, Huxley 1978, Viljoen, 2005) The French were able to produce 3- 6 crops yearly and 50 Kilograms per capita per year of vegetables were produced, this exceeded annual consumption and so produce was exported as far away and London. The “maraichers” were interested in profit and so produced high value crops and out of season winter crops. It is estimated that yields could have been much higher if the maraicher concentrated on easier to grow vegetables (UNDP, 1996)

England has always supported allotment gardens and community gardens and many poor Londoners grew their own food crops in small gardens. The more socialistic nature of Europeans has meant that many European cities developed allotments and community gardens in conjunction with new development. Leberecht Migge and Adolf Loos were two of the architects behind many of the social housing projects in Germany in the 1920-30s and created many projects that combine workers homes and vegetable gardens in the same plan. Migge also was known to design and create for the Russians during this time.

The new world also saw its share of urban agriculture, first from the natives who grew corn and vegetables in their villages and later by the French and English who settled the Americas. Small gardens and small farm plots were often attached to individual homes and centered in the community. Even large farms that produced for commercial sale tended small kitchen gardens as well. New York City was initially a farming settlement and still supports many community gardens that were started in the 1970s and 1980s Boston and Philadelphia also supported community gardens and all of these cities developed victory gardens during the wars (UNDP, 1996, Pennington, 2002)

Many societies have taken the lesson taught by their ancestors and applied them to modern life. China, Japan, Singapore, India, Sweden, England, Switzerland, Italy and others still pursue urban agriculture in some form or another. In China Shanghai is approximated to produce 80% of its vegetable consumption in the city center and perimeter suburbs (UNDP, 1996, Hough 2004) Japan has a flourishing and strong history of urban agriculture and includes it in the regular census. Special tools and seeds, and crop types have been developed and the food marketing system is geared toward the small urban farmer. Millions of Japanese are members of CSAs and fully support urban agriculture. (UNDP, 1996) Although not as accepting of urban agriculture as the Japanese other Asian countries such as Pakistan and Sri Lanka have urban agriculture projects underway. Even in the United States urban agriculture was popular pursuit up until the 1950s and 40% of the dollar value of agricultural production is urban as late as 1990 (UNDP, 1996, Viljoen 2005)

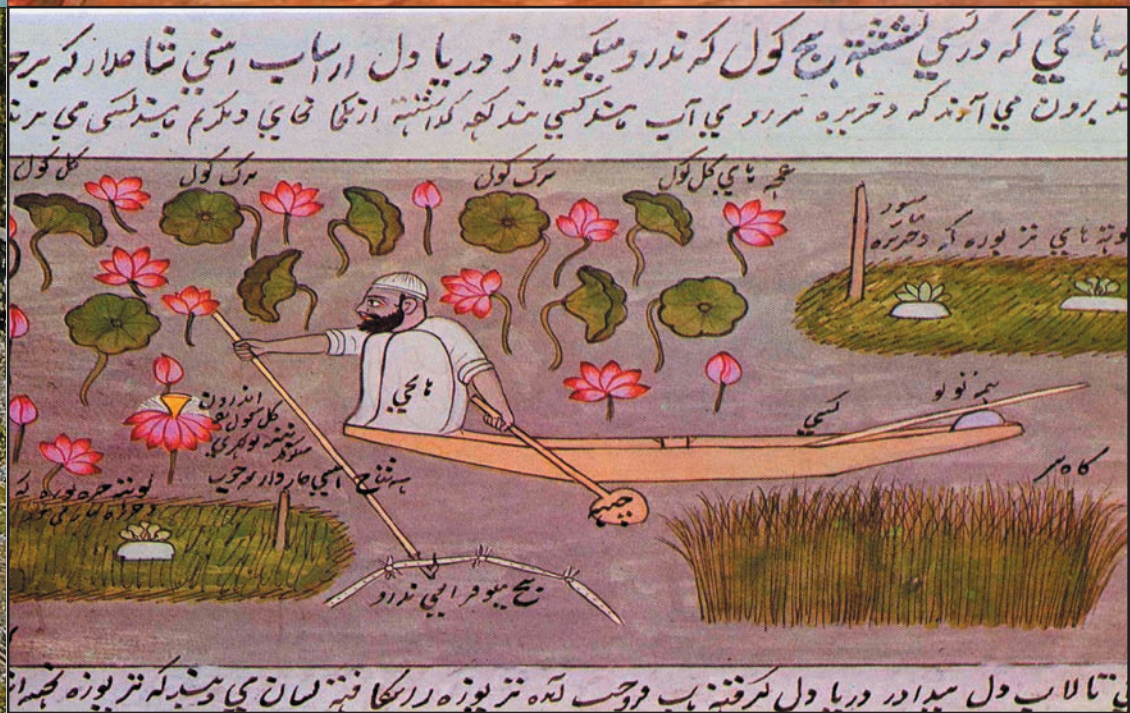
Although urban agriculture is enjoying resurgence it was once as plentiful a practice as eating its bounty. Almost all cultures had a need of food and grew in proximity to where they lived. Modern developments and technologies have allowed for a separation between where our food is grown and where it is consumed. Roads and refrigeration have allowed for quick distant transport and foods that survive longer when picked. Modern ideas on sanitation and housing have made traditional urban agricultural practices obsolete and unwanted. Growing our food near to our homes was once so commonplace that documenting it, as an abstraction, was simply not considered. Indeed many works of art and other records of the human condition from the past include images of gardens and the people, and places they lived, as one. Ancient civilizations utilized growing food where they lived and survived for centuries. Although not always considered our present state of existence is abnormal, our ancestors would be confused at such odd practices.

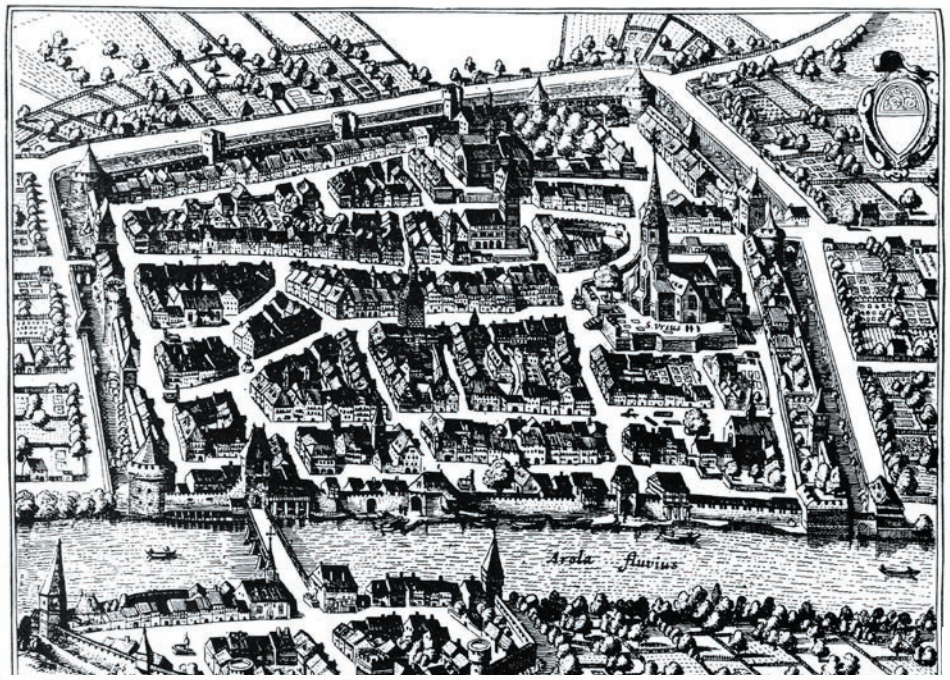


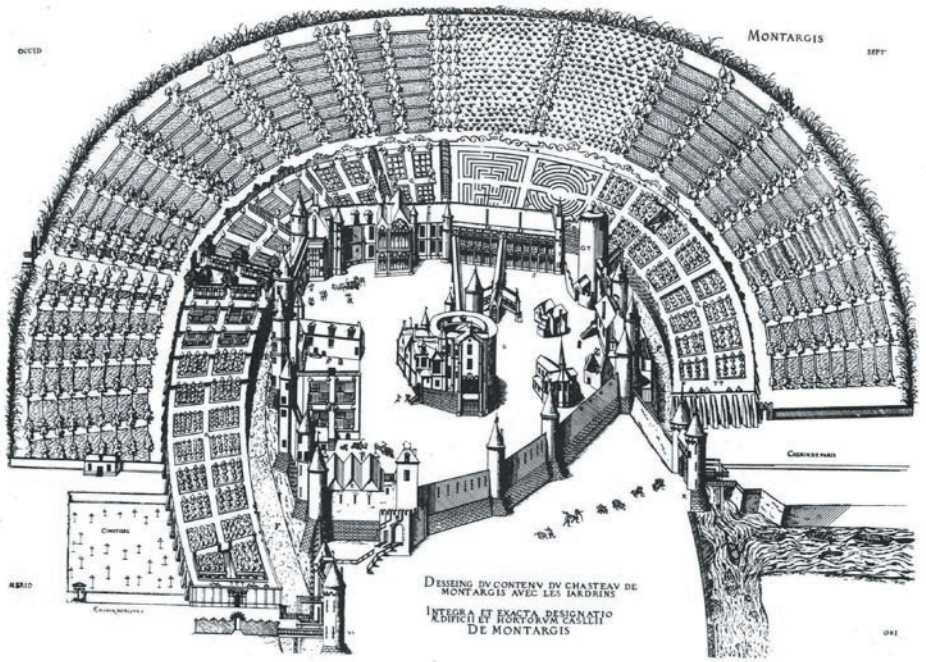


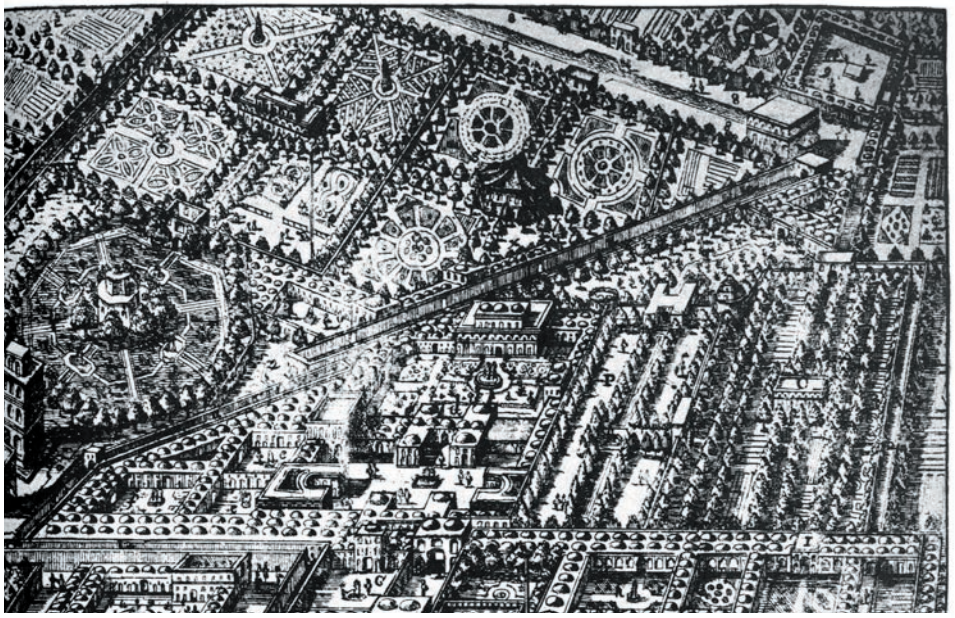


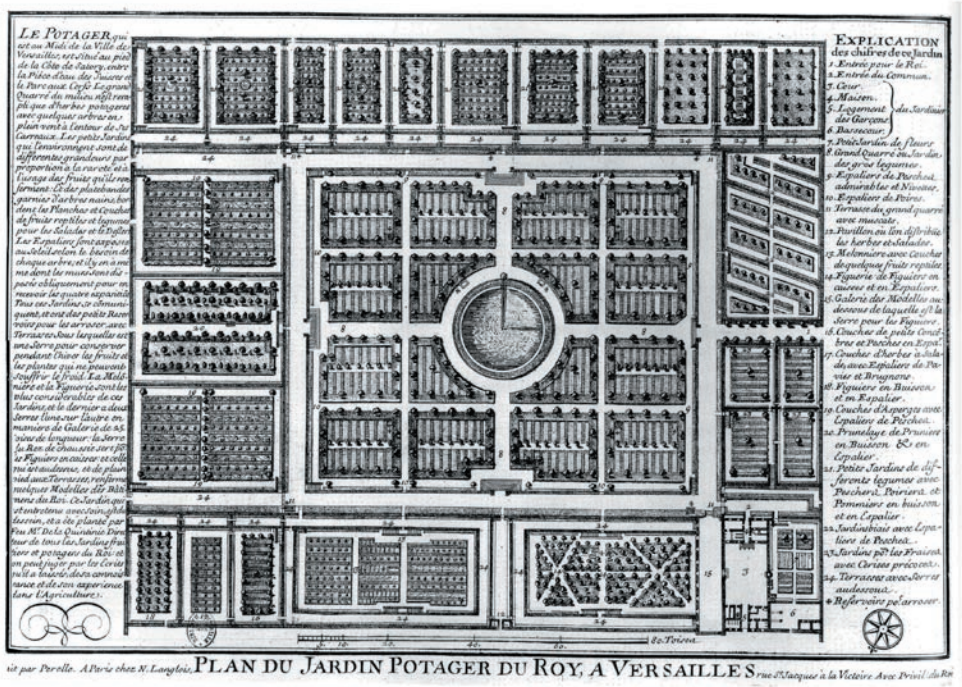



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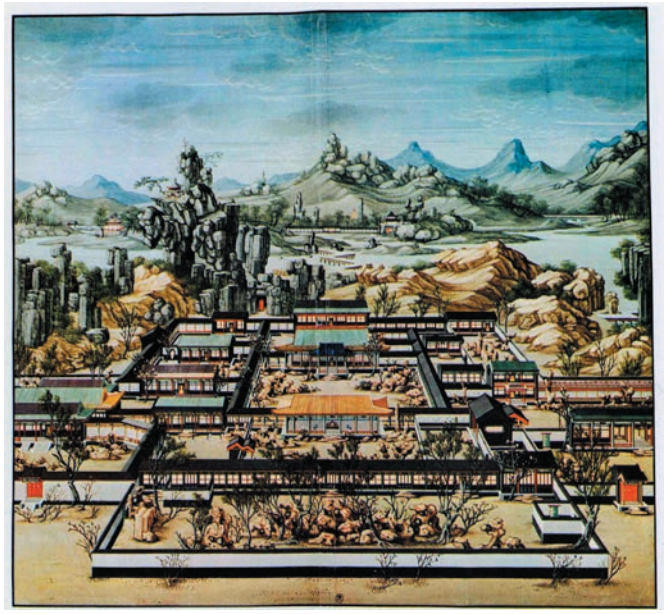

Arola fluvius


MONTARGIS
DESSEING DV CONTENV DV CHASTEAV DE MONTARGIS AVEC LES IARDRINS
INTEGRA ET EXACTA DELINEATIO AEDIFICII ET HORTORUM REGALIS DE MONTARGIS

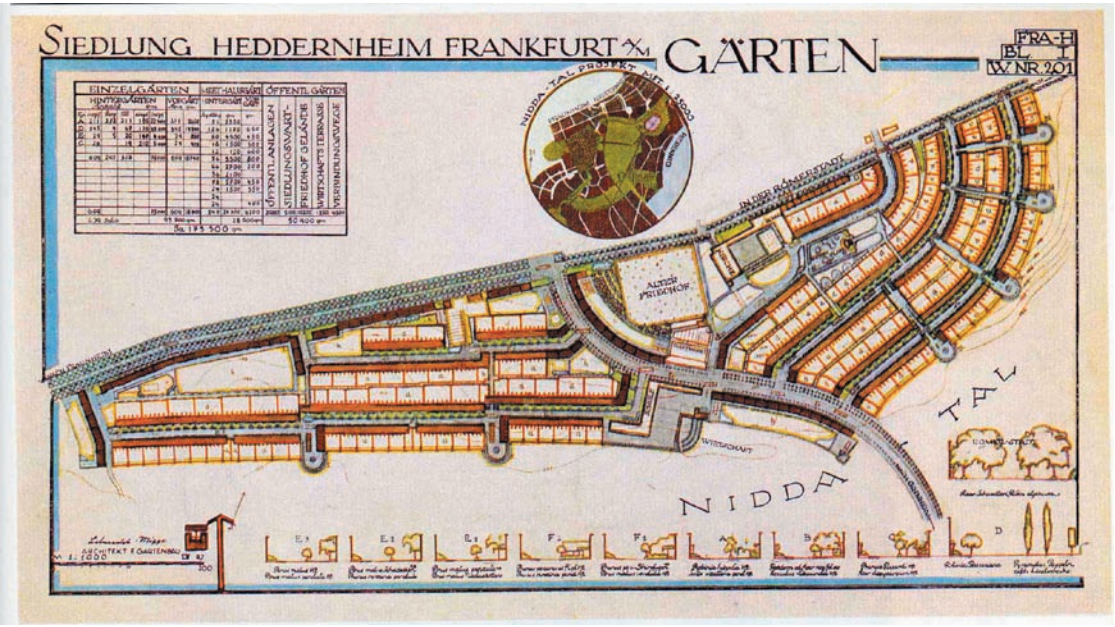


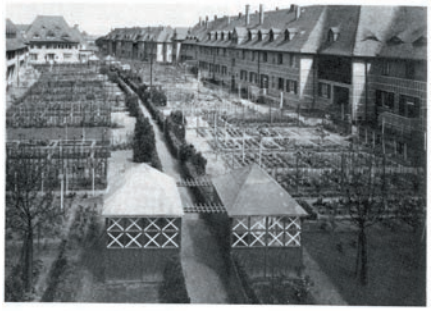

LE POTAGER qui est au Midy de la Ville de Versailles, est situé au pied de la Côte de Satory, entre la Pièce d'eau des Suisses et le Parc aux Cerfs. Le grand Quarré du milieu est rempli que d'arbres fruitiers avec quelques arbrisseaux, plain vent à l'entour de 7 à 8 arpents. Les petits Jardins qui l'environnent sont de différentes grandeurs par proportion à la rareté et à l'usage des fruits qu'ils renferment. Ils sont plus bas que garnis d'arbres nains, bordent les Planches et Couches de fruits reguliers et legumes pour les Salades et le Potager. Les Espaliers sont exposés au Soleil selon le besoin de chaque arbre, et il y en a un mis dans le milieu dans l'espace obliquement pour recevoir les quatre saisons. Tous ces Jardins sont ornés quant et sont d'un petit Bassin croisé pour les arroser avec Terrasses sous lesquelles sont pratiquées pour conserver pendant l'hiver les fruits et les planter qui ne peuvent souffrir le Froid. La Melioniere et la Figuerie sont les plus considerables de ces Jardins, et le dernier a deux Serres l'une sur l'autre en manière de Galerie de 45 toises de longueur: la Serre du Rez de chaussée sert pour le Figuiers en caisses et celle au dessus pour des Orangers, et de plusieurs autres curieuses Plantes. Elle est accompagnée aux Terrasses, renfermant quelques Modelles des Bâtimens du Roi. Ce Jardin qui est entretenu avec beaucoup de soin, a été planté par feu M. de la Quintinie Directeur de tous les Jardins Fruitiers et Potagers du Roi: et on peut juger par les Ecrits qu'il a laissés des connoissances et de son experience dans l'Agriculture.
EXPLICATION des chiffres de ce Jardin
1. Entrée pour le Roi.
2. Entrée du Commun.
3. Cour.
4. Maison.
5. Logement des Jardiniers et des Garçons.
6. Basse cour.
7. Petit Jardin de fleurs.
8. Grand Quarré du Jardin de gros legumes.
9. Espaliers de Pescher, admirables et Nouveaux.
10. Espaliers de Poires.
11. Terrasse du grand quarré avec muscade.
12. Pavillon ou l'on distribue les herbes et Salades.
13. Melonniere avec Couches de quelques fruits rapides.
14. Figuerie de Figuiers en caisses et en Espaliers.
15. Galerie des Modelles au dessous de laquelle est la Serre pour les Figuiers.
16. Couches de petits Orangers et Pescher en Espaliers.
17. Couches d'herbes et Salades, avec Espaliers de Poiriers et Brugnons.
18. Figuiers en Buissons et en Espaliers.
19. Couches d'Asperges avec Espaliers de Pescher.
20. Prunelaye de Pruniers en Buissons & en Espaliers.
21. Petits Jardins de différentes legumes avec Pescher, Poiriers, et Pommiers en buissons et en Espaliers.
22. Jardinets avec Espaliers de Pescher.
23. Jardins pour les Fraisiers avec Cerises précoces.
24. Terrasses avec Serres audessous.
* Reservoirs pour arroser.
de Toises.
Plan du Jardin Potager du Roy, a Versailles

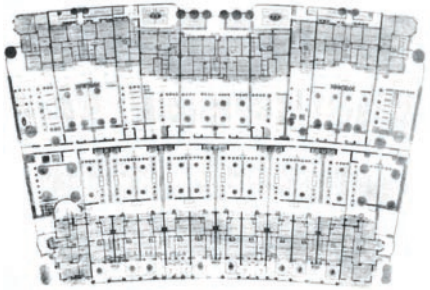


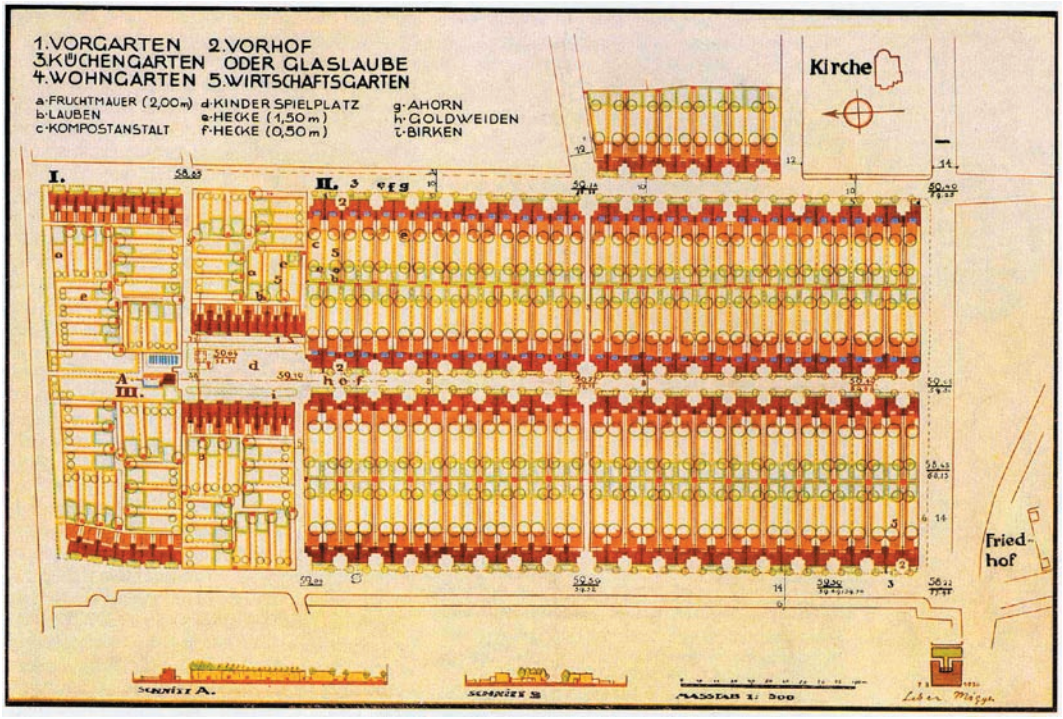


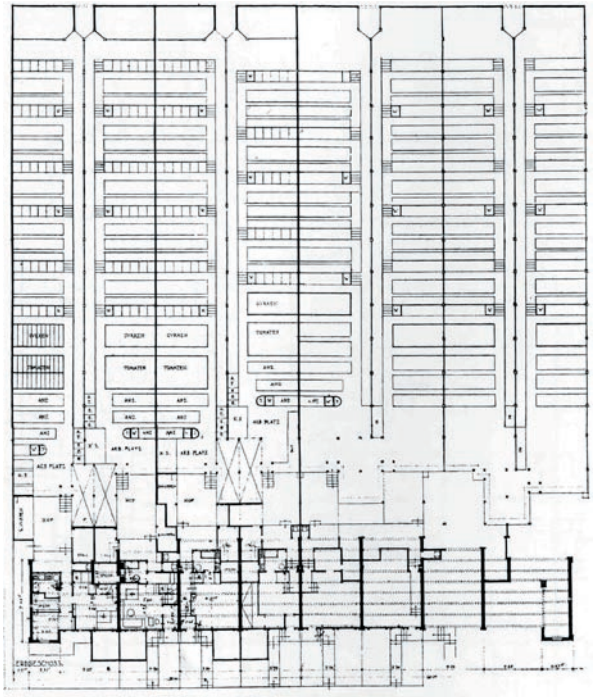



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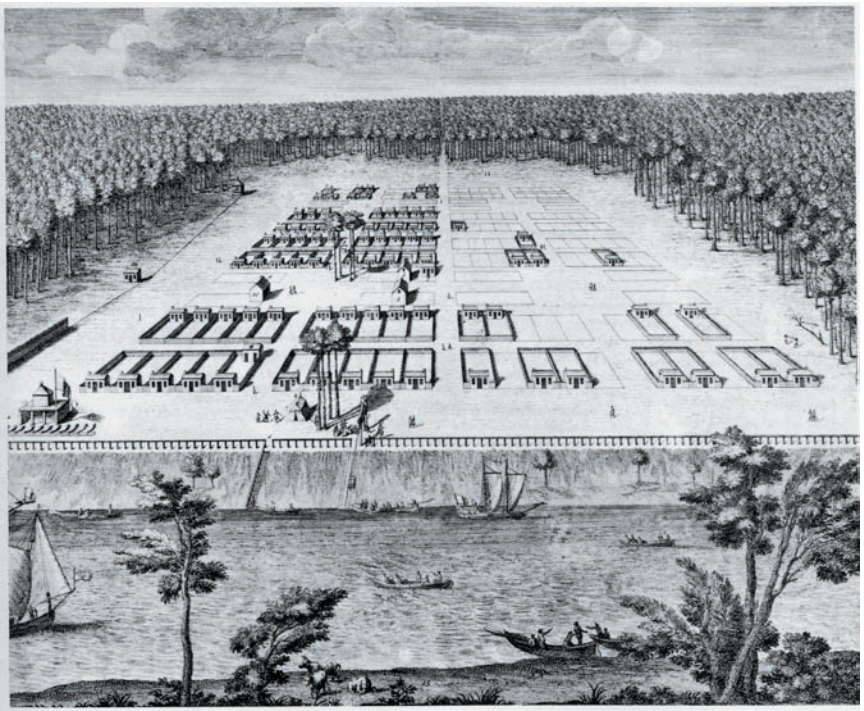


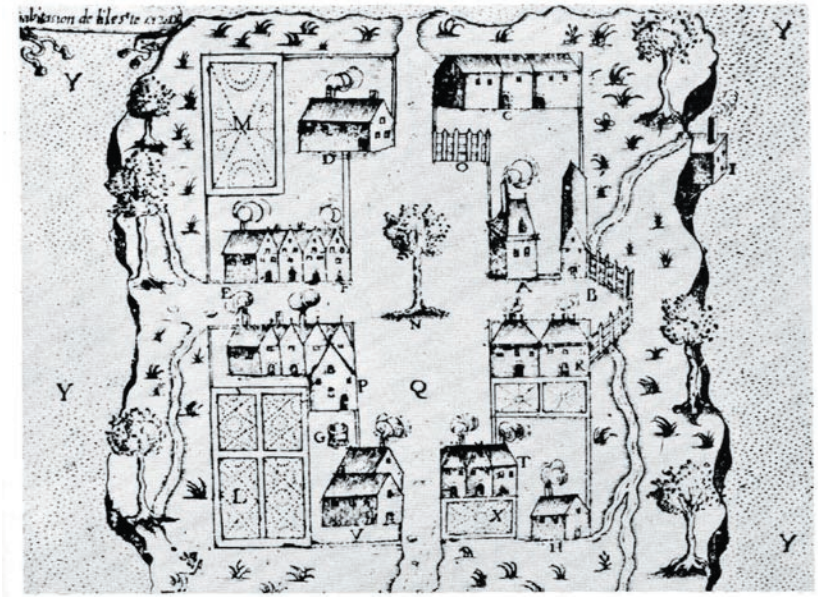

1.VORGARTEN 2.VORHOF
3.KÜCHENGARTEN ODER GLASLAUBE
4.WOHNGARTEN 5.WIRTSCHAFTSGARTEN
a-FRUCHTMAUER (2,00m)
b-LAUBEN
c-KOMPOSTANSTALT
d-KINDER SPIELPLATZ
e-HECKE (1,50m)
f-HECKE (0,50m)
g-AHORN
h-GOLDWEIDEN
i-BIRKEN
Kirche
Friedhof
I.
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2.3.1 Garden of Eden, Jacopo, 1570 Oil on Canvas

-Image from Galleria Doria-Pamphili, Rome

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2.3.2 Hanging Gardens of Babylon, Artist rendition

-Images from numerous website sources, original unknown.

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2.3.3 Map of the City of Catal Huyuk, fields visible near town.
2.3.4 Plan of the City of Catal Huyuk
2.3.5 Mother Goddess, icon of Catal Huyuk

-Images from Catal Huyuk, The temple city of prehistoric Anatolia, William Carl Eichman, found online at: http://www.telesterion.com/catal1.htm

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2.5.6 Catal Huyuk Region, Present day Turkey, Farms visible near settlements

-Images from : Google Earth, Created by Author

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2.3.7 The Farming Terraces of Macchu Picchu

-Images from friend from personal trip.

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2.3.8 Chinampas of Mexico,

-Images from website: Unknown

2.3.9 Chinampas

-Images from website: http://encarta.msn.com/media_461543847_761593151_-1_1/Aztec_Chinampas.html

2.3.10 Chinampas

-Images from Feast Your Eyes, Susan J. Pennington, 2002

2.3.11 Egyptian Gardens, One man tying onion bunch,

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

2.3.12 Persian Water gardens similar to Chinampas

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

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2.3.13 The Medieval town of Solothurn, Now Northwestern Switzerland

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

2.3.14 Castle at Montargis France, 1560, The inner gardens were ornamental
The outer gardens devoted to fruits and vegetables

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

2.3.15 A medieval herb garden, probably producing medicial herbs.

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

2.3.16 The Vegetable Garden of Versailles

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

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2.3.17 The Royal Palace of Isfahan, Persia 1712, myriad small gardens

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

2.3.18 Eighteenth Century Painting of Indian Palace, with small sqaure plots.

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

2.3.19 A Chinese Estate with gardens and living quarters mixed.

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

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2.3.20 Workers housing, Frankfurt Germany, Leberecht Migge, 1925-1930

-Images from Leberecht Migge 1881 - 1935, Publication date 1981

2.3.21 Workers Housing, Bremen, Adolf Loos, 1921 - 1922

-Images from Leberecht Migge 1881 - 1935, Publication date 1981

2.3.22 Gartenvorstadt (Garden Suburb) Leipzig, Leberecht Migge, 1913

-Images from Leberecht Migge 1881 - 1935, Publication date 1981

2.3.23 Garten Bruns (Bruns Garden) Leberecht Migge, Year Unknown

-Images from Leberecht Migge 1881 - 1935, Publication date 1981

2.3.24 Workers Housing Dessau, Leberecht Migge, Leopold Fischer 1928

-Images from Leberecht Migge 1881 - 1935, Publication date 1981

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2.3.25 Glass Cloche used by English growers in Sussex England, 1935

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

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2.3.26 Native Village, Secoton with visable plantings, 1585

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

2.3.27 Early French Settlement on an island in the st. Croix river, 1604

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

2.3.28 Image depicting Savanah settlement, 1734, Homes with Plots

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

2.3.29 Image of Farm house Ontario Canada, 1847

-Images from An Illustrated History of Gardening, Anthony Huxley, 1978

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2.3.30 Typical inner city farmers market, East New York, Brooklyn

-Images from Website : http://www.forgotten-ny.com/

2.3.31 Urban community plots dubbed “garden of Eatin’ “ by locals, South Philadelphia

-Images from Fatal Harvest, Kimbrell ed. 2002

2.0 Definitions and History of Urban Agriculture

2.4 Benefits of Urban Agriculture



2.5.1

Part 1 – Urban Farming Research and Site Research

2.0 Definitions and History of Urban Farming

2.5 Benefits of Urban Agriculture

A list of all of the benefits of urban agriculture is a near impossibility. The very nature of growing locally can be so varied that anticipating all the possible beneficial results would involve far more research than one person could handle, access to every combination of local growing, and omnipotence that mere mortals just do not posses. The ways in which urban agriculture benefits a community or an individual are so varied and specific to situation that a degree of imagination must posses the reader to truly comprehend the full extent of its reaches. With that said it is possible to list as many known benefits or degree of benefit and describe some of the more important ones. When reviewing this section the reader should think about the possible connection of these topics in their own life to truly understand the full extent of positive benefits urban agriculture can encourage.

Included in the description of certain topics is the understanding that not all of these benefits are based on urban farming on a large scale, an organized level or a tested truth. The types of growing can range from backyard garden to large scale international development urban farms. Because urban agriculture has not always been documented at every level not all of these benefits have been tested or proved to exist. They are simply the most obvious and logical results of growing locally. Where possible the benefits will be supported by documentation. The reader is asked to use common sense and except the following.

- Eating naturally grown fresh foods is beneficial to general health
- Exercise is a positive activity
- Involvement in community is a noble pursuit.
- It is important to consider both the environment and ecology of a place.

Another factor that is important in the establishing the benefits of urban agriculture is the actual place of practice. International urban agriculture often has many different goals than that of national agriculture. The benefits are not always interchangeable and should be considered commonplace in all types of urban agriculture; obviously certain benefits are dependant on the existence of infrastructure or conditions that may, or may not, exist in all situations.

What follows is a list of benefits of urban agriculture and a brief explanation of each topic. These benefits will be expanded on in the remainder of the chapter. In some cases one topic encompasses more than one benefit type and separations will be made.

Health

Proper nutrition is a necessity of good health. Growing fresh natural food close to its end destination provides an excellent opportunity for increased consumption of nutrients and calories necessary for a healthy diet.

Community

Working locally to grow food can stimulate community building exercises and elevate public perception of existing communities. Urban agriculture can provide a catalyst for community interaction and events. Almost all of the other benefits of urban agriculture also help strengthen and build community.

Economics

Urban agriculture can help generate income for families, individuals or groups. It can help stimulate local economies by providing commodity or by freeing up income from other sources to be invested in a community or in a private enterprise.

Pride

By providing jobs and activities to individuals urban agriculture can stimulate pride and self worth. The ability to create food from hard work and sell it for income can be a strong force for people in need.

Self Sufficiency

By reducing the reliance on existing food production and distribution systems urban agriculture creates self sufficiency. By organizing in groups to undertake and control an urban agriculture project communities and individuals are able to self govern aspect of their lives that might have been the domain of local or federal governments.

Food Security

Knowing where food comes from and how it was grown is very important to good health and food security. Urban agriculture allows people to witness the act of growing, on a daily basis, and to know where their food comes from. In a best case scenario it allows people to grow their own food.

Green Space

Green space in a community is very important. Although not all forms of urban agriculture will provide a place for physical interaction in a recreational manner proximity to green space is still beneficial. Urban agriculture projects that do combine a way to interact with green space are also possible.

Environment

Urban agriculture elevates attitudes and actions toward environment both on a local and global scale. Being involved in a local growing project can rekindle connections between people and environment.

Ecology

Being a conscious member of local ecosystems and understanding the consequences of specific ecological decisions can be closely tied to environment and community. Urban agriculture can help develop responsible attitudes.

Aesthetics

Urban agriculture projects can help "green" a community and provide opportunities for elevating the aesthetics of a place. Beyond the beauty of the natural world there are options in urban agriculture for man made interventions and projects that will increase the pleasure of place through aesthetics.

Recycling

Urban agriculture greatly benefits from constant inputs of recycled food wastes and composts. Vacant lands and abandoned buildings can be modified and re-used to support urban agriculture.

Crime

It has been shown that inner city crime can be reduced through urban green space programs, urban development and renewal programs and community garden programs. Renewal of vacant lots denies the use of the lots for criminal activity and community pride is increased. Members of the community become more watchful and protective of agriculture sites.

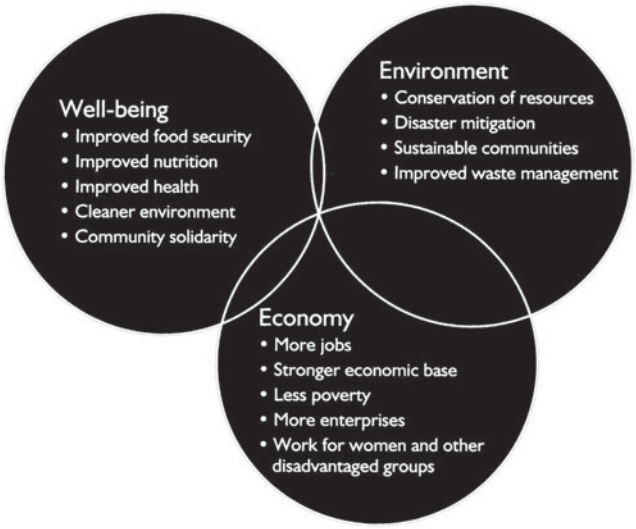
Discrimination

Those members of society who are typical discriminated against, minorities, woman, children and the elderly can find positive influence in urban agriculture. By partaking in positive socially productive activity

These benefits are the most obvious but there are many side avenues and alley ways to also consider and study. Many of these benefits can be lumped together into one topic and the next three sections will consider only three of the main topics but cover some of the other topics as sub categories. These three benefits will be Health, Social and Economic.

"At the 1996 United Nations International Conference on Human Habitats in Istanbul, urban agriculture was formally recognized for the first time for its contribution to the health and welfare of fast growing urban populations worldwide." - Bellows, Brown, Smit, 2005

Benefits of Urban Agriculture



Source : UNDP, Urban Agriculture "Food, Jobs and Sustainable Cities" 1996,

Health Benefits of Urban Agriculture

Probably the most important benefit of urban agriculture is the fact that, no matter what else might come? food is a necessity of life. We may be able to live unsheltered, or unclothed as many of our ancient ancestors did but we can't continue to live without the energy that food provides. It is common knowledge that a proper daily intake of food, nutrients and calories is absolutely necessary for maintaining good health. Primarily personal health can be benefited by urban agriculture in the simple role as food security for individuals and their families. By being able to produce food in a backyard or a rooftop or by growing on balconies and window sills the individual is able to provide themselves and family and friends with nutritious food. This creates a healthy diet and healthy food habits amongst the individual and related peoples.

The sad fact is that the world is increasingly becoming more obese, sedentary and sick. One in Four Americans are obese, or 60 million people over the age of 20, children are no better at a level of 9 million children or 16 percent (Center for disease control, 2005) Although computers and television have been a boon to industry and a commerce and a spectacular tool they are creating generations of people who spend most of their day sitting and inactive. Although mortality rates have declined in the last 50 years the causes of death are becoming more and more related to what we eat, how much we exercise and how we take care of ourselves (CDC, 2005) The yearly consumption of fruits and vegetables per capita is so much lower than the recommended values that it's amazing the health situation isn't worse. The Daily consumption of vegetables is recommended by the USDA to be 3.5 cups per day or 28 ounces (793 grams), in 2003 the daily per capita consumption was 3.8 ounces (106.5 grams) (USDA, ERS) The USDA recommends a daily intake of 2 cups (16 ounces, 453 grams) of fresh fruit, the reality is that 2.3 ounces (65 grams) are eaten per capita daily. Sugar is consumed at a rate of 4.4 ounces (125 grams) per day or 100 lbs a year per capita. (ERS, USDA 2005)

Urban agriculture can play a significant role in strengthening our personal and community health by making good nutritious, fresh, fruits and vegetables part of our daily meals. Food produced in proximity to end uses will allow for a larger majority of people to maintain a proper diet and the benefits of flavour and freshness should be a strong motivation.

Nutritional problems can be a result of ignorance or lack of possible options. In many poor areas the practice of Redlining has created barren wastelands of subsistence. Even in communities where Redlining has been eradicated the practices of the past were so damaging that companies still will not invest in the community; there simply isn't profit to be had. Add to this the proliferation of big food stores, and the elimination of smaller "mom and pop" food stores and many communities simply can not get access to healthy food. Urban agriculture can not only, help build communities by providing much needed food and nutrient sources but it can also help build communities by providing enterprise, jobs and income. Self sufficient, self reliant communities are built through the practice of urban agriculture. This self sufficiency works on a few levels, communities no longer have to rely on big business investment in the form of new food stores in order to obtain needed food, it helps generate income that is re-invested in the community and it helps develop enterprise both directly and indirectly linked to the pursuit of urban agriculture.

Another health benefit of urban agriculture revolves around exercise. Increasingly obesity and sedentary activities such as watching television and working on a computer are taking over for active outdoor (or indoor) exercise.

"NEW YORK, July 24 (Reuters) - Teenagers and young adults spend more time on the Internet than watching television, indicating a shift in media consumption for a demographic prized by advertisers, said a new study released on Thursday On average, young people said they spent nearly 17 hours online each week, not including time used to read and send electronic mail, compared with almost 14 hours spent watching television and 12 hours listening to the radio, the study said." -Reuters 2005

There are 168 hours a week. If we subtract 8 hours a day for sleep that leaves 112 hours. Using the numbers from the Reuters article at least 38 percent of a week is sedentary behavior and that does not even include time spent at school or a job. Urban agriculture can provide a positive outlet for exercise. Being a fairly intensive physical activity farming and gardening are great exercise.

Anatomy of MyPyramid

One size doesn't fit all

USDA's new MyPyramid symbolizes a personalized approach to healthy eating and physical activity. The symbol has been designed to be simple. It has been developed to remind consumers to make healthy food choices and to be active every day. The different parts of the symbol are described below.

Activity
Activity is represented by the steps and the person climbing them, as a reminder of the importance of daily physical activity.

Moderation
Moderation is represented by the narrowing of each food group from bottom to top. The wider base stands for foods with little or no solid fats or added sugars. These should be selected more often. The narrower top area stands for foods containing more added sugars and solid fats. The more active you are, the more of these foods can fit into your diet.

Personalization
Personalization is shown by the person on the steps, the slogan, and the URL. Find the kinds and amounts of food to eat each day at MyPyramid.gov.



Proportionality
Proportionality is shown by the different widths of the food group bands. The widths suggest how much food a person should choose from each group. The widths are just a general guide, not exact proportions. Check the Web site for how much is right for you.

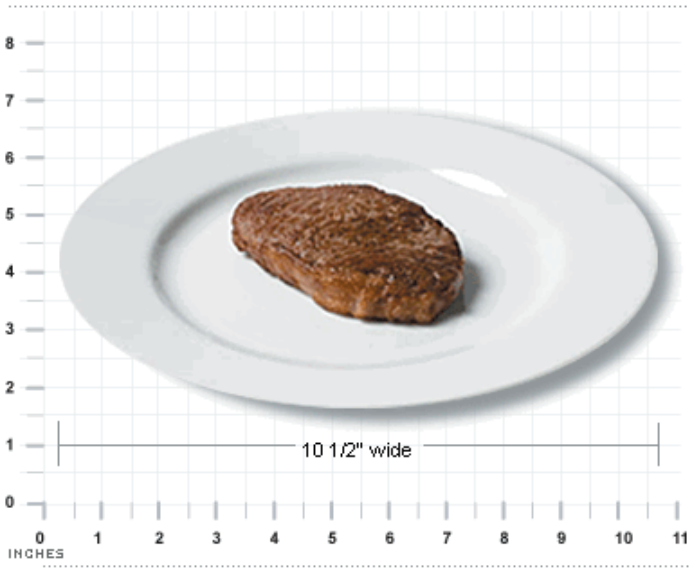
Variety
Variety is symbolized by the 6 color bands representing the 5 food groups of the Pyramid and oils. This illustrates that foods from all groups are needed each day for good health.

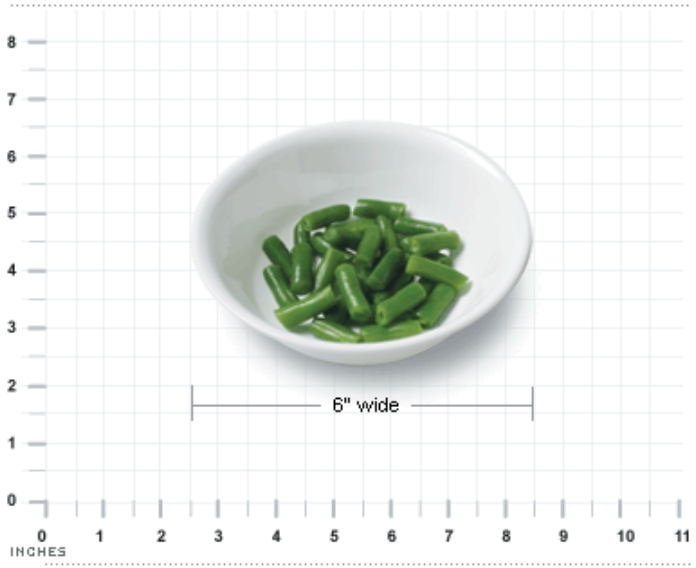
Gradual Improvement
Gradual improvement is encouraged by the slogan. It suggests that individuals can benefit from taking small steps to improve their diet and lifestyle each day.

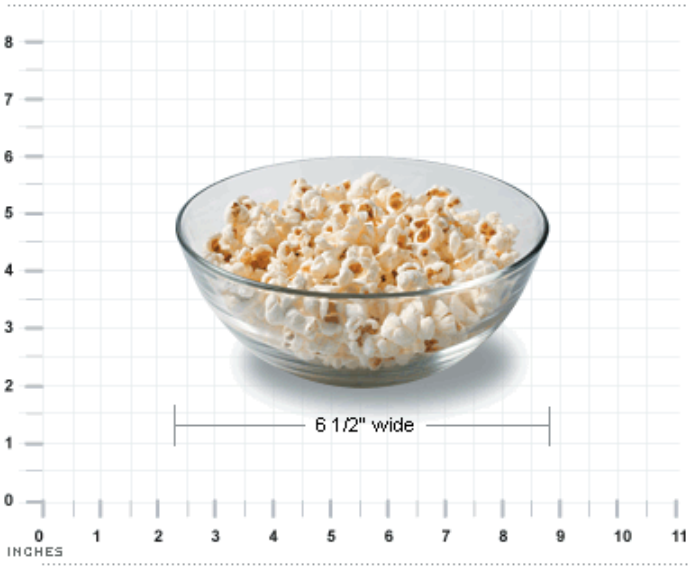
USDA U.S. Department of Agriculture Center for Nutrition Policy and Promotion April 2005 CNPP-16

USDA is an equal opportunity provider and employer.

GRAINS | VEGETABLES | FRUITS | OILS | MILK | MEAT & BEANS





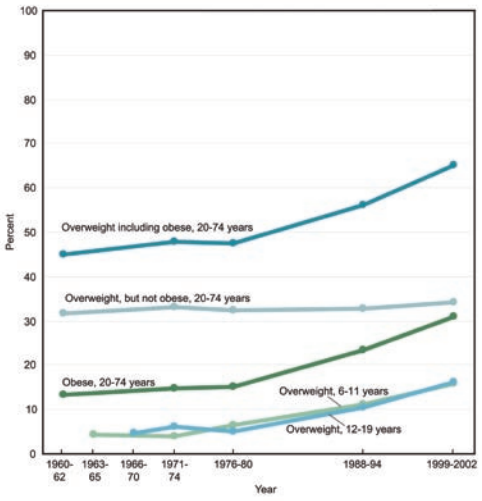


According to an online calorie burn estimator (http://www.healthstatus.com/calculate/cbc) an average person of 160 lbs can burn as much as 393 calories a day working 60 minutes in a garden.

By strengthening our diet and by physically strengthening our bodies through exercise urban agriculture benefits us. Beyond the pleasures of eating good fresh food our health is elevated by the practice of growing, and eating, locally. Add to this the secondary benefits of healthier communities and another secondary benefit of urban agriculture is possible. By making communities healthier the costs of medical aid can go down. The cost of Medicare in the united states has risen every year (CDC 2005) In New York State the cost of Medicare expenditures as a percentage of total personal health care expenditures rose from 16.1 percent in 1991 to 19.6 in 1998 (CDC 2005) Across the board all the States showed an increase in Medicare costs. This may be a result of increased population but also may be tied to the general health of people; health care expenditures have risen 10 percent in 40 years. In 2003 the United States spent $1.7 trillion on health care.

"*urban agriculture contributes to the health and well-being of a community by reducing hunger, improving nutrition and improving environmental conditions that affect health*" -UNDP, 1996

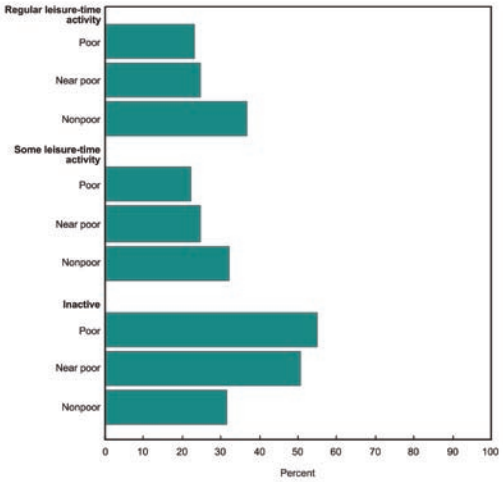
Figure 15. Overweight and obesity by age: United States, 1960-2002



NOTES: Percents for adults are age adjusted. For adults: overweight including obese is defined as a body mass index (BMI) greater than or equal to 25, overweight but not obese as a BMI greater than or equal to 25 but less than 30, and obese as a BMI greater than or equal to 30. For children: overweight is defined as a BMI at or above the sex- and age-specific 95th percentile BMI cut points from the 2000 CDC Growth Charts: United States. Obese is not defined for children. See Data Table for data points graphed, standard errors, and additional notes.

SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Examination Survey and National Health and Nutrition Examination Survey.

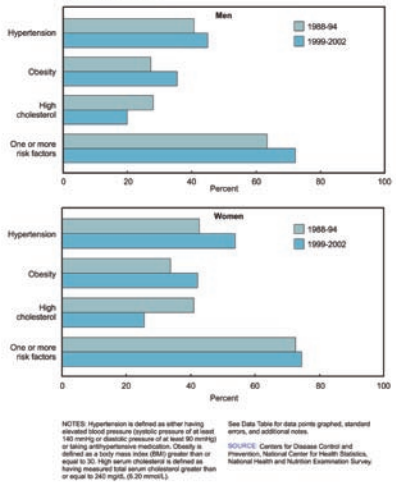
Figure 14. Leisure-time physical activity among adults 18 years of age and over by poverty status: United States, 2003



NOTES: Data are for the civilian noninstitutionalized population and are age adjusted. Inactive adults reported no sessions of light/moderate or vigorous leisure-time physical activity of at least 10 minutes duration. Adults with some leisure-time physical activity were not inactive but did not meet the requirements for regular activity. Adults with regular leisure-time activity reported at least 20 minutes of vigorous activity 3 times per week or 30 minutes of light/moderate activity 5 times per week. See Data Table for data points graphed, standard errors, and additional notes.

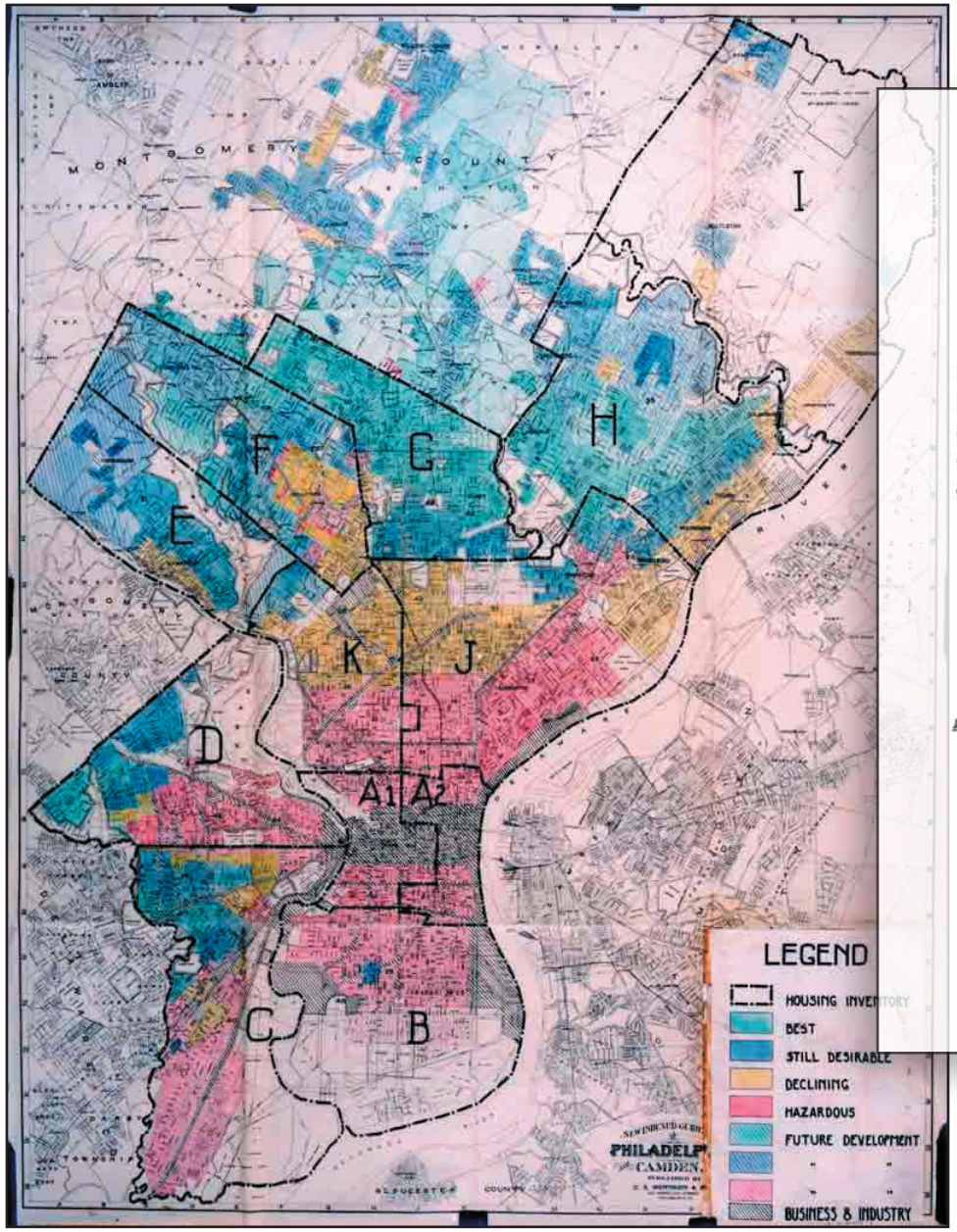
SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey.

Figure 34. Cardiovascular risk factors (hypertension, obesity, and high cholesterol) among adults 55-64 years of age by sex: United States, 1988-94 and 1999-2002



NOTES: Hypertension is defined as either having elevated blood pressure (systolic pressure of at least 140 mmHg or diastolic pressure of at least 90 mmHg) or taking antihypertensive medication. Obesity is defined as a body mass index (BMI) greater than or equal to 30. High serum cholesterol is defined as having measured total serum cholesterol greater than or equal to 240 mg/dL (6.20 mmol/L). See Data Table for data points graphed, standard errors, and additional notes.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey.



NORTH PHILADELPHIA (EAST OF BROAD)

KENSINGTON - FRANKFORD - BRIDESBURG

Section J

Wards 37-20-45-19-17-33-31-18-25-23-45

HOUSING INVENTORY

RESIDENTIAL UNITS:	107,444		
RESIDENTIAL STRUCTURES:	98,708	OWNER OCCUPIED UNITS:	50,617
ONE FAMILY STRUCTURES:	84,865	OWNER OCCUPIED UNITS MTGED:	27,084
TWO FAMILY STRUCTURES:	1,781	NEGRO OCCUPIED UNITS:	5,286
THREE FAMILY AND OVER:	12,064		

PREDOMINANT TYPE OF STRUCTURE: Row - semi-detached.

PREDOMINANT AGE OF STRUCTURE: Forty years and over.

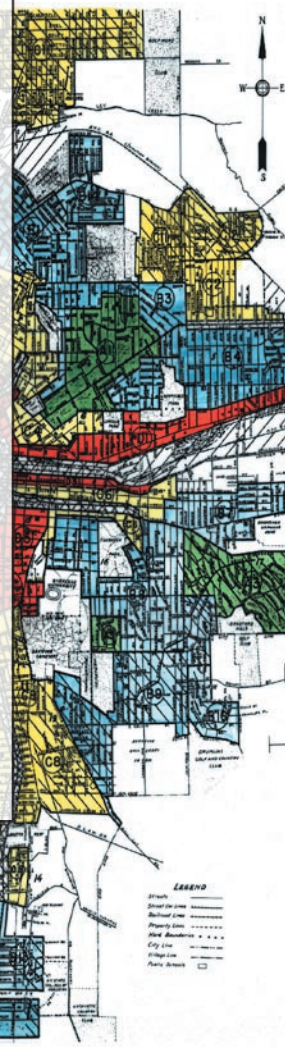
PREDOMINANT TYPE OF CONSTRUCTION: Brick.

CONDITION OF STRUCTURES: Poor.

LOCATION and DESCRIPTION

A.....Red (Hazardous), north of main business section to North Philadelphia at Lehigh Avenue between Broad Street and Delaware River, also including Kensington. This area is very old, mainly obsolete and consisting almost entirely of two, three and four story brick row houses, averaging in age from fifty years or more. Demolition has been heavy particularly in Ward 20 and the number of structures unfit for habitation is large. In addition to the water front being all industry, there are a substantial number of small plants engaged in light manufacturing scattered throughout the section.

North of Fairmount to York between Broad and Front Streets is occupied by Polish, Italians, Jewish and Negro with the latter predominating from Broad to 8th Streets. East of Front Street is Kensington and while it is densely populated, it is essentially an industrial area, including a number of textile mills. Population is mixed laboring class, including a large Polish colony along the water front.



2.5.10



Health Benefits of Urban Agriculture

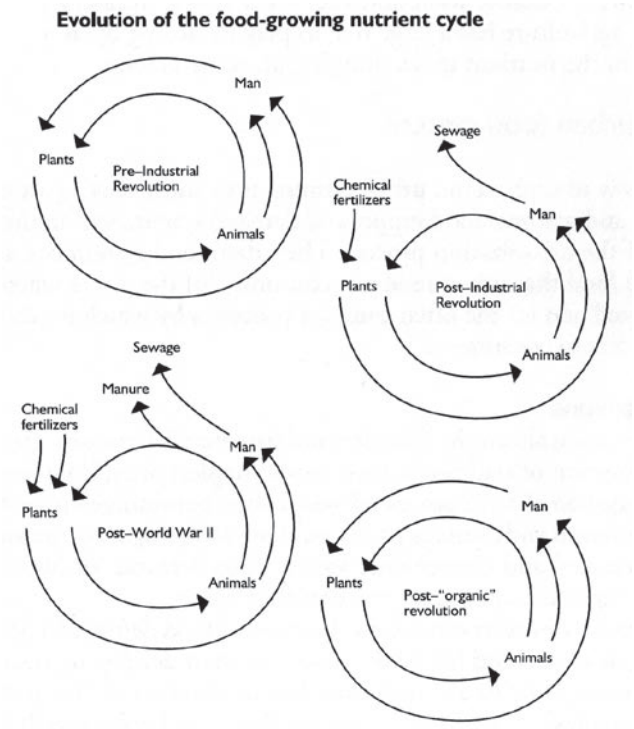
Small scale urban plots can produce almost all of a single family's dietary needs including Vitamins A, B, C and complex Iron (Bellows et. al. 2005, UNDP) Studies show that an better understanding of food -growing, harvesting, identifying varieties in stores and farm stands, understanding seasonality, cooking, and preserving leads to better dietary decisions and community growing provides social interactions that allow for dissemination of knowledge on proper food habits (Bellows, et al, 2005) Gardeners and growers tend to eat more vegetables and fruits and stay away from refined, processed foods (Bellows, et al 2005) Public sector advocates of nutritional health are promoting the introduction of local growing in some form to promote better community health (Bellows et al 2005)

Long distance shipping is seen as reducing nutrients in food. Studies show that 5-10 day lag between farm and end consumer can cause a loss of 30-50% of some nutrients in certain foods. (Bellows, et al 2005) Local growing is increasing consumption of nutritious food that, for the reason of cost or availability, is lacking in inner city diets. Local growing is also introducing ethnic and regional produce into diets that typically have no exposure to such foods (Bellows et al 2005) CSAs (Community supported agriculture) is benefiting both the grower and end consumer. The grower has a market for their produce and consumers are getting a yearly supply of fresh fruits and vegetables delivered to their door. This allows, not only, the growers to improve their diet but also members of the community. The end consumer could be in close proximity to the growing space or some distance away. The sick, elderly and disabled may not be able to participate in the growing process but they can still support it and benefit from it.CSAs are becoming very commonplace and local and state governments are supporting local growing by creating "Buy Local" policies (Bellows et al 2005)

Local food production is also benefiting the urban poor and homeless by helping food banks and soup kitchens maintain a stock of hard to get fresh fruits and vegetables. Community support groups have little trouble obtaining grains, canned goods and starches but find it hard to obtain vegetables and fruits. Local growing is able to provide these items and in some cases the very people fed by these gardens also tend them. (Bellows et al 2005, UNDP, 1996)

Another benefit of urban agriculture is Mental Health. Community gardens and local growing has long been used to treat the mentally ill. Specific treatment programs have been used to treat patients and help develop skills that can re-introduce many patients to society (Fitzpatrick, 2006) By creating better communities both socially and environmentally the Mental health of the general population also benefits.(Viljoen, 2005)

The health benefits of urban agriculture are numerous and plentiful. They involve individuals and communities, poor and wealthy and the producers and practitioners of local growing and the people of the community. Urban agriculture provides, nutrients, food security, exercise, healthy environments and new forms of treatments and medicines. Environments are improved and the secondary benefit of improved social and mental health are achieved. Urban agriculture has a very positive and multifarious positive outcomes.



Source : UNDP, Urban Agriculture "Food, Jobs and Sustainable Cities" 1996,

Fresh fruit: Per capita consumption adjusted for loss[1]

Year	Primary weight[2]	Retail weight[2]	Consumer weight	Total loss, all levels	Per capita consumption adjusted for loss			Calories consumed daily[3]	Servings consumed daily[4]
	Lbs/year	Lbs/year	Lbs/year	Percent	Lbs/year	Oz/day	G/day	Number	Number
1970	101.4	96.7	85.1	58.8	41.8	1.8	51.9	28.9	0.47
1971	100.6	96.0	84.4	58.8	41.4	1.8	51.5	28.5	0.46
1972	94.9	90.6	79.8	59.0	38.9	1.7	48.4	27.3	0.43
1973	96.6	92.2	81.2	58.7	39.9	1.7	49.6	27.8	0.44
1974	95.7	91.5	80.5	58.1	40.1	1.8	49.9	28.3	0.45
1975	102.0	97.4	85.7	57.4	43.5	1.9	54.0	30.8	0.48
1976	101.7	97.2	85.5	58.3	42.4	1.9	52.7	29.9	0.47
1977	99.9	95.3	83.9	58.4	41.6	1.8	51.7	29.6	0.47
1978	103.6	98.9	87.1	58.5	43.0	1.9	53.4	30.6	0.48
1979	100.3	95.8	84.3	58.4	41.8	1.8	51.9	30.3	0.47
1980	105.1	100.4	88.3	57.6	44.6	2.0	55.4	31.9	0.50
1981	103.8	99.1	87.2	58.1	43.5	1.9	54.1	32.1	0.50
1982	107.6	102.6	90.3	58.2	45.0	2.0	55.9	33.1	0.52
1983	110.2	105.2	92.6	57.6	46.7	2.0	58.0	34.0	0.53
1984	112.8	107.4	94.5	58.0	47.4	2.1	58.9	34.8	0.55
1985	110.8	105.5	92.9	58.0	46.5	2.0	57.8	34.5	0.54
1986	117.6	112.1	98.6	58.1	49.2	2.2	61.2	36.4	0.57
1987	121.8	116.1	102.2	57.4	51.9	2.3	64.5	38.6	0.60
1988	121.2	115.5	101.6	57.5	51.5	2.3	64.0	37.6	0.60
1989	123.2	117.3	103.2	57.7	52.1	2.3	64.7	38.2	0.61
1990	116.6	111.0	97.7	57.4	49.7	2.2	61.8	36.5	0.58
1991	112.9	107.5	94.6	57.8	47.6	2.1	59.2	35.4	0.56
1992	123.2	117.4	103.3	57.8	52.0	2.3	64.6	38.2	0.61
1993	123.8	118.1	103.9	57.7	52.3	2.3	65.0	38.8	0.61
1994	125.2	119.4	105.0	57.7	53.0	2.3	65.9	38.9	0.62
1995	122.9	117.0	103.0	58.0	51.6	2.3	64.2	38.0	0.61
1996	126.5	120.4	106.0	58.3	52.8	2.3	65.6	38.6	0.62
1997	129.8	123.5	108.7	58.2	54.3	2.4	67.5	39.6	0.64
1998	129.1	123.1	108.3	58.0	54.2	2.4	67.4	39.9	0.64
1999	129.8	123.5	108.7	58.3	54.1	2.4	67.2	40.3	0.65
2000	128.0	121.9	107.3	58.1	53.6	2.3	66.6	39.6	0.64
2001	125.7	119.5	105.2	58.5	52.1	2.3	64.8	38.4	0.63
2002	126.9	120.8	106.3	58.3	52.9	2.3	65.8	39.4	0.64
2003	126.7	120.6	106.1	58.2	53.0	2.3	65.8	38.8	0.64

[1]This table uses aggregate food supply data, adjusts for losses, and converts the remaining supply into daily per capita calories and *Food Guide Pyramid* servings. [2]The basic consumption estimate is made at a primary distribution level, which is dictated for each commodity by the structure of the marketing system and data availability. Farm weight. [3]Number of daily servings multiplied by calories per serving. [4]Grams per day divided by serving weight.
Source: USDA/Economic Research Service. Data last updated Dec. 21, 2004. Note: The loss factors presented here are first estimates and are intended to serve as a starting point for additional research and discussion. We welcome suggestions to expand on and improve our loss estimates. Contact Jean Buzby at jbuzby@ers.usda.gov or Hodan Farah at hfarah@ers.usda.gov

Fresh vegetables: Per capita consumption adjusted for loss[1]

Year	Primary weight[2]	Retail weight[2]	Consumer weight	Total loss, all levels	Per capita consumption adjusted for loss			Calories consumed daily[3]	Servings consumed daily[4]
	Lbs/year	Lbs/year	Lbs/year	Percent	Lbs/year	Oz/day	G/day	Number	Number
1970	154.3	144.5	127.2	56.5	67.0	2.9	83.3	41.2	1.50
1971	148.0	138.6	122.0	56.3	64.6	2.8	80.3	38.5	1.45
1972	151.3	141.6	124.6	56.4	65.9	2.9	81.9	39.6	1.48
1973	148.0	138.4	121.8	56.1	64.9	2.8	80.7	37.6	1.48
1974	145.9	136.4	120.0	56.0	64.2	2.8	79.8	36.6	1.48
1975	148.8	139.2	122.5	56.2	65.1	2.9	81.0	38.0	1.50
1976	148.1	138.4	121.8	56.1	65.0	2.8	80.7	36.7	1.49
1977	148.6	138.7	122.1	56.0	65.3	2.9	81.1	36.6	1.53
1978	143.4	133.7	117.7	55.6	63.7	2.8	79.2	34.9	1.49
1979	148.5	138.6	122.0	55.7	65.8	2.9	81.7	37.0	1.55
1980	151.3	141.2	124.3	55.7	67.1	2.9	83.4	37.6	1.58
1981	144.9	135.2	119.0	55.6	64.3	2.8	80.0	35.0	1.51
1982	150.8	140.7	123.8	55.5	67.0	2.9	83.3	36.7	1.56
1983	151.1	141.0	124.0	55.7	66.9	2.9	83.1	37.6	1.54
1984	156.4	145.8	128.3	55.7	69.3	3.0	86.2	37.7	1.60
1985	158.4	147.5	129.8	55.6	70.3	3.1	87.4	37.5	1.62
1986	158.5	147.6	129.9	55.7	70.2	3.1	87.2	38.0	1.57
1987	165.1	153.7	135.2	55.4	73.7	3.2	91.5	38.9	1.72
1988	170.2	158.4	139.4	55.3	76.1	3.3	94.6	39.7	1.77
1989	175.4	163.2	143.7	55.3	78.4	3.4	97.4	40.5	1.83
1990	169.9	158.1	139.2	55.4	75.9	3.3	94.3	39.3	1.79
1991	170.1	158.3	139.3	55.3	76.0	3.3	94.4	40.5	1.78
1992	173.6	161.6	142.2	55.4	77.5	3.4	96.3	40.5	1.80
1993	180.4	167.9	147.7	55.2	80.7	3.5	100.3	42.6	1.86
1994	186.3	173.4	152.6	55.4	83.0	3.6	103.2	43.5	1.91
1995	180.5	168.0	147.8	55.5	80.4	3.5	99.9	42.7	1.83
1996	185.5	172.6	151.9	55.5	82.6	3.6	102.6	44.1	1.88
1997	189.9	176.7	155.5	55.3	84.8	3.7	105.4	44.1	1.95
1998	183.6	170.5	150.0	55.8	81.1	3.6	100.8	42.3	1.88
1999	190.2	176.4	155.2	55.8	84.0	3.7	104.4	43.7	2.02
2000	198.0	183.5	161.5	55.9	87.2	3.8	108.4	44.0	2.01
2001	194.5	180.3	158.7	55.9	85.9	3.8	106.7	43.6	1.98
2002	193.5	179.2	157.7	55.8	85.6	3.8	106.3	42.5	1.98
2003	195.6	181.2	159.5	56.2	85.7	3.8	106.5	44.0	1.99

[1]This table uses aggregate food supply data, adjusts for losses, and converts the remaining supply into daily per capita calories and *Food Guide Pyramid* servings. [2]The basic consumption estimate is made at a primary distribution level, which is dictated for each commodity by the structure of the marketing system and data availability. Farm weight. [3]Number of daily servings multiplied by calories per serving. [4]Grams per day divided by serving weight.
Source: USDA/Economic Research Service. Data last updated Dec. 21, 2004. Note: Loss factors presented here are first estimates and are intended to serve as a starting point for additional research and discussion. We welcome suggestions to expand on and improve our loss estimates. Contact Jean Buzby at jbuzby@ers.usda.gov or Hodan Farah at hfarah@ers.usda.gov

List of plants are grown in the gardens and highly used by PLWHA

Plant species	Characteristic	For What purpose	Rhythm of uses	Cost on local market
Aloe vera	medicinal	Immune system stimulation	Often	3 $ /plant
Amaranth	Food		Some times	1 $ / kg
Artemisia annua	Medicinal	Immune system stimulation, loss of appetite	Often	40 $/ kg
Basella alba	Food & medicinal	Immune system stimulation, prevent gastric ulcers	Thrice a 15-days period	10 $/kg
Cabbage	Food & medicinal	Prevent gastric ulcers	Some times	0,4 $/ 2 plants
Capsicum frutescens	Food & medicinal	Prevent candidosis	Often in food	10 $ / kg
Garlic	Food & medicinal	Prevent candidosis, Immune system stimulation, prevent stress effects	Often	10 $/kg
Harungana madagascariensis	Medicinal	Immune system stimulation	Twice a week	15 $/kg
Honey bees (+ Propolis)	Food & medicinal	Prevent candidosis	Twice a week	4 $/kg
Moringa oleifera	Food & medicinal	Immune system stimulation	Often	25 $/kg
Okra	Food & medicinal	Prevent gastric ulcers	Some times	5 $/kg
Tropaeolum majus (capucin)	Food & medicinal	Immune system stimulation	Together with Moringa	10 $/ kg
Vernonia amygdalina	Medicinal	Immune system stimulation, Loss of appetite	Often	15 $/kg
Mushrooms	Food & medicinal	Immune system stimulation	Twice a week	10 $/kg
Lemon tree	Food & medicinal	Improve health (pectin)	Thrice a week	1 $ / 10 fruits
Grapefruit tree	Food & medicinal	Improve health and stimulate Immune system	Thrice a 15-days	1 $ / 20 fruits
Avocado tree	Food	Vitamins and grease	Twice a week	1 $ / 15 fruits

Nº	Sex-Age	Clinical signs before joining the team group	Clinical signs after harvest (10 months later)	Received treatment
01	F 27	Sedimentation: 78 mm/h WBC: 2300 /mm^3 Weight: 48 kgs Loss of appetite, fatigue, vaginal candidosis	Sedimentation: 12 mm/h WBC: 7200/ mm^3 Weight: 68 kgs No sign	*Art/ Vern/ Phyllant * Aloes + Honey * Garlic / Ginger * Capucin/ moringa as food supplement * Lebrunia oil/ Garlic
02	F - 35	Sedimentation: 78 mm/h WBC: 3300 /mm^3 Weight: 51 kgs Vaginal candidosis	Sedimentation: 28 mm/h WBC: 6200/ mm^3 Weight: 65 kgs No sign	*Art/ Vern/ Phyllant * Aloes + Honey * Garlic/ Ginger * capucin/ moringa as food supplement * Lebrunia oil/ Garlic
03	F - 31	Sedimentation: 25 mm/h GB: 4500 /mm^3 Poids: 60 kgs Skin eruptions	Sedimentation: 9 mm/h GB: 8100/ mm^3 Poids: 67 kgs Clean skin	*Art/ Vern/ Phyllant/ * Aloes + Honey * Garlic/ Ginger * Capucin/ moringa as food supplement * Lebrunia oil/ Garlic
05	M- 26	Sedimentation: 79 mm/h WBC: 3700 /mm^3 Weight: 45 kgs Skin eruptions	Sedimentation: 32 mm/h WBC: 5700/ mm^3 Weight: 58 kgs Clean skin	*Art/ Vern/ Phyllant * Aloes + Honey * Garlic/ Ginger * Capucin/ moringa as food supplement * Lebrunia oil/ Garlic
06	F - 52	Sedimentation: 78 mm/h WBC: 4900 /mm^3 Weight: 37 kgs Chronic diarrhoea, cough, zona, dysphagia, loss of appetite	Sedimentation: 24 mm/h WBC: 7400/ mm^3 Weight: 58 kgs No sign	*Art/ Vern/ Phyllant/ * Aloe vera + Honey * Garlic/ Ginger * capucin/ moringa as food supplement * Lebrunia oil/ Garlic
07	M -32	Sedimentation: 102 mm/h WBC: 2400 /mm^3 Weight: 45 kgs Fever, cough, chronic diarrhoea,	Sedimentation: 42 mm/h WBC: 8200/ mm^3 Weight: 61 kgs No sign	* Art/ Vern/ Phyllant * Aloe vera + Honey * Garlic/ Ginger * Capucin/ moringa as food supplement * Lebrunia oil/ Garlic
08	F -45	V.S: 72 mm/h GB: 1900 /mm^3 Poids: 45 kgs Cough, zona, vaginal candidosis	Sedimentation: 30 mm/h WBC: 4800/ mm^3 Weight: 65 kgs No sign	*Art/ Vern/ Phyllant * Aloes + Honey * Garlic/ Ginger * Capucin/ moringa as food supplement * Lebrunia oil/garlic
09	F - 39	Sedimentation: 106 mm/h WBC: 2200 / mm^3 Weight: 36 Kgs Fatigue, Fever	Sedimentation: 25 mm/h WBC: 5500 mm Weight: 65 kgs No sign	*Art/ Vern/ Phyllant * Aloes + Honey * Garlic/ Ginger * Capucin/ moringa as food supplement * Lebrunia oil/ Garlic

Health Benefits of Urban Agriculture (cont.)

Specific health initiatives are even being centered around the practice of Urban Agriculture. In the Democratic Republic of Congo urban agriculture is being used to treat HIV/AIDS and the social perception of the disease. HIV/AIDS is spreading in the area due to causes such as poverty, war, and sexual abuses. Families with HIV/AIDS affected members often are treated negatively by the community and loose their primary means of income or most sell household possessions and animals to pay for medication (Karhagomba,2005) Most often the deaths of these patients is due to malnutrition, lack of medication or stress due to negative attitudes of the community(Karhagomba 2005) Urban agriculture is being used to grow food, medicines and to re-integrate the patients back into the community as productive members. The project is showing sign of success with very positive results. Not only are the patients successfully being re-integrated into the communities but they are again able to support their families and, most importantly, showing great improvements in their conditions.

Gardens are located around hospitals and treatment centers and those patients who can not afford growing spaces use portable growing methods like cloth bags and other container gardens. Bee keeping is the next initiative in the works with hope of collecting the honey and more specifically the propolis used by the bees to construct their hives, which is said to have positive results in treating HIV/AIDS (Karhagomba, 2005)





"*Propolis, also called "bee glue," is a resinous substance bees use to construct and maintain their hives. In laboratory tests, propolis has exhibited a variety of interesting antimicrobial and antitumor properties [20]. However, it has little practical use and can cause contact dermatitis and other allergic reactions*" – Barret,1999

Social and Community Benefits of Urban Agriculture.

Growing is a life long pursuit. The introduction of urban agriculture into a community can create long lasting attitudes within the community toward local growing and proper diet. Health benefits of urban agriculture transcend generations of gardener and the public aspect of local growing creates opportunities for shared social growth and education (UNDP, 1996, Bellows et al, 2005, Viljoen 2005) Local growing spaces become places for the community to congregate and exchange information. This can be in the form of growing information, how to plant, tend, harvest etc, which can be passed through word of mouth to other communities. Informally urban agriculture can provide places for exchange of local news, opinions and ideas. In conjunction with these formal and informal social exchanges also come informal exchanges of products and commodities (Bellows, et al 2005)

Social interaction has positive influences on personal well being through recognition of achievement, informally attention to personal health is influenced and jobs and job training have positive results in the community. The role of urban gardens and growing spaces is one that helps build self worth for growers through increased income, public recognition and involvement in community building exercises (Bellows et al 2005, Viljoen 2005, UNDP 1996) Communities are strengthened through enhancement of neighbourhoods, crime is reduced and communities become more active places with more outdoor social activities. The presence of vegetable gar dens in inner-city neighborhoods is positively correlated with decreases in crime, trash dumping, juvenile delinquency, fires, violent deaths, and mental illness (Bellows et al 2005)

“We will explore how sharing has acted to open and connect people to one another. Those connections, we will see, have the power to transform everyday spaces into shared spaces in which people come together to themselves growing. In these shared spaces people express, encourage, and validate one another’s capacities as individuals and in doing so create community” Gerhart 2005

Schools that teach growing programs promote better health in children and help develop skills that can benefit youth. An understanding of biology, science, marketing and other ideas are introduced at a young age and help determine future trends in social behaviour (Bellows et al 2005) Urban agriculture in one community can have wide reaching effects by presenting a framework that other communities can study and implement (UNDP, 1996)

Politically urban agriculture can promote self reliance, self sufficiency and self governing in communities traditionally dependent on outside influences. These influences might be business, governmental or social. By being able to grow their own food, sell their own wares and feed themselves and the community feelings of pride and self worth are developed and strengthened and a put forth as examples for other members of the community. Economically inputs from urban agriculture can generate income that is able to be re-invested in the community and, in turn, can promote other forms of business development (Viljoen, 2005, UNDP 1996)

Minority groups or displaced and ostracized members of society can re-integrate themselves by growing locally. Food and other productive inputs help these people find acceptable foot holds in society. Immigrant populations have used local growing to maintain culturally specific traditions (Gerhart, 2005) Through hard work and perseverance people who were once discriminated or shunned by communities can find acceptance. Urban farming helps create social equity through improving the health and productivity of poorer peoples and communities (UNDP 1996)

Community gardens and local growing spaces are seen as safe havens within communities. Woman and children feel that they can be outside working and safe in these spaces (Gerhart, 2005) In the Lower eastside of New York community gardens were started as a way of reclaiming dangerous urban lots abandoned and left to decay. These spaces were used for illicit activity. Community members organized and reclaimed these spaces by cleaning them up and planting gardens. The Liz Christy garden on the corner of Bowery (which means farm in Dutch) and Houston Street in the Lower Eastside is one of the oldest of these gardens and still is in existence today. Many of these early gardens still exist and are protected by decree of the Mayor.

Downtrodden and poorer communities have successfully used urban agriculture as a way to “re-story” their neighbourhoods. Once known for crime and violence the introduction

of gardens have not only changed the character of the community but also the perception by outside persons (Gerhart, 2005) Obstacles to an individual can be better dealt with and solutions can be found through the sharing of these problems amongst a group of people involved in local growing. A sense of nurturing is established through growing and this attitude transcends the garden and begins to find its way into human interactions (Gerhart, 2005)

"...She argues that our market driven society, leisure has not only become the opposite of work but has also be commodified [SIC] and can only be accessed by those who can pay for it. Thus, inner city residents who are often under or unemployed are denied not only the ability to earn a livelihood, but to participate in leisure activities as well. Disconnection from the capital generating activities of work, and increasingly capital dependent activities of leisure serves to isolate people from one another and from productive activities. Garnett tells us that growing food is a way for people to gain feelings of self-worth and self sufficiency by having a productive outlet for one's time as well as by producing something of absolute value-food" Gerhart 2005

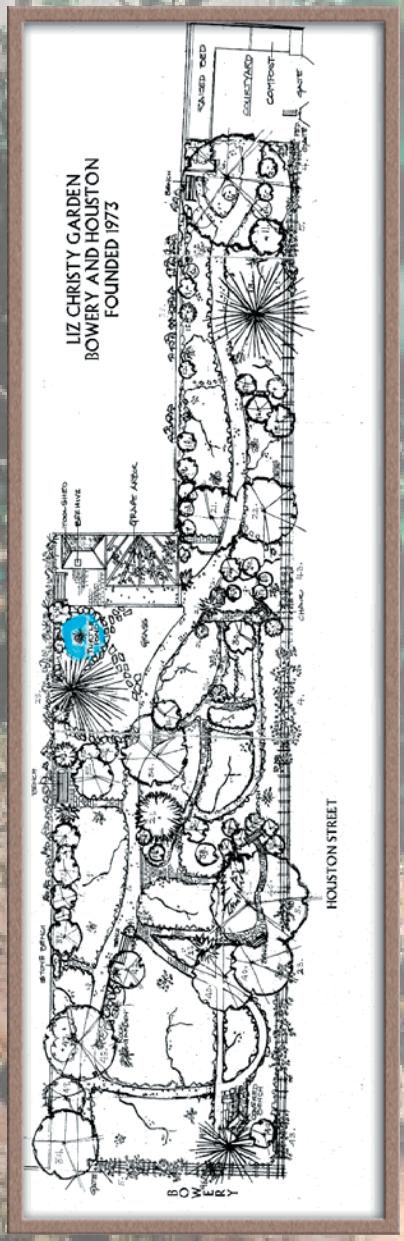
Although the experience of the social benefits of urban agriculture may not be readily available or discernable it is still very important. Urban agriculture plays an important role in developing communities, people and social interaction. It builds strength and self reliance and helps people share experiences and knowledge. Sometimes intangible the end result is almost always positive. It is better to try and bring people together through the practice of urban agriculture than to sit back and do nothing. The social and community benefits will occur even if not a primary goal of local growing. They can be used to the advantage of the project or simple left to develop and grow as they will.







2.5.15 2.5.16



Economic Benefits of Urban Agriculture

How much money can be made from urban agriculture? It is really hard to put a specific number on how much income can be generated. Every growing situation is different with different inputs, different climate, growing season, yields etc. The ability of the farmer affect profits, the number of crops planted and the amount of effort put into raising the crops, maintaining the plots of land and harvesting techniques are also so varied that it follows so must be the amount of money generated. Include in this equation the vagaries of weather and there is no absolute. Prices for produce and other factors like employment numbers are also hard to determine or generalize in this text. The price a producer charges for vegetables and fruit range as widely as the areas they are produced. Is a farmer an employee or an owner? Do temporary workers get included in studies? Variation is about the only thing that all growing has in common.

The United Nations Development Plan lists these three economic objectives of urban agriculture, employment, income generation and enterprise development. As stated in earlier chapters not all urban agriculture has, as its primary focus or goal, these three criteria. Some programs seek to develop people and communities and social interaction above economic goals. Others look to aid those in need by providing training and job skills or a way to feed themselves; income is secondary. Most of these programs exist through the use of grants and donations. Some do generate a very modest and fluctuating profit and still others immediately re-invest any income into the project. There are some cases, such as Food from the Hood in Los Angeles, which initially began as a community oriented project but quickly found a market for its secondary production (condiments) and expanded quickly. The money generated by Food from the Hood ($300,000 gross) is divided between the maintenance of the business and the students who work there. The money given to the students is in the form of scholarships and tuition supplements dependant on the work contribution of the student. Scholarships were, on average, $1200 per student but ranged from $500 to $6500. The project has an end goal of providing $15,000 to each student (Kaufman, Bailkey 2004) Projects also utilize varying degrees of management and overhead inputs. In a 1996 study of 22 gardens by Laura Lawson and Marcia McNally showed operational budgets ranged from $10,000 to $275,000 and most of these projects considered themselves financially insecure (Feenstra, McGrew, Campbell, 1999)

Despite the results of these papers and studies there are those projects that are financially stable and have, as their end goal, the creation and maintenance of economically viable businesses. Roxanne Christensen of the Somerton Tank farm project, when asked what the primary role of economics in urban agriculture is, responded.

"*For urban agriuclture [SIC] to succeed and establish itself on any kind of scale, it needs to be self-sustaining, meaning it needs to make money. What has sandbagged many urban agriculture projects in the past has been coupling them with social engineering causes. It has done the farming profession a great disservice because it has become associated with the disadvantaged, disaffected and downwardly mobile. And it sets urban farming up for failiure. [SIC] Farming is a profession. You need unique talents to succeed. You can no more grab people off street corners and turn them into farmers than you can turn them into artists or scientists. Cities should be courting professional farmers and supporting the development of urban agrciculture [SIC] industries at this particular time because they can generate significant economic activity. The social and environmental benefits which improve the urban quality of life are just extra bonuses.*" – Christensen, 2006

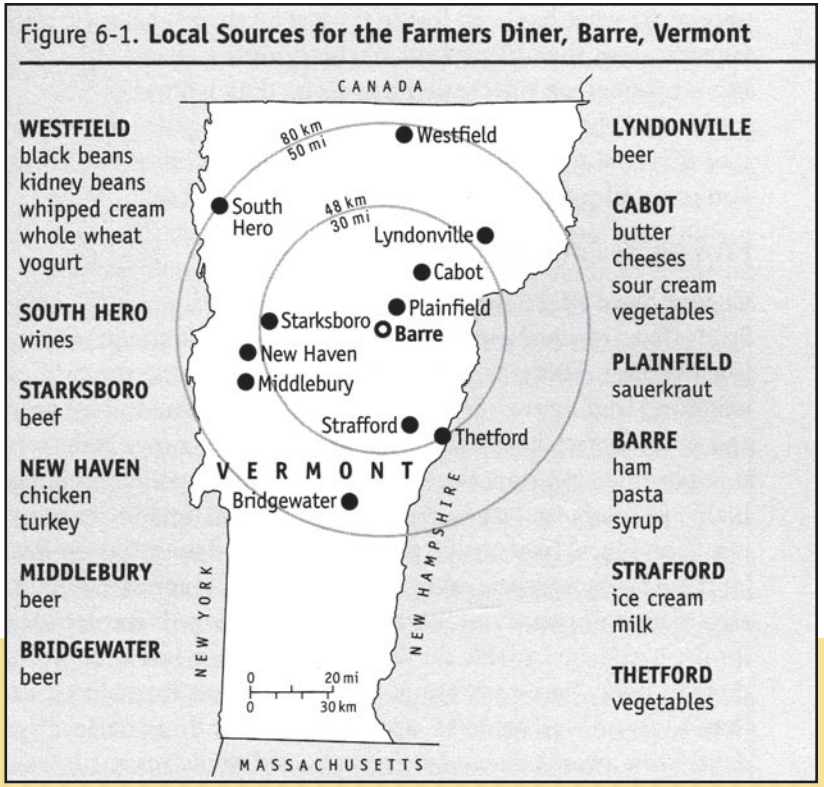
Urban agriculture needs to have as a focus the successful development as a business and income generator. A 1999 study of Entrepreneurial Community Gardens conducted by Gail Feenstra, Sharyl McGrew and David Campbell studied 27 urban agriculture projects across the United States and found that profit and sustainability varied drastically. The projects primarily targeted low income populations and youth. Of the 27 projects 78% (21) involved low income low income residents and 60 % involved youth (Feenstra et al, 1999) Annual distribution of garden sales income ranged from 36% percent of the gardens earning $0-$5000 dollars to 4% of the gardens earning $200,000+ Employment ranged from 49% of gardens employing 1- 5 people to 17% of gardens employing between 25 – 86 people. Salaries ranged from $2.50 an hour to $12.50 an hour with an average wage of approximately



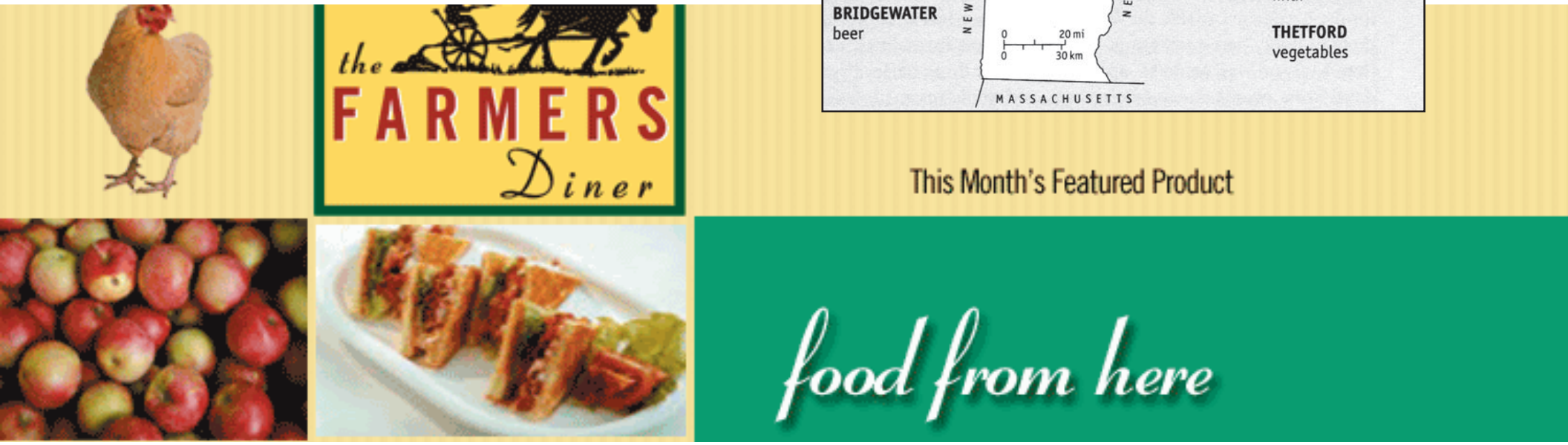
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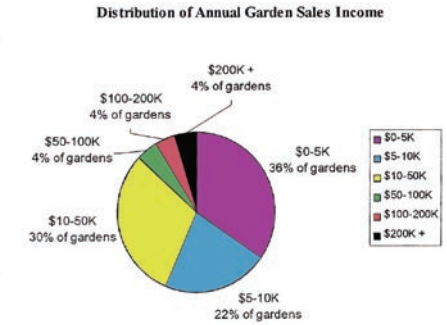
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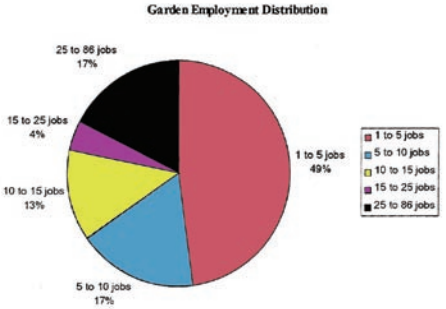


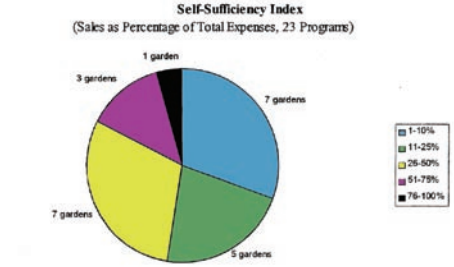
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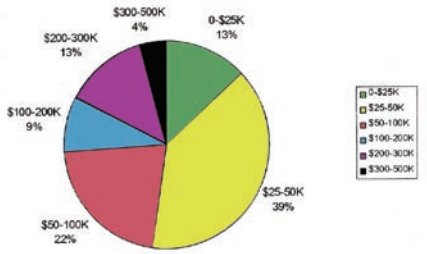


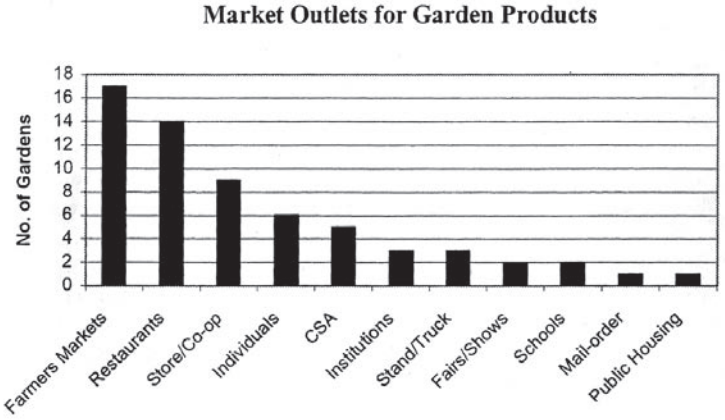
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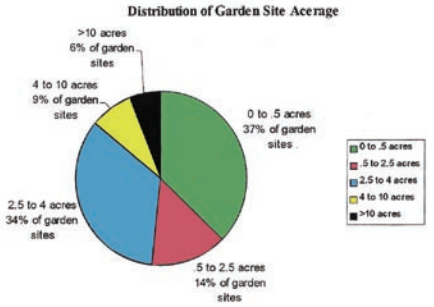












Location of National Gardens

Garden	Location
West	
Kauai Food Bank	Kauai, HI
Guadalupe Garden	Tacoma, WA
Seattle P-Patch	Seattle, WA
Miracle Garden	Phoenix, AZ
Midwest	
Community Farm Project	Bloomington, IL
City Greens	Minneapolis, MN
Southeast	
Magic Community Gardens	Asheville, NC
SEEDS Phoenix Garden Project	Durham, NC
Atlanta Urban Gardening Program	Atlanta, GA
Parkway Partners	New Orleans, LA
Northeast	
Centro Agricola	Holyoke, MA
City Farm	S. Providence, RI

Source for All Charts This page and proceeding page: Entrepreneurial Community Gardens, Growing food, Skills, Jobs and Communities, Feenstra et al, 1999.

Value-Added Products

Product	No. of Gardens
Salsa/sofrito/hot sauce	4
Herbal vinegar, tea, sorbet	4
Dried floral and herb products	4
Salad dressing	2
Crafts, candles	2
Jam	2
Honey	2
Fresh floral arrangements	1

Crops Grown for Market

Crop	No. of Gardens
Vegetables	27
Flowers	12
Herbs	9
Plants, starts	4
Fruit	3

$6.50 an hour, employed project members worked from 5- 30 hours weekly with the average being 23 (Feenstra et al, 1999) For an urban agriculture project to truly provide some economic benefits to an individual or community it must first be able to be self sufficient and earn profit; it must be run, first, as a business with all other benefits being secondary goals. It stands to reason that a project that has financial difficulties will not be able to provide services and jobs. A project must be able to help itself financially before it can help others. With that said there are a plethora of economic benefits to urban agriculture projects. Employment typically involves local residents. More often they are the youth of the neighbourhood around urban agriculture projects. More than income generation these projects help teach the youth skills. In addition to horticultural, marketing and landscaping skills the youth learn about food processing, distribution business and promotional skills that can assist them in finding jobs in the future. Environmental and ecological stewardship is also emphasized and team building and co-operative skills are learned (Kaufman Bailkey, 2004, Feenstra et al, 1999) Money earned can also be beneficial because it is typically re-invested in the community stimulating other growth (Feenstra et al, 1999)

Over 200 million people are involved in urban agriculture for commercial purposes world wide (Viljoen, 2005) Studies have shown on a macroeconomic scale that urban agricultures contribution to national economies is not insignificant (UNDP, 1996) A New Economics Foundation of London study found that for every £10 spent locally at a food business is worth £25 for the local area (Halweil, 2002) In West Africa each dollar of new farm income is worth between $1.96 and $2.88 for the local economy (Halweil, 2002) Economic booms in Japan, Taiwan and South Korea are attributed to the development of small farms after WW II (Halweil, 20002) Pete Rosset of the Institute for Food and Development Policy asserts "For this sort of development to work as it did in East Asia…the money spent of food must recirculate within the local economy, rather than leak out by depending of foreign food sources" Urban agriculture is a perfect way to not only create local jobs and income but to stimulate local economies by re-infusing the area with money. In turn other businesses and industry can grow. Enterprise development of not only the urban agriculture projects but secondary and tertiary businesses is a possibility. Secondary food production, retail stores, restaurants, sundries and numerous other businesses can grow around urban agriculture and have positive influences in the community. Not only can urban agriculture provide economic stimulus to a community in the form of income re-investment it can also promote growth by freeing up money typically spent on food purchases. By providing a way for communities to subsidize their diet with freshly grown food typical family food budgets are free to be spent on other necessities and even luxuries. In Vermont the farmer's diner, Tod Murphy owner and manager, almost completely utilizes local produce and supplies from the local farmers. The milk, eggs, berries, flour are all organic and purchased from local farmers now further than 80 kilometers. (Halweil, 2004) If you read their mission statement online you can see the way that the owner and marketers of the farmer's diner think of the situation.

-Buying and selling so much local food creates significant social returns. Every $1,000,000 in annual sales at a diner translates into 350 acres of farmland in production, 15 farmers with gross sales of $50,000, 13 new farm jobs, and $1,200,000 in land conservation costs saved. Because of local production and shortened delivery routes each $1 million in sales saves at least 10 tons of carbon dioxide emissions annually. (Johnson School of Business, Cornell University Social Venture Competition study 2001/2002)

Estimates are that 5 such diners will infuse local economies with $20,000,000 annually. (The farmers' diner) Murphy's goal is to expand the diner to also encompass preservation and production techniques that can grow the business and provide more outlets for the local farmer. Granted that the diner utilizes a more traditional type of farm but the idea is applicable to any local economy and growing project.

In Lincoln Nebraska a group of local farmers has banded together to invest in a food supermarket where they can sell their wares. Striving to produce organic produced grown using traditional methods the market was an risk that the local farmers saw as necessary (Halweil, 2004) Some of the farmers had to sell off farm equipment and other property to generate enough money to invest but the alternative was succumbing to the pressure of big industrial agriculture and losing everything. The market is in a part of town that

is quickly changing and becoming gentrified, the hope is that as the community changes people with an interest in what they eat and where it comes from will find the market a prime location to shop (Halweil, 2004)

Employment, income generation and enterprise development are all benefits of urban agriculture. If planned and managed properly urban agriculture can grow and strive and become a contributing economic force in communities and neighborhood economies. The economic benefits of urban agriculture serve the individual through income generation and skill training, the community through investment and re-investment and enterprise development and the nation and world by strengthening local and global economies. Like all the benefits of urban agriculture it is difficult to determine the depth of the economic benefits but it is clear that the urban agriculture can play an important role economically.

NOTE: Although well intentioned and successful projects it is unclear if the two businesses referenced in the proceeding passage are still open. The Farmers Diner seems closed but possibly due to renovation, possibly as a result of expansion. The Centerville Farmers Market is rumored to have closed it doors and all attempts by the author to determine this with certainty have failed. The original reference was contacted and responded to an e-mail with this.

"*I heard from a friend in L□*
able to get in touch with□
tions." (Brian Halweil 03_03_06)



Examples of the Impact of Urban Agriculture on Health Nutrition and Food Security

Country	Impact
AFRICA	
Kenya	Twenty – five percent of the country's urban population is dependent on self – produced food for nutritional survival.
Uganda	In Kampala, children of low income farming families are as healthy as children of wealthy families and healthier than children of non farming low income families. Save the Children fund recommended that supplementary feeding programmes in low income areas of Kampala were not needed and noted that urban food production was a factor in Uganda in the late 1980s.
Zambia	Severe economic crisis led to increased food production in Lusaka by 1977, 43% of one low income community was farming home gardens and 57% was farming other city farms – saving 10%-15% on food costs. According to a 1994 report, 80% of families farm in some low income neighbourhoods.
ASIA	
China	In Shanghai, vegetables grown in the metropolitan area reach markets within ten to 15 hours of harvest.
Indonesia	In Java, home gardens supply about 18% of caloric consumption and 14% of proteins for residents.
Nepal	In Kathmandu, 37% of households polled in a survey reported that they met plant food needs through household production. In the 1980s the average plant food production consumed directly by households was 72% and the average animal food was 86% Forty one percent of average daily intake was derived from household production.
Philippines	On the island of Negros, malnutrition among urban and rural children dropped from 40% in 1988 to 25% in 1990 after the start of biointensive gardens. In Cebu City, horticulture combined with public health interventions increased vitamin A levels significantly among children and provided other nutritional benefits that supplementation and fortification intervention alone did not provide
SOUTH AMERICAN	
Argentina	In Buenos Aires, 20% of the nutritional need of the city is produced by part time farmers. Urban farmers consume 70 kilos of vegetables per person each year, while their non farming neighbours consume only 30 kilos.

Examples of the impact of Urban Agriculture on job and income generation

Country	Impact
AFRICA	
Tanzania	In Dar es Salaam, urban agriculture was the second largest employer in 1988, after petty trading and labour. Twenty percent of working age adults participate in urban agriculture
Zambia	The average annual income of participants in a programme to expand and improve food gardens in Matete nearly doubled in two years
ASIA	
India	Intensive farming on 800 hectares of garbage dumps in Calcutta employs about 20,000 people. Fisheries in sewage – fed lagoons employ 4,000 families and produce 6,000 tons of fish every year.
Thailand	In Bangkok, a poultry conglomerate contracts to approximately 10,000 outgrowers.
NORTH AMERICA	
United States	Kona Kai Farms in Berkeley California, made $238,000 in 1988 through sale of organic specialty greens grown on a half acre. three employees are starting their own garden farms.
SOUTH AMERICA	
Argentina	In Buenos Aires, backyard gardens can provide 10%-30% of the cost of a nutritious diet.
Columbia	Urban hydroponics supported by UNDP generate approximately US $30 per month on 10 square metres and require only one hour of daily care. Up to two months minimum salaries (US $90 -$180) can be made on 30 – 60 square metres of planting.

Examples of Urban Agriculture's waste management benefits

Country	Impact
Solid Waste Management	
AFRICA	
Sudan	Approximately 27% of all garbage in Khartoum is consumed by urban animals such as goats, sheep, cattle. These animals also provide a valuable source of income and nutrition for poorer families
ASIA	
China	In Guangzhou, nine crops are produced each in open sites using night soil and urban compost.
India	In Calcutta, 800 hectares of mature dump land produce an average of 150 to 300 tons of vegetables a day without the use of chemical fertilizer.
Wastewater management	
AFRICA	
Tunisia	In Tunis, 1,750 hectares (mostly forage) are irrigated with treated wastewater
ASIA	
China	In Shanghai, 8,000 tons of night soil and seepage are collected each day (about 90% of the city's human waste) After treatment, the waste is sold to farmers in the urban region
India	The 3,000 hectares of Calcutta's sewage – fed lagoons produce an average of 6,000 tons of fish a year.
NORTH AMERICA	
United States	Two hundred wastewater reclamation plants throughout the state of California save 759,000 cubic metres of fresh water each day, with most of the treated effluent put into agricultural use.

Cities among the world's 100 largest metropolitan areas that spend 50% or more of household income by all income groups on food

City	Country	Spending on Food as Percentage of Income
Ho Chi Minh City	Vietnam	80
Lima	Peru	70
Katowice – Bytom - Gliwice	Poland	67
Dhaka	Bangladesh	63
Kinshasa	Zaire	63
Bangalore	India	62
Calcutta	India	60
Guangzhou	China	60
Istanbul	Turkey	60
Lagos	Nigeria	58
Bombay	India	57
Pune	India	56
Algiers	Algeria	55
Nanjing	China	55
Shanghai	China	55
Wuhan	China	55
Harbin	China	54
Recife	Brazil	54
Beijing	China	52
Shenyang	China	52
Tianjin	China	52
Alexandria	Egypt	51
San Paulo	Brazil	50

Note: In comparable cities 40% -49% of household income is spent on food

Source for All Lists This page and proceeding page: UNDP, Urban Agriculture "Food, Jobs and Sustainable Cities" 1996, compiled from numerous sources.



Images, Source:

Page 73

2.4.1 Venezuelan Urban Farmer

-Image from website and author: Maiz Rebelde Monday August 08, 2005

Page 77

2.4.2 - 2.4.6 Food Nutrition pyramid and typical serving sizes

-Images from USDA web site http://www.mypyramid.gov/

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2.4.7 - 2.4.10 Selected Health Statistics, 2005

-Images from : CDC, National Center for Health Statistics

Page 79

2.4.11 - 2.4.13 Map and supporting documents illustrating Redlining practices, 1936 Home Owners Loan Corporation (HOLC) Philadelphia and Syracuse NY, 1937

-Images from Article on Redlining in Philadelhpia from web site http://cml.upenn.edu/redlining/HOLC_1936.html,

Page 81

2.4.14 - 2.4.15 Per captia fruit and vegetable consumption adjusted for loss.

-Images from USDA Economic Reseach Service, 2004, http://www.ers.usda.gov/Data/

2.4.16 - 2.4.17 Charts from Diobass report on UA and HIV / AIDS project

-Images from URBAN AGRICULTURE PROGRAMME OF THE DIOBASS PLATFORM, Innocent Balagizi Karhagomba, WORKSHOP URBAN MICRO-FARMING AND HIV-AIDS Johannesburg/Cape Town, South Africa 15-26 August 2005

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2.4.18 - 2.4.19 Images of inner city Gardens from the Bronx, NY

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2.4.20 Liz Christy in her community Garden, New York City

-Images from website: http://www.lizchristygarden.org/

2.4.21 Map of Liz Christy Garden, New York City

-Images from website: http://www.lizchristygarden.org/

2.4.22 - 2.4.23 Images of Liz Christy Garden, 1973, present day

-Images from website: http://www.lizchristygarden.org
-Background Image: Google Earth, By Author

2.4.24 Images of East New York Brooklyn, Community Gardens

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-Background Image: Google Earth, By Author

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2.4.25 - 2.4.26 - 2.4.27 Images of the Farmer's Diner, Barre Vermont
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-Images from : Farmers Diner Website: http://www.farmersdiner.com/overview.html
- Map from : Eat Here, Brian Halweil, W.W. Norton and Company, NY, 2004

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-Images from :Entrepreneurial Communit Gardens, Growing Food, Skills, Jobs and Communities, Feenstra et al, 1999

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-Images from : Google Earth, Created by Author.

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Part 1 – Urban Agriculture Research and Site Research

3.0 Common Forms of Urban Agriculture

3.1 Introduction
3.2 The Allotment
3.3 Community Gardens
3.4 The War Gardens
3.5 Conclusion



3.1 Introduction

"*The benefits of urban agriculture in wealthy countries are quite different from those in less developed countries. Food security is less of a concern in wealthier countries for several reasons: (a) food costs for lower-income groups may be one fifth to one third of urban family budgets (compared with one third to four fifths in poor countries); (b) food distribution systems are generally more complete; an (c) food is both of higher quality and more accessible. Cities in more developed countries generally are less densely populated and have more available land for raising crops and animals*" - UNDP 1996, "Urban Agriculture Food, Jobs and Sustainable Cities.

Urban agriculture around the world is often undertaken by people out of necessity. Be it for food, income or medical purposes. In the United States and Canada and Europe, the Western Hemisphere, community gardens are probably the most familiar forms of urban agriculture. Community gardens often allow city dwellers to grow food and create areas of leisure near their homes or close to communities. Other names for a similar type of garden are allotment gardens or kitchen gardens, civic gardens or children's gardens. The difference between other forms of urban farming and these types of local growing is the intent. While urban farming works to create food and generate enterprise, and jobs, income and food security etc. community gardens are often varied and have different goals depending on the community or individuals that manage them. Some allotment gardens are used to grow vegetables, some flowers. In England the use of the allotment can range from leisure area to chicken field, although animal husbandry is often illegal. The existing community gardens in Brooklyn and Manhattan New York are more typically used for relaxation and outdoor exercise although many combine the pursuit of leisure with the practicality of growing vegetables for consumption. Still others provide spaces for community interaction and many do generate a modest profit through sales. While international forms of urban agriculture and community gardens of the western hemisphere are often very similar urban agriculture is more typically developed as a business enterprise and community gardens and allotments are more often used by the individual, sales of food are secondary and become more of an outlet and display of pride for community gardeners. Urban agriculture is practiced in North America and Europe and the division between what is urban agriculture and what are community gardens is usually blurred. This section intends to discuss the more commonly known forms of urban agriculture in the guise of community gardens.











3.2 Allotments

The community gardens and allotments in Europe have a history that pre-dates those located in North America. Many find their routes in the “Common” land used to commonly graze cattle and livestock, owned by no one and shared by all. In England and Whales the allotment is derived from the commons that were converted to private holdings during the reign of Queen Elizabeth the 1st (1558-1603) The “Commoners” are compensated by the allocation of allotments. The enclosure of common lands persists until 1847 when fear of revolt led to General Enclosure act which allowed for enclosure of the commons only if allotments were provided. Finally in 1887 saw the introduction of the Allotment Act which forced authorities to create allotments if there was demand. Opposition to the act continued until it became law in 1907 (Small holding and allotment act) and national planning included the provision for allotments. (Humphreys, 1996, Crouch, Ward 1997) During WWI and WWII there was much demand for the allotments throughout England, during WWI the allotment assisted in providing food which was becoming scarce due to shortages and during WWII the Dig for Victory Campaign pushed production in the allotments. The ebb and flow of interest in the allotments seems to revolve around controversy and the wars.

In 1873 there were 244,268 plots in England; by 1918 there were nearly 1,500,000 and 1,400,000 during the Second World War. After the war the numbers began to drop falling to 600,000 in 1960, 497,000 in 1977 and finally back to 265,000 by 1997, a number closer to the numbers of the 19th century. The allotments are still in use in England and a national treasure and resource to be sure (Wikipedia, Lawson 2005)

The Danish and other Nordic countries also have a history of the allotment. In Copenhagen the allotment was first introduced as the city developed at the end of the 19th century. People moving from the country to the city brought with them the urge to grow and so rented land to plant vegetables and fruit. These rented lands soon became more permanent with the introduction of small buildings. Although the continued expansion of land meant that some allotments were dismantled for new building the government tried to compensate the growers with plots further outside of the city. During the Second World War, during the occupation by the Germans, the allotments were provided free of charge to anyone who wanted to grow and an estimated 100,000 existed. With the end of the war, and the proliferation of the automobile, summer cottages soon replaced many of the allotments. The ones that remained tried to emulate the wealthier cottage owners and the garden buildings began to become more similar to a summer cottage with places for sleeping and eating. Much of the summer was spent at the allotment cabins. The construction of roadways soon meant that many allotment gardens were surrounded by highways and a general concern about pollution was felt by the gardeners. With the energy crisis of the 70’s the Danish gardeners found themselves competing for allotment space, the once treasured summer homes were now too expensive to travel to by car. Devel opment had left few areas available for new allotments. The Danish parliament saw the need to protect the allotment for its people and introduced a decision to ensure the existence of space for allotments. The ministry of agriculture now buys land as the city develops and rents it for allotments. The city continues to expand but there remain patches of green through out the city (Jensen 1996, http://www.cityfarmer.org/DenmarkHistory.html)

In Canada the allotment saw a popularity around the wars too but the first instance was during the building of the Canadian Pacific Railway with the company encouraging workers to plant gardens on company land. Contemporary allotments are still available in many parts of Canada and the United States. The defining characteristic of an allotment is that it is typically rented or leased by an individual or family and used solely by the renter. Allotments are still available for rent in many American and Canadian centers and typically have long waiting lists.















MINISTRY OF AGRICULTURE

ALLOTMENT & Garden Guide

VOL. 1 No. 1 JANUARY · 1945

IN this new series of monthly "Guides" we are out to help you to get better results from your vegetable plot and your fruit garden. Every month we shall try to do three things : first, we shall remind you of the things that ought to have been done, but may not have been possible because of the weather or for some other reason ; secondly, we shall deal with gardening operations for the month ; thirdly, we shall look ahead a month or two and remind you of what you need to do in readiness.

For more detailed week by week information you would do well to take in one of the weekly gardening journals, as soon as the supply situation permits. And your daily or weekly newspaper probably runs a gardening feature that would be helpful to you.

Get ready for OUTDOOR WORK

January is generally a fairly quiet time in the garden. But you need to push on with your digging and manuring whenever the weather and the state of the land permit. You should also prune and begin to spray your fruit trees, if you have not already done these jobs. But January is a time when you should be thinking and planning, ordering your seed potatoes, vegetable seeds, fertilizers and so on, and making sure that your tools are in good order and that you are ready to begin gardening in real earnest next month, or as soon as local conditions will let you.

Before coming to the various jobs of the month, there is one really important matter that we should say something about—the condition of your soil and the great need to keep it in good heart, for we must not expect to go on producing satisfactory crops year after year unless we restore to the soil what the plants take from it. We must also keep the soil in "good tilth."

MINISTRY OF AGRICULTURE

ALLOTMENT AND Garden Guide

VOL. 1 No. 3 MARCH · 1945



"March winds and April showers,
Bring forth the May flowers."



That was a peace-time couplet. "Not yet must the flowers invade the fat green hinterland of the war-time allotment", a Northern newspaper recently declared. As it pointed out, fresh allotment produce—garden stuff, too—is going to be of immense value during the first few years after the war, when there will be a great strain upon road, rail and all transport. The man who can grow his own produce on his own plot will not only be making an important contribution to a smooth transition from war to peace, but will also be looking after his own family interests best.

The Ministry does not rule out flowers altogether. As the Northern newspaper happily put it : "Now and again an allotment holder will disinterestedly set himself to cheer us all up by bedding out—in true peace-time parkland style—with lobelias, geraniums, pansies—just a happy fringe of them along the hem of his plot." The Ministry itself has said, in effect, that not more than one-tenth of peace-time flowers should be grown, but the paper puts it better with its phrase "just a happy fringe", adding "But behind this gay facade wholesome



"Just a happy fringe..."

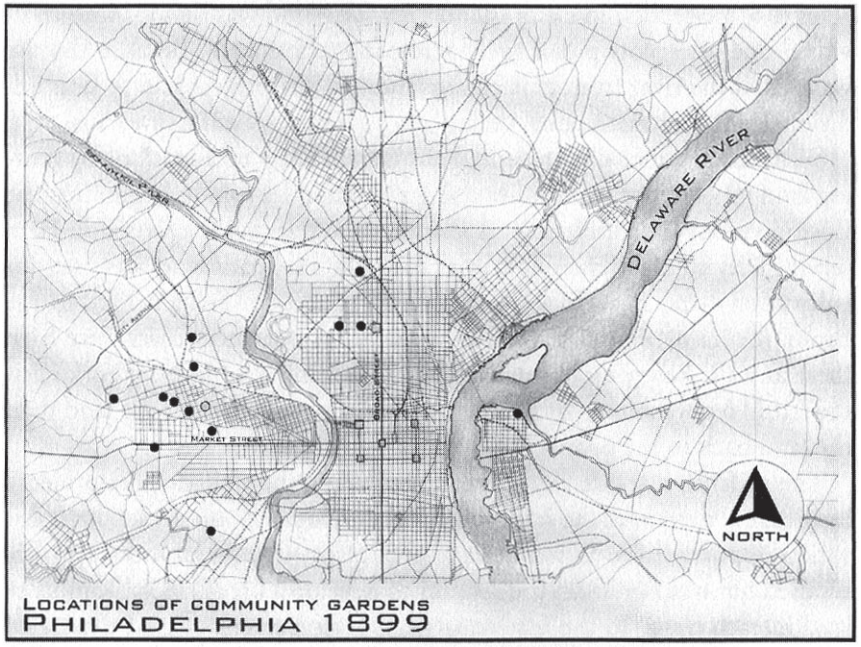
3.3 Community Gardens

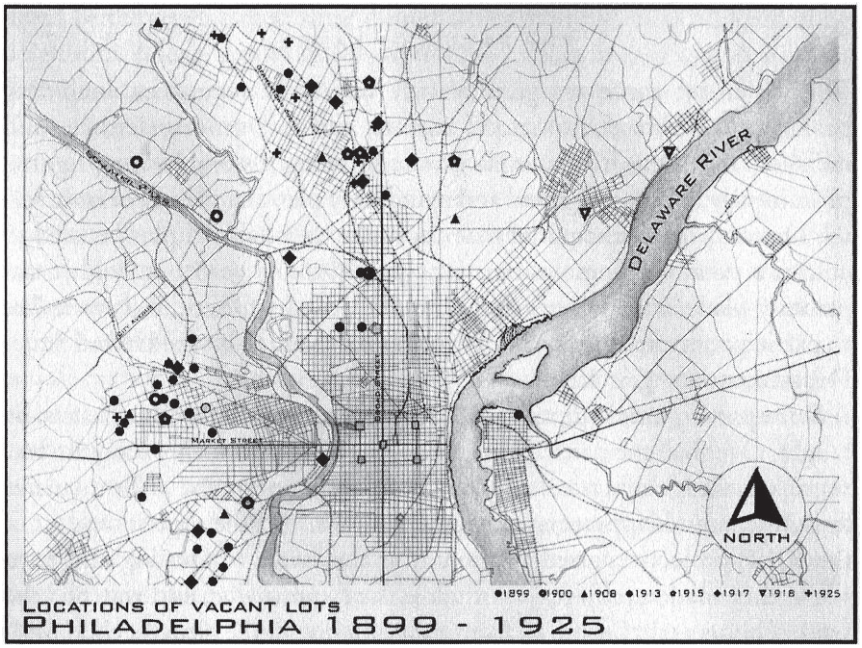
Unlike the allotment Community gardens tend to be exactly what their name suggests; gardens held by the community and tended by community members. Sometimes the name suggests the location of the garden more than ownership. Gardens are joined through membership but typically are open to the public. The history if the community garden is rooted in three types of program, vacant lot cultivation, children's school garden and civic garden campaigns (Lawson, 2005)

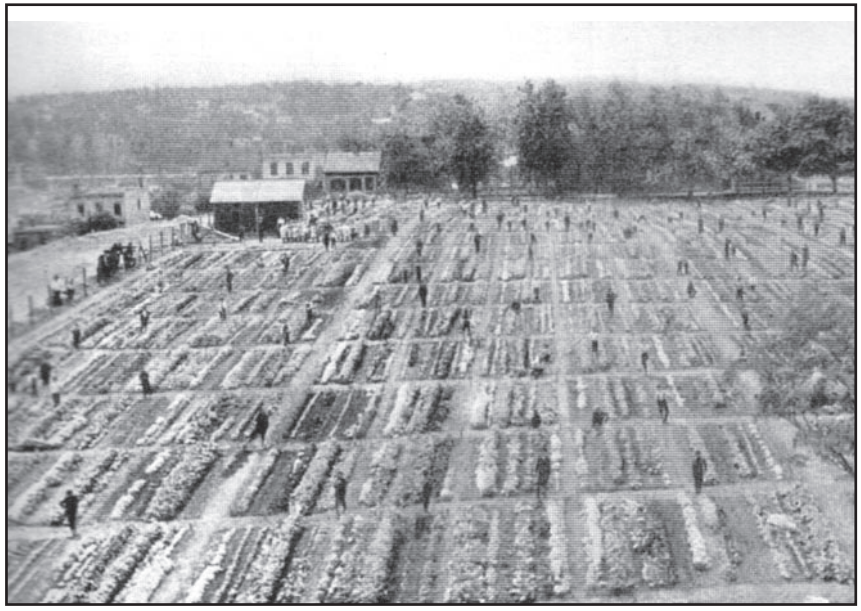
Industrialization is responsible for many of the forming factors in our near history. In the 19th century progress in manufacturing and technology spurred advancements and changes in society and where and how people lived. Industrialization also generated quick influxes of population to urban centers and fluctuations in employment and economy. In 1850 the population of the United States was approximately 23 million people (Lawson, 2005) The number grew to 63 million just 40 years later in 1890 with 35 percent of the population living in urban centers (Lawson 2005) In 1850 ten urban regions had populations of over 50,000 and by 1890 fifty eight urban centers had more than 50,000. The number more than doubled to 144 urban centers with 50,000 or more and 51 percent of the population by 1920 (Lawson, 2005) The rapid influx of people into cities meant also the quick rise of tenements, and the problems that existed with mass overcrowding, unsanitary conditions and poor health standards. The move toward the city also included farmers and soon the countryside saw derelict and abandoned farms. By the beginning of the 20th century the problems of the industrialization began to become evident. The response to this was the onset of progressive reform. Groups, governments and organizations began to address the problem and propose solutions. Unfortunately these solutions were often misguided, ill thought or carried out by corrupt agencies and individuals (Lawson, 2005) the result of which was the worsening of problems. An example is the thought that a solution to the health problems of tenements was simply to remove them. The buildings were torn down and replaced by wider streets and boulevards and parks. Little thought was actually given to where the residents of the tenements would move or how they would be affected. The idea that simply providing education and infrastructure would allow the poor to alleviate their current conditions was prevalent. However, this period also saw the introduction of community gardens as a response to these same conditions. Vacant lot cultivation societies and children's school gardens were introduced in the late 19th century. The children's garden program generated national interest and the community gardens were also becoming more widespread. Seen as a solution to problems of health and poverty the community garden program soon became a national pursuit. These early community gardens were typically a supplement to other reform ideas and tended to be a way for the wealthy to become involved in philanthropic activities. The gardens were certainly not meant to be a permanent solution and were often more educational and interim in nature. With the onset of the depression in 1893 the community garden was seen as a way to provide charity to the unemployed that created much greater opportunities than other solutions. Detroit was one of the first cities to create charity community gardens but New York, Philadelphia and other East coast cities soon followed suit. Community gardens soon progressed beyond charity and became a way for children to learn, school centered on growing were created, co-operative small farms as a way to generate income and civic improvement gardens came into existence. The popularity of community gardens ebb and flowed for the next 50 -60 years until the 1950s saw a dramatic decline in community gardens. The energy crisis of the 1970s again saw an interest in affordable food production and again community gardens saw resurgence. In 1857 the Philadelphia Vacant Lot Cultivation Association divided a community area into 1/5th acre sites and promoted and supported community gardens until at least 1919 (Goldstein) The site was re-developed in the 1920-1930s and then in 1970s converted back into community gardens.

Many of the community gardens now in existence in the United States and Canada started through community action. Concerned citizens took back unused and abandoned land for the purpose of changing it aesthetically and functionally. As stated previously gardens in New York such as the Liz Christy community garden were just such gardens. In other situations the intervention of the government created community growing spaces as a response to public need or economic stress.




DELAWARE RIVER
MARKET STREET
NORTH
LOCATIONS OF COMMUNITY GARDENS
PHILADELPHIA 1899

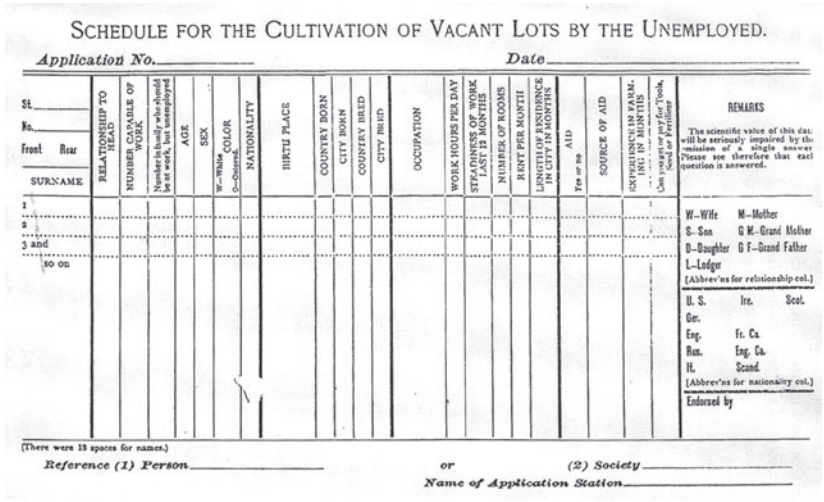

DELAWARE RIVER
MARKET STREET
NORTH
●1899 ●1900 ▲1908 ◆1913 ●1915 ◆1917 ▼1918 ✚1925
LOCATIONS OF VACANT LOTS
PHILADELPHIA 1899 - 1925




VEGETABLES
RETAIL

Cities with Vacant-Lot Cultivation Associations

State	City	Years of Operation Mentioned in Literature
Colorado	Denver	1895–1897
Delaware	Wilmington	1915
District of Columbia	Washington	1895
Illinois	Chicago	1897
Indiana	Indianapolis	1915
Kansas	Kansas City	1897
	Topeka	1895
Massachusetts	Boston	1895–1897
Michigan	Detroit	1894–1897
Minnesota	Duluth	1895
	Minneapolis	1895–1897
	St. Paul	1895
Missouri	St. Louis	1895
Nebraska	Omaha	1895–1897
New Jersey	East Orange	1895
New York	Brooklyn	1895–1897
	Buffalo	1895–1897
	New York City	1895–1897, 1905–1907, 1910
	Rochester	1895
	Syracuse	1895
Ohio	Cincinnati	1895
	Dayton	1897
	Toledo	1895
Pennsylvania	Philadelphia	1897–1927
	Pittsburgh	1915
	Reading	1896
	Scranton	1895
Rhode Island	Providence	1897
Tennessee	Jonesboro	1895
Washington	Seattle	1895–1897
Wisconsin	Lacrosse	1895



SCHEDULE FOR THE CULTIVATION OF VACANT LOTS BY THE UNEMPLOYED.

Application No._____ Date_____

St._____
No._____
Front Rear

SURNAME | RELATIONSHIP TO HEAD | NUMBER CAPABLE OF WORK. Number in family who should be at work, but unemployed | AGE | SEX | W.—White O.—Colored. COLOR | NATIONALITY | BIRTH PLACE | COUNTRY BORN | CITY BORN | COUNTRY BRED | CITY BRED | OCCUPATION | WORK HOURS PER DAY | STEADINESS OF WORK LAST 12 MONTHS | NUMBER OF ROOMS | RENT PER MONTH | LENGTH OF RESIDENCE IN THIS CITY, MONTHS | AID Yes or no | SOURCE OF AID | EXPERIENCE IN FARMING IN MONTHS Can you get or pay for Tools, Seed or Fertilizer

1
2
3 and so on

REMARKS

The scientific value of this cat. will be seriously impaired by the omission of a single answer Please see therefore that each question is answered.

W—Wife M—Mother
S—Son G M—Grand Mother
D—Daughter G F—Grand Father
L—Lodger
[Abbrev'ns for relationship col.]

U. S. Ire. Scot.
Ger.
Eng. Fr. Ca.
Run. Eng. Ca.
It. Scand.
[Abbrev'ns for nationality col.]

Endorsed by

(There were 18 spaces for names.)

Reference (1) Person_____ or (2) Society_____

Name of Application Station_____

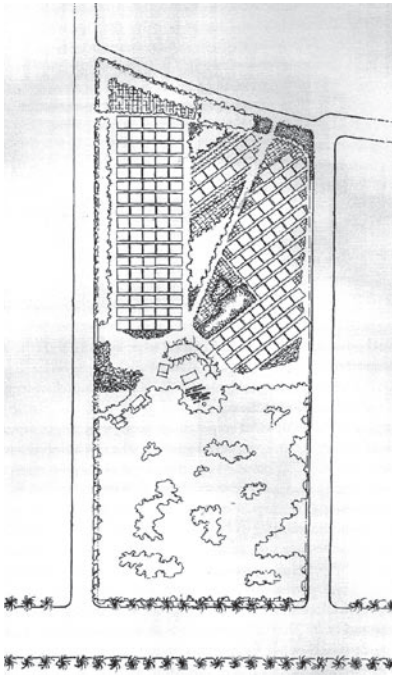
Results from the Philadelphia Vacant Lots Cultivation Association, 1897–1927

Year	Number of Acres	Participant Total	Crop Value	Earnings per Garden	Total Cost	Cost per Garden
1897	27	528 persons or 96 families	$6,000	$60.00	$1,825.33	$18.25
1898	40.5	770 persons or 140 families	9,700	59.87	2,266.76	14.00
1899	73	1,495 persons or 249 families	4,810.80	49.35	2,650.30	9.07
1900	130	2,386 persons or 480 families	24,600	47.30	3,962.48	7.62
1901	158	2,946 persons	30,000	47.46	4,480.94	7.09
1902	198.5	3,775 persons	50,000	62.80	5,556.80	7.00
1903	275	3,609 persons	36,000	47.00	4,837.00	6.16
1906	—	800 families or 4,000 persons	52,000	65.00	6,616.34	—
1907	—	800 families	54,000	—	7,200.00	—
1908	10 farms	412 families	—	55.00–70.00	9,918.38	—
1909	124.5	452 families	—	—	8,903.83	—
1910	82.5	355 families	—	—	7,229.38	—
1911	72	388 families	—	—	8,211.44	—
1912	—	422 families	25,000	—	7,813.98	5.00
1913	20 farms	548 families	28,000	154.00–160.00	8,105.17	—
1914	20 farms	603 families	32,000	—	8,427.98	—
1915	23 farms	671 families	—	—	9,458.89	—
1916	100 acres (22 farms)	611 families	30,000	—	9,807.61	—
1917	160 acres	1,145 families	70,000	—	17,310.74	—
1918	—	1,156 families	90,000	—	25,561.49	—
1921	—	3,145 persons or 664 families	55,000	80.00	13,846.00	9.00
1922	—	632 families	53,000	83.00	4,830.32	7.64
1923	50	2,216 persons or 488 families	—	—	—	—
1924	—	2,238 persons	42,000	90.00	—	—
1925	—	467 families	38,000	80.00	—	—




CLINTON
COMMUNITY
GARDEN


GEORGE PUTNAM SCHOOL GARDEN.
Plan of One Bed.
Nasturtium.
Zinnias.
Beets.
Radishes.
Lettuce.
Bush Beans.
Tomatoes.
Corn.
Walk
Walk 14 in.
10 ft.
3½ ft.





3.4 War Gardens

Probably one of the most widespread forms of urban agriculture stemmed from the 1st and 2nd World Wars. Although not confined to urban centers Victory and War gardens were a way for the public to supplement their diets during a time of food shortage and support the war effort by freeing up farm resources. A matter of national pride victory gardens sprang up all over the country during the wars. Before the United States entered the First World War rumors of food shortages and rationing prompted people to begin to horde food. Prices on vegetables rose at an astonishing rate and protests were common. Indeed after the United States entered the war on April 6th in 1917 resources became limited. Food shortages did occur and the farm and transport industries were thrown into disarray, first because of the loss of man-power and second due to the need for military goods to be transported via methods traditionally used for food. President Wilson asked the nation to plant war gardens and the nation responded. Rail sidings, backyards, schools, company lands and even existing ornamental gardens were used for growing vegetables and an estimated 5 million gardens existed in 1918. As the war ended so did the gardens. Charles Lathrop Peck, organizer of the National War Garden Commission, argued that the gardens should be kept going to assist in the re-building of Europe. Much to Peck's disappointment the 20's, with their care free attitude, left most people disinterested in gardening (Pennington, 2002) Advancements in transportation and food production also had an effect on the war garden movement. The increased load on traditional farms during the war is believed to have initiated the "Dust Bowl" problems of the 30s. Increased production to capture profits during the war meant a "hedgerow to hedgerow' approach to farming where natural ecosystems were stripped of their diversity in order to gain acreage that could be used to farm. At the end of the First World War production on these lands decreased, grassland that once fed buffalo which in turn fertilized the soil through manure, had been removed to plant wheat and now sat barren and wasted. Soon soil erosion reached such hazardous levels as to actually create dust storms that ravaged Oklahoma, Texas, New Mexico, Colorado, Kansas, Nebraska, South Dakota and Wyoming with dust reaching as far away as Chicago. The result was a severe loss of farms production, income and food. It is estimated that between 300,000 and 400,000 (Numerous Sources) people were displaced during the crisis and had influence on the introduction of the Soil Conservation and Domestic Allotment Act of 1935. The Act asked farmers to conserve soil and prevent erosion along with other goals of achieving productive farms again. At the same time gardening on a small scale was still occurring in cities as a response to the depression. Displaced and out of work families developed small gardens to produce food and many of the institutions that supported war gardens moved resources to help the poor. With Roosevelt's New Deal initiatives and infrastructure spending the economy began to recover and farming practices also began to return to normal. Unfortunately all the progress made and the attitudes developed through the problems of the dust ball would be rendered moot with the onset of the Second World War.

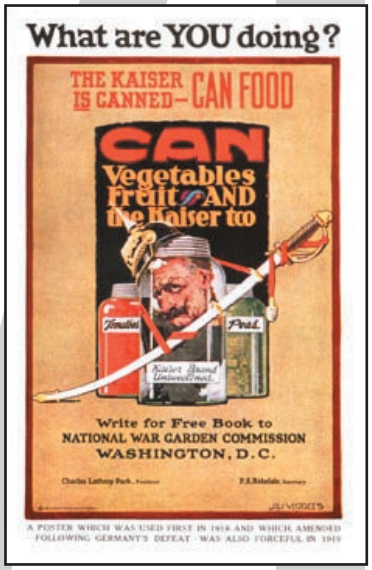
When the United States entered the Second World War after the attack on Pearl Harbor the production mill began again (Benyus, 1998). The progress of the last 6 plus years was set aside so that farms could again produce the needed food supplies for the war effort. War gardens were again introduced but this time more slowly. Unlike the gardens of the First World War the Department of Agriculture wanted to control the new gardens. Secretary of Agriculture, Claude Wickard immediately called a meeting to discuss the use of gardens during the war and, much to most people's surprise, asked that the nation hold back on patriotic urges to start war gardens. There was good cause for this as during wartime supplies are limited and Wickard saw a possible problem with inexperienced, but patriotic, gardeners wasting seeds and fertilizers to start unproductive or low yield gardens. (Pennington, 2002) Again transportation and labor shortages were common and people did start to grow in gardens. In January of 1942 the Garden Club of America announced that it was joining forces with the office of Civilian Defense to promote more home and truck gardens to support the war (Pennington, 2002) these new war gardens would be called Victory gardens and the American garden industry began to develop guides, seeds and support. An estimated 8 million Victory gardens existed in 1942 and that number rose to 20 million a year later (Pennington, 2002).


ENEMY PLOTTERS
CABBAGE WORM
POTATO BUG
BLACK RUST
UNCLE SAM EXPECTS EVERY WAR GARDEN TO DO ITS DUTY
CHARLES LATHROP PACK
PRESIDENT OF
NATIONAL WAR GARDEN
COMMISSION


don't waste food
while others starve!
UNITED STATES FOOD ADMINISTRATION


War Gardens Victorious
Every War Garden a Peace Plant—
—Charles Lathrop Pack, President.
NATIONAL WAR GARDEN COMMISSION
WASHINGTON, D.C.
A POSTER FOR 1919, SYMBOLIC OF VICTORY


CAN
ALL YOU
CAN
IT'S A REAL WAR JOB!


What are YOU doing?
THE KAISER
IS CANNED—CAN FOOD
CAN
Vegetables
Fruit AND
the Kaiser too
Write for Free Book to
NATIONAL WAR GARDEN COMMISSION
WASHINGTON, D.C.

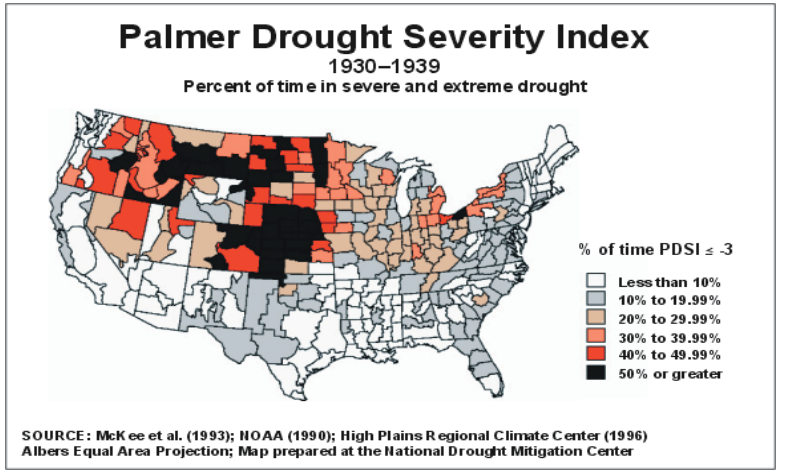

YOUR VICTORY GARDEN
counts more than ever!

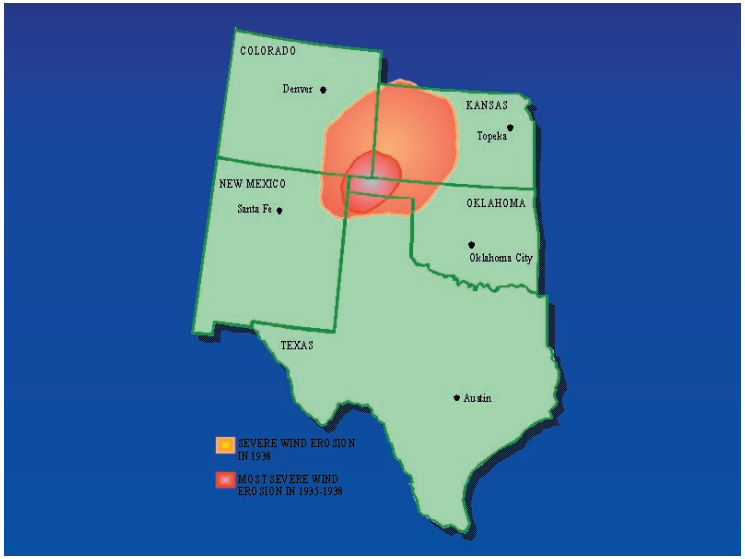

VICTORY
GARDENS
HOW WHEN
WHAT TO
PLANT
HUTTS' DAIRY
751 TONAWANDA STREET
BUFFALO 7, NEW YORK


PLANT A VICTORY GARDEN
OUR FOOD
IS FIGHTING
A GARDEN WILL MAKE YOUR RATIONS GO FURTHER


DIG ON
FOR
VICTORY




Palmer Drought Severity Index
1930–1939
Percent of time in severe and extreme drought
% of time PDSI ≤ -3
Less than 10%
10% to 19.99%
20% to 29.99%
30% to 39.99%
40% to 49.99%
50% or greater
SOURCE: McKee et al. (1993); NOAA (1990); High Plains Regional Climate Center (1996)
Albers Equal Area Projection; Map prepared at the National Drought Mitigation Center


COLORADO
Denver
KANSAS
Topeka
NEW MEXICO
Santa Fe
OKLAHOMA
Oklahoma City
TEXAS
Austin
SEVERE WIND EROSION IN 1938
MOST SEVERE WIND EROSION IN 1935-1938







WAR GARDEN ON BOSTON COMMON

There were hundreds of visitors daily at this fine demonstration garden and the adjoining food cottages, and the result was partly shown by the fact that there were more than 30,000 war gardens in Boston in 1918. In this series of gardens on "The Common" there were thirty-five varieties of vegetables, practically everything except corn being included. Miss Aena Biddle Prismouth with several assistants was in charge of the gardens for the Women's City Club.



MIDST TOWERING SKYSCRAPERS

In Bryant Park, New York, in the heart of the nation's throbbing metropolis, there was planted a demonstration war garden, and a little garden house was erected which served as a distributing center for literature of the National War Garden Commission. Formal ceremonies were held at the time of the dedication of the building.





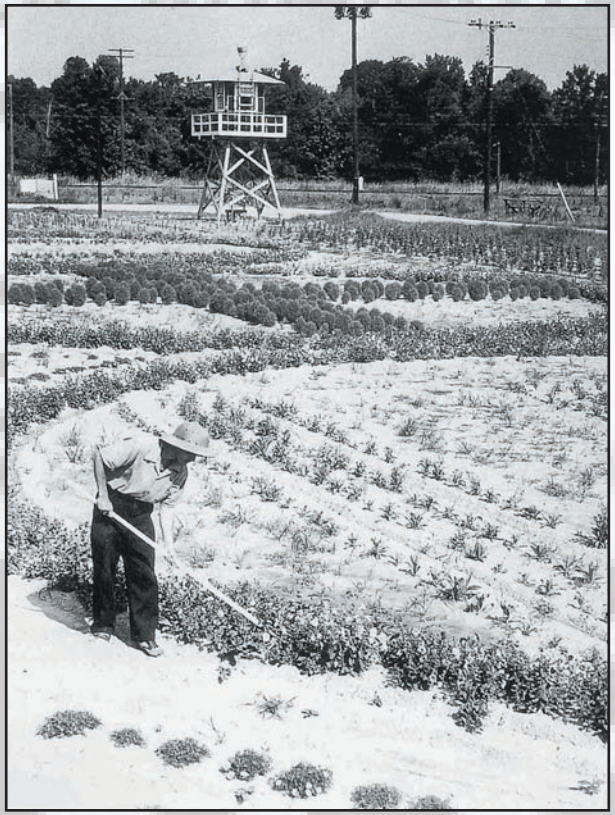


Estimated Value of War Garden Crops in Certain Cities, 1918

Denver, Colorado	$2,500,000
Minneapolis, Minnesota	1,750,000
Indianapolis, Indiana	1,473,165
Washington, D.C.	1,396,500
Los Angeles, California	1,000,000
Grand Rapids, Michigan	900,000
Louisville, Kentucky	750,000
Salt Lake City, Utah	750,000
Worcester, Massachusetts	750,000
Oklahoma City, Oklahoma	500,000
Scranton, Pennsylvania	450,000
Rochester, New York	350,000
Dallas, Texas	300,000
Burlington, Iowa	250,000
Pittsburgh, Pennsylvania	250,000
Newark, New Jersey	160,000
New Orleans, Louisiana	125,000
Atlanta, Georgia	100,000

As an ironic side note, much of the garden labor force in the western United States was of Japanese origin and was interned throughout the war. While interned the Japanese families continued to grow vegetables and produce gardens, many of which were said to be very beautiful and productive.









3.5 Conclusion

By the 1950s the community garden began to be a less visible component of North American communities. In Europe the allotment persisted as do many positive and forward thinking attitudes toward the environment and ecology. With the end of the wars public interest in gardening decreased and it was not until the 1970s and the energy crisis that people began to show interest in community gardens again. There are many such gardens in existence today.

Of course war gardens and victory gardens, community gardens and allotments are common throughout the world. The discussion of the community gardens in this section is intended to bring to light the many forms of urban agriculture that are common in North America and Europe. Although not as all encompassing as forms of urban agriculture practiced in other countries like Cuba and Japan community gardens, allotments and the victory gardens of the wars are familiar types of urban agriculture. There may be opposition by people to the idea of growing food in urban centers but one should merely need to point out these existing forms to quell fears or apprehension. The community garden has been an important part of the fabric of our societies for a very long time and will continue to ebb and flow in popularity with the fluctuations in the economy and personal concerns for health.



Images, Sources:

Page 95

3.0.1 Community Gardens 2004

http://counties.cce.cornell.edu/Lewis/ESNYhowworks.htm

3.0.2 garden1.jpg

http://www.franknicol.co.uk/images/garden1.jpg

3.0.3 Challenger 3.jpg

www.urbanharvest.org/.../challenger3.jpg

3.0.4 garden-tour-greene.jpg

http://www.times-up.org/bklyn_bldg.php

3.0.5 South tulips

http://westsidecommunitygarden.org/

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3.0.6 Denmark Old Gardeners

http://www.cityfarmer.org/DenmarkOldGardeners.jpg

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3.0.7 Commons Fillmore

http://www.answers.com/topic/fillmore-jpg

Page 98

3.0.8 Wivenhoe Allotments

http://www.wivenhoe.gov.uk/About_Wivenhoe/Picture_Gallery/aerial_pictures.htm

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3.0.9 Allotments in wartime London England

from CPULS - Continuous productive urban landscapes
Andre Viljoen (editor) - Architectural Press, Burlington MA, 2005

3.0.10 Suffolk allotments

http://www.bbc.co.uk/suffolk/in_pictures/suffolk_from_the_air/gallery/64.htm

3.0.11 allotments near Wimbledon

http://www.icteachers.co.uk/photos/town_country.htm

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3.0.12 Garden Guides

http://www.earthlypursuits.com/AllotGuide/AllotGuide1_1.htm

Page 102

3.0.13 Toronto Community garden

http://www.psychogeography.ca/blog/archives/00000059.htm

Page 103

3.0.14 - 3.0.15 Philadelphia community gardens

City Bountiful: A Century of Community Gardening in America, Laura Lawson University of California Press, 2005

3.0.16 - 3.0.17 Planting a community garden

ttp://www.earthlypursuits.com/WarGarV/WarGard9.htm

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3.0.18 Community Gardens for the Poor

City Bountiful: A Century of Community Gardening in America, Laura Lawson University of California Press, 2005

3.0.19 - 3.0.21 Tables

City Bountiful: A Century of Community Gardening in America, Laura Lawson University of California Press, 2005

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3.0.22 - 3.0.25 School Gardens

City Bountiful: A Century of Community Gardening in America, Laura Lawson University of California Press, 2005

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3.0.26 Propaganda Poster for victory gardens ww1

Feast your Eyes, The unexpected beauty of vegetable gardens, Susan J. Pennington University of California Press, 200

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3.0.27 - 3.0.34 Victory and War Garden Posters From WWI and WWII

http://www.missoulian.com/specials/salute/part1.html
ttp://www.earthlypursuits.com/WarGarV/WarGardprints.htm
http://www.art.unt.edu/ntieva/news/vol_15/no_1/WarPosterImages.htm
http://www.art.unt.edu/ntieva/news/vol_15/no_1/WarPosterImages.htm
http://www.victorygardens.net/VGM.html

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3.0.35 - 3.0.36 Dust Storm Image

http://www.photolib.noaa.gov/historic/c&gs/theb1366.htm
http://www.weru.ksu.edu/new_weru/multimedia/dustbowl/dustbowlpics.html

3.0.37 - 3.0.38 Map(s)

http://drought.unl.edu/whatis/dustbowl.htm
http://www.spartacus.schoolnet.co.uk/USAdust.htm
http://www.weru.ksu.edu/new_weru/multimedia/dustbowl/dustbowlpics.html

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3.0.39 - 3.0.42 Various Victory Gardens

http://www.toronto.ca/archives/images/f1266_it65863.jpg

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3.0.43 - 3.0.44 Poster(s)

http://www.nal.usda.gov/fnic/history/can.htm

3.0.45 Charts: City Bountiful: A Century of Community Gardening in America, Laura Lawson University of California Press, 2005

Page 112

3.0.46 - 3.0.49 Japanense Internment Camp Gardens

Feast your Eyes, The unexpected beauty of vegetable gardens, Susan J. Pennington University of California Press, 2002

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3.0.47 Community Garden

http://www.growcommunitygardens.org/Page 25

Part 1 – Urban Agriculture Research and Site Research

4.0 A Brief History of Brooklyn

4.1 Origins
4.2 Growth
4.3 Precedent
4.4 Present Day
4.5 Neighbourhoods



4.1.1

Part 1 – Urban Farming Research and Site Research

4.0 A Brief History of Brooklyn

4.1 Origins

"Dere's no guy livin' dat knows Brooklyn t'roo and t'roo (only the dead know Brooklyn t'roo and t'roo) .... He'll neveh live long enough to know duh whole of Brooklyn. It'd take a guy a lifetime to know Brooklyn t'roo and t'roo an' even den, yuh wouldn't know it all."
- Thomas Wolfe, "Only the Dead Know Brooklyn," 1935

Brooklyn New York is a prime place to study the concept of Local Growing. Serving as the kitchen, dinning room, and bedroom to Manhattan, Brooklyn is a borough consisting of houses and neighbourhoods. The life and vitality of the area is expressed through its varied population and diverse economic, social and ethnic cultures. The juxtaposition of these factors makes Brooklyn a perfect place to study and test the ideas of Local Growing.

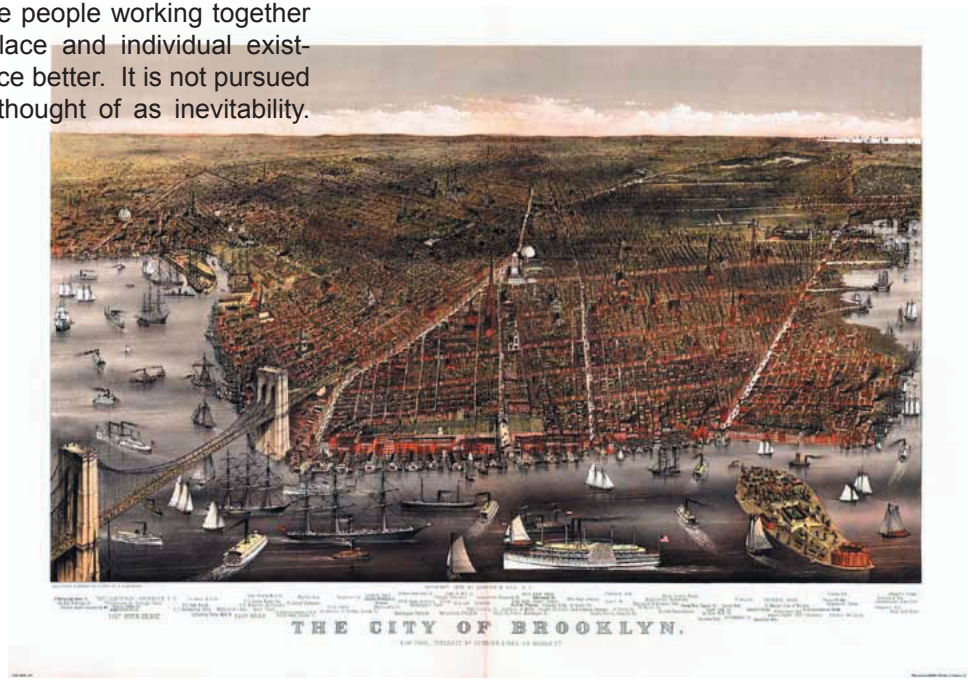
Originally settled by the Dutch, and later controlled by the English, Brooklyn was for the longest period a series of smaller farming villages. These villages were organized into Kings County of greater New York in 1683, incorporated as the village of Brooklyn in 1816 and the city of Brooklyn in 1834. In 1896 the final incarnation of greater Brooklyn was finally established and joined Manhattan, Queens, The Bronx and Richmond (Later Staten Island) in 1898.

Once an economic power house with industry and commerce; Brooklyn quickly became a place synonymous with poverty, crime and urban strife. Current census information lists Brooklyn as having the second highest poverty rate just behind the Bronx and the second highest unemployment rate. Brooklyn can be viewed as a good place to initiate independent, non-traditional, income incentives, social interventions and environmental endeavors like Urban Farming and subsequent industry.

No matter where you are in Brooklyn there is a seeming sense of Manifest destiny. A common effort and goal that is defined in the daily lives of its people, Brooklyn isn't considered a diverse group of people all competing for a similar goal. It is a group of diverse people working together to make the place and individual existence in that place better. It is not pursued as a goal but thought of as inevitability.



4.1.2



4.1.3



4.1.4

Vingboons Map of Manhattan, 1639
A Facsimile from the Library of Congress

UNIV. MAP & DESIGN LI...
UNIVERSITY OF WATERLOO
WATERLOO, ONTARIO N2L 3G1

UNIVERSITY
MAP & DESIGN
LIBRARY
U. of W.
G
3804
.N4
1639
.U5
1981

4.1 Origins - History of Brooklyn

The first inhabitants of what is present day Brooklyn were the native American Indians who called themselves the Lenape. They hunted and fished the land and grew corn and tobacco crops in the rich fertile soil. Two of the tribes, the Nayack and Canarsee now lend their names to regions of New York City.

The original European settlers were the Dutch who first settled on the adjacent Manhattan island. Seeing Brooklyn and eager to expand the Dutch soon purchased land and also settled in Brooklyn (1636) Due to disease and dishonest land deals the natives quickly lost foothold in Brooklyn. The Dutch quickly founded villages on the island and began to farm and prosper. The first 6 villages were

- Breuckelen in 1646
- New Amersfoort in 1647
- Midwout in 1652
- New Utrecht in 1657
- Boswijck in 1661
- And Gravesend by the English Lady Deborah Moody and her followers in 1645

These villages are now known by the names, Brooklyn, Flatlands, Flatbush, New Utrecht, Bushwick, and Gravesend.

The British captured the Dutch settlement in 1674 forming the colony of New York and consolidating the villages into Kings County. Through the 18th century and early 19th century the area saw war and then prosperity. The battle of Brooklyn of 1776 nearly destroyed George Washington's army; forcing them to finally escape the British by slipping across the East River one foggy night. This left the area in the hands of the British for the rest of the war.

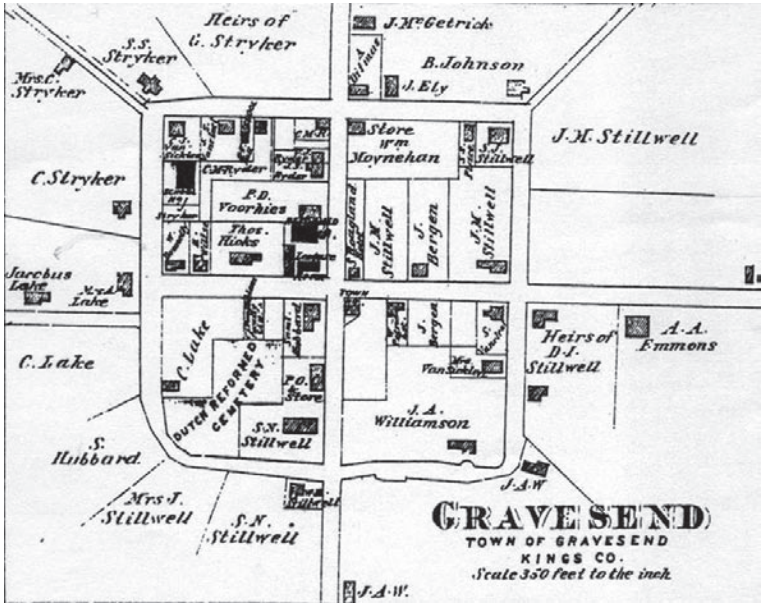
Following the revolution the land was primarily farmed by the Dutch and English. The farms were very successful and the farmers grew wealthy. The whole region grew but the city of Brooklyn, it's proximity to the thriving New York City and it's role as terminus for the fruits and vegetables of long island (on their way to Manhattan) not to mention the crops of Kings county farms, meant that the once small village of Brooklyn soon became the center of growth in Kings County. The other villages also prospered but not at the same rate or in the same way that Brooklyn did. The population of Kings County grew from 4,549 in 1790 to 838,547 in 1890. In 100 years the population had grown 184 percent (*Geostat center historical data browser*) The village of Brooklyn accounted for a growth of 804, 740 people in that period (*Of Cabbages and Kings County, Linder, Zacharias, 1999*)

The town of Brooklyn was incorporated in 1816 and the city of Brooklyn saw it's inception in 1836. At this same time the growth of business in The village of Brooklyn also prospered in order to serve it's inhabitants. Thought often as the bedroom of Manhattan Brooklyn had originally begun to grow as an independent city, at one point being the 3rd largest American city (1860) Manufacturing and trade grew throughout the 19th century but so did farming. Much of the west shore of Kings county began to serve the inhabitants of Manhattan and much of the manufacturing and business formed along the shore of the east river. This allowed for easy trade and easy supply. In 1827 the village of Bushwick incorporated the town of Williamsburgh which then re-emerged as the town of Williamsburgh in 1840. Williamsburg was swallowed by the ever growing city of Brooklyn in 1854 with New Lots (which seceded from the town of Flatbush in 1852) following in 1854, Flatbush, New Utrecht and Gravesend in 1894 and Flatlands in 1896. The city of Brooklyn joined the Bronx, Queens and Staten Island to become the city of New York after a vote in 1898.

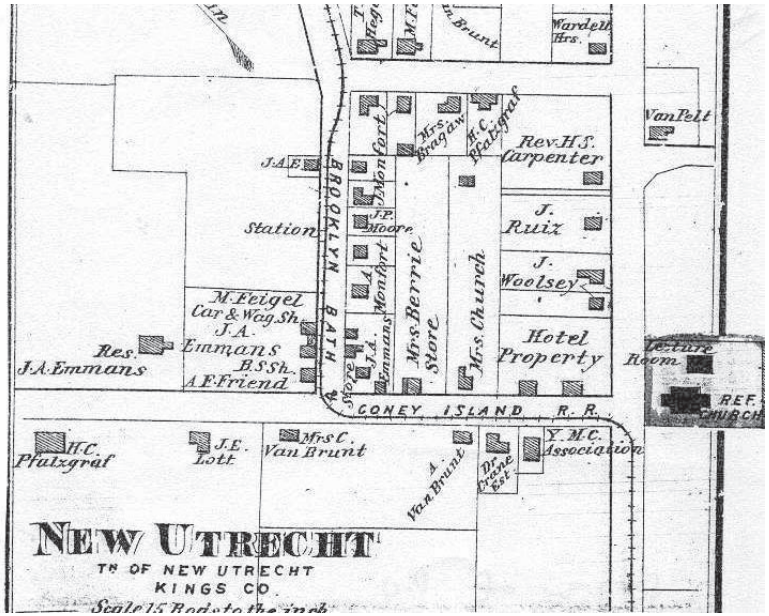


4.1.5




Heirs of G. Stryker
J.McGetrick
S.S. Stryker
B.Johnson
J.Ely
Mrs C. Stryker
Store Wm Moynehan
J.M. Stillwell
C.Stryker
P.D. Voorhies
Thos. Hicks
J.N. Stillwell
J. Bergen
Jacobus Lake
C.Lake
Heirs of D.J. Stillwell
A.A. Emmons
DUTCH REFORMED CEMETERY
P.O. Store
J.A. Williamson
S. Hubbard
S.N. Stillwell
Mrs J. Stillwell
GRAVESEND
TOWN OF GRAVESEND
KINGS CO.
Scale 350 feet to the inch




Wardell Hrs.
Van Pelt
Rev. H.S. Carpenter
Mrs. Bragaw
H.C. Pfalzgraf
J.A.E.
Station
J. Ruiz
J. Woolsey
M. Feigel Car & Wag. Sh.
J.A. Emmans B.S.Sh.
A.E. Friend
Res. J.A. Emmans
Mrs. Berrie Store
Mrs. Church
Hotel Property
Lecture Room
REF. CHURCH
CONEY ISLAND R.R.
H.C. Pfalzgraf
J.E. Lott
Mrs C. Van Brunt
Y.M.C. Association
NEW UTRECHT
TN OF NEW UTRECHT
KINGS CO.



RLIN
912.
747
23
BLAU
(1966)





4.2 Growth

Today Brooklyn New York is a metropolis unto itself. It is a buzzing center for manufacturing, trade, and commerce. The arts flourish, and Brooklyn has a culture and social network all its' own. The original Dutch settlers of what is now Brooklyn New York were farmers. The 6 towns of later day Kings County were formed around the enterprise of farming. At first these farms served the local population and the individual farmers but later began to serve the growing metropolis of New York City.

Many of the famous streets and neighbourhoods of present day Brooklyn still bare the name of the Dutch farming families that settled on the southern end of Long island in the 1600s. Names like Wyckoff, Lefferts, Hoyt, and Van Nostrand are familiar to present day Brooklyn as streets and places and subway stops. The farming communities in Kings County formed the area and helped define it. They continued to be productive up until 1924 and continued to produce milk and stable horses until 1944.

The farms started and tended by the original settlers grew grain crops for sale: wheat, corn, oats, rye, and hay. For personal use kitchen gardens were maintained that grew tomatoes, cabbages, cucumber and other things like herbs for cooking and medicinal plants. The farms prospered and grew through the 17 and 18 centuries and the farmers and their families grew wealthy and influential. Manhattan continued to grow and develop but the lack of transportation between Brooklyn and Manhattan, the river ferries crossed the East river infrequently and sporadically meant that Kings County stayed relatively rural in Nature. The majority of the growth in then Kings County was nearest Manhattan in the village of Brooklyn and specifically Brooklyn Heights and later Williamsburg[h]. The more distant villages remained rather small and focused on farming and local affairs.

The opening of the Erie Canal in 1825, and advancements in transportation techniques, saw the beginning of a change in Kings County, the farmers and farms and the future of Brooklyn. At first the change in commerce was predicated to have a devastating effect on Kings County farmers, the low cost and plentiful yields of the Midwest and upstate New York farmers now had a seemingly ever increasing market in Manhattan. The ability to ship large amounts of grains and other durable staples meant that the Long Island and Kings County farmers couldn't compete. Prices for transportation and limitations of acreage hindered the ability for local growers to supply the masses of Manhattan, or at least profitably. Prescient farmers realized that there were limitations to the distant farmer and began to consider market gardening and vegetable production as an opportunity and a way to maintain their way of life. By supplying Manhattan and the growing village of Brooklyn with perishable and delicate vegetables the farmers of Kings County not only found salvation but also began to see increased profit. The freshness and speed with which they could provide vegetables began to make the Dutch and English farmers of Kings County very wealthy indeed. The president of neighbouring Queens Agricultural Society said of the situation in 1852.

"Queens County cannot be interfered with in its prosperity, as long as there are in that Metropolis [New York and Brooklyn] hundreds of thousands of mouths to be daily supplied, and hundreds of thousands of dollars to be expended for….fruits and vegetables…but then gardens will come to have the dimensions of farms" –Linder, Zacharias, 1999

Not only did the farmers of Kings County benefit from the captive markets of Manhattan and Brooklyn, they also benefited from the ready supply of fertilizer and compost. In many cases the transportation costs of moving market vegetables was so low for the Kings County farmer that paying for farm improvements, more and better supplies of fertilizer and better inputs was made possible with the savings (Linder, Zacharias, 1999) The Federal census of 1850 found that market garden profit in Kings County was limited to approximately $88,000 dollars and only one farm had produced $1000 worth. Twenty years later the profit from market gardening is listed at approximately $390,000, nine years later the number is nearly $900,000. Even in 1919 a profit of $262, 747 is reported from market gardening and that number was grown on what is most likely a 3rd of 4th of the acreage of the 1879 number. (Linder and Zacharias, 1999)

Many thought this move toward market gardening was a stop gap attempt by the farmers to wait out real estate speculation and first rate prices for now obsolete farms. Even though many of the Kings County farms undertook market gardening late in the century they did so before much interest was shown in


U.S. GEOLOGICAL SURVEY
J. W. POWELL, DIRECTOR
NEW YORK
BROOKLYN SHEET
Q U E E N S
K I N G S
JAMAICA BAY
Rockaway Beach
HARVARD COLLEGE LIBRARY
M 4050

4.2.1


U.S. GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR
TOPOGRAPHIC SHEET
NEW YORK
BROOKLYN QUADRANGLE
CONVENTIONAL SIGNS
CULTURE
ROCKAWAY INLET
Rockaway Beach
G
3800
62
U 6

4.2.2

4.2 Growth (cont.)

suburbanization of the county. Profit and continued revenue seemed the reason for market gardening, suburbanization and real estate development coming late to many of the rural villages. Most of the rural towns had a population under 10,000 up until 1880-1900; the village of Brooklyn being one of the only exceptions with a population of 11,000 by 1820 and 830,000 by 1890.

During the peak years only 31 of 409 farmers did not produce vegetables and most of these produced milk. In Gravesend the local enumerator did not count any of the farms as market gardens but only due to the fact that the majority of them produced potatoes. In the 1850 census Kings County is 12th in a list of counties and farming production, 29 years later Kings County is 2nd. As a share of the total value of production in Kings County market gardening rose from 32 percent in 1870 to 70 percent in 1880. Clearly Market gardening was a huge contributor to the economy of Kings County and the villages that occupied it.

The opening of the Brooklyn Bridge in 1883, said to have been spurred on by real estate speculation, and the subsequent introduction of better transportation and road systems opened up Kings County to new real estate development and growth. The old farmers who were hold outs for a long time gradually sold off larger parcels of land at increasingly higher prices. The small rural villages like New Utrecht and later Flatbush began to grow and the nature of industry began to turn. What was once farm land started to become housing developments. The introduction of eight steam railroads, nine steamboat lines and one streetcar opened up the once uninhabited Coney Island and new roads and rail lines helped the wealthy business man from Manhattan and Brooklyn proper buy and move to suburban homes in Gravesend and New Utrecht, Brownsville and Flatbush. As of 1896 all the once independent villages of Kings County had been annexed by the growing city of Brooklyn and 2 years later all was New York.

Farming and market gardening did not dissappear completely with the new interest in real estate development. Much of what previously existed in the form of farmers field and gardens continued to produce and sell it's products to the people of the region and Manhattan up until the 1920s. A resurgence of interest in both farming and gardening was show during both wars and there is still one existing farm in Brooklyn today. The Wyckoff house still exists in the Flatbush region of Brooklyn. The project continues to garden on the grounds and opens up the original farm house and grounds to the general public.

http://www.wyckoffassociation.org/museum/garden.html

4.2.3 Original Kings County Towns

4.2.4 Towns and Consolidation Years

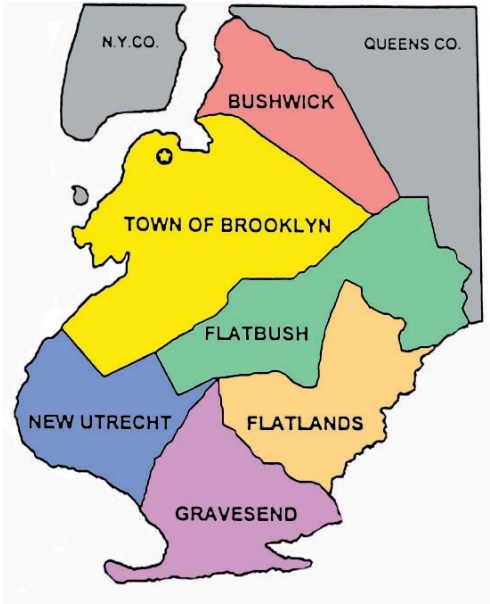
-Images from website: http://www.bklyn-genealogy-info.com/Map/Maps.Main.html

Opposite page

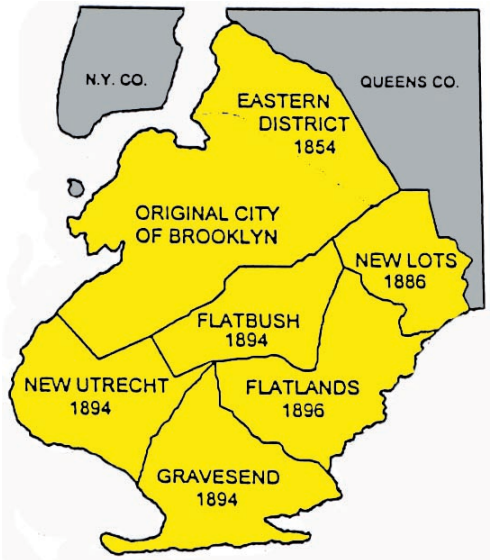
4.2.1 Map of Kings County 1891

4.2.2 Map of Kings County 1898

-Images from unknown website



4.2.3



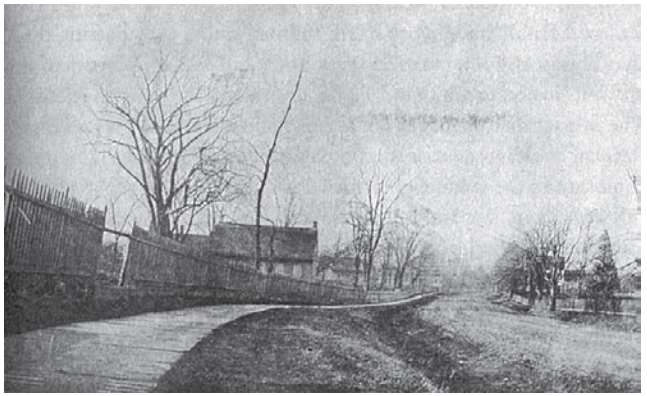
4.2.4



4.2.5



4.2.6



4.2.7



4.2.8



4.2.9

4.2.5 New Lots farm of Jacob Rapelje 1890 (*The smoke stacks in the background show the infringement of industry and the city*)

4.2.6 Flatbush Farms 1877-1879

4.2.7 Flatbush Avenue 1880

4.2.8 Market man brining celery to market 1890

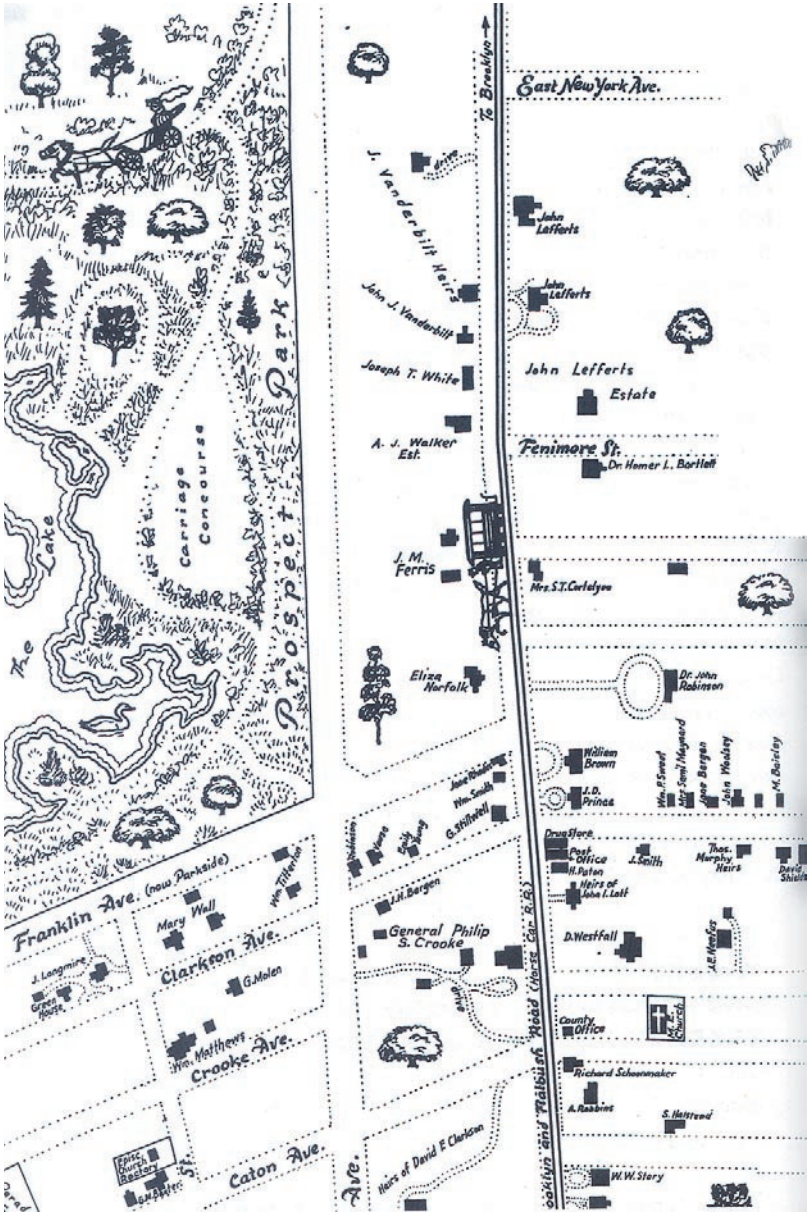
4.2.9 Jacob Rapelje Farm 1890

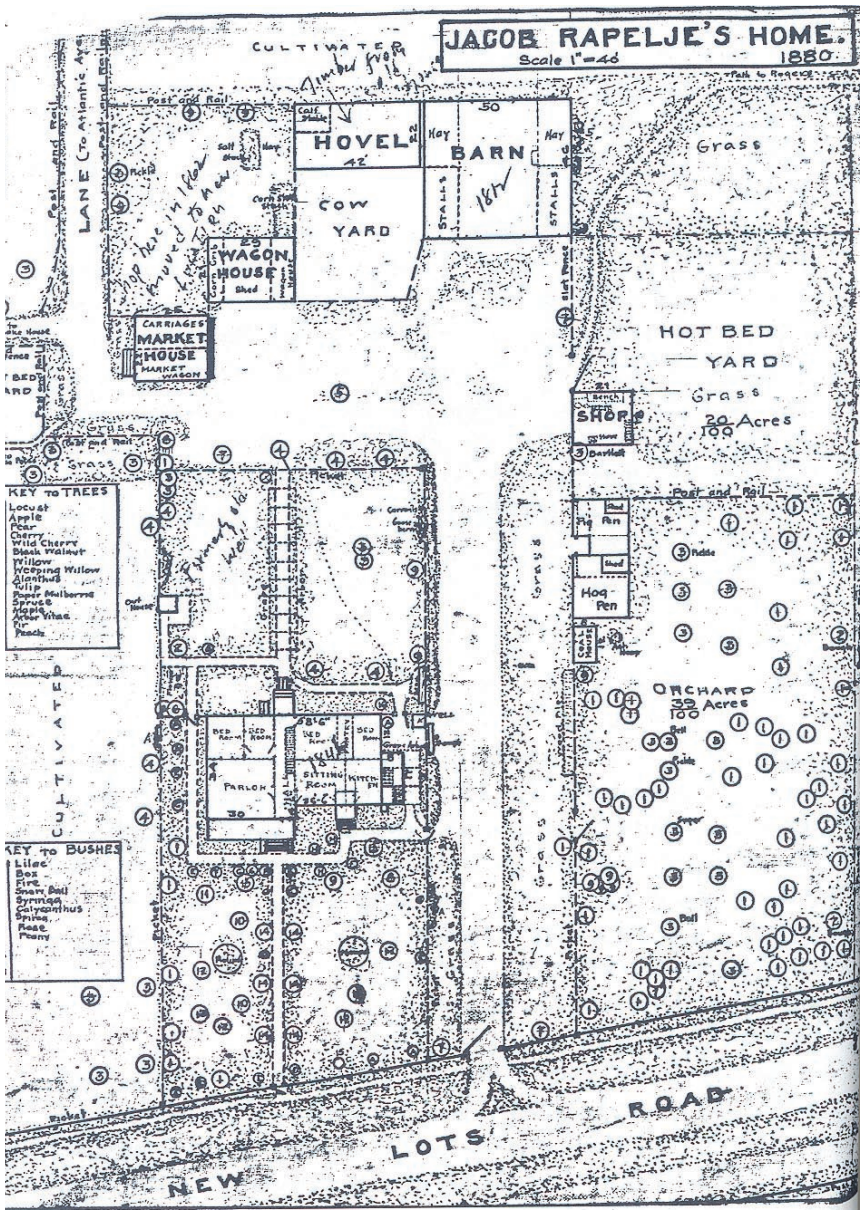
Opposite page

4.2.10 Village of Flatbush 1770 (*Olmstead's prospect park is the top left corner*)

4.2.11 Jacob Rapelje farm 1880 (*already converted into a market garden farm*)

-Images from "Of Cabbage and Kings County" Linder, Zacharias-1999 University of Iowa Press.


East New York Ave.
To Brooklyn
Prospect Park
Carriage Concourse
The Lake
J. Vanderbilt Heirs
John J. Vanderbilt
Joseph T. White
A. J. Walker Est.
John Lefferts
John Lefferts
Estate
Fenimore St.
Dr. Homer L. Bartlett
J. M. Ferris
Mrs. S.T. Carlelyon
Eliza Norfolk
Dr. John Robinson
William Brown
J.D. Prince
Drug Store
Post Office
H. Paton
Heirs of John I. Latt
J. Smith
Thos. Murphy Heirs
D. Westfall
J.I. Bergen
General Philip S. Crooke
County Office
Richard Schoonmaker
A. Rabbins
S. Hazzard
Heirs of David E. Clarkson
W.W. Story
Franklin Ave. (now Parkside)
Mary Wall
Clarkson Ave.
G. Molen
Wm. Matthews
Crooke Ave.
Caton Ave.
Brooklyn and Jamaica Plank Road Co. R.R.
4.2.10


JACOB RAPELJE'S HOME.
Scale 1"=40
1880.
CULTIVATED LANE (To Atlantic Ave.)
HOVEL
BARN
COW YARD
WAGON HOUSE
CARRIAGES
MARKET
HOUSE
HOT BED YARD
Grass
SHOP
20 Acres
KEY TO TREES
Locust
Apple
Pear
Cherry
Wild Cherry
Black Walnut
Willow
Weeping Willow
Alanthus
Tulip
Paper Mulberry
Spruce
Maple
Silver Vine
Fir
Peach
Hog-Pen
ORCHARD
33 Acres
PARLOR
KEY TO BUSHES
Lilac
Box
Fire
Snow Ball
Syringa
Calycanthus
Spirea
Rose
Peony
NEW LOTS ROAD
4.2.11

4.3 Precedent

The idea of growing food close to urban centers is not new in Brooklyn. As mentioned earlier Kings County was built by farmers who first grew grains and later farmers who produced market vegetables. These commodities were sold to the local population and to the larger centers such as the village of Brooklyn and Manhattan. There is, however, even more precedent for growing in urban environments in Brooklyn's development.

With the Brooklyn Bridge open and new roads and transportation lines introduced Kings County was open to those who could afford to purchase land and build homes. The New York Times wrote at the turn of the century.

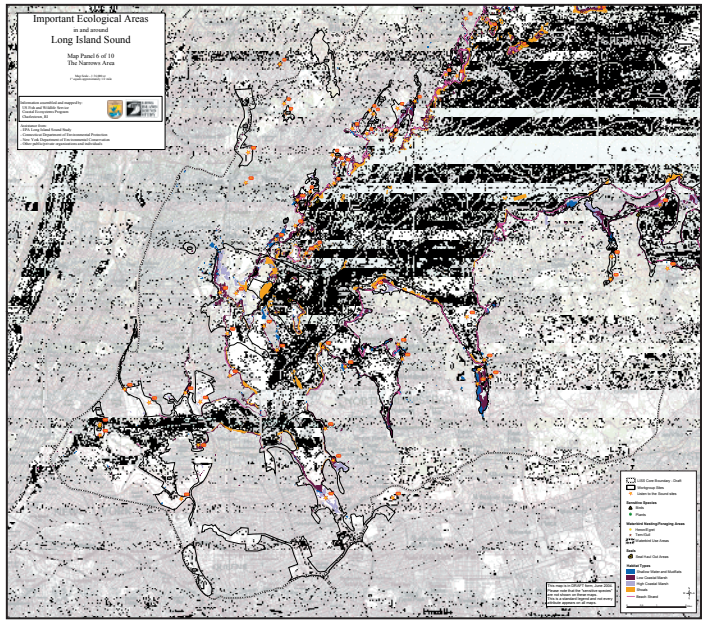
"*The opportunity afforded for people of moderate means but steady habits to make homes for themselves within easy reach of the great metropolitan mart, and yet not out of sight of green fields and trees in summer, or deprived of pure health giving air all the year round*"

At the same time the Brooklyn Eagle predicted an increase in population to 5 million inhabitants in Brooklyn within 20-30 years and in 1914 the New York Times predicted the same but in 50 years. Both papers also lamented the problem of feeding these masses and feeding them inexpensively. Frederic Pratt, president of the Brooklyn Committee on City Plan saw inadequacies in the current system. Although market gardens still persisted in Kings County many people had no access to the distribution centers located in Wallabout (Brooklyn navy Yards) The problem wasn't access to market in fact the real problem was the disappearance of the market garden. Long distance food soon became common place and due to increased costs of transportation, and numerous middle men, is estimated in 1912 to have cost the city 50 to 100 million dollars. The food that reached New York was no longer as fresh as it was when picked and the necessity of so many "Middle Men" resulted in increased costs. As a result the general health of the population decreased. A study a few years later showed that New Yorkers daily consumption of fruits and vegetables to be lower than that of most other large cities. Only 1/10th of all fruits and vegetables came from local sources. The problem of good food at reasonable prices became an issue in New York and Kings County. The Chief of the Bureau of Soils proposed a series of gardens and farms on the periphery of the boroughs that could see produced "trucked in" daily. James Sullivan saw the need for establishing market gardens in proximity to all the smaller towns of Kings County in order to feed the local population and sell to larger markets; ironically he proposed these market gardens in areas that had, until recently, been hot beds of market gardening.

There was an obvious push and drive toward solving the problem of feeding millions of people who lived in and around New York City. The inadequacies of distant food supply were dawning on the people of New York and the ever increasing costs necessitated a solution. Wells Sherman the chief marketing specialist, in charge of fruits and vegetables, of the USDA's Bureau of Agricultural Economics noted that, at the end of the 1920s a market gardener located near a large market such as New York and Brooklyn could "remain a market gardener indefinitely" Indeed the idea that farming in Kings County had been pushed aside and made obsolete by the distant suppliers was simply not true. Many New Yorkers did not notice that the supply of distant food essentially disappeared when foods produced locally were in season, nor did they notice the reduction in price. In fact as late as 1912 1000 wagons a day came into Wallabout from a radius of 40 miles. The climate on Long Island was so favourable that it increased the growing season by two months above that of the mainland from 5 to 7 months a year.

The problem was not the ability of the local farmers to produce vegetables and fruits but rather the public's perception that these same fruits and vegetables shouldn't be nor couldn't be produced locally for a reasonable price; or that the use of land was better suited for building and decongesting the cramped metropolis. Add to this a tax system that benefited urban development and made farming unprofitable.

Thomas Adams didn't necessarily disagree with this idea. He knew all to well that the entire region was formed on free market commerce. Real estate speculation was as American as apple pie. He did, however, believe that there was a place for planning this expansion to include areas of agriculture. Adams's plan, similar to Ebenezer Howard's Garden City, revolved around 300,000 – 400,000 inhabitants and would combine both urban amenities and rural pleasures. Like Howard, Adams proposed agricultural areas ring the urban areas and be protected from development. Not only





This Page

4.3.1 Current Ecological project managed by the Regional Plan of New York

4.3.2 Brooklyn greenbelt waterfront project managed by the Regional Plan of New York

4.3.3 Green Thumb Web site

4.3.4 Green Market Web site

4.3.5 Regional Plan of New York Web Site

-Images from websites: http://www.greenthumbnyc.org/, http://www.cenyc.org/HTMLGM/maingm.htm
http://www.rpa.org/







4.3 Precedent (cont.)

would the areas produce the needed fruits and vegetables for the urban population but would limit expansion and force any ideas of growth into a similar arrangement. Adams believed that expansion couldn't be stopped but could be planned. The Regional Plan of New York, which Adam's was president of, conducted one of the largest surveys of the area and concluded that "restoration of a balance between agriculture and manufacture is of interest to New York" (Linder, Zacharias, 1999) Although not stating that market gardening was of any immediate importance it did leave open the possibility of the need for future consideration. The survey did state that mixing agriculture and housing would create a situation "advantageous to both" In the 1930s the New Deal National Resources Board, under a Roosevelt administration, recognized the amazing market in the East of New York, Boston and Philadelphia and supported "…to fertilize relatively infertile lands and to expand the production of crop specialties" in the vicinity of these markets.

The opposition to these ideas stemmed from a few different sources. First and foremost the private real estate speculation market made it hard for such a far reaching and original idea to take hold. Unlike European cities most American cities do not public retain land for development. Most U.S. cities were, and still are forbidden by statute and state constitution to enter the private land market freely (Linder, Zacharias, 1999) In fact land was being set aside as protected from development but these lands were for cemeteries and benefited the dead. In European cities the administrations saw fit to purchase large amounts of land and use this land to afford housing a development when needed. Not only did this allow the administrations to control development it also allowed for public amenities such as parks and playgrounds and community gardens to become part of any new development. In the United States the immediate response to a planning initiative was the quick purchase of as much land surrounding a proposed development by private developers. These lands could be held indefinitely as the new developments drove prices higher. In some cases the land was purchased and held until the city paid the high prices or cancelled the program. The second obstacle was simple public perception that a project such as the Garden City was socialistic and or communistic. America capitalism would not support projects for the better social good, at least not at the time.

By the 1970s plans were coming into place that supported agriculture. By this time many of the farms that were in or near large cities had already been swallowed up by development but some initiatives helped. In 1964 60 percent of all vegetable production was concentrated in Standard Metropolitan Statistical areas. The USDA explained this as the result of expanding cities not necessarily dislocating farmers. The cities are the farmers market and so when the city expanded the dislodged farmer typically moved to the edge of the new boundary. In 1973 New York State created protected agricultural zones to maintain local food supplies and the farm industry. In 1975 Suffolk County, on Long Island, began to pay farmers the value of their land that they kept undeveloped and maintained for farming. In 1956 Staten Island still had 60 commercial farms growing nearly $1 million worth of crops a year. Many of the local restaurants in New York maintained gardens or small farms on Long Island. In 1976 The Greenmarkets program was started in New York that saw the creation of farmers markets in almost all the boroughs that were served by farmers from 100 miles away would come to sell directly to the customer. The Greenthumb project was also started in the 70s and saw the creation of community gardens that encompassed 75 acres of growing space. Many of these same gardens still exist and have been protected by local legislation.

Growing started Brooklyn, existed for much of its development and finally succumbed to land speculation and profit. Gardens still exist today but ideas of planned communities with a mixture of agriculture, housing and commerce disappeared with the ever growing metropolis. Plans put in place to protect local food sources came to late to maintain the Dutch farms of old. Perhaps people's perception of farms in Brooklyn as anachronistic has finally dissipated and the possibility of rekindling the enterprise of farming exits. People are increasingly conscious of what they eat and where it comes from. They want healthy, natural foods picked fresh and delivered daily. Brooklyn has the climate, drive, motivation and precedent to make it a prime location to grow locally. The existing community gardens speak volumes about the desire to grow in the city, the plethora of food co-ops and organic food stores shows an interest in food and where it comes from and the farms of old are precedent.

4.4 Present Day

The idea of Urban Agriculture could be applied to any city in the world. In many places some form of local growing is already in Place. The Europeans have practiced a form of urban farming for decades and made a success of it. In the United States there are many cities with vast amounts of vacant land ideal for growing food. Philadelphia has an estimated 30,900 vacant lots and 22,000 vacant residential structures, New Orleans had 14,000 vacant lots and now much of the city is being completely re-built providing many opportunities. Chicago has 70,000 vacant lots with 20 percent of the city communities having one quarter of the properties considered abandoned, primarily in the poor neighbourhoods. There are 2500 acres of vacant land in Milwaukee, 13,000 tax delinquent parcels in St Louis, Trenton New Jersey estimates that 18 percent of its land area is vacant, Syracuse New York list 10 percent of its houses as abandoned, and Detroit has 46,000 vacant parcels and 24,000 empty buildings (Kaufman, Bailkey, 2000) Many of these vacant spaces are sitting tax delinquent, or abandoned and dangerous. The cities are losing tax dollars on all of them, paying to maintain and protect others and paying to demolish abandoned buildings.

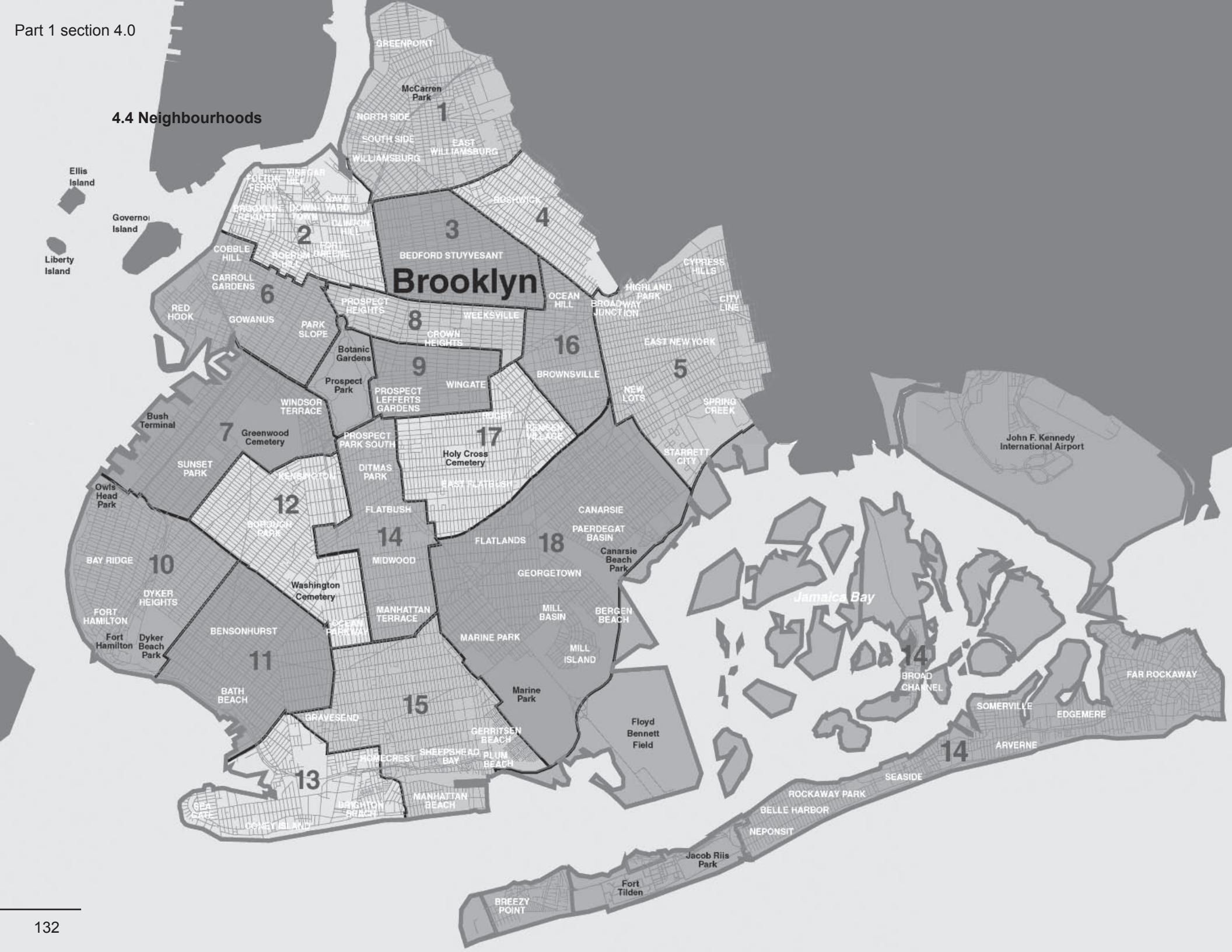
Brooklyn has 1,546 acres of vacant space or 4 percent of its 38,441 total acres. There is also 321 acres listed as miscellaneous with their end use being unknown. The number of vacant buildings in Brooklyn is hard to estimate but should be considered higher in areas such as East New York, Brownsville, Bushwick and areas like Ridgewood (Queens) and Cypress Hills. These areas are typically poor and have long been manufacturing centers. As is the case in most other cities, when the manufacturing in an area ceases the exodus of the population soon follows. Red lining and other nefarious practices have kept these areas under developed and poverty stricken for a very long time (Thabit, 2003). Almost all of the census districts of Bushwick have nearly 50 percent of there population below poverty, with the number of families below poverty almost the same. Brownsville is worse with numerous districts of 65 percent and higher poverty rates. Vacant land is also numerous with Bushwick having 954 vacant lots at 7 percent of its land area, East New York has 2134 vacant lots or 16.7 percent of its land area and Brownsville is at 9 % of its land area. All the districts have a median income that does not exceed $40,000 a year. Contrast this with the Park Slope, Prospect park area of Brooklyn and downtown Brooklyn with 4.9 percent and 2.5 percent vacant land (respectively) and median incomes that range from a low of $10,000 annually to $112,000 annually, also one of the only districts in Brooklyn where the percentage of people and families in poverty is 0 or below 10 percent for some census tracts(New York Census, 2000)

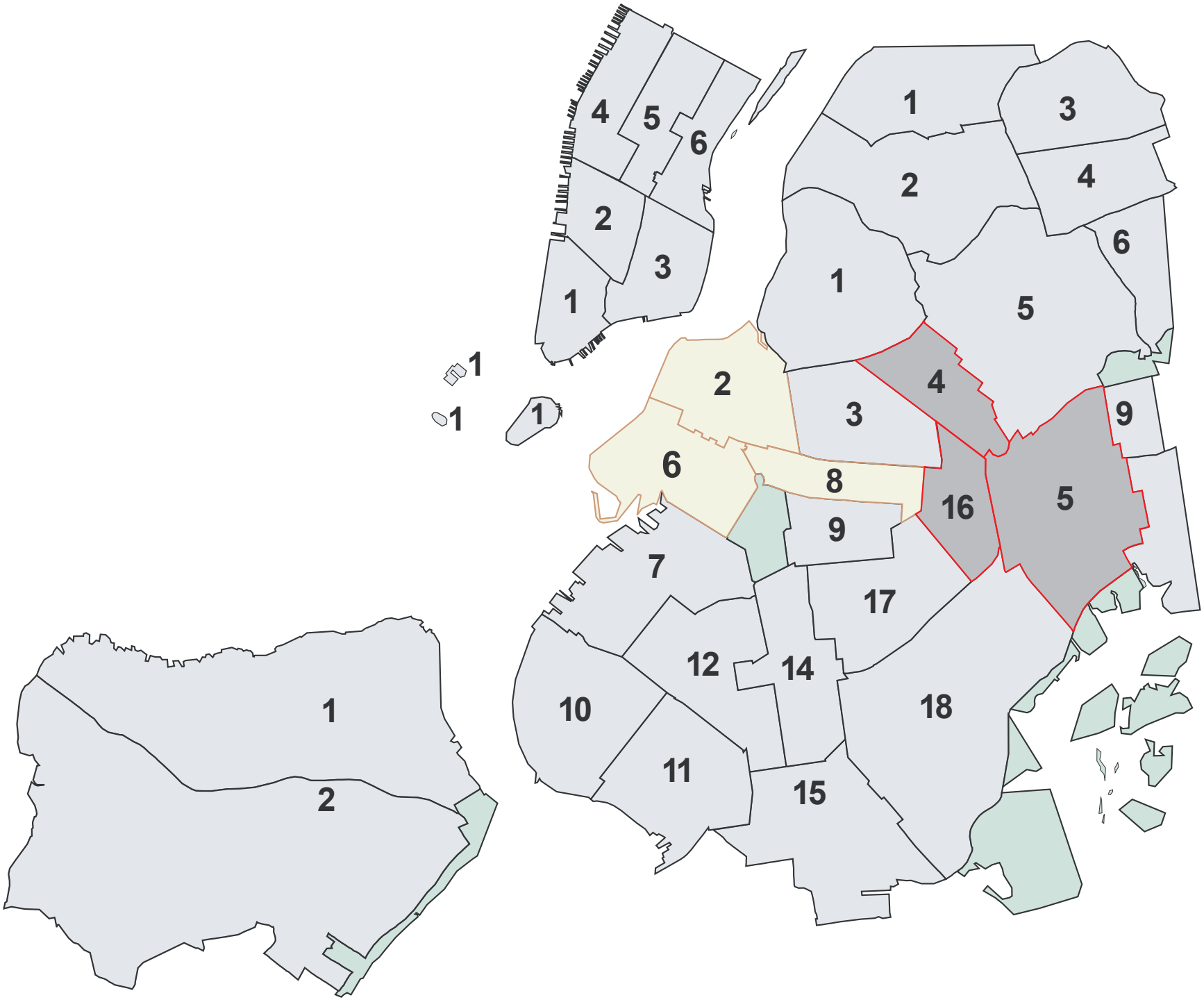
The choice of Brooklyn for this thesis and the case studies conducted for this thesis stem from these census numbers. Brooklyn is a densely populated area with many different cultures and societies coming into contact, and sometimes conflict, everyday. There is a population base to support the business of farming, a liberal majority who share many *of the same ideas of necessary for a project that involves urban agriculture (election results, 2004) and a diverse median income that can both support the project and benefit from it. The vacant land available and the infrastructure in place make Brooklyn a prime location to propose an Urban Agriculture project. The different neighbourhoods provide possible areas for expansion with similar projects catalysts and the history of the place is a precedent for growing and growing successfully. Brooklyn can be viewed as a good place to initiate independent, non-traditional, income incentives, social interventions and environmental endeavors like Urban Farming and subsequent industry.*

The other reason for the decision to use Brooklyn comes from personal experience of the place. I lived in Brooklyn for 3 years and in the New York area for 7 years. To say that Brooklyn gets a hold of a person is an understatement. My personal experiences gives me an insight into the place and the character of the people that was not available in other urban centers. More so my familiarity with Brooklyn and the people of Brooklyn makes me think it is a perfect place for Urban Agriculture.

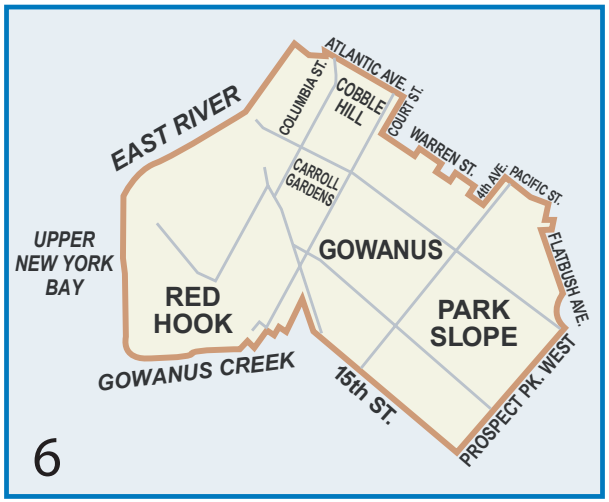
Brooklyn, as a place, is simple to define. The boundaries and geographic features are simple to list and discuss. The concept of adjacent neighborhoods, elementary schools, parks, supermarkets and other typical residential fare is common to most who will read this. So what makes Brooklyn so special? It's hard to define for those who don't have some experience with the place. The qualities that define Brooklyn are not defined by monuments or

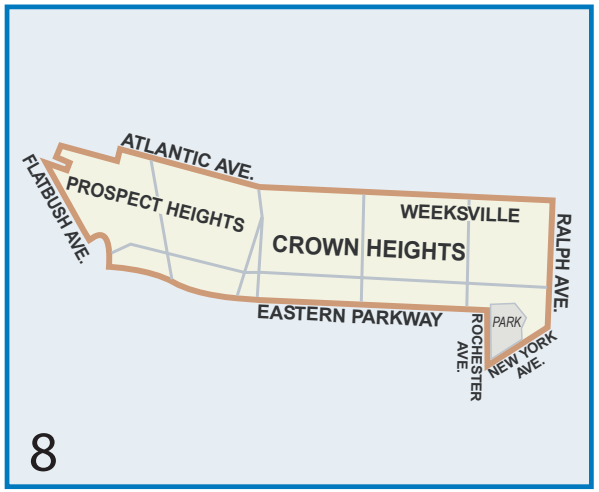
4.4 Neighbourhoods




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LAND USE, 2004

	Lots	Lot Area Sq. Ft. (000)	%
1- 2 Family Residential	2,184	4,266.0	7.4
Multi-Family Residential	3,232	12,209.5	21.1
Mixed Resid. / Commercial	1,010	3,516.1	6.1
Commercial / Office	461	4,531.6	7.8
Industrial	272	3,330.3	5.8
Transportation / Utility	114	13,750.5	23.8
Institutions	274	8,065.3	13.9
Open Space / Recreation	79	4,308.4	7.4
Parking Facilities	257	2,014.2	3.5
Vacant Land	419	1,465.8	2.5
Miscellaneous	65	377.5	0.7
Total	8,367	57,835.2	100.0

LAND USE, 2004

	Lots	Lot Area Sq. Ft. (000)	%
1- 2 Family Residential	4,257	7,634.8	11.2
Multi-Family Residential	5,827	16,309.1	24.0
Mixed Resid. / Commercial	1,612	3,365.6	4.9
Commercial / Office	248	1,807.6	2.7
Industrial	597	9,939.3	14.6
Transportation / Utility	231	16,098.3	23.7
Institutions	200	3,167.0	4.7
Open Space / Recreation	41	3,438.8	5.1
Parking Facilities	252	1,701.0	2.5
Vacant Land	517	1,630.5	2.4
Miscellaneous	221	2,963.1	4.4
Total	14,003	68,055.1	100.0

LAND USE, 2004

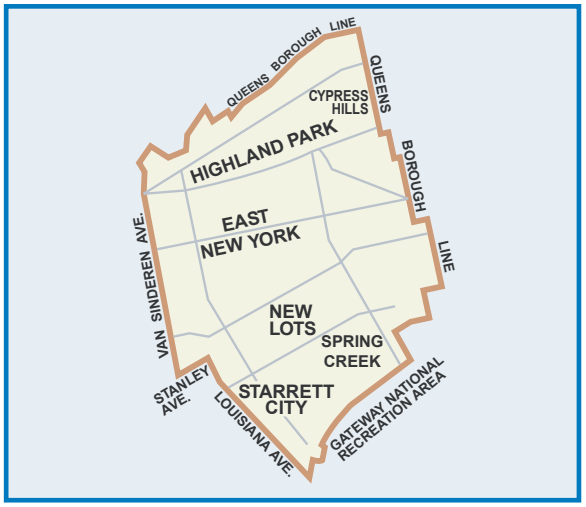
	Lots	Lot Area Sq. Ft. (000)	%
1- 2 Family Residential	2,700	5,933.2	19.2
Multi-Family Residential	2,973	12,303.1	39.8
Mixed Resid. / Commercial	1,022	2,370.5	7.7
Commercial / Office	135	760.8	2.5
Industrial	148	1,514.8	4.9
Transportation / Utility	84	613.1	2.0
Institutions	199	3,239.4	10.5
Open Space / Recreation	14	1,654.5	5.4
Parking Facilities	163	903.1	2.9
Vacant Land	658	1,502.5	4.9
Miscellaneous	39	106.2	0.3
Total	8,135	30,901.3	100.0

4.4.2



LAND USE, 2004

	Lots	Lot Area Sq. Ft.(000)	%
1- 2 Family Residential	3,942	8,114.3	19.5
Multi-Family Residential	4,076	11,022.9	26.4
Mixed Resid. / Commercial	1,039	2,454.7	5.9
Commercial / Office	272	1,368.3	3.3
Industrial	243	2,495.4	6.0
Transportation / Utility	80	584.9	1.4
Institutions	199	3,503.0	8.4
Open Space / Recreation	63	7,512.3	18.0
Parking Facilities	440	1,280.6	3.1
Vacant Land	954	2,960.3	7.1
Miscellaneous	128	378.6	0.9
Total	11,436	41,675.2	100.0



LAND USE, 2004

	Lots	Lot Area Sq. Ft.(000)	%
1- 2 Family Residential	11,492	27,693.9	24.8
Multi-Family Residential	3,595	21,870.5	19.6
Mixed Resid. / Commercial	1,108	2,658.1	2.4
Commercial / Office	286	3,845.3	3.4
Industrial	404	6,802.8	6.1
Transportation / Utility	251	3,861.2	3.5
Institutions	312	7,897.2	7.1
Open Space / Recreation	77	11,987.0	10.7
Parking Facilities	491	5,711.6	5.1
Vacant Land	2,135	18,633.2	16.7
Miscellaneous	164	642.1	0.6
Total	20,315	111,602.9	100.0



LAND USE, 2004

	Lots	Lot Area Sq. Ft.(000)	%
1- 2 Family Residential	3,577	7,553.5	22.1
Multi-Family Residential	2,026	11,664.3	34.2
Mixed Resid. / Commercial	608	1,765.1	5.2
Commercial / Office	280	1,375.7	4.0
Industrial	124	1,620.5	4.7
Transportation / Utility	122	1,025.2	3.0
Institutions	191	3,004.5	8.8
Open Space / Recreation	29	1,627.4	4.8
Parking Facilities	195	950.3	2.8
Vacant Land	980	3,197.5	9.4
Miscellaneous	52	335.1	1.0
Total	8,184	34,119.1	100.0

4.4.3



4.4.6



4.4 Present Day (cont.)

actions or a glorious history. It's not the industrial, commercial or cultural Mecca that is easy to quantify and comprehend. Brooklyn is simply the collection of neighborhoods and people that interact at a residential scale. This residential quality may be unique to Brooklyn or it might be made more evident by it's proximity to Manhattan. Juxtaposed against this giant of modern life its residential quality may be emphasized and made more common in comparison. Indeed there may be special qualities that are more evident to the outsider. From personal experience of living there for many years these special qualities may have dimmed in my eyes but it seemed to become a more special place the longer I interacted with it. Strange that I keep giving Brooklyn a persona as if it were a living place. Indeed it seems like such. The ebb and flow of energy and people, business and culture and poor and rich, strong and weak are seemingly the very components of a living entity.

The connection to the place is also made stronger by those individual parts that it is comprised of. There is a pride and enjoyment from being part of the greater whole. The differences between peoples are lessened by the collectively shared experience of living in the place. Too many times I have witnessed black face, white face; rich and poor share a glance over knowing that they all lived in same borough. Go to any concert and see people chanting "Go Brooklyn, Go Brooklyn" This isn't pride in the place so much as pride in the collective experience of living in that place together.

Once an economic power house with industry and commerce; Brooklyn quickly became a place synonymous with poverty, crime and urban strife. Current census information lists Brooklyn as having the second highest poverty rate just behind the Bronx and the second highest unemployment rate. By looking at the census data we can break down the population into groups of the total population of 2,465,326 The population breakdown for the borough of Brooklyn is 34.7% White, 34.4% Black, 19.8% Hispanic and 7.5% Asian. The remaining percentages can be broken down into American Indian, Two or more races (non Hispanic) and a small percentage listed as some other race. The total number of households is 880,727. This number can be sub-divided into 339,957 married couple family, 195,988 female house holder without husband, 48,175 male householder without wife, and 296,607 non-family homes. Single family dwellings are 46,988 detached units and 80,622 attached units. The remainder of the units are comprised of at least 2 units with the higher number being 315,346 structures with 20 or more units and 188,964 with 50 or more units. Of these households 642,437 are renter occupied and 238,290 are owner occupied. 501,803 families do not own a car and 291,238 families own only one.

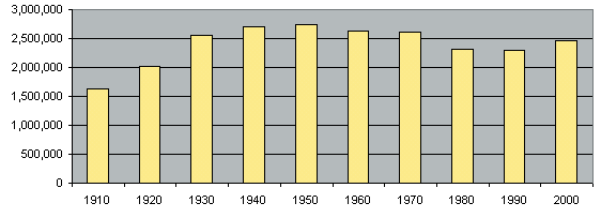
The average rent per unit is $672.00 with the majority of households spending 35% of household income on rent at 232,728 households. The average is between 20% - 35% Of owner occupied units the median housing value is $224,082. The homeowner vacancy rate is 2.1% and the rental vacancy rate is 3.5%

931,769 persons are foreign born. 68% are

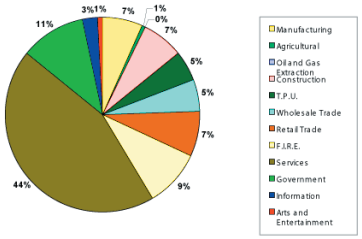
high school graduates or higher and 21.8% are college graduate or greater. Of the 1,877,751 persons over the age of 16 , 1,039,512 are considered in the labor force a percentage of 55.4% Of which there are 927,030 employed persons and 111,528 unemployed persons. This should be tempered by the fact that 838,239 persons are listed as not in the labour force making the unemployed number 949,767. Of the female population the unemployment rate is 11.1% but the number females considered to be in the labour force is 512,083 compared to the number of females considered not in the labour force at 512,592. The male population is similarly divided with an unemployment rate of 10.3% Of which 527,429 are considered in the labour force and 325,647 are considered not in the labour force. The median household income in 1999 was $32,561 and median family income was $36,295

Person below the poverty level number 610,476 above 18 and 221,255 under 18. Of persons 65 years and over 59,068 are listed as below poverty level. This means that 35% of the population of Brooklyn are below the poverty level and make up nearly 40% of the total population under the poverty level of New York City. Nearly 40% of households are considered under the poverty level. Despite all of these numeric divisions and scientifically gathered information in Brooklyn there is a seeming sense of manifest destiny. A common effort and goal that is defined in the daily lives of its people, Brooklyn isn't considered a diverse group of people all competing for a similar goal. It is a group of diverse people working together to make the place and individual existence in that place better. It is not pursued as a goal but thought

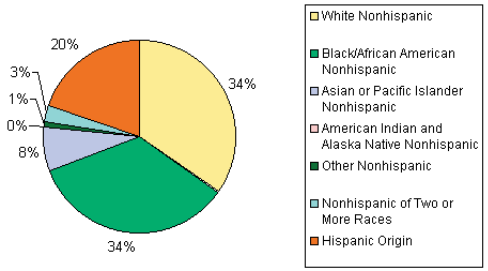
Brooklyn's Population

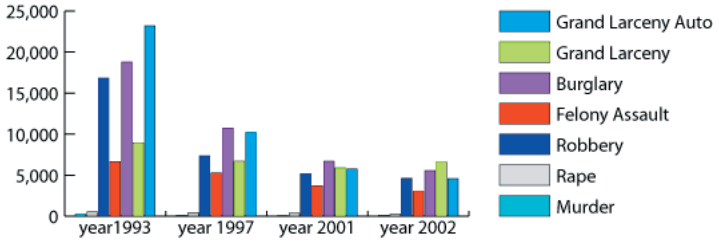


Personal Income by Major Source of Earnings, 2002

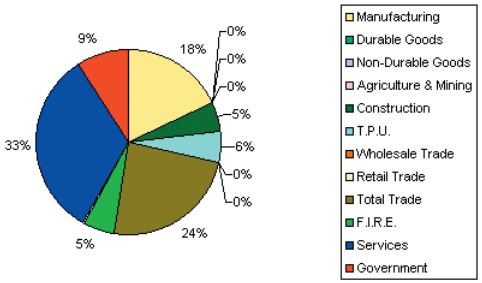


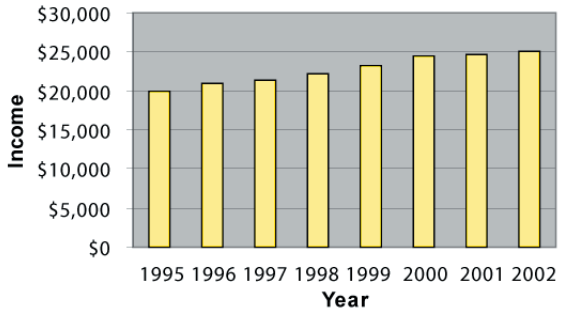
Brooklyn's Population by Race and Ethnicity in 2000



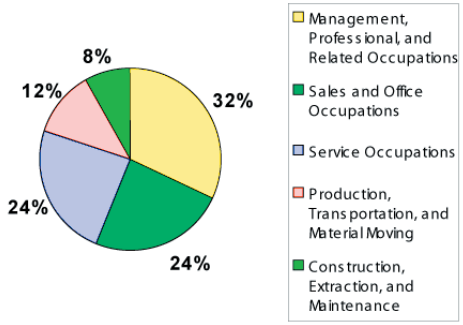


Brooklyn Employment by Industry in 2000

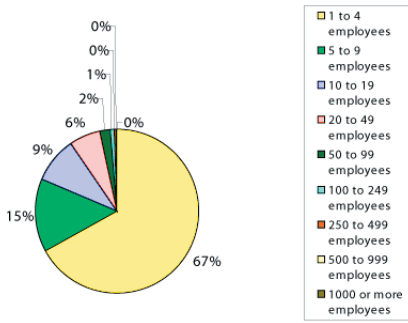




Workers By Occupation, 2002



Brooklyn Firms by Number of Employees in 2001



4.4 Present Day (cont.)

as inevitability. The future of Brooklyn is uncertain but it will most likely continue to exist in juxtaposition to Manhattan as a place that is the bedroom and living room of New York City.

The possibility to grow the borough and make it something new and progressive is there. The people are committed to the place and their co-inhabitants. The joint pursuit of a better place to live with benefits for all is a shared goal and could and should involve the practice of local growing and urban farming on a scale that far succeeds the gardens and growing spaces that already exist. Not to make them obsolete but to continue a community initiated idea and make it something that can contribute to the place and it's people.

























4.4.9





Images, Sources

Page 116

4.1.1 Aerial Photo of New York and Brooklyn

-Image from unknown website

Page 117

4.1.2 Brooklyn Location Graphic

-Images from Wikipedia: http://en.wikipedia.org/wiki/Image:Brooklyn_Highlight_New_York_City_Map_Julius_Schorzman.png

4.1.3 Old Graphic of Brooklyn

-Images from Unknown source

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4.1.4 Image of Dutch Colony

-Images from : Scanned by author, UMD library, University of Waterloo.

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4.1.5 Kings County Map

-Images from "Of Cabbage and Kings County" Linder, Zacharias-1999 University of Iowa Press.

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4.1.6 Corner of Fulton and Dekalb Brooklyn 1848 (depicted)

-Images from New York Public Libray Digital Collection: http://digitalgallery.nypl.org/nypldigital/index.cfm

4.1.7 Image of Old farm house 1846

-Images from New York Public Libray Digital Collection: http://digitalgallery.nypl.org/nypldigital/index.cfm

4.1.10 Gravesend Farms 1873

4.1.11 New Utrecht Farms 1873

-Images from website: http://www.bklyn-genealogy-info.com/Map/Maps.Main.html

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4.1.8 Farms of Brooklyn 1766

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4.1.12 Image of the Vanderveer Farm 1890

4.1.13 Farming in Brooklyn 1930

-Images from New York Public Libray Digital Collection: http://digitalgallery.nypl.org/nypldigital/index.cfm

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Images sourced on page

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4.4.2 - 4.4.5 District Profile graphics and tables

-Images from New York City Department of Planning: http://www.nyc.gov/html/dcp/html/subcats/resources.shtml

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4.4.6 Image of the South East Corner of Flatbush

-Images from :The Library of Congress Historical Panoranmas: http://memory.loc.gov/ammem/collections/panoramic_photo/index.html

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4.4.7 - 4.4.8 Demographic Charts, Brooklyn

-Images from the Brooklyn Economin Development Corporation: http://www.bedc.org/bkstats.htm

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4.4.9 Base Map of Brooklyn city Blocks

-Image created by author

4.4.10 Images of Brooklynites

-Image from photo project, Anthony LaSala and Seth Kushner: http://www.sethkushner.com/brooklynites/images_01.html

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4.4.11 Image of the developing Brooklyn shore (Manhattan in distance)

-Images from :The Library of Congress Historical Panoranmas: http://memory.loc.gov/ammem/collections/panoramic_photo/index.html

4.4.12 Image from a Brooklyn rooftop of modern day Brooklyn

-Image created by author

All other images and charts sourced on page

Part 1 – Urban Agriculture Research and Site Research

5.0 International Urban Agriculture

5.1 Introduction
5.2 Cuba
5.3 Conclusion

Part 1 – Urban Agriculture Research and Site Research

5.0 International Urban Agriculture

5.1 Introduction

Urban Agriculture has become a buzzword in recent years. Many people talk about growing food in city centers like it was a new phenomenon. As illustrated in previous sections this is simply not true.

Urban agriculture is as old as agriculture itself. Jane Jacobs argues in her book "*The Economy of Cities*" that the city itself predates the farm and in many ways is the catalyst for farming. This author agrees with that assumption and argues that the city and farm, or city and garden, have existed symbiotically in most cultures for years.

So why is it only now that we seem enthralled by the concept of growing food in our dense cities? Has there been some change in the world that makes the practice more common? Is it that there really is a move toward a new type of city growing? I assert that both of these are true, at least in North America.

African and third world nations have, for some time, been involved in growing in the city. It is a necessity for life in many countries around the world. In other countries it is shear density and rapid change in economies that have driven the growth of urban agriculture. Some people pursue it to feed their families. In some countries urban agriculture is a transplant of rural people and rural expertise into large city centers; the poor farmer moved to the big city to find work and found that he could pursue his previous occupation on vacant land.

In both these cases the term "Urban Agriculture" isn't a concept for contemplation it is a reality. The practice of growing food close to where you live isn't an oddity, these people have never known anything else.

Urban agriculture is a new concept to North Americans because of the existence of traditional agriculture. The city and the farm are, in our collective minds, divided. In the past this was a simple divide of farming communities with central hubs that served the needs of the farmers and cities arranged around sources of water and other amenities. Over time this separation grew and the division widened. Our present day agricultural practice grew out of European farming practices, tried and tested, profitable and reliable. It's only now that those practices have become something different and, coupled with our changing world, new and better ways of supplying our food are in demand.

The traditional farming methods have been supplanted by industrial agriculture, there is a growing awareness of the ties between our health and our environment and people are becoming more interested in, and more concerned, with our impact on the earth and the subsequent effect it is having on everything we do. Urban Agriculture is not a new concept but urban agriculture as a serious and wide reaching industry is. The absurdity of eating food transported over many miles is made even more evident when it is juxtaposed against abundant fresh, organic food grown in our backyard. Local food makes sense and our society is learning this first hand. We are beginning to make the transition to more productive and ecologically friendly food sources. Organics are in demand and their production is on the rise. With this growth in organics, and the food awareness it has created, locally grown foods are finding their way into traditional stores, organics being too fragile to lug over bumpy concrete roads.

North American societies are beginning to understand the need for a new food industry and are moving toward locally grown food but this is a luxury we have the pleasure of making on our terms. Urban agriculture in other, international centers, has been forced to develop. Changes in economies and political systems have meant that many places have had to make quick changes in order to survive.

This is the case in many third world countries but no where is it more true than in Cuba. With the collapse of the Soviet Union the Cuban people faced a complete change in the way they lived their lives. They were forced to relearn and rethink the way they supported them selves and they ended up doing it in a an amazing, and amazingly successful, way.

This section will explore two types of international urban agriculture but focus primarily on Cuba. By looking abroad we will find ways to make urban agriculture a reality at home.

5.2 Cuba - The Special Period

In 1989, with the collapse of the Soviet Union, Cuba was launched into a period of adjustment that involved many drastic changes. Fidel Castro called this period the “Special Period” and if the end results are any indication, then it truly was.

For over 450 years Cuba has been at the mercy of other nations. First the Spanish, then the United States and, after the revolution, the Soviet Union(Suzuki 2006) Some would argue that the revolution resulted in an independent and sovereign Cuba but this is not the case. Although the Cuban people may have removed dictators like Battista, Fidel was also heavy handed; only in a different way. Gone were the days of scandal and murder but what arrived were the days of a police state. Next came the transition to Communism and the ties to the Soviet Union.

It is true that the Soviet Union supported the country in many ways but it is also important to recognize that is took a lot as well. The primary supporter of the Cuba agricultural system was the Soviet Union (Suzuki 2006) During the time that this tie existed between the two countries the Soviet Union supplied millions of tons of fuel and fertilizers, seeds and pesticides. In return it took a large share of all the crops produced (Suzuki 2006)

With the fall of the Soviet Union also came the reduction of Oil, Agricultural Inputs and food to Cuba. Between 1993-94 supplies for agriculture dropped 67% (Novo, Murphy 2004) With the US embargo and dwindling support of the Soviets it is estimated that the food availability dropped as much as 60% between 1991 and 1995. (Novo, Murphy 2004) Extensive rationing and limited caloric intake was the result.

Not only did the reduction of Soviet imports directly affect the possible food supply it also affected the possible future food supply. The needed fuel for running the farm machinery and processing factories disappeared and this also meant the needed fuel to transport the food from the farms to the cities. The massive milk and meat industries could no longer survive and even if they did there was no way to move the milk or meat to the end consumer.

Across the country the population had to rethink the way it was feeding itself. Once reliant on high input chemically supported industrial agriculture there was no longer the needed energy to continue in this way. The fuel needed to transport the fuel was needed else and so food had to be grown closer to the urban centers where it was eaten (Suzuki, 2006)

The food crisis was the catalyst for Urban Agriculture in Cuba and Fidel Castro proclaimed that no piece of land should go uncultivated.

Since the 1950’s and 60’s the majority of the food produced in Cuba was supplied through state farms. In 1993 the Cuban government issued Law 142. This law broke up the state farms into parcels owned and managed by the workers. In 1994 the previously banned farmers markets were allowed to operate again (Novo, Murphy 2004) and the laws against private enterprise (at least with regard to food) have been relaxed (Suzuki 2006)

The government still plays a role in the countries agriculture. The state distribution system is still in place and farmers have quotas to meet. Still the farmers are able to produce much more than their quotas and free to sell this extra at market. The government also plays a role in agriculture through it’s educational programs and supply and support of tools and supplies.

The land for urban agriculture is supplied to the workers through USUFRUCT and will remain as such as long as the land is used to grow food (Suzuki, 2006)

There are many different types of garden and farm in this new system but the most popular and productive are the community or “Popular” gardens and the organiponicos and it is estimated that there are 10,000 urban gardens (farms) in existence employing 350,000 Cubans. Almost all Schools,, hospitals and seniors homes have their own garden (Suzuki, 2006)






Gulf of Mexico
Straits of Florida
Caribbean Sea
Yucatan Channel
NORTH ATLANTIC OCEAN
Windward Passage
Homestead
U.S.
Key Largo
Marathon
FLORIDA KEYS
Key West
Nassau
New Providence
Eleuthera
Andros Island
EXUMA CAYS
Cat Island
San Salvador
THE BAHAMAS
Cay Sal Bank (THE BAHAMAS)
Great Exuma
Rum Island
Long Island
Crooked Island
JUMENTOS CAYS
RAGGED ISLAND RANGE (THE BAHAMAS)
Acklins Island
Guinchos Cay (THE BAHAMAS)
Cay Lobos (THE BAHAMAS)
Cay Santo Domingo (THE BAHAMAS)
Great Inagua
CIUDAD DE LA HABANA
Havana
Mariel
LA HABANA
Artemisa
Matanzas
Cárdenas
Jovellanos
Colón
ARCHIPIÉLAGO DE SABANA
Isabela de Sagua
VILLA CLARA
Caibarién
Placetas
Santa Clara
Cienfuegos
Sancti Spíritus
SANCTI SPIRITUS
Ciego de Ávila
CIEGO DE ÁVILA
Morón
ARCHIPIÉLAGO DE CAMAGÜEY
Florida
Nuevitas
Camagüey
CAMAGÜEY
Puerto Padre
Las Tunas
LAS TUNAS
Holguín
Banes
Antilla
HOLGUÍN
Moa
Mayarí
Amancio
Santa Cruz del Sur
ARCHIPIÉLAGO DE LOS JARDINAS DE LA REINA
Manzanillo
Bayamo
Golfo de Guacanayabo
GRANMA
Palma Soriano
Santiago de Cuba
SANTIAGO DE CUBA
Pilón
GUANTÁNAMO
Guantánamo
Baracoa
U.S. Naval Base Guantanamo Bay
HAITI
Minas de Matahambre
San Cristobal
Güira de Melena
Guines
Surgidero de Batabanó
Arroyos de Mantua
PINAR DEL RÍO
Pinar del Río
La Fe
Guane
Golfo de Batabanó
MATANZAS
Aguada de Pasajeros
CIENFUEGOS
Nueva Gerona
La Fe
ISLA DE LA JUVENTUD
(special municipality)
Isla de la Juventud
Cayo Largo
Little Cayman
Cayman Brac
Grand Cayman
George Town
Cayman Islands (U.K.)
Montego Bay
Ocho Rios
JAMAICA
Port Antonio
Savanna la Mar
Kingston
Spanish Town
Navassa Island (U.S.)
HAITI
Cayes
Cuba
Line of separation
National capital
Province boundary
Province capital
Railroad
Expressway
Road
0 50 100 Kilometers
0 50 100 Miles
Lambert Conformal Conic Projection, SP 20N/22N
Base 802340 (R01601) 10-94

The organiponicos and huertos intensivos are probably the most interesting type of urban farm in Cuba. Although the other urban farms serve the same goal the organiponicos and huertos intensivos work in a way that this author thinks is the perfect model for urban agriculture.

The typical organiponico is completely organic and run as a cooperative . The Huertos Intensivos are also quite common and take the idea of the organiponico a step further and favor intensive raised plantings. Both organiponicos and Huertos Intensivos cover 386 ha in Havana with an average output of 21 kg / Square metre. This number can be as low as 15 kg / metre squared and as high as 25 kg / metre squared.

Any inputs are entirely organic and they typically produce a variety of 50 different crops. The climate allows for year round growth and all profits are split between the workers and reinvested back into the garden (50% - 50%) The average worker can make upwards of 1000 pesos a month or twice that of a typical doctors salary. Most workers are highly educated and share their knowledge with other growers in the city. The government encourages education and even plans to assist Venezuela and other countries to set up their own urban agriculture projects by sending their own growers to educate and train. (Novo, Murphy, Suzuki 2004, 2006)

The typical garden grows a variety of fruits and vegetables and some raise livestock. They all practice organic techniques and use natural predators for pests and natural herbicides and pesticides such as bacterias and garlic oil for plant management. The polycultures alone help to avoid pest and disease and plants such as sunflowers and merrigolds, which both attract beneficial bugs and repell pests, are planted as natural controls. The natural predators can be in the form of bugs that the workers actually raise on site.

Vermiculture compost techniques are used and all soils and waste plant material is recycled to produce thick, nutrient rich soil.

The urban gardens not only provide fresh organic fruits and vegetables but serve as green space in the city center and help mediate pollutants. The needs of the urban farms have also had a ripple affect on other aspects of Cuba. The water needs of the urban farms in Havana have meant that the local water supply needed to be cleaned up and mediated. The result was a solution based in sound ecological practices.

The typical organiponico sells it's wares in a local shop or market attached to the garden and these markets help provide the population with specialty items that the government food ration can't. While the private sale of these items is not necessarily legal it is ignored by the police and allowed to continue.

Not just fruits and vegetables are produced in urban centers. Autoconsumos raise similar crops as the organiponicos but also raise livestock and dairy. In 1997 they produced 8,355,00 eggs, 1,392,00 litres of milk and 240 tons on meat (Novo, Murphy 2004)

Urban agriculture in Cuba is able to support healthy diets, economic expansion and self sufficiency, activity and employment, food security, environment and ecology, social strengths, and education.

These are all positive outcomes of urban agriculture and should be pursued no matter where it is practiced. The Cuban urban agricultural practice is alive and well and a great model for other cities. Although thrown into a crisis the Cuban people adapted and overcame with a successful industry that is building healthy communities both physically and economically.

The result of urban agriculture in Cuba was a positive one. Some might wonder what affect it had on traditional farms. The answer is a positive one. With the disappearance of reliable fuel sources the traditional farm also had to change the way it operated. reliance on inputs and technology meant that many of the younger farmers had no idea how to maintain their crops without these inputs. A system of mentoring and education was established by the government that paired young farmers with older farmers. The end result was a renaissance of traditional farming techniques and research into natural techniques for growing. Yields were increased and more reliable and healthier crops were the end result. (Suzuki, 2006)



5.3 Conclusion:

The reason for the emphasis on Cuba is simple. The Cuban people were thrown into turmoil and responded with amazing success. The ideas encompassed in the countries urban growing and changes in rural agriculture are some of the most forward thinking in the world. Each and every initiative is a result of need and based in sound ecological practice. The questions remains “will a political or economic shift change the way that agriculture is practiced in Cuba?” This is certainly a possibility but it is more hopeful that the Cuban people will stand against this shift in favour of the current system in place. The economic, ecological benefits and the benefit to personal health are so obvious that it would be strange to see a change occur.

The lessons learned by the Cuban farmers should be shared with the rest of the world and the present US embargo may mean that the only ones not to benefit from these lessons are the very people who one day may need it the most.

Images, Sources

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Urban Agriculture (organiponico)

-Image from: http://www.cityfarmer.org/cubacastrofoto.html

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Urban Agriculture in Cuba, Vermiculture from an Organiponico

-Images from: http://www.choicesmagazine.org/2003-4/2003-4-01.htm

and

http://www.cityfarmer.org/cubacastrofoto.html

Page 147 Map of Cuba

-Images from: http://www.lib.utexas.edu/maps/cuba.html

Page 149 Vara Laya Organiponico

-Images from: http://www.varalaya.ca/tour.htm

Part 2 - Form and Metrics

6.0 Study of Metrics Associated with Growing.

6.1 Yields
6.2 Good Practices
6.3 Conclusion

6.1 Yields

Yields, like most things with numerous influencing factors, are hard to predict. There is an inherent risk in all farming of not having a productive season or year. Pest, disease, climate and simple incompetence can affect the end of season yields. Case studies such as the Somerton tank farm project in Philadelphia and Wally Satezwich's work in Saskatoon are showing very good signs of being able to produce consistent yields and generate consistent profits. Still these two projects are susceptible to all the same factors that most growing projects have to endure.

Instead of being able to pre determine yields it is more important to promote proper practice and work hard to produce significant yields. By making smart choices and implementing tested techniques high, decent, yields should be possible. Many of these same techniques will be discussed in Part 3 Section 10.3 as strategies for creating successful urban agriculture projects and in section 10.1.2 in the section on SPIN farming techniques. This section will briefly discuss some current strategies for producing and generating yields; think of it as good practices.

Yields can be estimated by studying production numbers for traditional farms and even urban community gardens and growing projects. These numbers can then be matched to planting and harvesting practices and assessed. Through concentration and practice of proper growing techniques high yields are possible. Briefly, as an introduction to this section, initial numbers for yields can be estimated through the use of supporting research and historical numbers. These numbers are only possible scenarios and should be understood to be generated in unknown conditions. The specific growing medium, soil type and climate of these conditions are not known and cannot be thought of as common or typical of all growing projects.

Studies done to determine the yield production of specific plots of land produce varied results. Librecht Migge, the german urban planner and architect, supported 200 square metres per household for adequate growth of vegetables and fruits. His colleagues had varying ideas of the amount of land from 6 square metres to 250 square metres to produce the same yield.

For the sake of this study we will need to determine our own possible yields per plot. If we use the most current data available and consider a typical plot of 250 sqaure metres as producing 3.5 tonnes of vegetables and fruits a year (Hough, 2005) and add the figures from the Marais gardeners in Paris then divide the two numbers to get an average we can use that number to determine possible yields. In addition we will use the 2003 per capita consumption of fruits and vegetables provided by the United States Department of Agriculture. These numbers include all vegetable and fruit consumption including processed fruits and vegetables. For this study we will use only the fresh fruit and vegetable numbers of 322 lbs per capita per year or 146 Kilograms per capita per year. Of course this does not imply that 146 kilograms is the suggested per capita yearly consumption of fruits and vegetables, only that it is the current condition in the United States.

"*It has been estimated that the standard allotment garden of 250 square metres may yield, under eperienced management, 20 tonnes per 0.4 hectare or approximatley 3.5 tonnes per plot per year*" - Cities and Natural Process, Michael Hough, Pg 176

"*. . . One grower, M. Ponce, who produced 250,000 pounds of vegetable on a little more than one hectare with seven other workers. . . some 5000 growers, working 900 hectares of land, supplied th vegetable needs of around two million Parisians and even shipped some of their crops to London.*" - Cities People Planet, Herbert Girardert, Pg 238

The first quote is Hough's estimate and the second quote refers to the Marais gardeners of 19th century France. While reviewing the first quote it is evident that the Hough equation must be wrong. 20 tonnes per 0.4 hectare translates into 44092 lbs / 4000 square metres or 11.023 lbs per square metre. If we multiply the per sq. metre lbs by 250 square metres we are left with 2755 lbs or 1.25 tonnes. By combining Hough's re-worked quote and the Marais gardeners number and taking the average we can get a more accurate possible yield.

In addition we can also add the yield numbers from another source and include that in our average. The organiponicos, or High Yield Urban Gardens of Cuba, are estimated to produce projected average yields of 15 - 20 kg / sq m and in 2000 actually produced closer to 25 kg / sq m. (de La Salle, 2004)

Less intensive “Community Gardens” in Cuba produced 1-2 kg /sq m in 1996, and 8-12 kg /sq m in 2000. (de la salle 2004) The organiponicos are intensive high input gardens and, for this reason, are distinct from the more common community gardens. While the yields differ we are able to still use all of these numbers to get an average possible yield for the study plots. These numbers not only give us an idea of possible yield but take into account the possible different types of planting (organiponico vs. community gardens, 19th century vs. present day)

Combine these number and land area figure and using the per capita consumption numbers we can estimate the possible yield from the study site. Using 2002 NYC census numbers we can get an estimate of the population in the study area and what their food requirements are.

The following equations and maps show the methodology used for predicting possible yields for the main study area. They should not be thought of as tested and proved, only possible yields based on available space. The first set of maps and equations show the total possible yield based on total available growing area. The second set of maps and equations show the more realistic possible yield from a conservative utilization of available free space. The final map and equations compare specific population numbers from the 2002 NYC census and the per capita fruit and vegetable consumption for the state.

It is important to keep in mind that growing techniques, year to year growing conditions, crop varieties and many other factors vary so much that accurately predicting possible yields is near impossible. Proper growing techniques covered in section 10.2 and SPIN farming methods covered in section 10.1 should help to predict possible year to year (season to season) yields per project. Vigilance and planning will allow for the best possible results.

For this section we will use the following equation:

Per Capita Fruit and Vegetable consumption for the United States over 34 years. The chart lists both fresh and processed fruits and vegetables.

Only the fresh fruits and vegetables numbers will be used at an average of **322 lbs (146 Kg) per capita per year.**

Hough’s modified estimate states that 250 square metres will produce, under good management, 1.25 tonnes
or 2755 lbs of food.

2755lbs / 250 sq m
= 11.02 lbs per sqaure metre

The Marais estimate translates to

250,000 lbs / 10000 sq m (1 Hectare)
= 25 lbs per square metre

The cuban organiponico and community garden numbers work out to a range of 4.409 lbs per square metre to 22.04 lbs per square metre for the community gardens, and a range of 33.06 lbs per square metre to 55 lbs per square metre for the organiponicos.

Thus the average for possible yields can be assessed from these numbers

11.02 + 25 + 4.409 + 26.455 +33.06 + 55 (lbs) / 6
=25.82 lbs per square metre

multiply that by the plot size of 250 sq m and we get 6455 lbs per plot (only slightly smaller than Hough’s incorrect number)

Now divide the per plot productivity by the average per capita fruit and vegetable consumption to get the possible number of people fed per plot (average of 322 lbs (146 Kg) per capita per year)

6455 lbs / 322 lbs = 20.05 units (or 20.05 people)

Each 250 Square metre garden can feed 20 people their typical per capita fruit and vegetable intake per year. Or 0.06 acres can feed 20 people their typical fruit and vegetable consumption per year

20 people per 250 square metre plot

U.S. per capita food consumption
Fruit and vegetables
Farm weight, pounds per capita per year

Year	Fresh fruit	Fruit for processing	Total fruit	Fresh vegetables	Vegetables for processing	Total vegetables	Total fruit and vegetables
2004	127.1	144.3	271.4	204.6	218.2	422.8	694.3
2003	128.3	153.9	282.2	199.8	222.0	421.8	704.0
2002	127.0	146.6	273.7	194.7	217.0	411.8	685.4
2001	126.1	146.9	273.0	195.7	216.6	412.3	685.3
2000	128.7	160.0	288.7	198.7	224.3	423.0	711.7
1999	130.4	160.6	291.1	192.3	222.9	415.2	706.2
1998	129.3	155.7	285.0	185.7	226.3	412.1	697.0
1997	130.1	164.2	294.3	190.4	225.8	416.3	710.6
1996	126.7	160.2	286.9	185.9	232.1	418.0	704.9
1995	123.5	161.4	284.8	180.9	226.7	407.6	692.5
1994	125.3	156.7	282.1	186.5	226.7	413.2	695.3
1993	123.3	158.1	281.4	180.7	226.8	407.6	689.0
1992	124.1	159.5	283.6	173.9	221.2	395.1	678.7
1991	113.1	143.0	256.1	170.3	225.8	396.1	652.3
1990	117.0	157.2	274.2	170.2	215.8	386.0	660.2
1989	122.9	137.9	260.8	175.6	205.5	381.1	641.9
1988	121.4	157.8	279.1	170.3	195.8	366.1	645.2
1987	121.3	153.8	275.1	165.2	201.7	366.9	642.0
1986	118.6	159.2	277.8	158.6	202.4	361.1	638.9
1985	110.7	161.1	271.8	158.6	201.9	360.4	632.2
1984	112.7	157.2	269.8	156.6	200.7	357.3	627.1
1983	110.7	153.3	264.0	151.3	188.8	340.0	604.0
1982	108.1	170.2	278.3	150.9	185.8	336.8	615.1
1981	103.5	150.3	253.8	145.1	189.9	334.9	588.7
1980	106.5	163.2	269.8	151.4	187.6	339.0	608.8
1979	99.9	154.6	254.5	148.5	193.2	341.7	596.2
1978	103.8	150.7	254.5	143.4	191.7	335.0	589.5
1977	99.9	154.3	254.2	148.6	197.4	345.9	600.1
1976	102.2	169.8	271.9	148.1	201.7	349.8	621.7
1975	101.5	158.0	259.6	148.8	190.9	339.7	599.3
1974	96.3	146.6	242.9	145.9	189.2	335.1	578.0
1973	96.9	141.4	238.3	148.0	188.0	336.0	574.3
1972	94.5	135.9	230.4	151.3	187.4	338.7	569.1
1971	100.9	145.9	246.8	148.0	192.4	340.4	587.2
1970	101.0	140.5	241.5	154.3	183.3	337.5	579.0

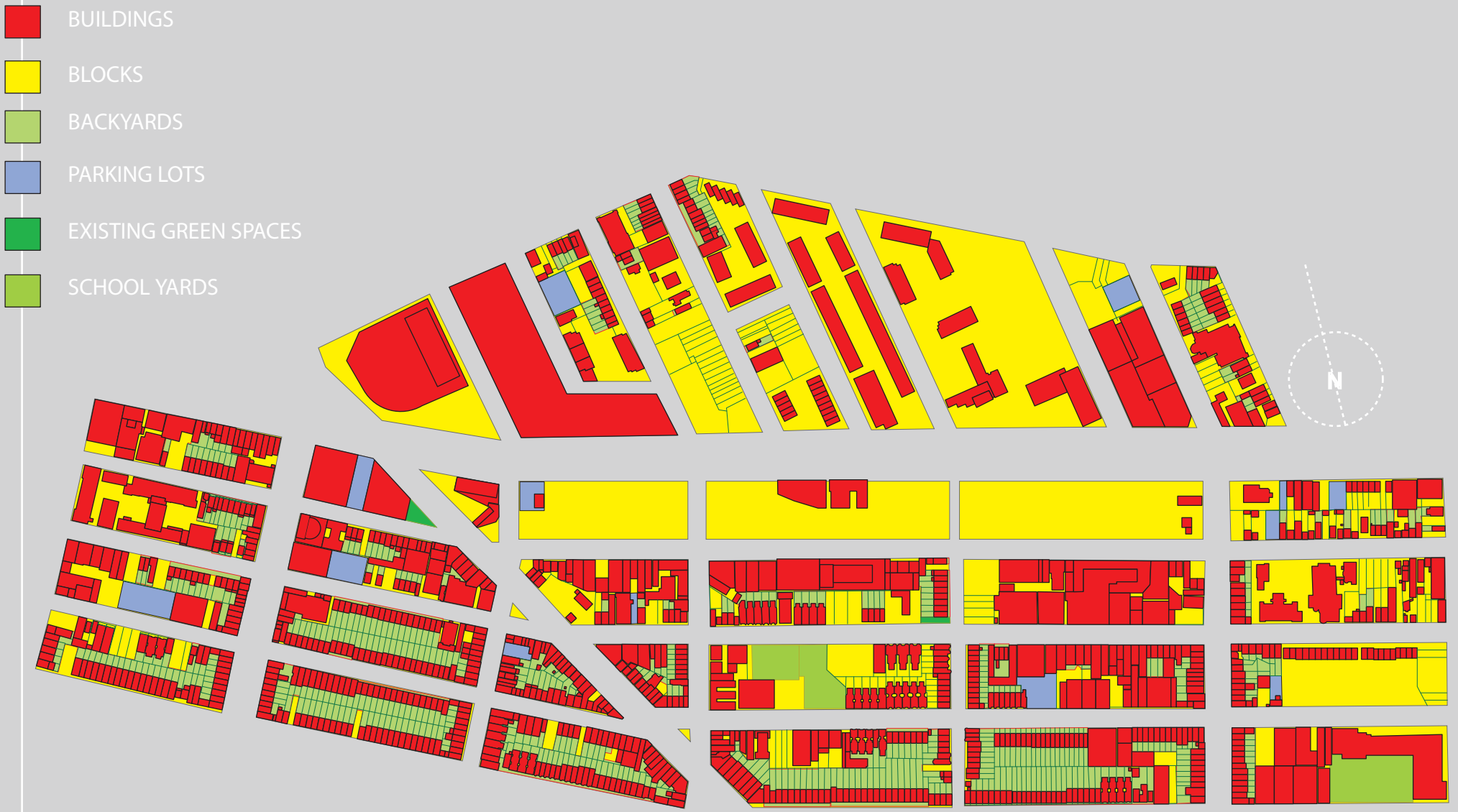
Fresh fruit include apples, apricots, avocados, bananas, cherries, cantaloup, cranberries, grapes, grapefruit, honeydew, kiwifruit, lemons, limes, mangoes, nectarines, oranges, papayas, peaches, pears, pineapples, plums, prunes, strawberries, tangelos, tangerines, temples, and watermelon. Fruit for processing include apples, apricots, blackberries, boysenberries, cherries, cranberries, dates, figs, grapes, grapefruit, lemons, limes, loganberries, nectarines, olives, oranges, peaches, pears, pineapples, plums, prunes, raspberries, strawberries, tangelos, tangerines, temples, and other miscellaneous fruit and berries. Fresh vegetables include artichokes, asparagus, snap beans, broccoli, cabbage, carrots, cauliflower, celery, sweet corn, cucumbers, eggplant, endive, escarole, garlic, head lettuce, romaine and leaf lettuce, mushrooms, onions, bell peppers, potatoes, radishes, spinach, sweet potatoes, and tomatoes. Vegetables for processing include asparagus, lima beans, snap beans, beets, broccoli, cabbage, carrots, cauliflower, sweet corn, cucumbers, dry edible beans and peas, lentils, mushrooms, onions, green peas, chile peppers, potatoes, spinach, tomatoes, and other miscellaneous vegetables. Calculated from unrounded data.

Source: USDA/Economic Research Service. Last updated Dec. 21, 2005.



S-15754C


East River
Brooklyn Navy Yard
(inactive)
Wallabout
Fort Greene Park
Pratt Institute
Governor's Island
Channel
Buttermilk
Atlantic Basin
Erie Basin
Hamilton Street Basin
Gowanus Creek
Gowanus Bay
BROOKLYN BOTANIC GARDENS
PROSPECT PARK
Lake
Greenwood Cemetery
Parade Grounds


BUILDINGS
BLOCKS
BACKYARDS
PARKING LOTS
EXISTING GREEN SPACES
SCHOOL YARDS
N
MAIN STUDY AREA

BUILDINGS

Area: 229261 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 917
Number of Per captia supplied: 18340 People

229261 SM / 250 SM = 917 gardens
917 gardens x 20 people per garden = 18340 People

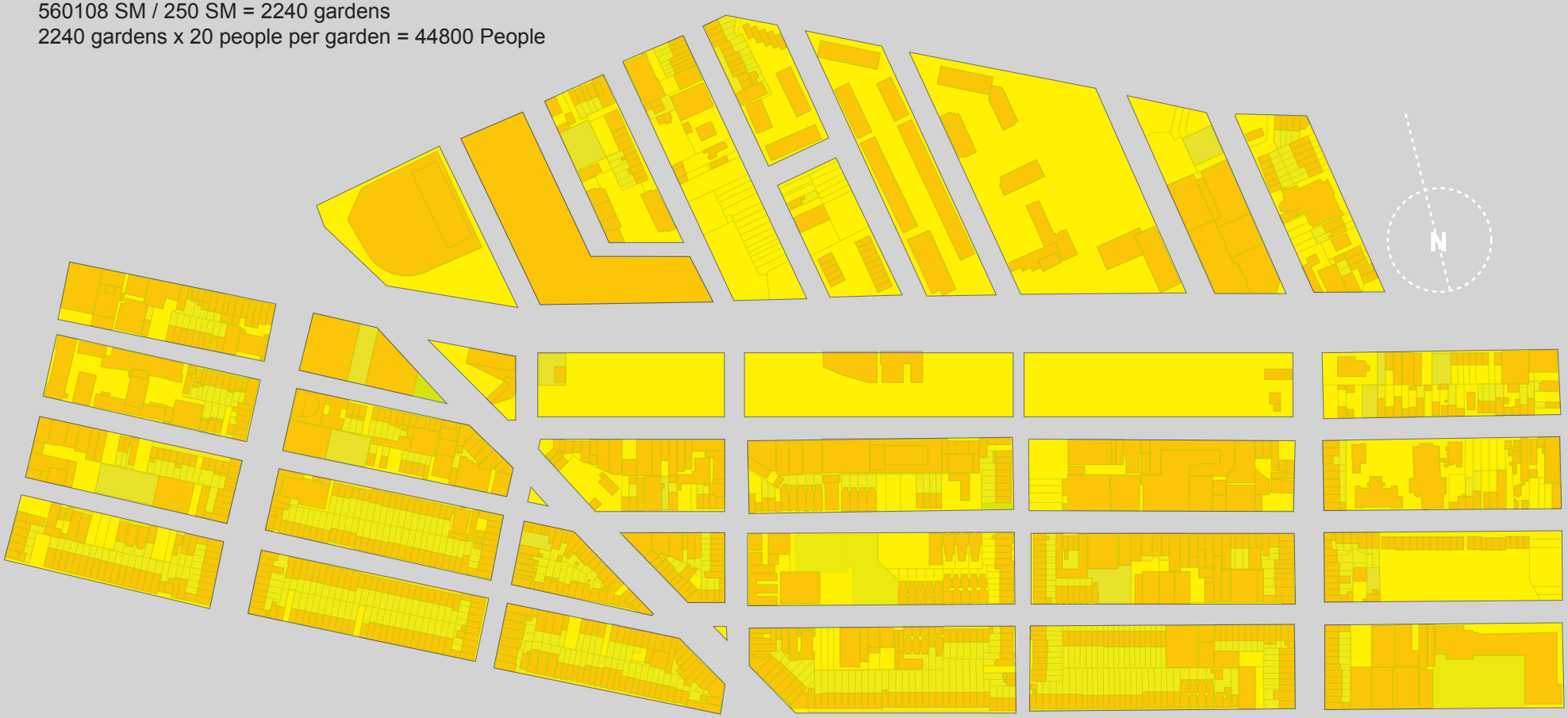


Area Of Buildings = 229261 Square Metres or 56 acres

BLOCKS

Area: 560108 Square Metres
Allotment Garden Area: 250 Square Metres
Number of Possible Gardens: 2240
Number of Per captia supplied: 44800 People

560108 SM / 250 SM = 2240 gardens
2240 gardens x 20 people per garden = 44800 People



Area Of Blocks = 560108 Square Metres or 138.4 acres

BACK YARDS

Area: 57123 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 228
Number of Per captia supplied: 4560 People

57123 SM / 250 SM = 228 gardens
228 gardens x 20 people per garden = 4560 People



Area Of Yards = 57123 Square Metres or 14 acres

PARKING LOTS

Area: 9895 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 39
Number of Per captia supplied: 780 People

9895 SM / 250 SM = 39 gardens
39 gardens x 20 people per garden = 780 People



Area Of Parking Lots = 9895 Square Metres or 2.5 acres

EXISITING GREEN SPACE

Area: 566 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 2.25
Number of Per captia supplied: 45 People

566 SM / 250 SM =2.25 gardens
2.25 gardens x 20 people per garden = 45 People

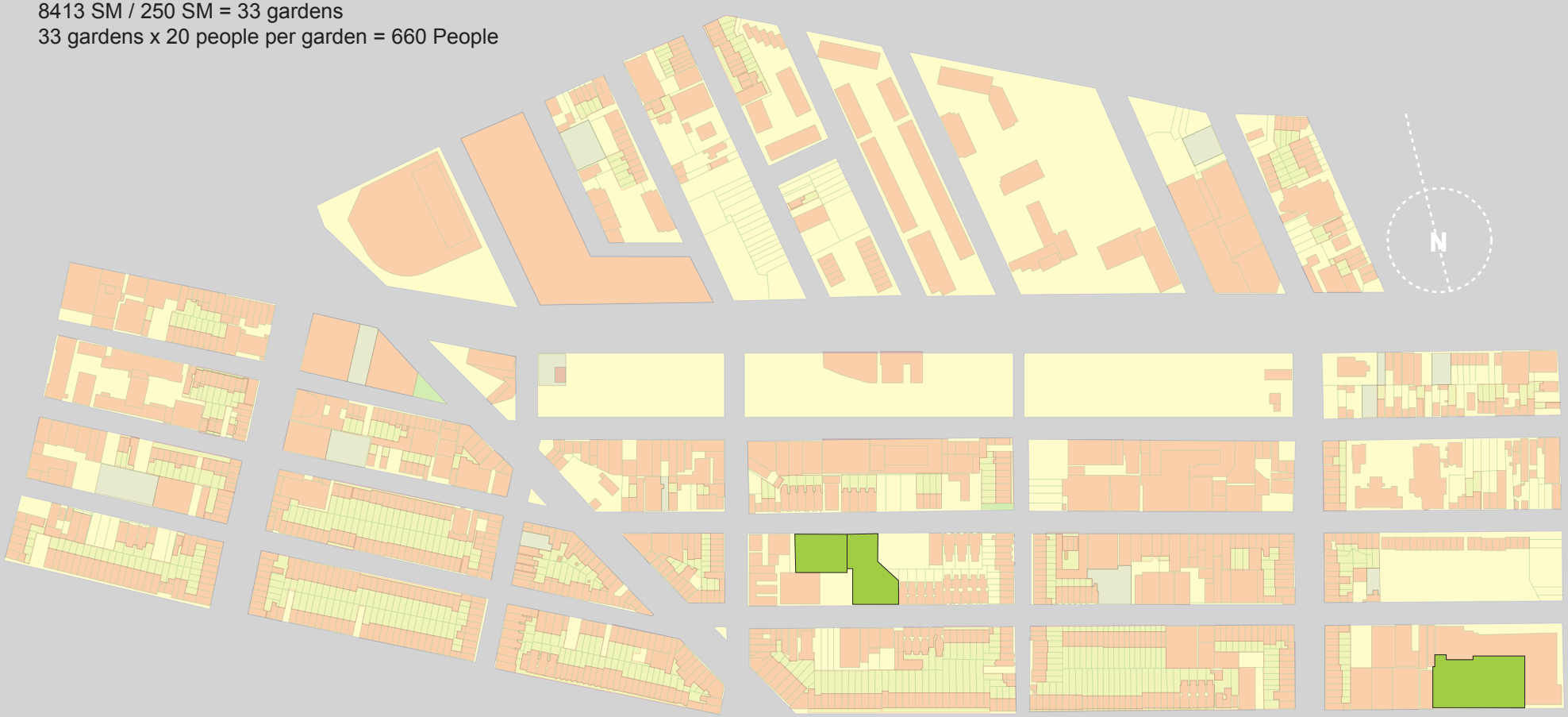


Area Of Exisiting Green Space = 566 Square Metres or 0.14 acres

SCHOOL YARDS

Area: 8413 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 33
Number of Per captia supplied: 660 People

8413 SM / 250 SM = 33 gardens
33 gardens x 20 people per garden = 660 People



Area Of Playgrounds = 8413 Square Metres or 2 acres

BUILDINGS

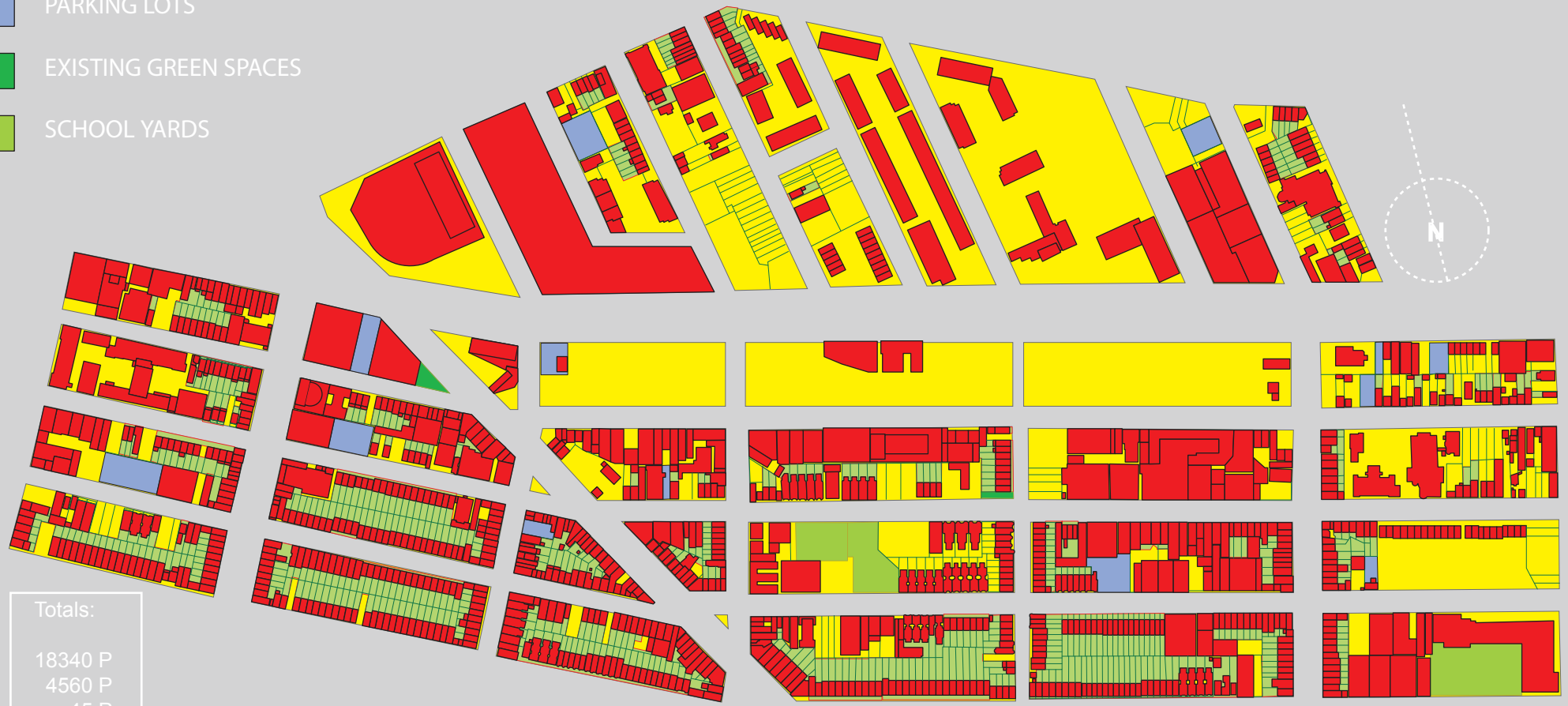
BLOCKS

BACKYARDS

PARKING LOTS

EXISTING GREEN SPACES

SCHOOL YARDS



Totals:

18340 P
4560 P
45 P
660 P
20415 P
780 P

TOTAL
44800 P

In conclusion it would seem that there is enough vacant land and sundry parcel to supply 44,800 + inhabitants with fresh fruits and vegetables throughout the year. This, of course, does not take in to account many of the other assumptions that must be considered if this study is to provide accurate data. Free and vacant land is only a fraction of the end total which is comprised of areas that have restrcitions about their use. The next page of study will conduct the same calculation but take these restrictions into account,. The goal is to provide a more accurate set of data that can be used to discuss the viability of urban agriculture and local growing in this Brooklyn site. Census data must also be used to test this scenario in order to determine what the median population density of this site is. Using census tract data from the department of planning of New York City (http://www.nyc.gov/html/dcp/html/subcats/resources.html) it is possible to determine the population density of the study area. Another set of diagrams and graphs will illustrate this data. The end result of this study should show the viability of urban agriculture and local growing on this site in Brooklyn and of the viability of urban agriculture and local growing for all of Brooklyn.

MAIN STUDY AREA

BUILDINGS

Modified:

Area: 229261 (1/4) = 57315 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 229
Number of Per captia supplied: 4580 People

229261 (1/4) = 5713 SM / 250 SM = 229 gardens
229 gardens x 20 people per garden = 4580 People



Due to structural considerations, occupancy types, and public private functions of the study area buildings a factor of (1/4) is used to provide more accurate data for this study.

Used Area of Buildings = 57315 Sqaure Metres or 14 acres

BLOCKS / VACANT LOTS

Modified:

Area: 255029 (1/2) =127514 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 510
Number of Per captia supplied: 10200 People

255029 (1/2)=127514 SM / 250 SM = 510 gardens
510 gardens x 20 people per garden = 10200 People



Instead of calculating the total block areathe amount of vacant land needs to be considered It is likely that more than 1/2 of vacant land could be used for growing so this number should be considered as low for this study.

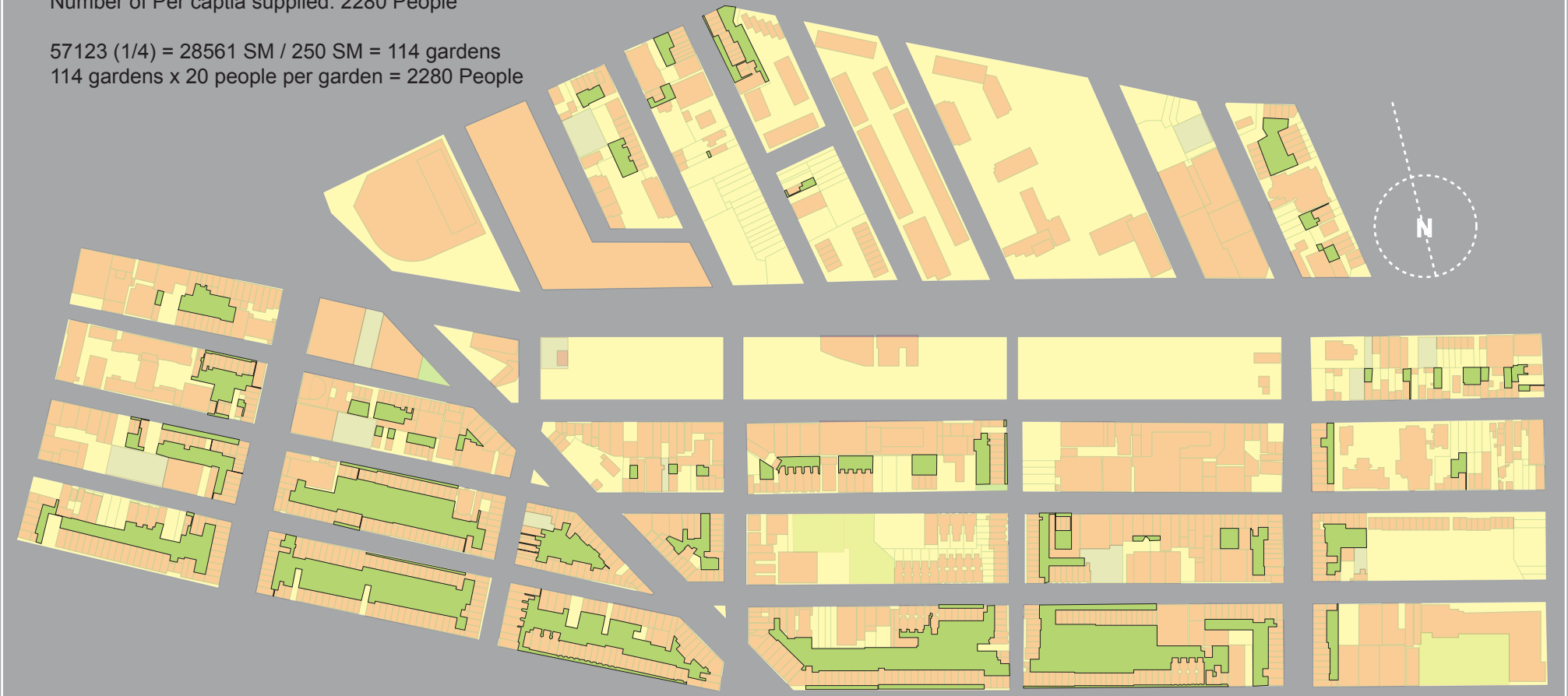
Used Area of Vacant Space = 127514 Sqaure Metres or 31.5 acres

BACK YARDS

Modified:

Area: 57123 (1/2) = 28561 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 114
Number of Per captia supplied: 2280 People

57123 (1/4) = 28561 SM / 250 SM = 114 gardens
114 gardens x 20 people per garden = 2280 People



It must be assumed that either half of all yards are available for public or private growing or that only half of the yards are fully utilized for public or private growing as a contributing area. Aspects such as current ussage, owner desire and available solar radiation levels must be considered

Used Area of Yards = 28561 Square Metres or 7 acres

PARKING LOTS

Modified:

Area: 9895 (1/2) = 4947 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 19.5
Number of Per captia supplied: 390 People

9895 (1/2) = 4947 SM / 250 SM = 19.5 gardens
19.5 gardens x 20 people per garden = 390 People



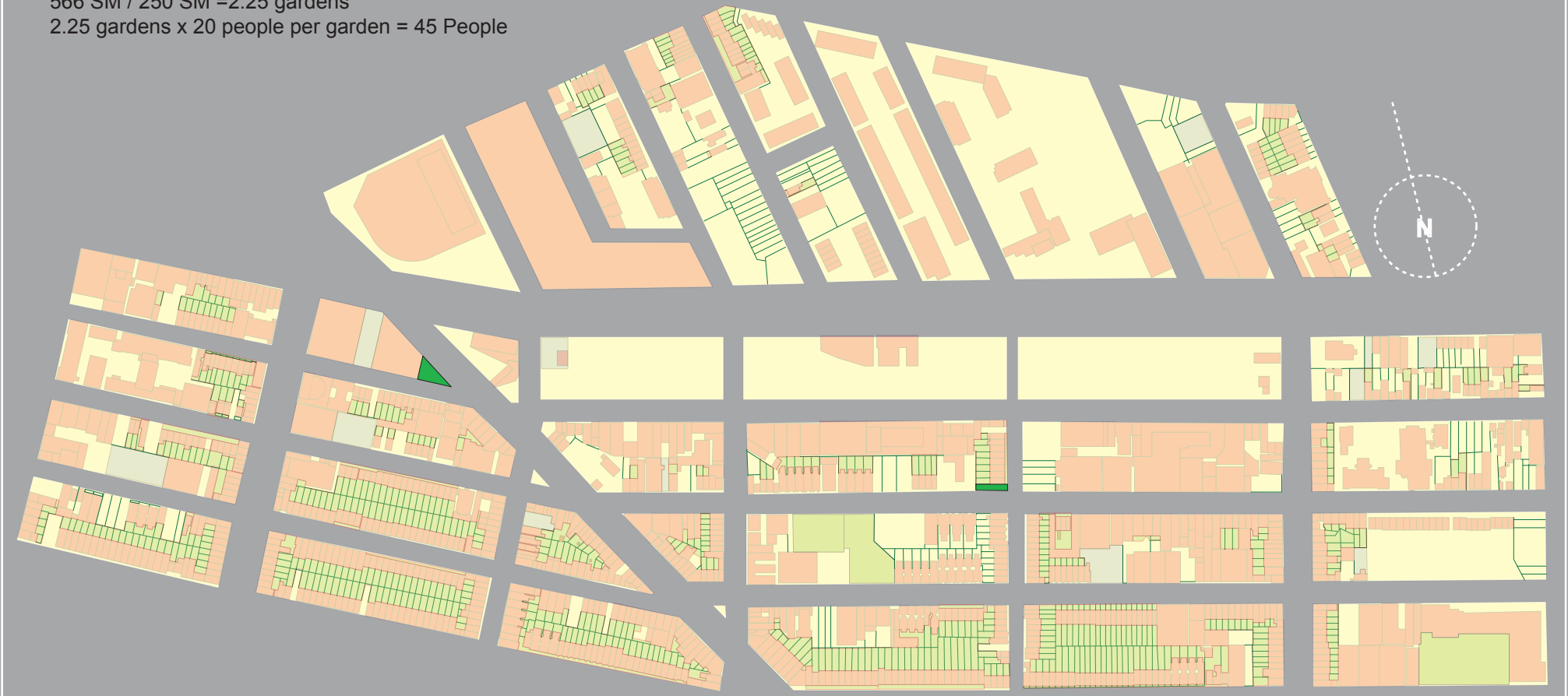
Again only half the parking lots should be considered as available for growing. This might be in the for of ground growing, container growing or vertical growing.

Used Area of Parking Lots = 4947 Sqaure Metres or 1.25 acres

EXISITING GREEN SPACE

Area: 566 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 2.25
Number of Per captia supplied: 45 People

566 SM / 250 SM =2.25 gardens
2.25 gardens x 20 people per garden = 45 People



Exisiting green spaces illustrate a desire amongst the community members to grow and can be considered fully utilized for this study without modification.

Used Area of Exisiting Green Space = 566 Sqaure Metres or 0.14 acres

SCHOOL YARDS

Modified:

Area: 8413 (1/4) = 2103 Sqaure Metres
Allotment Garden Area: 250 Sqaure Metres
Number of Possible Gardens: 8.4
Number of Per captia supplied: 168 People

8413 (1/4) = 2103 SM / 250 SM = 8.4 gardens
8.4 gardens x 20 people per garden = 168 People



Due to the nature of playgrounds and their use container gardening or other periphery gardening should be considered. 1/4 of the total area is available for planting.

Used Area of Playgrounds = 2103 Sqaure Metres or .5 acres

BUILDINGS

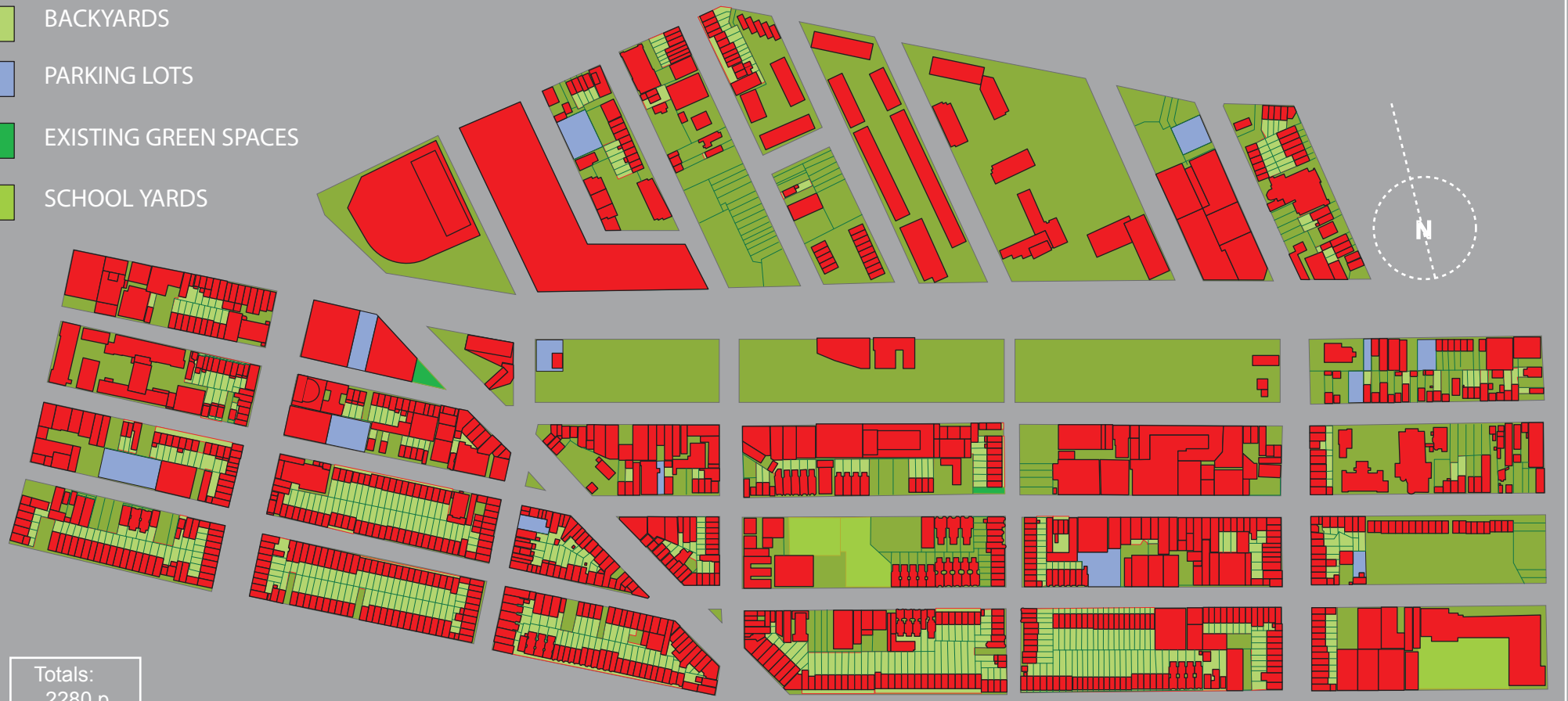
BLOCKS \ VACANT LOTS

BACKYARDS

PARKING LOTS

EXISTING GREEN SPACES

SCHOOL YARDS



Totals:
2280 p
4580 p
10200 p
168 p
390 p
45 p

TOTAL
17663 P

Although this is a drastic reduction in the amount of available land for urban agriculture it is a more accurate result. Many factors must be considered when completeing a large study of this nature. Primarily the inaccuracy of the base maps must be considered, secondly the fact that many special conditions apply that must, at least, be understood if accurate results are possible. These conditions start with structural considerations when considering roof top gardening that severly limited the amount of available space. While it is true that some possible roof top gardening, lost due to these structural considerations, could also be done in multiple on outdoor balconies and terraces it is important to first limit the amount of available space before looking more closely at other possible growing spaces such as balconies. Private yards cannot always be considered free range for growing, dependent on the owners wishes and current uses and available solar radiation levels, the land may not be available.Private growing, while not community based in it's intent, does decrease the dependence on other growing in the community by those who utilize their own land for feeding their families. Parking lots and playgorunds can also be considered private limited growing spaces and therefore must be subjected to a factor when considered in this study. The means to garden these areas must also be undertood to be different from allotment garden growing and may reduce their production capabilities. Finally vacant land is a term used to describe land not defined on the base maps but the nature of this land is not certain and therefore must be considered possibly private or unusable for growing and also subject to a factor.

MAIN STUDY AREA

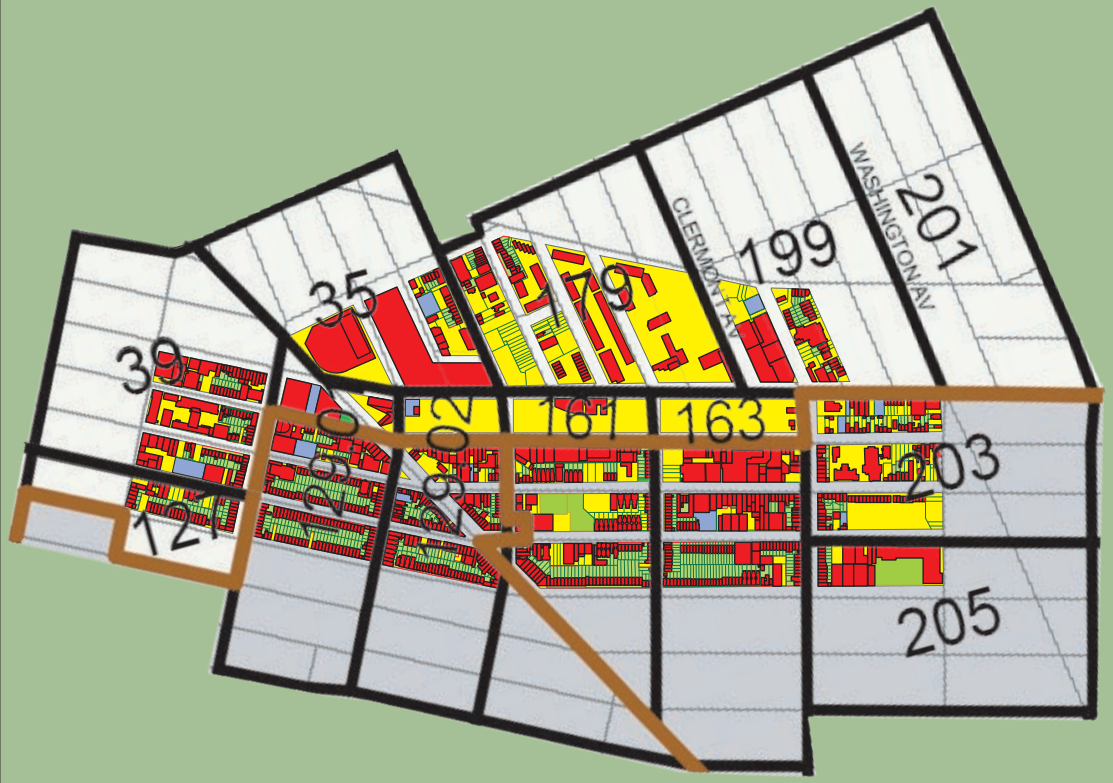


Fig. 1.2 Brooklyn Site.

Census Tracts:

After analysing the available Land Area for growth it is important to also take into account the Census data for the Study area and make comparisons based this data. By first studying the data provided by the 2000 New York City Census (http://www.nyc.gov/html/dcp/html/lucds/cdstart.html) And determining averages for popultion density, number of physical blocks and number of average blocks per census tract we then apply these numbers to the study area to determine more precise population data. The economic data is also analyzed for inclusion into this study.

Total Blocks:	Total Population In Study Area	Est. Amount of People Fed by Food Produced
36 Blocks	36 Blocks (Average per Block 2460 /8 = 307.5) 36 (307.5) = 11070 People In Study Area	17663 People - 11070 = 6593 Surplus

Through comparisson of the available study numbers it is possible to determine that the Food and Vegetable per capita consumption of the study area can be met through local growing and urban agriculture. There is a surplus of 6593 persons worth of food supply remaining after supplying the required food for the study area. The suggests that either less planting is needed, and therefore less land, or that a viable economic oppurtunity exists. It is also important to consider that these numbers are based on existing per captia intake. The increased production numbers could mean that the average per-capita intake of fruits and vegetables could be increased.

Economic and Land consumption Considerations:

6593 Persons worth of food production in excess
At 146 Kilograms per person
6593 (146 Kg) = 962578 Kg surplus food.
Average Cost per Kilogram of Fruit and vegetable = $1.10
962578 Kg ($1.10/Kg) = $1,058,835 Year
$1,058,835 / 11070 persons = $95.64 Per Person / Year
$10 made in community for every $1 invested = (10) $1,058,835 = $10,588,530 Annual Community investment

2927 Kilograms per 250 Square Metre Allotment Garden
962578 Kg / 2927 = 328 Gardens (250 SM) = 82215 SM
Building Area: 57315
Yards Area: 28561
Parking Lot Area: 4947
Playground Area: 2103
Vacant Plot Area: 127514
Total Area: 220440 - 82215= 138225 Square Metre needed

The available land and subsequent production provides for every person in the study area to make an additional $95.64 per year, or, as invested in the community at 10 to 1 nearly $10.5 million in community investment annually. It is also possible for the required land area to be reduced to 138225 Square Metres or 82215 Square Metres less than total land available

Total Population is Census Tracts:		Total Blocks in Census area:		Total households and Average Family size in Census Area			Median Income and Poverty Levels in Census Area			
CT	# People	CT	# Blocks	CT	Households	Average Family Size	CT	Median Income		Person BPFamilies BP
35:	1477 People	35:	8 Blocks	35:	703	3.02	35:	$44,306	%18.6	%4.7
39:	2117 People	39:	10 Blocks	39:	984	3.05	39:	$38,686	%21.6	%11.1
127:	3405 People	127:	10 Blocks	127:	1264	3.39	127:	$19,000	%38.2	%35
129.01:	2239 People	129.01:	7 Blocks	129.01:	978	3.06	129.01:	$48,024	%11.4	%7.4
129.02:	2125 People	129.02:	7 Blocks	129.02:	989	3.09	129.02:	$55,625	%8.5	%6.2
161:	2568 People	161:	8 Blocks	161:	1214	2.94	161:	$65,192	%10	%8.4
163:	3175 People	163:	8 Blocks	163:	1409	2.96	163:	$59,583	%9.5	%6.8
179:	3379 People	179:	9 Blocks	179:	1256	3.23	179:	$38,750	%21.9	%14.7
199:	2946 People	199:	9 Blocks	199:	1416	2.98	199:	$38,717	%19.8	%10.4
203:	1192 People	203:	6 Blocks	203:	451	3.41	203:	$38,942	%20.1	%14
205:	2444 People	205:	6 Blocks	205:	1,110	3.07	205:	$45,256	%15.8	%16.5

27062 People Total in Census Area

88 Blocks Total in Census Tract Area

11774 Total Households in Census Tract Area

Average Median Income $44,734, Average %17.7 Persons Below Poverty Level and %12.9 Families below poverty Level.

2460 Average persons per Census Tract Area

8 Blocks Average Per Census Tract Area

1070 Average Households. Average Family Size 3.1
.

6.2 Good Practices

Skilled labor:

First and foremost people who have an interest in growing and a proven ability will have more success in urban agriculture situations. Too often programs are set up as social enterprises and quickly fail because no one knows how to plant. Having people who know how to plant and how to tend plants is most important. These people can be volunteers, paid consultants, paid workers or hopefully project initiators. Secondary benefits can be garnered through educational programs, apprenticeship training and basic osmosis. A skilled grower will certainly have better luck producing appropriate yields and can teach and nurture new and other growers while still maintaining the project. It is important that this educational aspect works more akin to an apprenticeship and does not take time away from growing. An ideal situation would be a family involved in the project where the experienced parents teach the children the skills to grow and the children work in the gardens trading productivity for skill.



April Temperature New York, NY

(sorted by year)

Missing 1 year of data

Year	Temperature	Rank Based on the Time Period Selected (1996-2006)*	Rank Based on the Period of Record (1909-2006)*
2006	----	----	----
2005	53.3 deg F	11	97
2004	51.4 deg F	9	91
2003	47.3 deg F	1	42
2002	53.3 deg F	11	97
2001	51.0 deg F	8	87
2000	47.8 deg F	2	47
1999	50.1 deg F	5	77
1998	50.4 deg F	7	83
1997	48.0 deg F	3	55
1996	48.3 deg F	4	57

October Temperature New York, NY

(sorted by year)

Missing 1 year of data

Year	Temperature	Rank Based on the Time Period Selected (1996-2006)*	Rank Based on the Period of Record (1909-2006)*
2006	----	----	----
2005	54.8 deg F	11	79
2004	53.0 deg F	9	61
2003	51.7 deg F	5	41
2002	51.4 deg F	2	36
2001	54.4 deg F	10	74
2000	52.6 deg F	7	55
1999	51.4 deg F	2	36
1998	52.7 deg F	8	57
1997	51.6 deg F	4	40
1996	51.0 deg F	1	28

June Precipitation New York, NY

(sorted by year)

Missing 1 year of data

Year	Precipitation	Rank Based on the Time Period Selected (1996-2006)*	Rank Based on the Period of Record (1909-2006)*
2006	----	----	----
2005	3.21 inches	4	46
2004	3.02 inches	3	43
2003	10.26 inches	11	98
2002	4.48 inches	5	74
2001	5.29 inches	8	85
2000	4.87 inches	7	80
1999	0.19 inches	1	2
1998	5.94 inches	10	88
1997	1.93 inches	2	17
1996	5.71 inches	9	86

August Precipitation New York, NY

(sorted by year)

Missing 1 year of data

Year	Precipitation	Rank Based on the Time Period Selected (1996-2006)*	Rank Based on the Period of Record (1909-2006)*
2006	----	----	----
2005	3.96 inches	9	56
2004	3.02 inches	5	42
2003	5.85 inches	11	76
2002	4.91 inches	10	69
2001	2.56 inches	2	26
2000	3.82 inches	8	52
1999	2.89 inches	4	37
1998	2.78 inches	3	32
1997	3.21 inches	7	46
1996	1.87 inches	1	15

EVANSVILLE, IN	64	10	9	12	12	11	10	9	7	7	8	10	10	115
FORT WAYNE, IN	58	12	10	13	13	12	10	10	9	9	9	11	13	132
INDIANAPOLIS, IN	65	12	10	13	12	12	10	10	9	8	8	10	12	126
SOUTH BEND, IN	65	16	12	14	13	12	11	9	10	9	10	13	15	144
DES MOINES, IA	65	7	7	10	11	12	11	9	9	8	8	7	8	108
DUBUQUE,IA	52	9	8	11	12	12	11	10	9	9	9	9	10	117
SIOUX CITY, IA	64	7	6	9	10	11	11	9	9	8	6	6	7	99
WATERLOO, IA	54	7	7	9	10	12	10	9	9	9	7	7	7	104
CONCORDIA, KS	42	5	5	8	9	11	10	9	9	8	6	5	5	89
DODGE CITY, KS	62	4	5	7	7	10	9	8	8	8	6	5	4	78
GOODLAND, KS	84	4	5	6	7	10	9	9	8	6	5	4	4	77
TOPEKA, KS	58	6	6	9	10	12	11	9	8	8	7	6	6	97
WICHITA, KS	51	5	5	8	8	11	10	8	7	7	6	5	6	86
GREATER CINCINNATI AP	57	12	11	13	13	12	11	10	9	8	8	11	12	131
JACKSON, KY	24	14	13	14	12	14	13	12	9	9	9	12	14	145
LEXINGTON, KY	60	12	11	13	12	12	11	11	9	8	8	11	12	130
LOUISVILLE, KY	57	11	10	13	12	12	10	10	8	8	8	10	11	124
PADUCAH KY	21	9	9	11	11	11	9	8	7	7	8	10	10	111
BATON ROUGE, LA	53	10	9	9	7	8	11	13	12	9	6	8	9	110
LAKE CHARLES, LA	43	10	8	8	7	8	9	11	11	9	7	8	9	104
NEW ORLEANS, LA	56	10	9	9	7	8	11	14	13	10	6	8	10	114
SHREVEPORT, LA	52	9	8	10	8	9	8	8	7	7	7	9	9	99
CARIBOU, ME	65	14	12	13	13	14	14	14	13	12	13	14	14	160
PORTLAND, ME	64	11	10	11	12	13	11	10	9	9	9	11	11	128
BALTIMORE, MD	54	10	9	11	11	11	10	9	9	8	8	9	9	115
BLUE HILL, MA	119	12	11	13	12	12	11	11	10	9	10	11	12	134
BOSTON, MA	53	12	10	12	11	12	11	9	10	9	9	11	11	127
WORCESTER, MA	49	12	11	13	12	13	11	10	10	10	9	12	12	134
ALPENA, MI	45	14	11	12	12	12	11	10	11	12	13	14	15	145
DETROIT, MI	46	13	11	13	13	12	10	10	10	10	10	12	13	135
FLINT, MI	63	13	11	12	13	11	10	9	9	10	10	12	13	134
GRAND RAPIDS, MI	41	16	12	12	13	11	10	9	10	10	11	13	16	144
HOUGHTON LAKE, MI	40	14	11	12	12	11	11	9	10	11	12	13	14	141
LANSING, MI	50	14	11	13	13	11	11	10	10	10	10	13	14	138
MARQUETTE, MI	26	18	13	15	13	11	12	11	11	14	15	16	17	165
MUSKEGON, MI	64	17	13	13	12	11	10	9	9	10	11	14	16	143
SAULT STE. MARIE, MI	63	19	14	13	11	11	11	10	11	13	14	17	19	165
DULUTH, MN	63	12	9	11	11	12	13	12	11	12	10	11	11	134
INTERNATIONAL FALLS, MN	65	11	9	10	9	12	13	12	11	12	10	11	11	130
MINNEAPOLIS-ST.PAUL, MN	66	9	7	10	10	11	12	10	10	9	8	8	9	115
ROCHESTER, MN	44	9	8	10	12	12	11	11	10	10	9	9	9	120
SAINT CLOUD, MN	64	8	7	9	9	11	12	10	10	9	8	8	8	109
JACKSON, MS	41	11	9	10	8	9	9	11	10	8	7	9	10	110
MERIDIAN, MS	59	11	9	10	9	9	9	11	9	8	6	8	10	107
TUPELO, MS	21	10	10	11	10	11	11	9	8	6	8	9	11	113
COLUMBIA, MO	35	8	8	11	11	12	9	8	8	8	9	10	9	112
KANSAS CITY, MO	32	7	7	10	11	12	10	9	8	8	8	8	7	104
ST. LOUIS, MO	47	9	8	11	11	11	9	9	8	8	8	9	9	111
SPRINGFIELD, MO	59	8	8	10	11	11	10	8	8	8	8	9	8	109
BILLINGS, MT	70	8	7	9	10	11	11	7	6	7	6	6	7	96
GLASGOW, MT	49	8	6	7	7	10	11	8	7	6	5	6	7	90
GREAT FALLS, MT	67	8	8	9	9	11	12	8	8	7	6	7	7	100
HELENA, MT	64	8	6	8	8	11	11	8	8	6	6	7	8	95
KALISPELL, MT	55	15	11	12	10	12	12	7	8	8	9	12	15	131
MISSOULA, MT	60	14	10	12	11	12	12	7	7	8	8	11	13	124
GRAND ISLAND, NE	66	5	6	7	9	11	10	9	8	7	5	5	5	86
LINCOLN, NE	33	6	5	8	9	12	9	9	9	7	6	6	6	93
NORFOLK, NE	59	6	6	8	9	11	10	9	8	8	6	5	5	91
NORTH PLATTE, NE	52	5	5	7	8	11	10	10	8	7	5	4	4	84
OMAHA EPPLEY AP, NE	68	6	7	9	10	12	11	10	9	8	6	6	6	99
OMAHA (NORTH), NE	18	5	6	10	10	12	10	10	9	8	7	6	7	101
SCOTTSBLUFF, NE	61	5	5	7	9	11	11	8	7	7	5	5	5	86
VALENTINE, NE	49	4	5	6	9	11	10	9	8	7	5	4	4	84
ELKO, NV	74	9	9	9	8	8	8	5	3	4	4	5	7	9	79
ELY, NV	66	7	7	8	8	7	5	5	6	4	5	5	6	73
LAS VEGAS, NV	56	3	3	3	2	1	1	3	3	2	2	2	3	26
RENO, NV	62	6	6	6	4	4	3	2	2	2	3	5	6	51
WINNEMUCCA, NV	55	8	7	8	7	7	5	2	2	3	4	7	8	68
CONCORD, NH	63	11	9	11	12	12	11	10	10	9	9	11	11	127
MT. WASHINGTON, NH	72	19	18	19	18	17	16	17	15	15	15	19	20	209
ATLANTIC CITY AP, NJ	61	11	10	11	11	10	9	9	9	8	7	9	10	113
ATLANTIC CITY C.O.,NJ	42	10	9	11	10	10	9	9	8	8	7	9	10	110
NEWARK, NJ	63	11	10	11	11	12	10	10	10	9	8	10	11	122
ALBUQUERQUE, NM	65	4	4	5	3	4	4	9	9	6	5	4	4	60
CLAYTON, NM	55	3	3	5	5	8	8	10	9	6	4	3	3	68
ROSWELL, NM	32	4	3	3	3	4	5	6	8	6	5	3	4	54
ALBANY, NY	58	13	10	12	12	13	11	10	11	10	9	12	12	136
BINGHAMTON, NY	53	16	14	15	14	14	12	11	11	11	12	15	17	161
BUFFALO, NY	61	20	17	16	14	13	11	10	10	11	12	16	19	169
ISLIP, NY	21	11	9	11	12	11	10	9	9	9	8	10	10	119
NEW YORK C.PARK, NY	135	11	10	11	11	11	10	11	10	8	8	9	10	121
NEW YORK (JFK AP), NY	46	10	10	11	11	12	10	9	9	8	8	10	11	119
NEW YORK (LAGUARDIA AP), NY	64	11	10	11	11	11	10	9	9	8	8	10	11	119
ROCHESTER, NY	64	18	16	15	13	12	11	10	10	11	12	15	18	161
SYRACUSE, NY	55	19	16	17	14	13	11	11	11	11	13	16	19	171
ASHEVILLE, NC	40	10	10	12	10	12	12	12	13	10	8	9	10	126
CAPE HATTERAS, NC	47	11	10	11	9	10	10	12	11	9	9	9	10	120
CHARLOTTE, NC	65	10	10	11	9	10	10	11	10	7	7	8	10	112
GREENSBORO-WNSTN-SALM-HGHPT,NC	76	10	10	11	9	10	10	12	10	8	7	8	9	116
RALEIGH, NC	60	10	10	10	9	10	10	12	10	8	7	8	9	113
WILMINGTON, NC	53	10	10	10	8	9	10	13	13	10	7	8	9	118
BISMARCK, ND	65	8	7	8	8	10	12	9	8	7	6	6	7	97
FARGO, ND	62	9	7	8	8	10	11	10	9	8	7	6	8	101
WILLISTON, ND	43	8	6	8	8	10	11	9	7	7	6	6	8	96
AKRON, OH	56	16	14	15	14	13	11	11	10	10	10	14	16	155
CLEVELAND, OH	63	17	14	15	14	13	11	10	10	10	11	14	16	156

Climate:

Attempting to grow fruits and vegetables in climates that simply won't support it is a fool's errand. Trying to grow in hostile climates will most certainly result is either more hard work than necessary or complete failure. Plants are grown in climates as hostile as Antarctica but using hydroponics and very specifically designed internal green houses and controlled environments. Essential to growing climate is length of season, duration of solar radiation exposure, rainfall, and extremes such as incidents of natural disaster, flood etc. Proper analysis of the region and its climatic history can be as beneficial as soil quality and farming experience to growing successfully. Most areas have specific weather data available online that can be used to predict possible climate patterns and trends for example New York City shows an average of nearly 50 degrees Fahrenheit in April for the last ten years. An analysis of average temperatures for October also reveals a trend of 50+ degrees Fahrenheit for the last ten years. This indicates that the possible growing season starts in April and ends in October. Analysis of the precipitation data for the same period shows two years of near draught conditions in June of 1997 and 1999 and then fluctuating precipitation through the summer. This might indicate a trend but does show patterns that will determine possible irrigation needs through a season. By combining as many different data sets as possible and doing a cursory comparison it is possible to establish trends and possible factors that will influence yield

Soil Types:

By assessing soil types prior to planting it will be possible to determine what sorts of inputs are required, what type of tillage and possible contaminants. Also PH levels, nitrogen amounts etc can be determined. Many vacant lots and abandoned sites in urban areas have an industrial past and so it is imperative that a proper soil analysis is conducted. Kits are available online that will test for acidity and element content but it is best to hire an outside testing agency to determine contamination. Brownfield sites can have disastrous effects on growing and it is ill advised to use them. Remediation is possible but highly discouraged with sites that have high levels of contamination due to the duration of remediation needed. Passive remediation is possible through phyto-remediation techniques although this process is still in its infancy and needs further study. Other remediation techniques are expensive and require the use of heavy machinery and tools and the assistance of government agencies such as the EPA in the United States. Soil constitution is also of great importance. Clay and sand can have negative effects on growing and proper soil depth should be considered too. Inputs such as manure, compost and fertilizers can also be used but the types used and proximity to sewers, water systems, animals and humans should be assessed prior to use. For best results organic inputs are highly suggested (Edwards, 1990, Halweil, 2004) Specific discussion of the types of soils world wide is available through the UN FAO website

http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/W8594E/W8594E00.htm

Soil Types:
Particulate Types

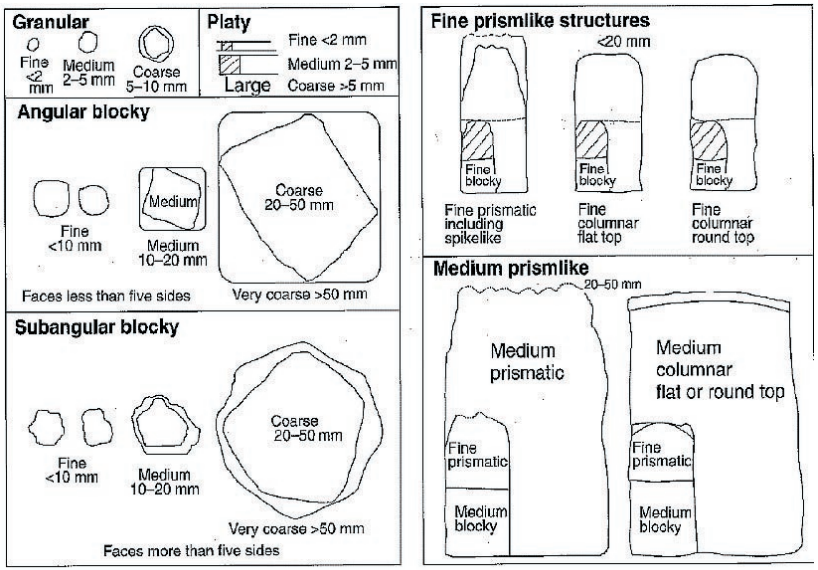
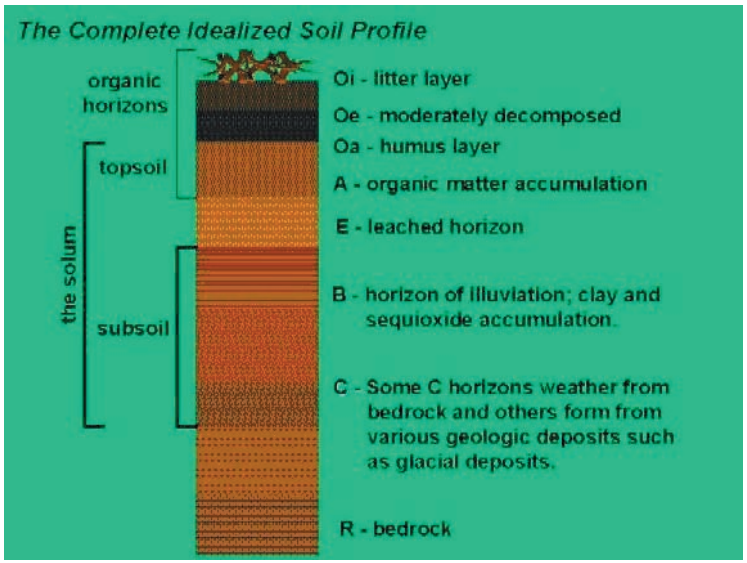
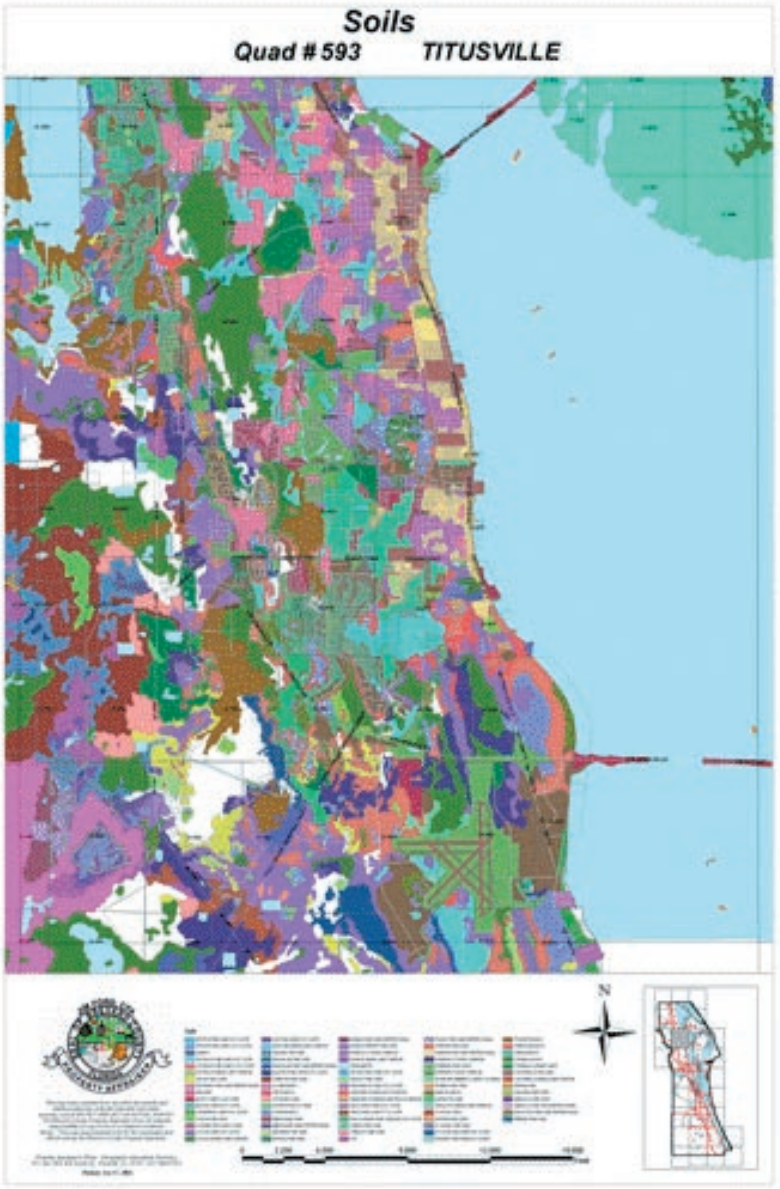


Figure 45 Types, kinds, and classes of soil structure.

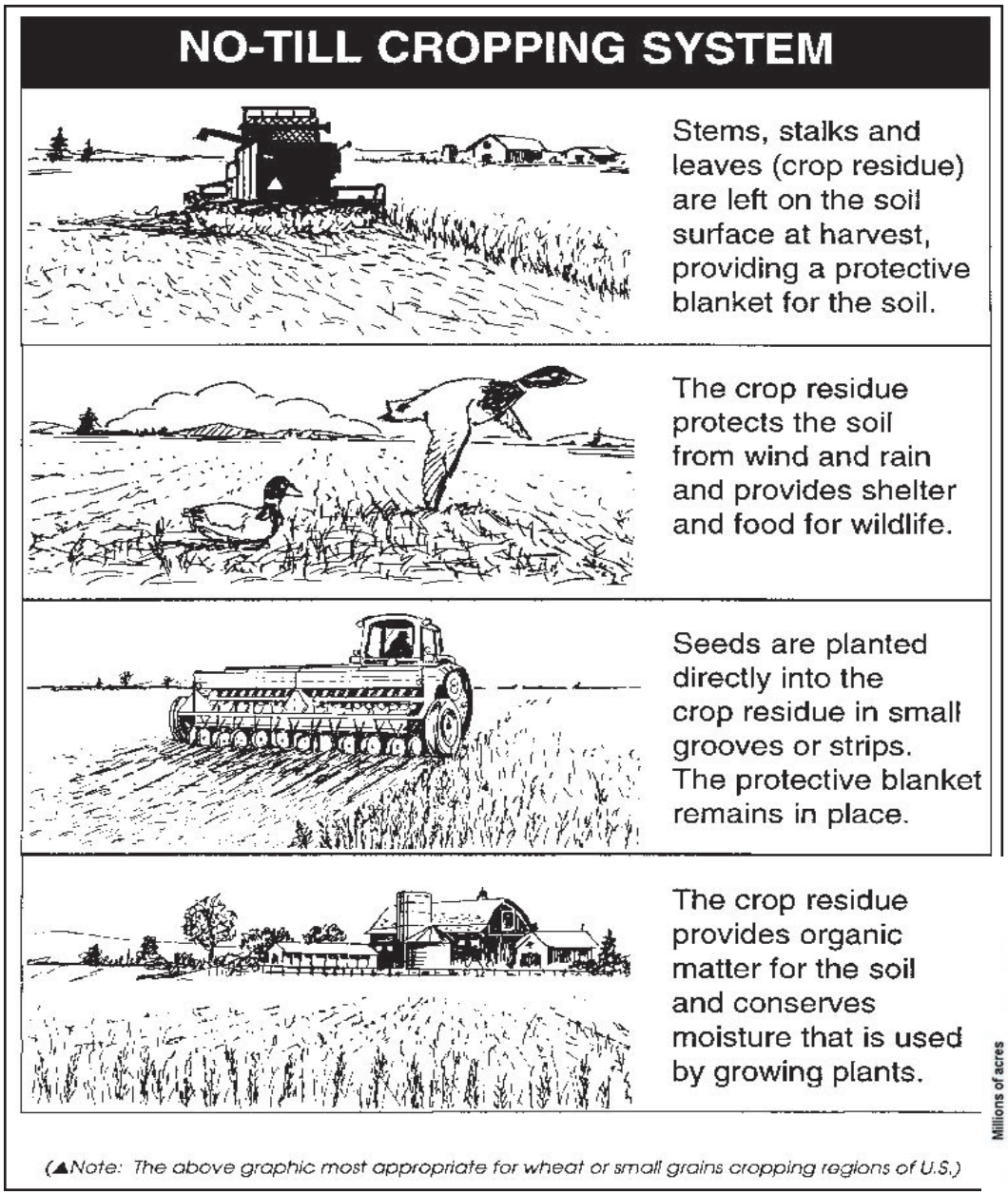
Soil Types:
Typical Compositions



Opposite Page:
Soil Type Map of Japan and more specific soil map of Titusville

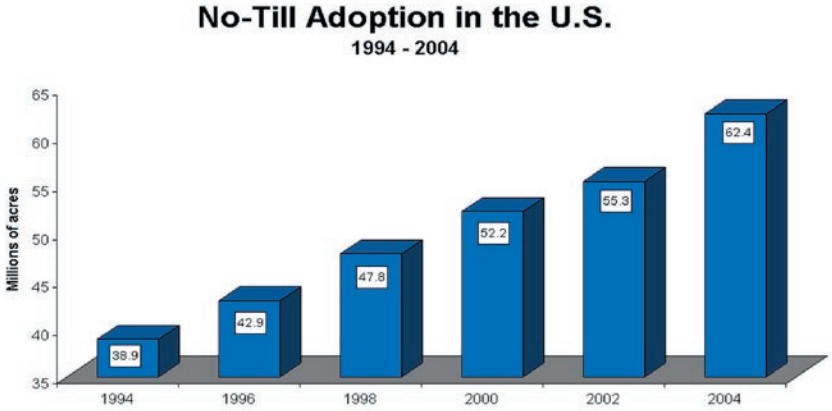

Soils
Quad # 593
TITUSVILLE
N





Tillage:

Study of tillage techniques have shown that traditional tillage methods of overturning topsoil and mixing it can have negative affects on yields and cause soil erosion (Edwards, 1990) New techniques of Chisel tillage and lift tillage have proven to be successful in many instances (Edwards, 1990) Chisel tillage protects soil erosion through only disturbing the soil where seeds are planted and lift tillage works by breaking apart the land intended for growing but leaving the strata intact (instead of turning and mixing strata) Traditional farmers are increasingly practicing a type of planting called no till. The land is planted with winter crop and the remnants are left through the planting of the new crop. This preserves soil, creates wildlife habitat and provides nutrients as the remaining plants breakdown. Although soil erosion is not as significant an issue in small scale urban plots that are traditionally tilled by hand or using small motorized tillers the lessons learned from no till planting can be just as beneficial to small plots, ecosystems and the environment and should be considered.



Inputs:

Inputs have two affects on growing. One; they affect production and yield and Two; they affect economic return. Too much spent on inputs of compost and fertilizer etc. will severely diminish profits. Proponents of sustainable agriculture practices suggest the use of organic inputs such as recycled organic waste, treated animal manure and the use of natural pest and disease prevention. These can be in the form of natural pest forecasting, more crop rotations to avoid dependencies, the use of natural predators and proper sowing timing to avoid disease (Edwards, 1990) In general the avoidance of chemical inputs, herbicides, fungicides and pest control are advised. Although natural organic inputs can have negative affects on communities they are less frequent and less harmful than problems with inorganic inputs. Specifically, water supplies, ecological systems and the environment can be affected by the use of inorganic inputs and their subsequent seepage out of controlled growing areas. A system of chemical dependency can be established if plant yields are stimulated through inorganic inputs (Edwards, 1990) and there is even evidence that yields produced through organic management are higher and more profitable (Edwards, Parr, Papendick, Youngberg, Meyer, 1990 Halweil, 2004) Labor costs and equipment costs, however, can be higher for organic farms but returns on produce are also much higher producing higher profit to labor returns (Verijken, 1990)

Natural pest control and disease and weed suppression methods are possible and will decrease the reliance on purchased inputs. There are many techniques and systems available for review online. Some of these inputs will add cost to the project but the positive returns in healthy and nutritious fruits and vegetables are worth the money.

Composts:

Possibly the most widely used manner of adding nutrient to a garden, composting is very beneficial. There are many different techniques but all have positive influences on growing. Vermiculture is the use of worms to breakdown organic waste and combine it with soils, sheet composting involves successive layers of organic wastes and sheeting materials like wood chips, hay and even paper and cardboard. In garden composting can be used or out of garden composting like barrel composting and pile composting where organic waste and other items are left to breakdown and become soil inputs over time. Manure can also be used but it is important to understand where the manure comes from and what the animals that produced it were fed. Steroids and other growth hormones are used in producing livestock and can find their way into manures (Halweil, 2004) These different inputs are covered in the section on general conditions (section 10.2)

Online Pest Control Websites:

http://www.extremelygreen.com/pestcontrolguide.cfm

http://www.oneplan.org/Crop/OrganicPestCtrl.shtml

Organic Fertilizer Websites:

http://www.extremelygreen.com/fertilizerguide.cfm

http://www.ext.vt.edu/departments/envirohort/factsheets2/fertilizer/jan89pr6.html

Composting Methods Websites:

http://web.extension.uiuc.edu/homecompost/methods.html

http://www.compostinfo.com/tutorial/methods.htm

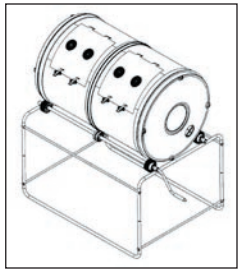
Natural Disease Control Websites:

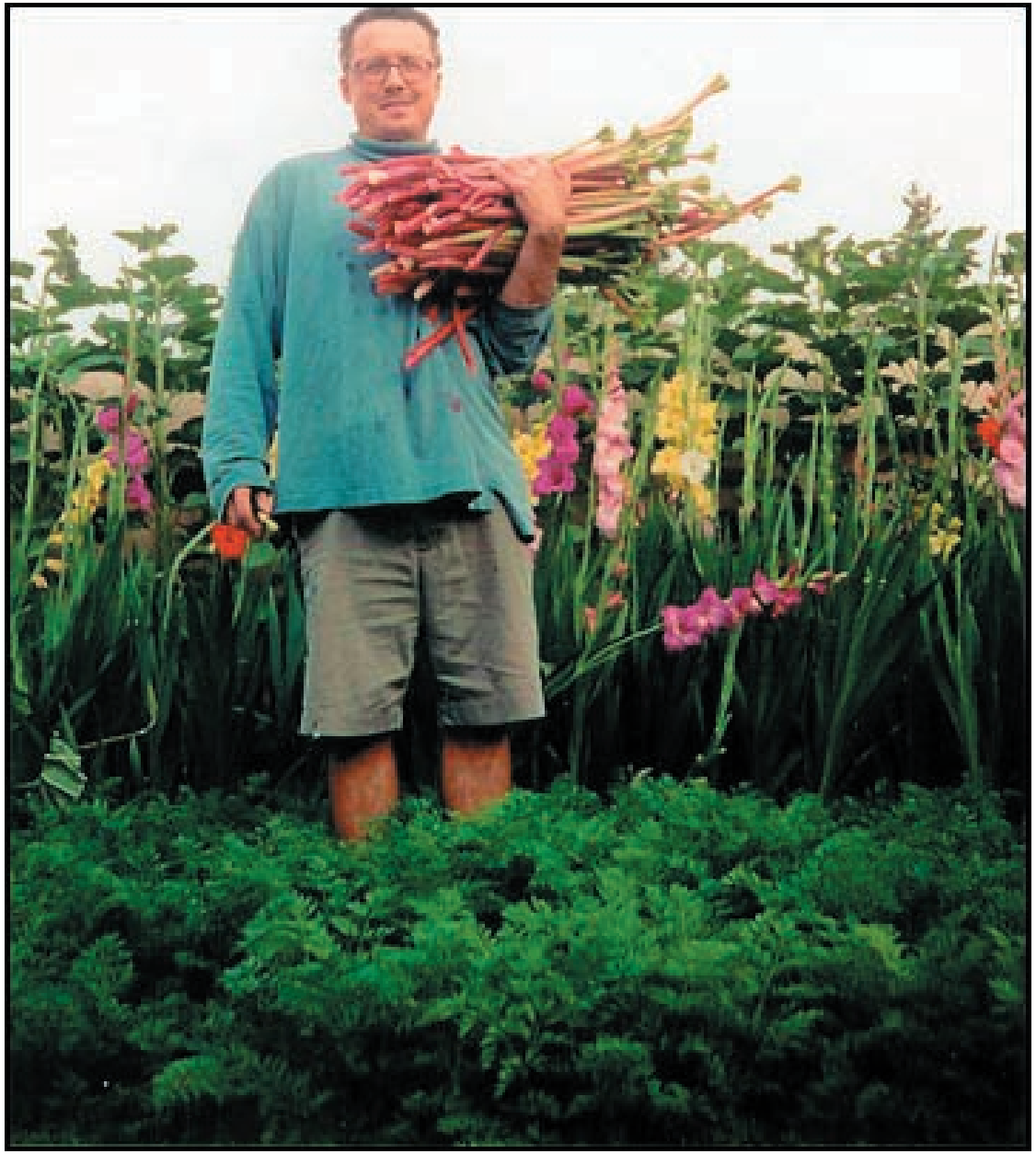
http://www.oneplan.org/Crop/OrganicPestCtrl.shtml#a_disease

http://anrcatalog.ucdavis.edu/pdf/7252.pdf

This is only a brief list for reference. There are many techniques that are applicable to different climates and conditions and the best methods should be researched and studied on a case by case basis.







Planting Structure:

The use of intensive practices can greatly increase yields per growing area. Wally Satzewich is able to generate 3 plantings out of one bed per season using his SPIN (section 10.1.2) farming techniques (Satzewich, 2006) Of course this intensive practice also requires increased labor and inputs between plantings. However managing crops so that sympathetic plants are planted in succession can have positive implications. Growing a nitrogen intensive crop after a winter cropping of plants, that add large amounts of nitrogen to the soil, can reduce the need for further inputs after preliminary tillage. Planting crops that have decent storage histories closer to the end of season can extend profits and yields through extending selling time into the off season.

" When documenting case studies, keep in mind that there are two basic types of sub-acre farming structures. The multi-locational: like mine which has around 25 backyard garden plots, and the Single - sited, like Somerton Tanks.

In terms of yields, I really don't have any good tomato production numbers, becasue (SIC) I don't grow them. Somerton might be able to help you here, as well as other items. But here are some yield figures that I rely on for my own production purposes:

These are per 2 foot by 25 foot bed.
Spinach) 15 - 25 lbs.
Scallion) 150 bunches
radish) 50 bunches
cut lettuce) around 20 lbs.
head type lettuce) 75 to 100 heads
beets) 50 bunches
potatoes) 500 to 1000 lbs. per 1000 sq. feet
carrots) 75 to 100 lbs./bunches per bed. "

- Wally Satezwich, 2006, e-mail correspondence



Polycultures:

One of the most damaging practices in farming is mono - cropping. Growing one variety of plant is a very unnatural practice. Monocultures open the grower up to increased risks of pests, disease and natural destructive factors. By maintaining numerous crops in a planting structure it is possible to limit many of these negative risks. Polycultures prevent pest infestation and disease through diversity. Pest that feed on a single crop or diseases common to a single crop can move quickly through a monoculture and destroy it without hesitation. By growing different varieties of plants the pest outbreak or disease outbreak can be limited to a single crop that will be more manageable. The most positive outcome is that by effectively diluting a growing area with numerous types of crops disease and pests are not attracted to the area at all (Halweil, 2004, Edwards, 1990) Also by planting certain pest deterring herbs and flowers in proximity to other crops outbreaks are stopped before they begin.

6.3 Conclusion

Yields will fluctuate and depend heavily on many factors. Every plot of land is different and has different factors to consider. The factors listed are those that can be controlled or at least anticipated. Of course they also include the simple concepts of proper watering and weeding that all gardens need. New Techniques for more natural interactions with plants and crops are being studied and developed everyday and staying current with these practices can greatly increase yields and create a knowledge base that will benefit the entire project in the long run. An increased interest in sustainable farming and growing practices is being seen throughout the farming community and a better study of sustainable practices can assist in creating better yields and better planting practices.

The United Nations Food and Agriculture Organization (FAO) is a good reference for sustainable farming techniques, the canadian International Development Research Center (IDRC) and numerous books and publications are also useful for studying new techniques and incentives for decent growing techniques. The amount of material online can be overwhelming but a slow methodical start will lead to answers and ideas.

http://www.fao.org/
http://www.idrc.ca/index_en.html
http://www.ruaf.org/



Figure 2-34. Pivot irrigation patterns

Images, Sources:

Page 154

Farmer reading his paper 1931

-Image from http://www.archives.gov/press/press-kits/1930-census-photos/index.html

Chart: Sourced on chart

Page 155

Brooklyn Map

-Images from Obtained from New York City Department of Planning

Page 156 - 171

Maps and charts by author

Page 172

Tenant farmer plowing

-Image from: http://www.cals.lib.ar.us/butlercenter/abho/photos/

Defiance County Farm Plot Map

-Image from: http://www.defiance-county.com/townshipFarmer.html

Farmer

-Image from: Unknown source

Page 173 - 174

Climate chart data

-Charts from: http://www.ncdc.noaa.gov/oa/ncdc.html

Page 175-176

Soil Structure Chart

-Images from: http://sis.agr.gc.ca/cansis/taxa/cssc3/intro.html

Soil Types

-Image from: http://hosts.cce.cornell.edu/hwwff/learning.php?unit=2&section=Site%20Assessment%20Part%20II%20(Soils)

Soil Map of Brevard County Florida

-Images from: http://www.brevardpropertyappraiser.com/mainhtml/quadsoils.asp

Page 176 - 177

No Till Brochure image

-Image from: http://www2.ctic.purdue.edu/Core4/CT/PhotosGraphics.html

Conventional Tillage

-Image from: http://www.deere.com/en_AU/press_release/2004/rtk_intro.html

Adoption of No till practices

-Image from: http://www2.ctic.purdue.edu/Core4/CT/PhotosGraphics.html

Page 179

Wally Satzewich, SPIN Farming developer

-Image from: http://www.marketgardening.com/wallysmarketgarden/

Page 180
Indoor Grass Art Instilation

-Image from: http://pruned.blogspot.com/2006_02_01_pruned_archive.html

Page 181

Pivot Irrigation

-Image from: http://www.globalsecurity.org/military/library/policy/army/fm/5-484/fig2-34.gif

Pivot irrigation overhead

-Image from: - Fatal Harvest - The tragedy of industrial agriculture
Andy Kimbrell (editor) - Island Press, 2002 - Washingtonm,DC

Part 3 – Design Study

7.0 Initial Design Ideas

7.1 Introduction
7.2 Other Designers
7.3 Community One
7.4 Grow Box
7.5 Guerilla Growing
7.6 The Growing Staff
7.7 The Growing Boxes
7.8 My Garden
7.9 The Subway
7.10 The Barge
7.11 Ellis Island

7.1 Introduction

When I first began this thesis I had many ideas and many goals. There seems to be a period in all projects that I would call discovery. This is a time when misconceptions are corrected and tangents are followed. The intent is to weed out, pardon my pun, the red herrings. A specific idea can feel so right and so strong for a long time. This can lead to wasted time unless one is given the time in the beginning to properly explore it. I think this is an important time in a design project, a learning experience or even a new job. Most importantly I think it is important to show where certain ideas come from and why a specific decision was made or a direction followed. Too many times I have listened to someone suggest a direction, when reviewing work, that was already attempted and tested and found faulty. By talking about the path of discovery an idea of the current direction is better understood by the reviewer. Better yet this initial study allows for the discovery of possible new routes that would not have been discovered.

As a student of architecture we are taught to quickly analyze a design problem and make a proposal. More often than not this analysis is ill informed and hasty. This can lead to a project that is not truly in touch with the proper issues. We all have prejudices and preconceptions and it is very easy to respond to these preconceptions instead of the issue at hand.

This section is intended to give some voice to the initial ideas and preconceptions and the responses made to these preconceptions. They allowed me to move ahead and understand many of the issues involved with urban agriculture. They also allowed me to get some ideas out of my head. Also included in this documentation is a small section on my own garden. Believing that I couldn't suggest urban agriculture if I couldn't practice what I preached I created a small garden of my own.

7.2 Other Designers:

There are many people concerned with the idea of urban agriculture. The United Nations food and agriculture organization (FAO) supports many projects around the world, community groups and city agencies have developed social programs for cities that combine urban agriculture and other positive community building enterprises, the list goes on. Designers too have found an interest in urban agriculture. Some propose it as an urban planning exercise, some as architectural design; still others are interested, as I am, in creating sustainable communities. This section illustrates some of the projects I have come across in my research. They are presented as alternatives, support and as ideas.

Vertical farm: (8.1.1-8.1.4)

Much like my initial design ideas this project sought to combine urban agriculture with architecture in the vertical built form. The premise is the ever rising population and lack of farmable land. Little attention was given to the way in which this "lack of land" is created i.e. harmful practices. The ideas are interesting but it is hardly feasible, spending millions of dollars to create an engineered structure in which to grow food when there is more vacant land in some cities than the governments know how to handle is not wise. Add to this the energy cost in construction and the energy costs to sustain growing and the investment far outweighs the returns.

Continuous Productive Urban Landscapes: (Not Shown)

This project proposes exactly what it sound like it does. Continuous productive urban landscapes using existing parks and greenways, housing blocks and single homes. The project stitches London together through green spaces and growing to the extent that most surfaces are used to grow. Homes and businesses are developed around the project and work in conjunction with the pursuit of growing. An interesting proposal that has many valid ideas and constructions.

The Land of Scattered Seeds:(8.1.5-8.1.7)

By John Puttick illustrates how growing food in dense urban cores can generate an environmental, social and economic chain reaction(Doron, 2005) Beautiful illustrations tell the story of two brothers living across the street from each other and their development of growing spaces. The project tells the tale of local growing in an elegant manner.

MVDRV Pig City: (8.1.8-8.1.9)

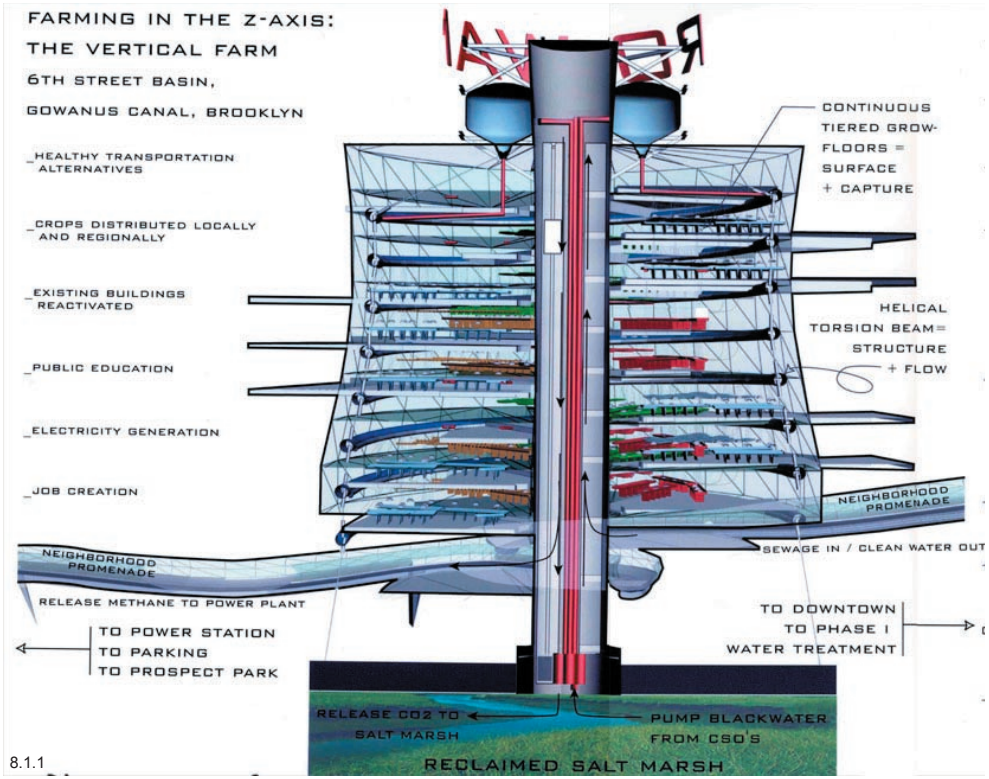
What can I say about this project except that it is all at once amazing and improbable. The Dutch seem to have an interest in these types of projects, maybe from

their great history as a farming country.

There are also many artists using farming and local growing as a medium. The edible estates project seeks to replace the urban lawn with a productive growing environment. From the edible estates project webpage

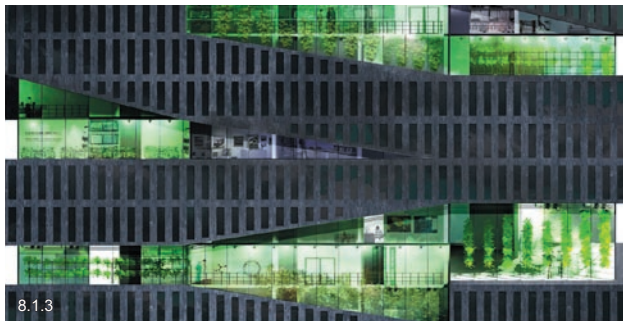
"**Edible Estates**" **(8.1.10-8.1.11)** proposes the replacement of the American lawn with a highly productive domestic edible landscape. Food grown in our front yards will connect us to the seasons, the organic cycles of the earth and our neighbors. The banal lifeless space of uniform grass in front of the house will be replaced with the chaotic abundance of bio-diversity. In becoming gardeners we will reconsider our connection to the land, what we take from it and what we put in it. Each yard will be a unique expression of its location and of the inhabitant and their desires. Valuable land will be put to work."

In Los Angeles the "**Not a Cornfield**" **(8.1.12-8.1.14)**project seeks to transform and existing brown field site, once a train yard, into a growing area. Planted with corn it evokes ideas on land use, open space within a city center and others.

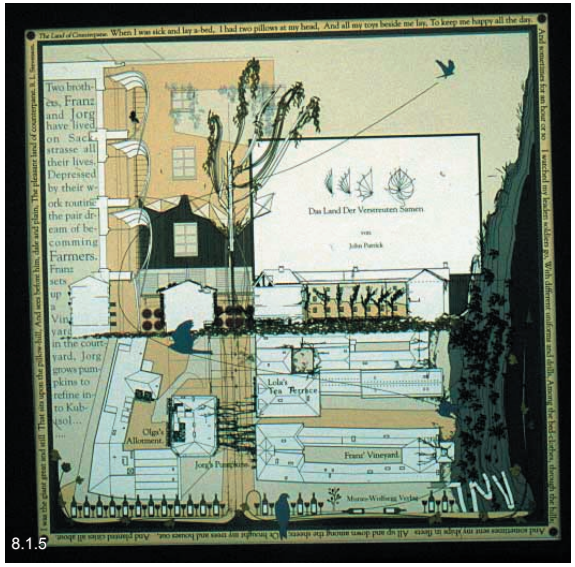


8.1.1

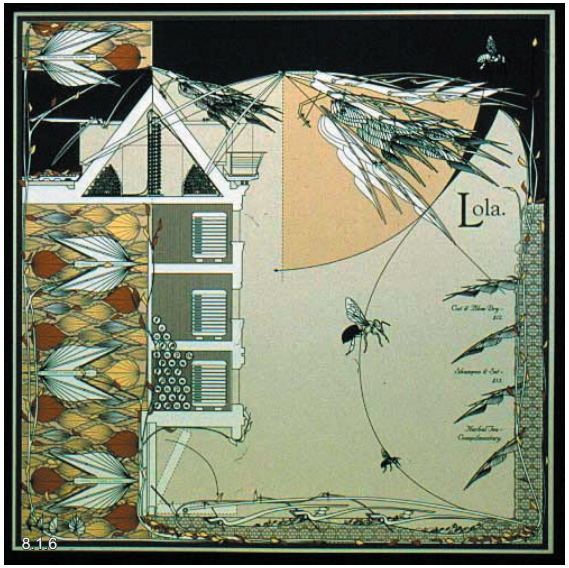

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8.1.3

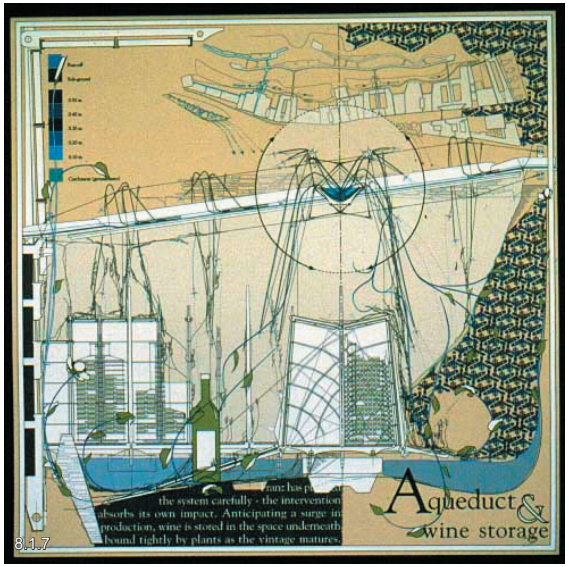

8.1.4



8.1.5



8.1.6



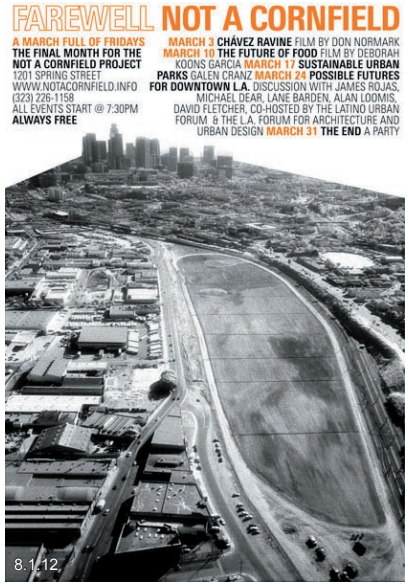
8.1.7


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8.1.9


8.1.10


8.1.11



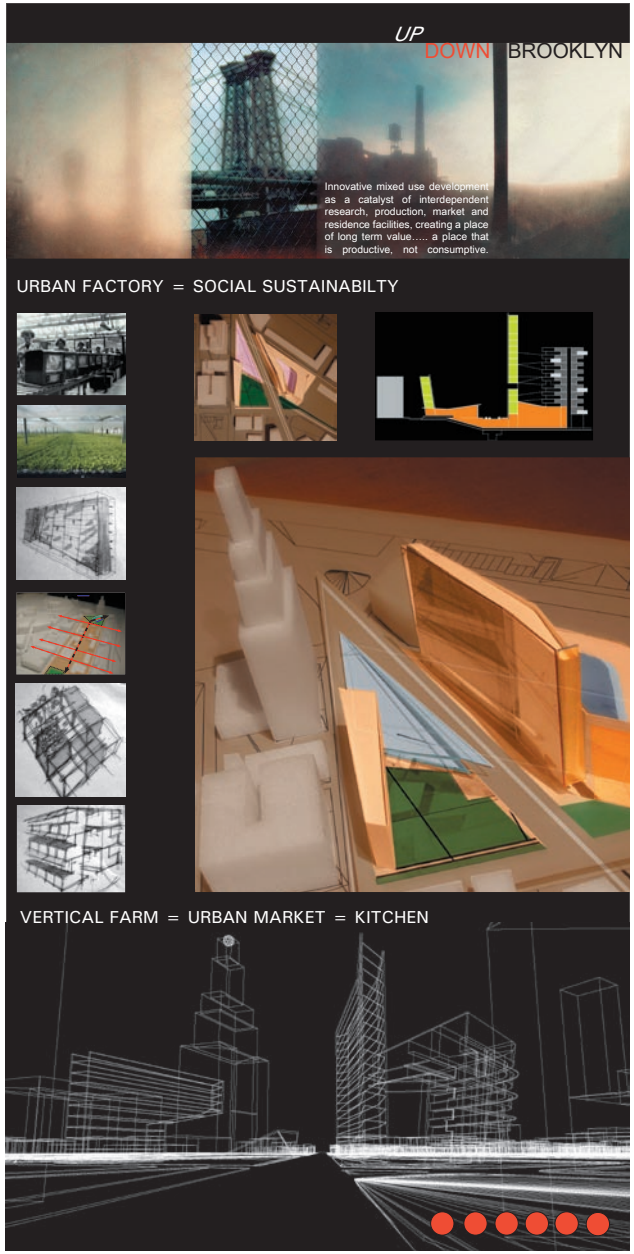
8.1.12


8.1.13

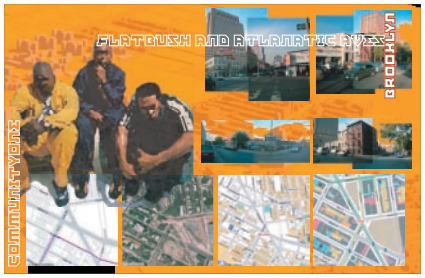

8.1.14

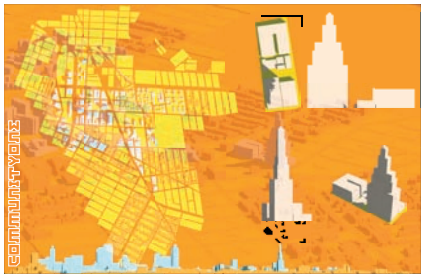
7.3 Community One:

This project came directly from one of the original inspirations for this thesis. In the Fall of 2003 I took part in a design charette at the firm I was working for in New York. Every year a similar charette is held amongst the partners, principles and invited design staff of the firm. I had the pleasure of participating that year and my group, through what seemed to me at the time an original discussion about a non existent practice, came up with the idea of urban farming. The site was in Brooklyn and sat nearly kitty corner from the Atlantic rail yard site. The design proposal won that year and we also one the marketing competition that was tied to the charette; an unprecedented achievement. I soon learned that many people around the country and around the world were practicing urban agriculture and that it was much larger than I understood. At first I still had the idea that urban agriculture and architecture could be mixed in an traditional manner. This project was intended to work as a vertical farm, funded by corporations and run as a business employing youth as farmers. The only part of that design that still exists is the idea of urban agriculture as a business.

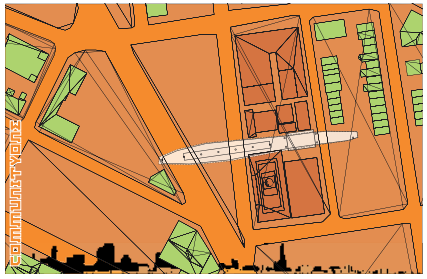


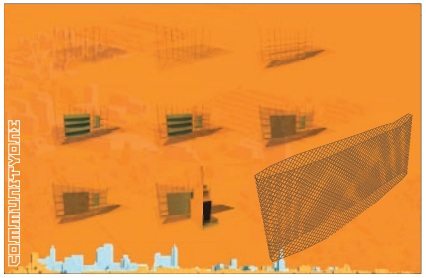

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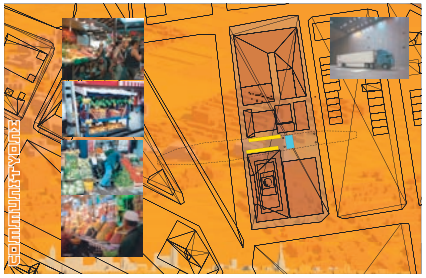

FLATBUSH AND ATLANTIC AVE
BROOKLYN
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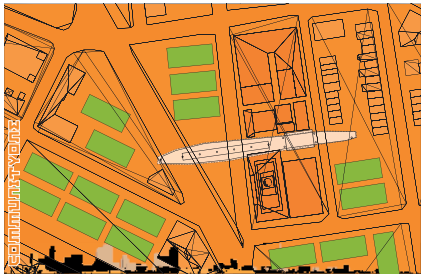

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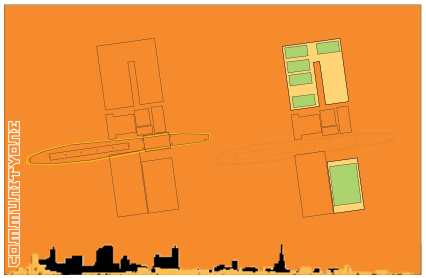

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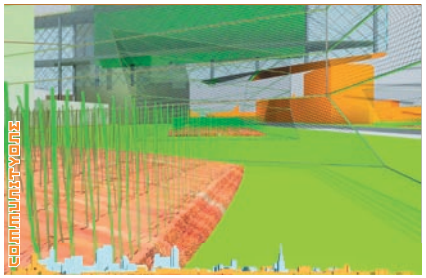

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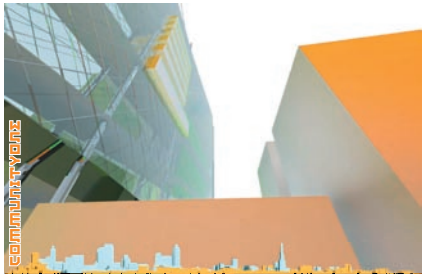

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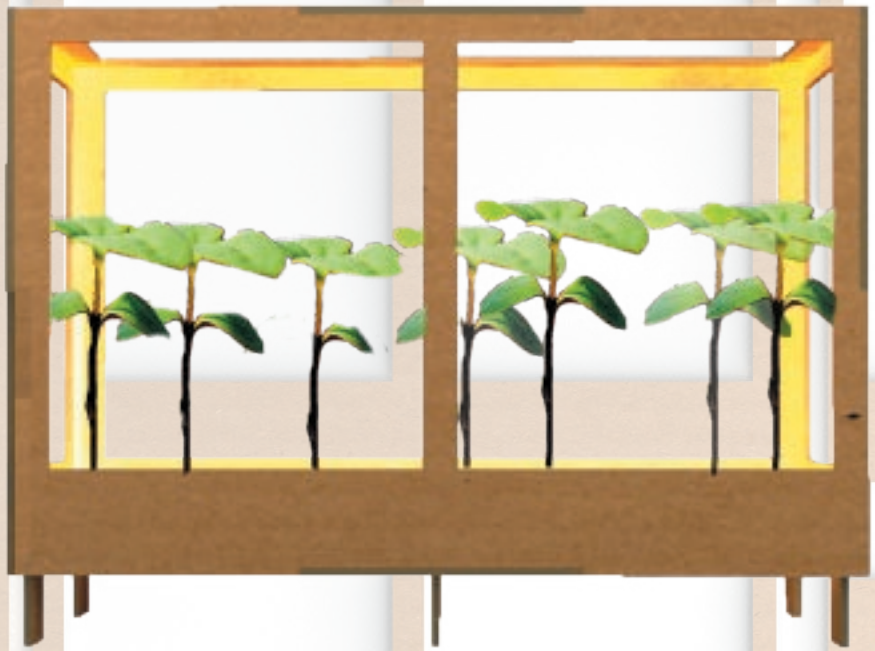

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7.4 Grow Box:

The intent of this project was to develop a small grow box similar to a terrarium. The idea was that the box would have been built out of waxed corrugated cardboard and simple sheets of clear plastic. The box would be sold, or better yet given out for free, to children and groups and used as a way of generating interest in growing. The simple nature of the box would mean a child could put it together and, combined with some seed packages, be used to start plants and grow herbs. The instructions could even bee written on the cardboard so that they were clear to read and understand before separating the pieces from the template. Ideally this is a project that could find some use within the existing thesis but I do not intend to develop it any further.



7.5 Guerilla Growing:

So much vacant space and interstitial space is completely unused. There are many opportunities around us everyday for growing. If we can't gain permission to use the unused land to plant fruits and vegetables then maybe we need to just do it covertly. A group in Toronto already practices this although they don't merely concentrate on growing food. With a small packet of seed, a flask of water and some tilling utensil, even a spoon, the ordinary person on the street becomes capable of growing.

http://www.publicspace.ca/gardeners.htm











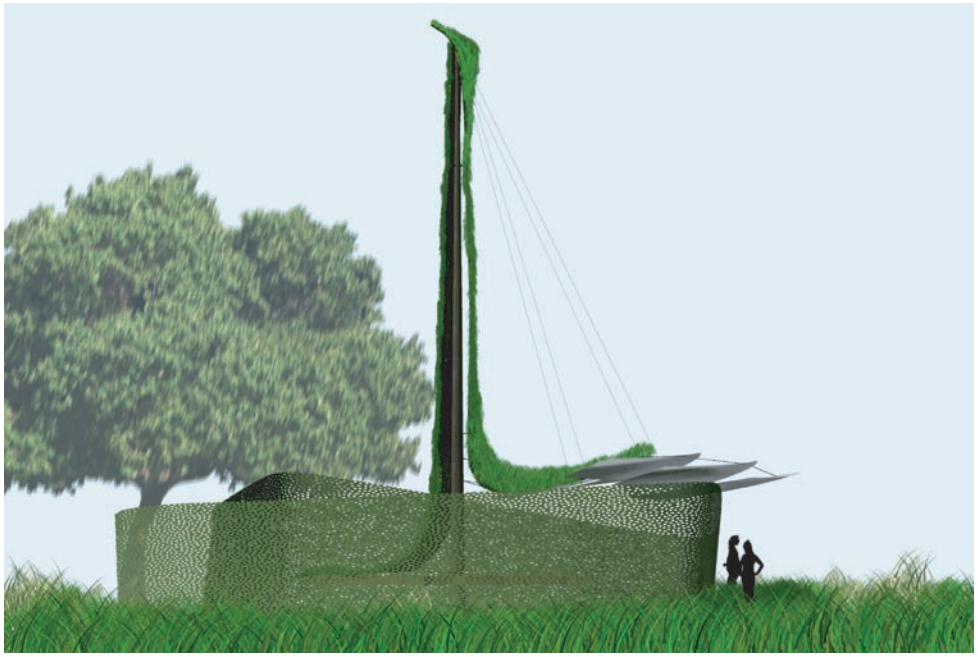


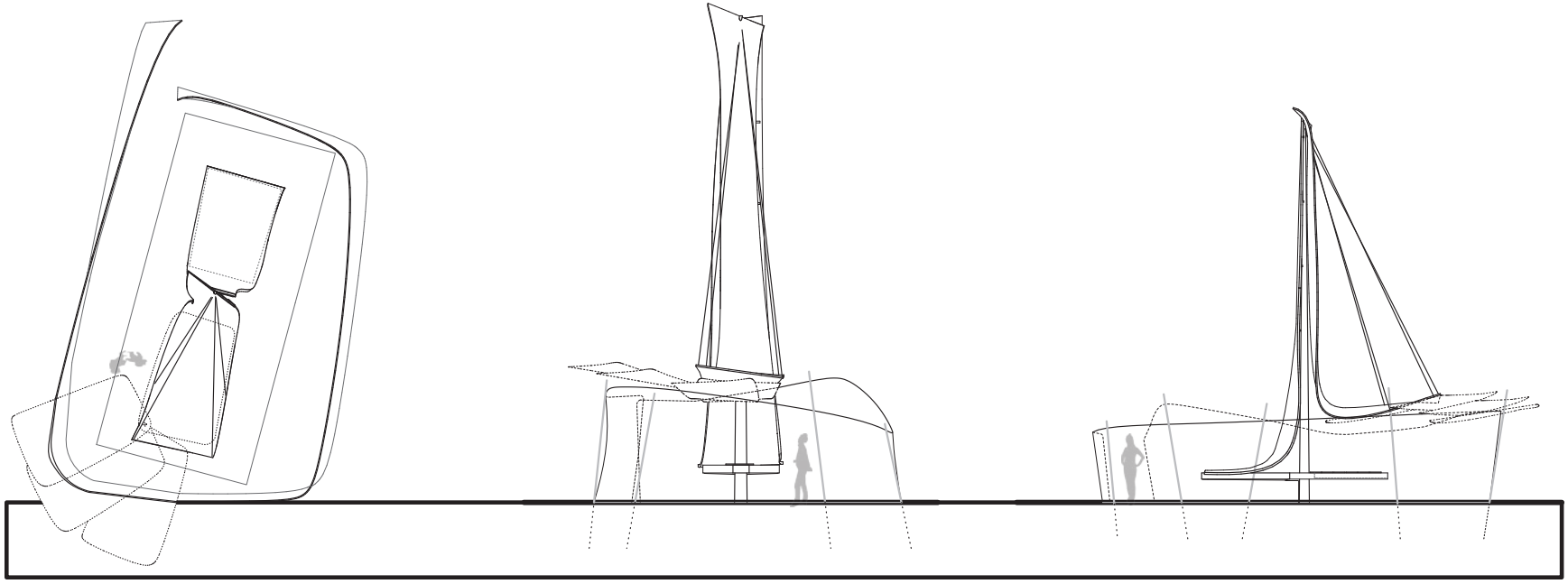




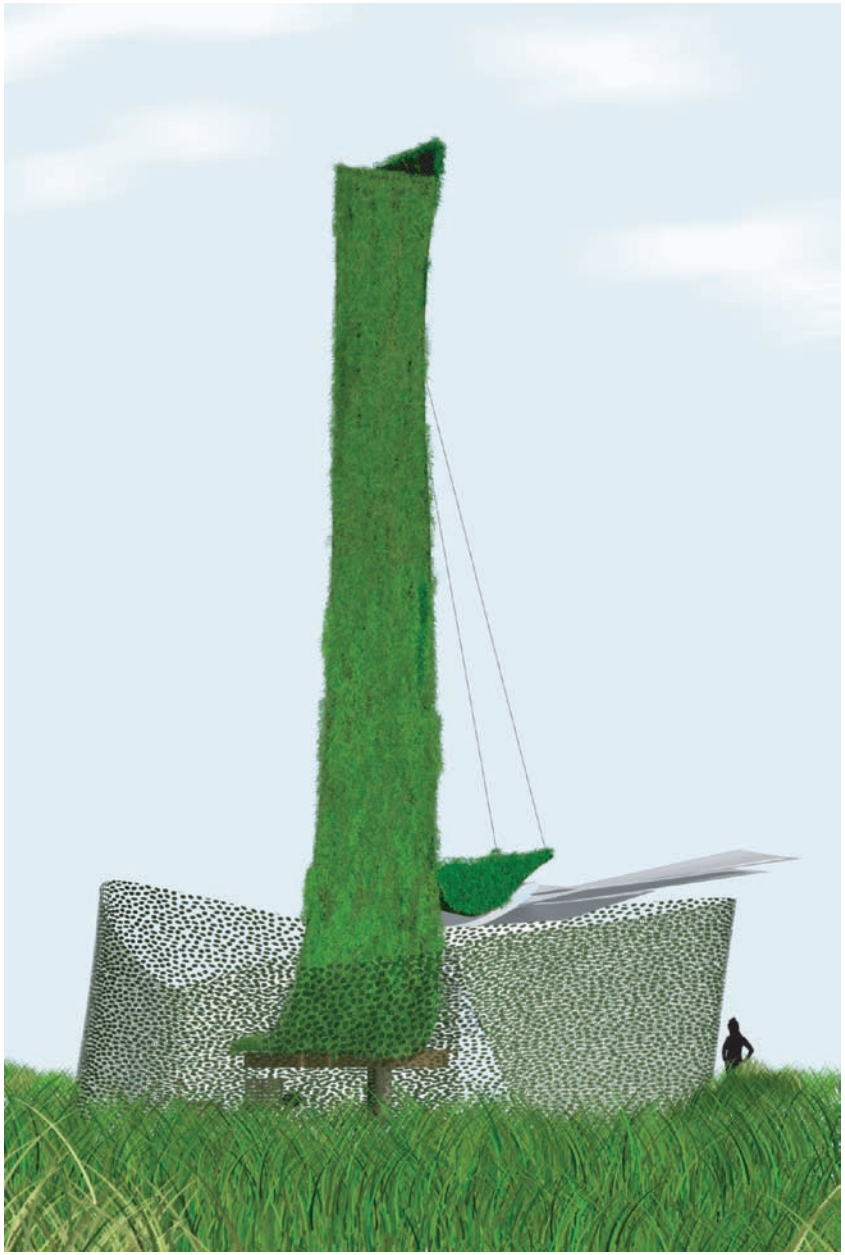
7.6 The Growing Staff:

The next group of design studies came out of trying to attempt to seriously deal with the needs of urban agriculture. The first project tried to combine growing, public amenity, and architecture. One of the important factors, as I saw it at the time, was way finding or signage. Not only did these parcels of vacant land within a larger study area need satisfy the needs of growing but they also had to announce themselves and generate some visual interest. Unfortunately the staff project tried to be too much and was about architecture more than it was about growing. The project proposed growing bed structures supported on tall mast like poles. Situated on a vacant lot space they combined growing with public amenity in the form of a private space surrounding each staff that allowed for the user to close off the space or open it to the rest of the site.







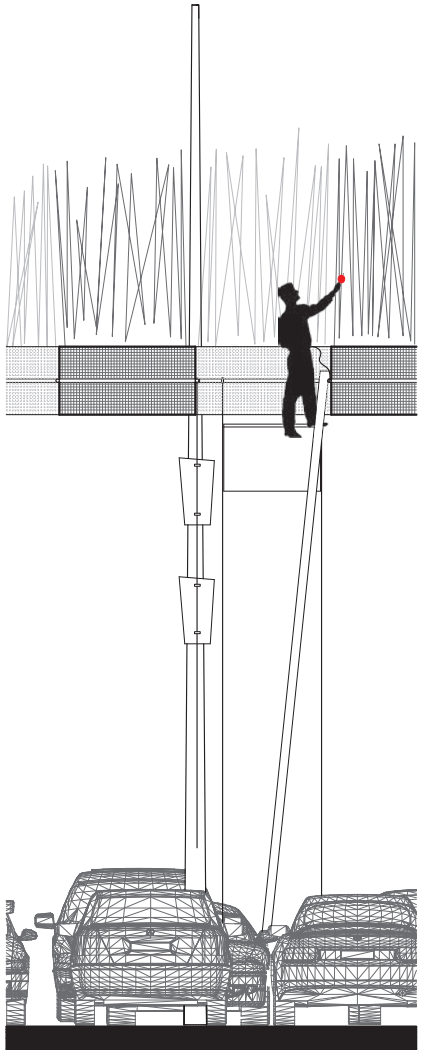


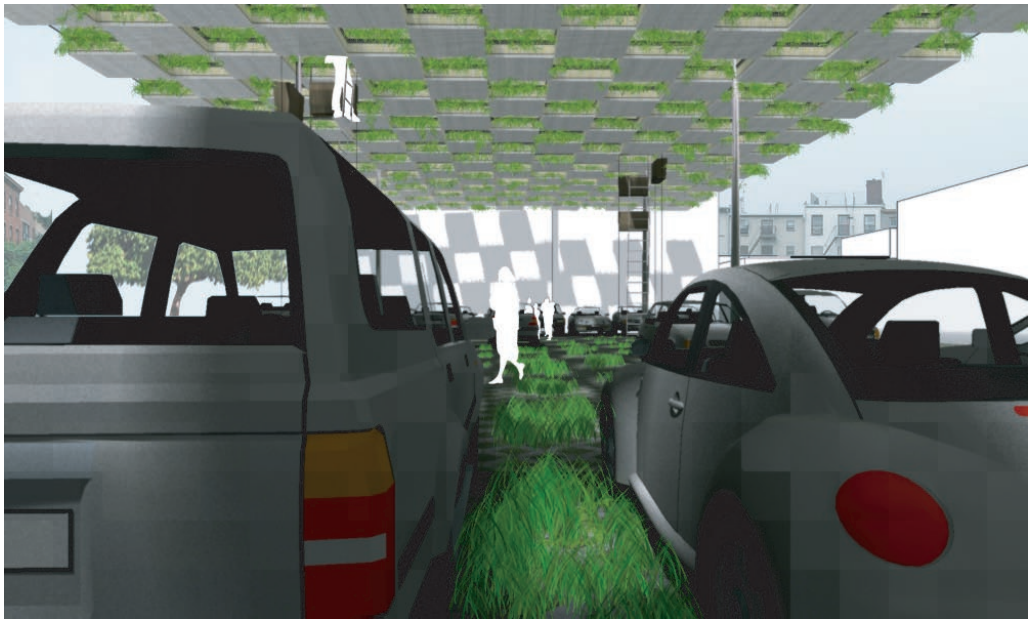
7.7 The Growing Box:

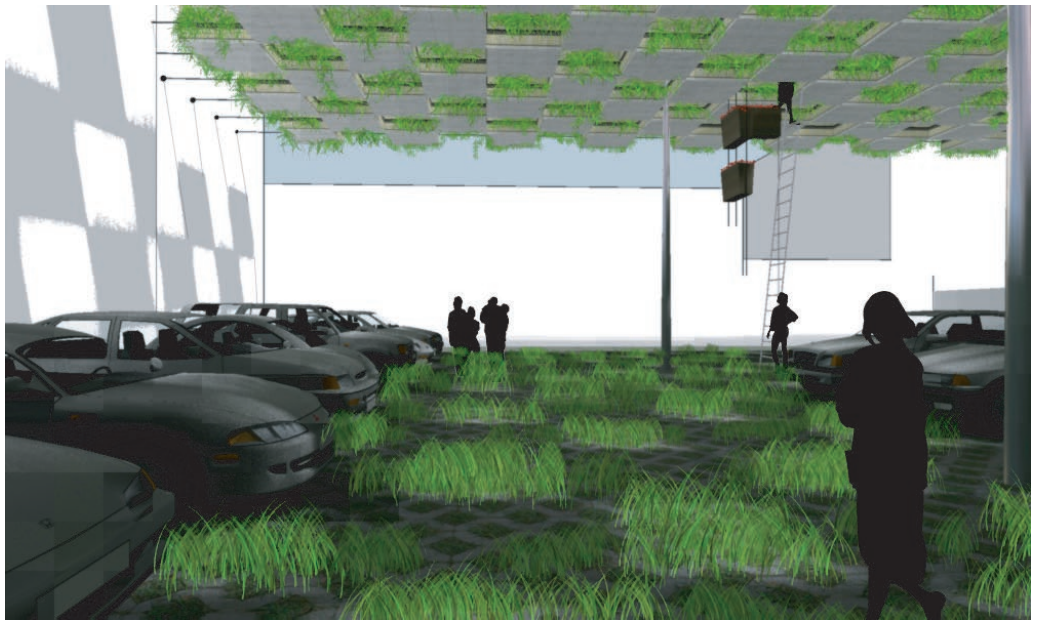
This project sprang from many of the same ideas that the staff project did but also tried to preserve the existing space and function with which is shared occupation. The growing boxes were metal mesh boxes suspended above the ground on a series of poles and cables. In the case of the study they were suspended over a parking lot. The boxes would be filled with rockwool and other lightweight growing mediums and then planted with seed. A series of tubes would be suspended over the boxes and serve as an irrigation system. Tending the boxes was made possible through the use of a ladder and the arrangement of the boxes in a chessboard pattern, white being open to below and black being the grow boxes. Again it was too much architecture and not enough about the simple needs of urban agriculture. Although not assessed the price alone would have been ridiculous.











7.8 My Garden

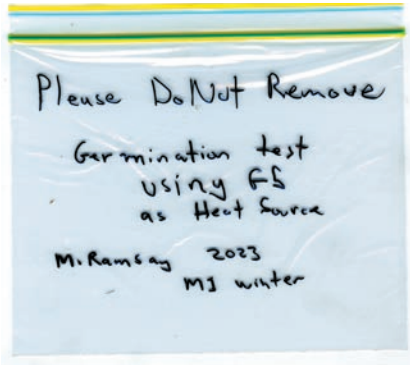
Starting in mid winter of 2005 I decided to grow my own garden. Being a beginner gardener or possible novice level I felt i had to test some of my assumptions about growing and test my own abilities to produce fruits and vegetables. I began by exploring some of the different types of growing, traditional, hydroponics, aquaponics etc It was clear from this research that , if I wanted to start a garden right away, I was going to have to use hydroponics. I searched my local area for a hydroponic supplier and found one in Kitchener Ontario. Scott Eitel has been growing hydroponics for many years and through him, and his wonderful generosity, I was able to get all the start up equipment I needed including seeds, organic nutrient solutions, pots, seed starters and even a grow lamp. It should be noted that all of these things Scott donated to me and my thesis and I thank him. It should also be noted that this sharing of resources and knowledge is common in gardeners and part of the benefits of growing.

Starting in late march / early April I set up some seeds in small peat medium pucks and placed them in a warm sunny area of my graduate office. Some plants required more light than i could find in the middle of winter from the natural solar resource so i rigged one of my studio boxes with the grow light and put some trays of seeds in the box. With a little vigilance and water I soon saw the beginnings of plants and even some fruits. Herbs were by far the quickest to sprout but tomatoes and zucchinis and cucumbers soon followed. As the months changed and spring approached the natural sunlight in my office increased and i soon had quite the jungle. I realized that many of the plants i had started indoors using nutrient solution in water and electric light would be best served by moving them out doors and onto my back porch.

With the transition and the new warmer weather i also decided to plant some traditional crops in the small parcels of soil at the base of my back porch. throughout the summer my transplanted growing and traditional growing grew wonderfully and produced so much food that I had to start giving it away. Although I still bought some fruits and vegetables from the market I also ate everything that came off my plants. I have even dried some of the hot peppers and still use them today. The plants were too big to bring with me when i moved so I left them for the next people moving into the house. As far as I know they continued to produce well into October and were enjoyed by all. The result of my garden also had a secondary effect on the students I share my office with. When I left the school in September i still had some plants growing in my office. The other students continued to care for them and even expanded the crop varieties. There are now more plants in the office and even more placed around the school in other offices and in the hallways in a sunny area.

The end result of my growing was both educational and productive. I was able to grow plants and learn about what they required, what not to do and what plants benefited from certain conditions. I was also able, through example, to Show others the benefits of growing. These people took up the practice of growing when they saw the benefits and continue to practice it today. In my backyard I was able to prove that plants started early and indoors could successfully survive in outdoor conditions. The plants started hydroponically continued to grow outdoors in a Soil less medium and were able to create much of their required nutrients from the sun. The traditional plants I was growing in the backyard, although they had limited solar exposure (2 hours daily) still managed to grow successfully.

I would not say that I was an expert gardener but with some time and a little patience I think I could easily learn the basics behind plant growth and apply the lessons to a garden scenario. Intensive urban agriculture will best be served by experts practicing but there is a place for the beginner and the novice. Training programs way detract from the pursuit of urban agriculture as a viable business but they may also allow many different types of people from many cultures to participate in the joys of growing and the beneficial pursuit of urban agriculture.





7.9 The Subway

The subway in New York City is one of the best ways to get around town. It can sometimes be a little nerve wracking when you are unfamiliar with the routes. Once a person becomes a veteran of the subway they will almost never use other means of transportation. Taxis and car services are very nice ways to travel but they are subject to the whims of traffic. The subway is fast, efficient and far reaching. Due to the proximity of the Atlantic Rail Yards to the MTA subway I considered proposing growing on subway cars or at least using them to distribute. Because they are so widespread they become the perfect way to transport fruits and vegetables around New York City. A garden worker in Brooklyn can get to the restaurants in Union Square Manhattan in less than 10 minutes if they are good. If we go one step further then we can consider the idea of converting older subway cars to rolling greenhouses or hydroponic production gardens. The cars could sit in the center of the Atlantic rail yards all day and travel by night taking fresh produce all around the city. Of course the expense and the logistics of such an enterprise is hard to fathom, still, the infrastructure is in place and it might be possible. Instead of bringing the city to the garden it would be possible to take the garden to the city.



7.10 Barges:

The East river and Hudson rivers are teeming with boat traffic. Much of it is under the radar of the typical New Yorker. Garbage barges, work barges and other similar ships traverse the waters everyday. As a seasonal alternative to growing on land it could be possible to load a barge or series of barges with soil and supplies and spend the summer chasing the sun on the rivers. Similar to the subway idea the barges could travel from the Bronx to Staten Island and New Jersey to the Hampton's. The barge could be both a floating garden and a floating market; a classroom that comes to the student and an attractive element on the New York Rivers, Like the Mexican Chinampas the barges would have little worry with regard to irrigation.



7.11 Ellis Island:

The original landing of many of the people who immigrated to America Ellis Island was the first stop for millions of people in the new world. Unfortunately the main dorm building is the only part of the island in good repair. Serving as a museum now it has been renovated and maintain throughout the years. The rest of the island is not so lucky and many of the old buildings are falling apart. I have considered suggesting the island for a farming site. Although plagued with some logistical problems such as easy transportation and shared occupancy with the museum it nonetheless has many positive factors. The proximity to water, again, makes it simple to irrigate. Its proximity to most of the boroughs and New Jersey put it in a prime place to service all these areas and it's location in New York harbour, close to other tourist attractions, makes it a great place to promote urban agriculture.

These are not all the ideas I have pondered when considering this thesis but they are some of the more developed ones. The three last ideas do not have a lot of graphic development but the ideas have been mulled over and re-mulled in my head for some time. If there was an unlimited budget and no bureaucratic obstacles to over come then these ideas would be wonderful additions to the project, the city and urban agriculture. For the moment they will simply serve as examples of other strategies and ideas that I have considered during the course of this thesis.



Images, Sources:

Page 185

Vertical Farm Project

-Image from: http://www.verticalfarm.com/images/design/z-axis.htm

Page 186

The Land of Scattered Seeds

-Images from: http://www.ucl.ac.uk/news-archive/archive/may-2005/latest/news-item.shtml?sladebartlett

and

http://www.presidentsmedals.com/Projectdetails.aspx?student_id=0&proj_id=759&year=2001

MDVRV Pig City

-Images from : http://www.mvrdv.nl/_v2/

Page 187

Edible Estates

-Images from: http://www.fritzhaeg.com/garden/initiatives/edibleestates/salina_images.html

Not a Cornfield Project, Los Angeles

-Images from: http://notacornfield.com/events/2006/02/final-five-friday-nights-not-cornfield_27.html

Page 188 - 197

All images by author except images of gorrila gardenrs

-Images from: http://publicspace.ca/gardeners.htm

Page 198

New York Subway

-Images from: Joe Nocella

Page 199

Barge

-Images from: http://www.alaskarails.org/historical/whittier-80-90/index.html

Page 200
Ellis Island

-Image from:http://www.wmf.org/resources/sitepages/united_states_ellis_island_baggage_dormitory_building.html

Part 3 - Design Study

8.0 Site Analysis - Atlantic Rail Yard

8.1 Introduction
8.2 History of the Yards
8.3 Current Design Proposal
8.4 Community Reaction
8.5 Opinions
8.6 Conclusion

8.1 Introduction - Atlantic Rail Yards

Initially the proposed site for this thesis was primarily the Atlantic Rail Yards in Brooklyn New York. This was due to two factors. One, my experience of living in the community and the acknowledgement that there was community interest in growing and health related food issues such as organics and urban agriculture and, Two, as a response to proposed development of the rail land area. This development would completely change and skew the nature of the neighbourhoods that contain it and greater Brooklyn. Although the thesis project has expanded to include vacant lots, backyards, school yards, parking lots etc. the Atlantic rail yard site is still a highly valued and important piece of land that should be incorporated into the project. It sits as the physical center of the study area but it is also the intended organizational center of the project. It is understood that urban agriculture can exist in many conditions and settings but emphasis is on the center of the project as catalyst; if not in reality than at least in spirit.

Currently the rail yard is a temporary train holding depot in the morning and evening for incoming and outgoing commuter rail trains. The site is approximately 11 acres; 61 M north to south by 720 M east to west, 43850 square meters, has two abandoned buildings of an industrial nature and is crossed by 2 overpasses. The site slopes gently from the western end to the center where it levels out at 20 feet below grade. The west end temporarily stores the train cars while space at the eastern end is used for bus storage. The entry to the rail system is on the eastern end and the grade access to the site is the western end.

In January of 2004 developer Bruce Ratner purchased the New Jersey Nets pro basketball team. Ratner unveiled plans to move the Nets to Brooklyn, building a new stadium for them and associated other building and urban development. Frank Gehry was tasked to design the arena an adjacent buildings and the plans were publicly displayed. The arena and other commercial and residential buildings are sited on the Atlantic rail yard site in Brooklyn. Not only does the proposed development utilize the land the rail yard occupies but also calls for the purchase and demolition of adjacent blocks. These blocks house business and homes for residents in the Prospect Heights, Bedford Stuyvesant area of Brooklyn and there is immediate concern among residents.

Not only is their opposition to the plan based on the shear size of the proposed development but also because of the attempt to invoke eminent domain. Eminent Domain, known as expropriation in Canada and compulsory purchase in the United Kingdom, is the power of the state to expropriate private land without the owners consent. In the United States eminent domain can only be used if just compensation is paid to the land owner and the expropriated land is intended for public use. Through legal loop holes and different interpretations of “public use” eminent domain has come under recent fire for taking land from private owners and giving it to private developers. The argument is that development creates jobs, generates tax dollars and beautifies community; therefore the “public good” is served. In reality people are moved from their life long homesteads so that developers are able to make money. Although used for many beneficial projects such as highways and other needed infrastructure recent public awareness of abuses has led to state statutes being introduced to limit the use of eminent domain (http://en.wikipedia.org/wiki/Eminent_domain) Although negatively used in many cases there are also many positive uses of eminent domain. In Boston MA the Dudley street initiative used eminent domain to gain control of abandoned and dangerous lots within the Dudley neighbourhood. This allowed the Dudley initiative to redeveloped these sites and make for a safer neighbourhood and a self sufficient community (http://www.dsni.org/) The Atlantic rail yard dispute involves 11 acres of private property and 17 residential and commercial high-rises at stake. Not only will the land of the Atlantic rail yards be used for the arena development but there is now the possibility of private citizens being displaced against their will. Protest groups are quickly organized, involving city council members, architects, planners, scores of concerned citizens from many of the adjoining neighbourhoods and local business owners. Opposition within the neighbourhood is high and also throughout Brooklyn, the only supporters seem to be basketball fans.

In response to the possible use of eminent domain and the concerns about the high-rise nature of the proposed development other proposals were devised and shown in response. Many of these proposals illustrated how the same density could be achieved in a low rise building with green space, parks, and other more sensitive development.

The consensus is that Brooklyn is a borough of neighbourhoods and low rise development. The proposed development would destroy both the atmosphere and aesthetic of Brooklyn.

The Atlantic rail yards sit in between the neighbourhoods of Prospect heights and Bedford Stuyvesant and adjacent to Fort Greene, Park Slope, and East New York. It is a perfect site for developing a project concerned with creating self sufficient and responsible communities. The yards themselves are located at one of the busiest transportation hubs in Brooklyn, accessible by subway, bus, commuter rail, car and foot. Millions of people move through or adjacent to the site everyday and it is the perfect site to serve as a viable, working, example of what can be achieved through the creation of urban agriculture programs, infrastructure and ideas. Not only can this site serve as the showpiece for Local Growing but also the catalyst for further development throughout Brooklyn and Greater New York.





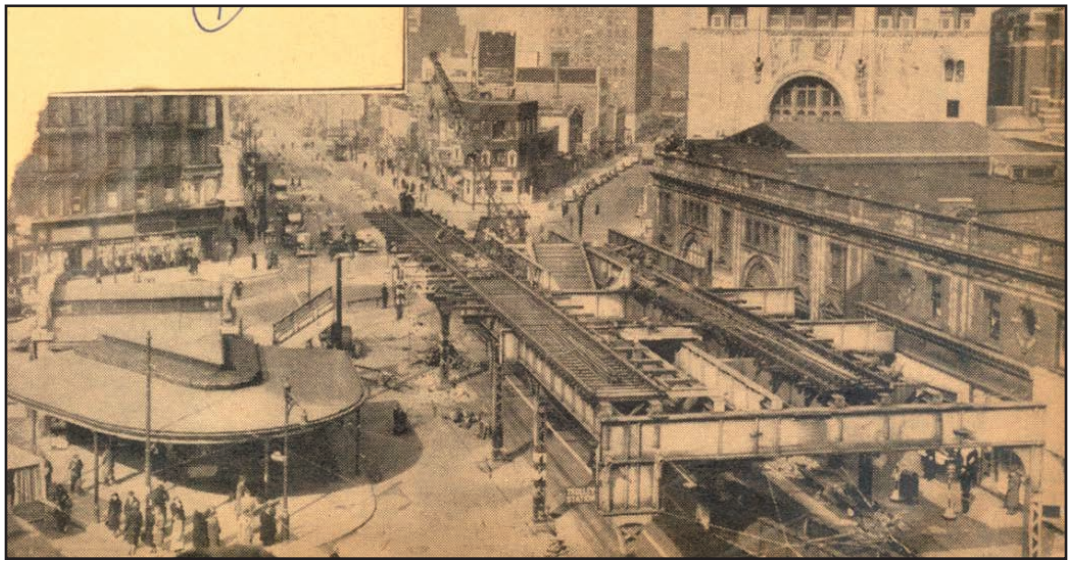
Aerial Views of the Atlantic Rail Yards

Source: Ratner Proposal for the Atlantic Rail Yards Project (2005)

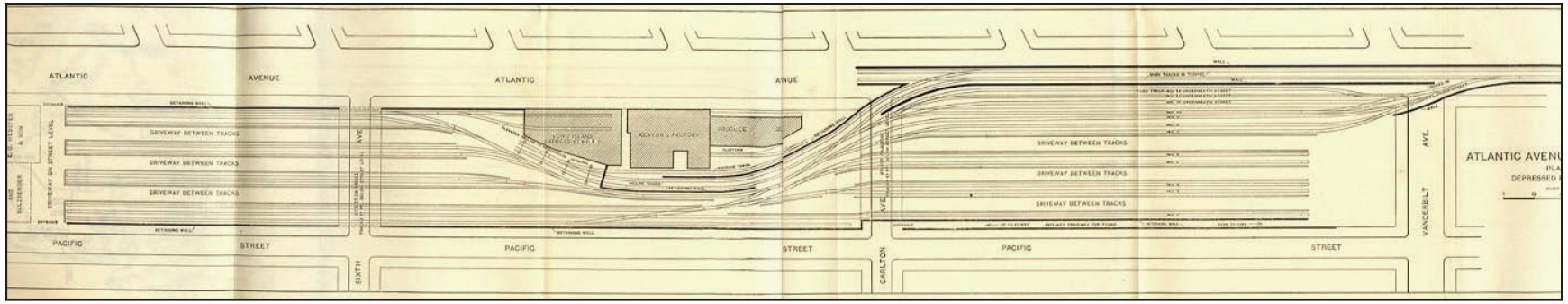
8.2 History

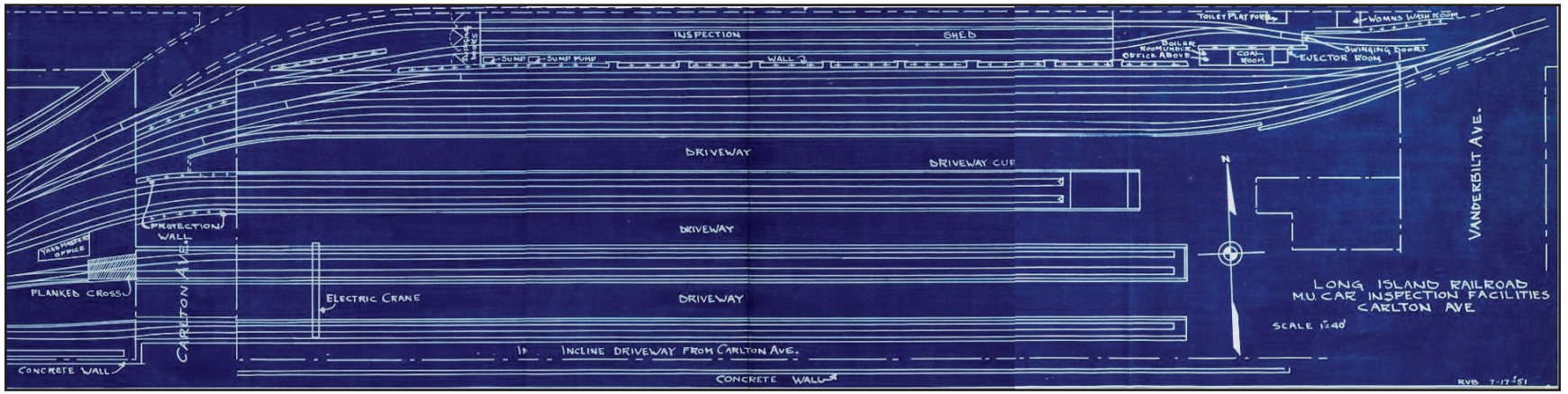
The history of the Atlantic rail yards is difficult to track. The Long Island Rail Road broke ground on the 5th of May 1836 and was chartered on April 24th 1834, The Jamaica Brooklyn Line was established at approximately the same time and both lines served, Brooklyn and Long island. The Atlantic Rail Yard site was a freight yard ca. 1906-1907 (that served the many meat houses and storage warehouses that surround that site and that area. The elevated train lines that ran through Brooklyn also passed through the rail yards. At first the corner of Flatbush and Atlantic Avenues was the home for a rail terminal and station (some of which still remains today) and the also combined merchandise storage and exchange shipments. This transportation hub and merchandise storage was utilized by the Rabinowitz family and existed until it was raised sometime in the early to mid 20th century (dates are difficult to determine) The Site now is home to the Atlantic center and the Atlantic mall owned and developed by Forest City, Bruce Ratner's company. The rail yards are still used for temporary storage of LIRR trains but the LIRR express stable building is no longer in use and the yard has almost none of it's original connections to adjacent buildings and tracks. It is rumored that at one point the plot of land that housed the above ground rail terminal and merchandise storage was considered for the new home of the then Brooklyn Dodgers. Although brief a series of photos will depict the site and it's many incarnations throughout the years. Were possible comparison images will be used to illustrate the changes.





Above: The LIRR rail Depot and Meat houses (right), **Below:** The Flatbush terminal and elevated rail. The Williamsburg Bank is visable in the background(year unknown) Source: http://www.arrts-arrchives.com/index.html



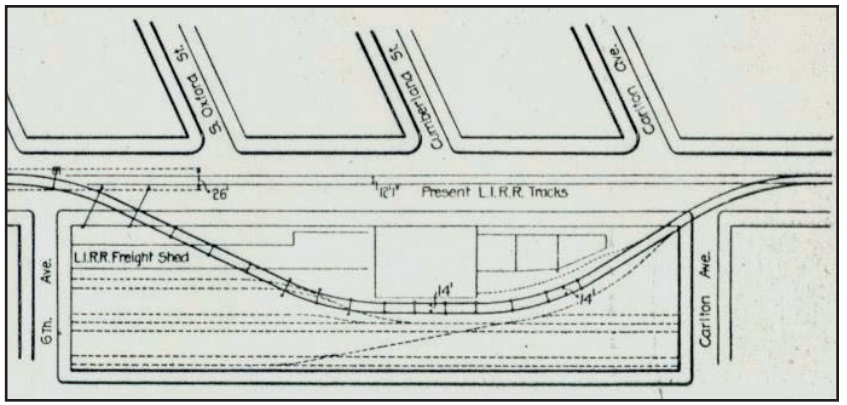


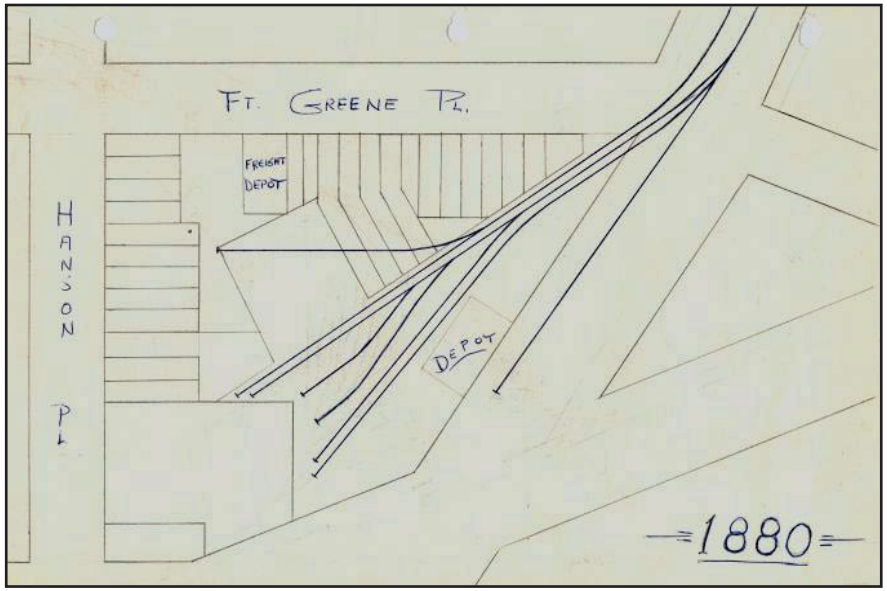
Top Down: Numerous Plans of the Rail yards and Carlton / Vanderbilt extension.

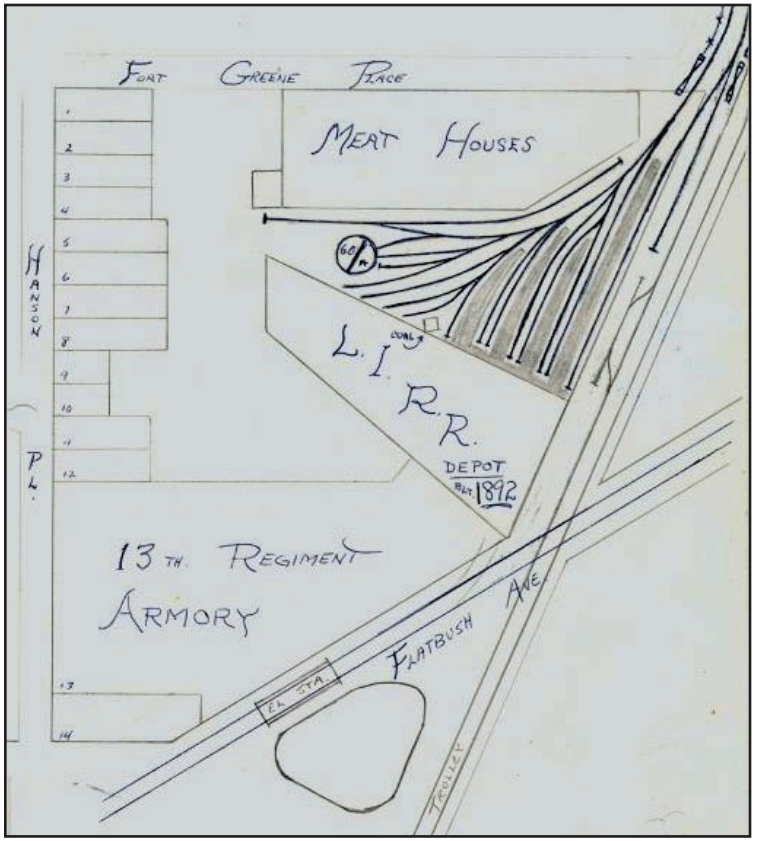
Bottom left: The removal of the roundabout at the intersection of Flatbush and Atlantic Avenues. The new home of the Flatbush terminal

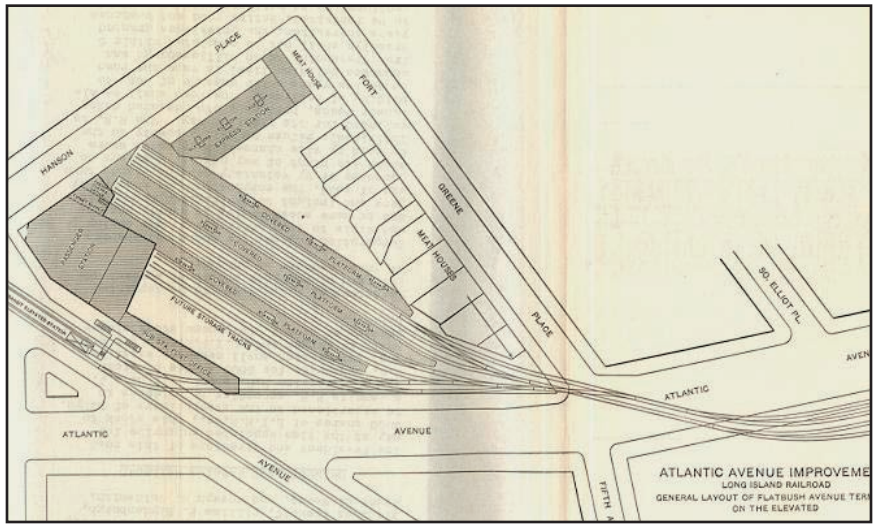
Source: http://www.arrts-arrchives.com/index.html









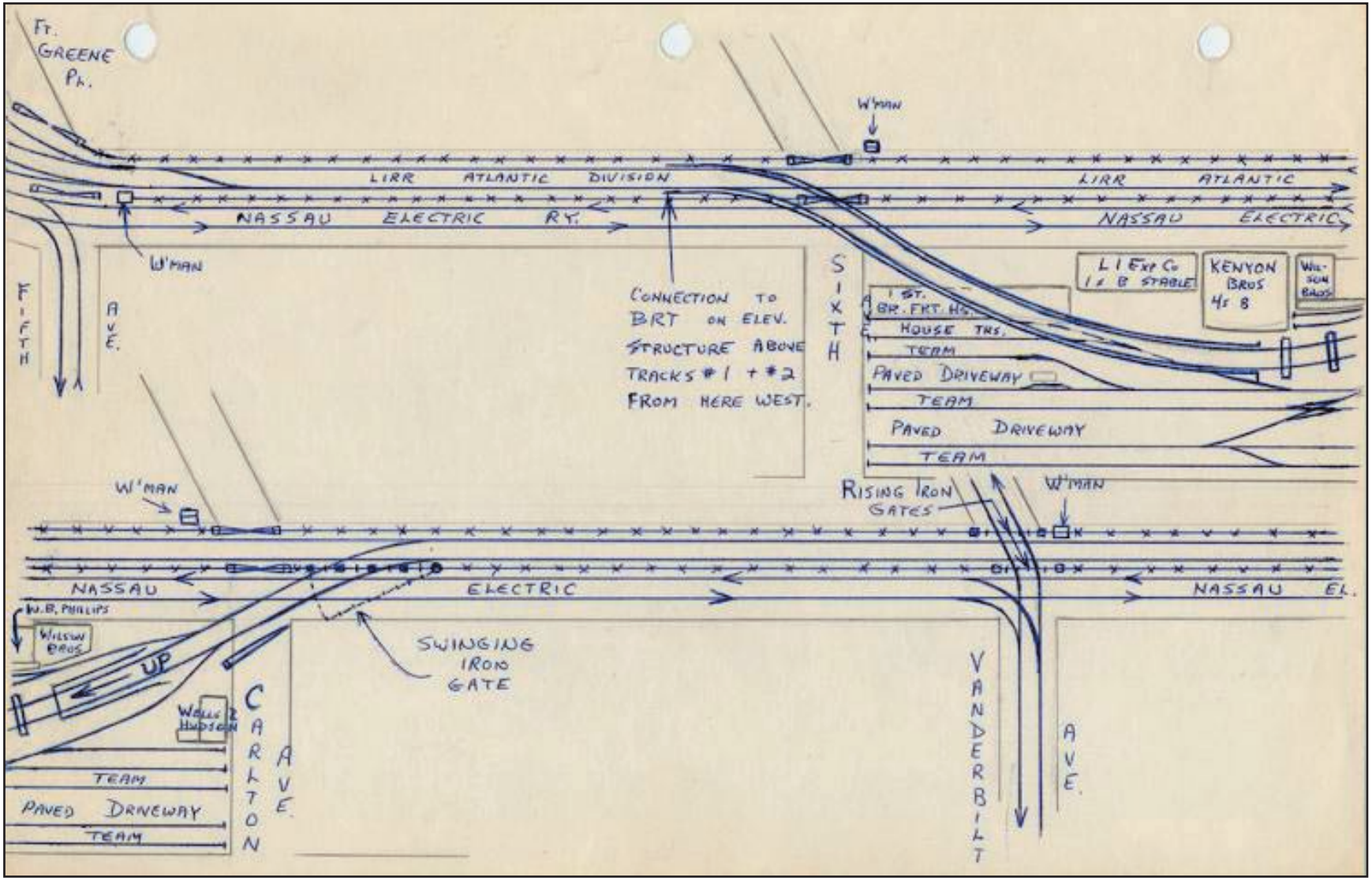


Atlantic Terminal Maps

Many Different maps of the Atlantic avenue terminal and merchandise storage buildings. Much of the merchandise sent to this terminal and transported through this terminal was food produced on Long Island and Brooklyn farms (Linder, Zacharias, 1999)

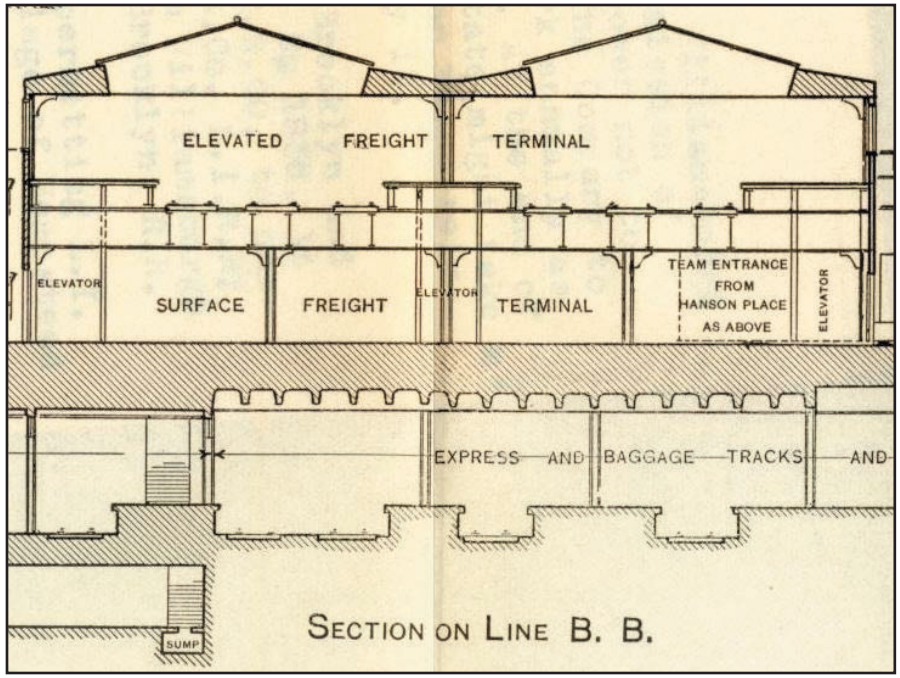
It is not clear if these maps were hand drawn from historical sources or original sketches produced at the time. They are the only known account the author could find of the layout.

Source: http://www.arrts-arrchives.com/index.html



Carlton / Vanderbilt Freight exentension

By 1907 the freight yards were being expanded to include the portion of land between Carlton Street a Vanderbilt Avenue. Connections to the 5th Street Elevated and the LIRR were made. Source: http://www.arrts-arrchives.com/index.html



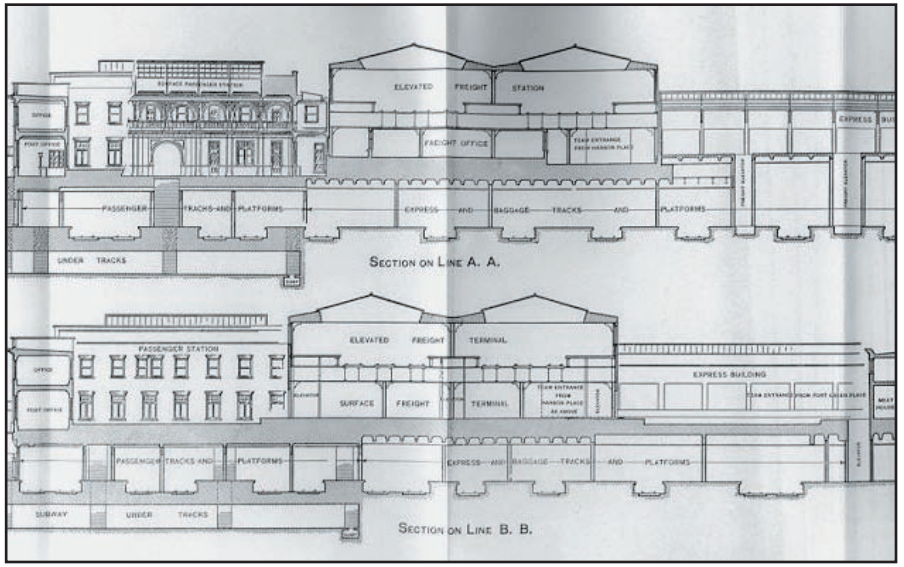
Sections and images of the Atlantic Terminal and merchandise warehouse. Below: dismantling the "El" on Flatbush Avenue and Atlantic Avenue (The Williamsburg Bank is in the Background) Source: http://www.arrts-arrchives.com/index.html





Above: The original Meat Houses (Right) and the LIRR Deopt (Left)

Source: http://www.arrts-arrchives.com/index.html



The Intersection of Atlantic and Flatbush Avenues

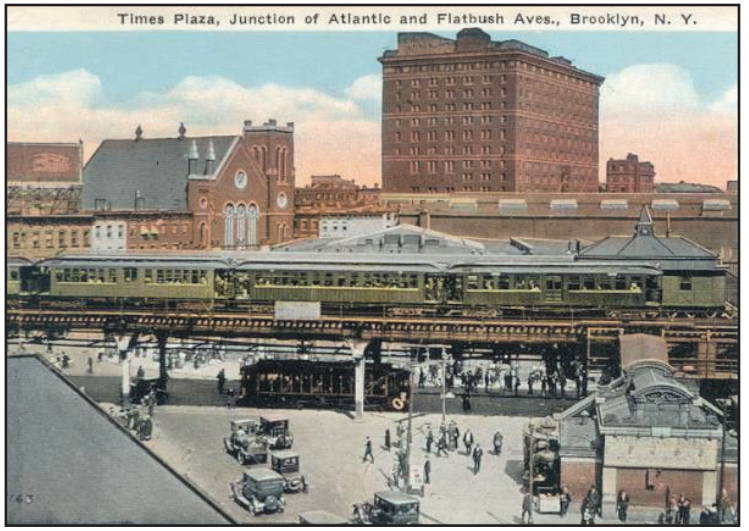
Left: the intersection of 5th Avenue and Atlantic Avenues year unknown.

Right: The intersection of Flatbush and Atlantic Avenues year unknown (Visible is the elevated train and the Atlantic terminal in the background.)

Below: The 5th Avenue elevated train rounds the corner to the Atlantic rail yard interchange. The building in the foreground still exists and is home to a restaurant

Source: http://www.arrts-arrchives.com/index.html
and
http://www.forgotten-ny.com



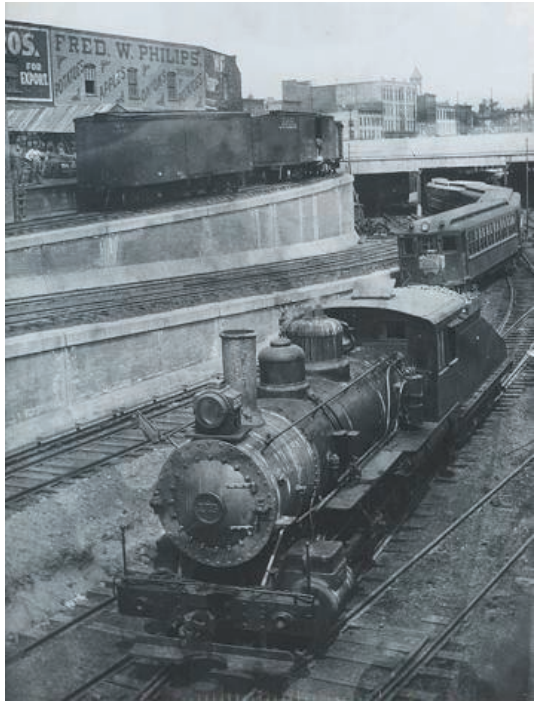







Brooklyn Terminal New York Subway L. I. Depot
and Trolleyline, Brooklyn, N. Y.


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GLASS CONTAINERS


FRED. W. PHILIPS







The Intersection of Atlantic and Flatbush Avenues

Opposite Page: The Small building that sits at the intersection of the two Avenues still exists today and now serves as a skylight for the subway station below.

OP, top right: The Rubinowitz merchandise storage and , **this page top right**, the new Atlantic Center on the same site.

OP, bottom right: The elevated train tracks springing from the rail yards and, **this page bottom right**, the intersection today.

Op, bottom left, Ramp system connecting factories and the freight yards.

Source: http://www.arrts-arrchives.com/index.html *and* http://www.forgotten-ny.com





Numerous views of the freight yards in operation. Bottom right: The expansion of the Carlton Vanderbilt freight yards

Source: http://www.arrts-arrchives.com/index.html



Numerous views of the freight yards today.

Source: Images taken by author


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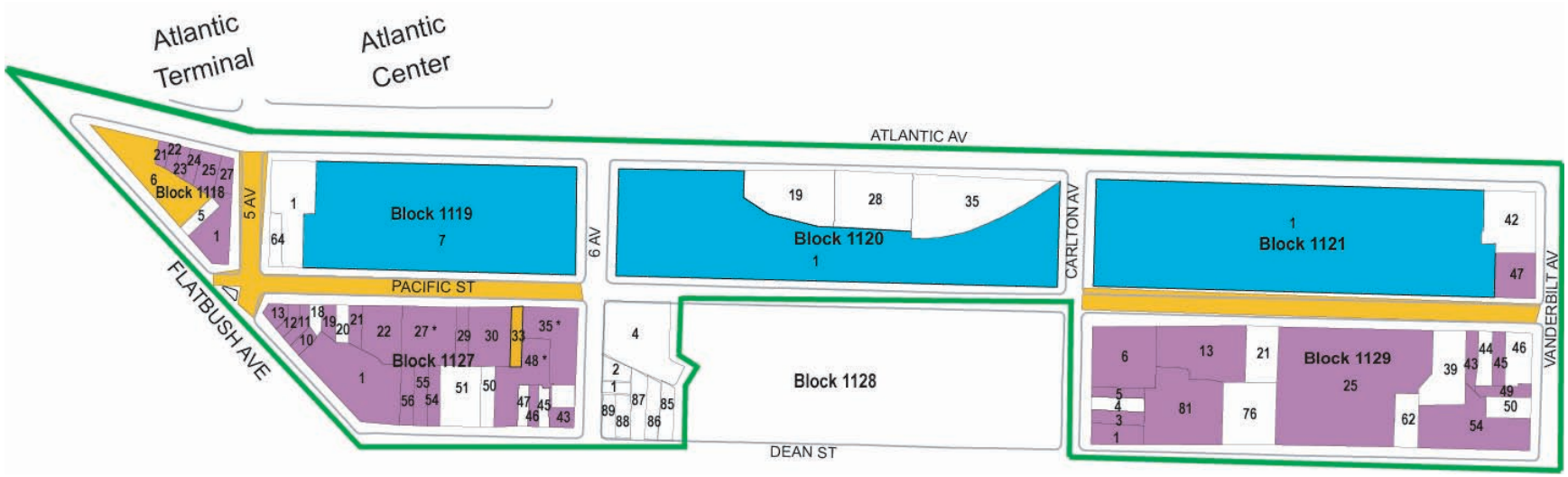

DSW

8.3 Current Design Proposal

There are many questions about the Bruce Ratner stadium development proposal. They range from environmental impact to economic impact, neighbourhood vitality and need. Ratner proposes nearly 9.2 million square feet of mixed residential, commercial, office and sports facility. Add to this the intended 7 acres of open public space and the development is one of the largest in Brooklyn history. Beyond the obvious problems of displacing residents to make way for this massive development other questions of scope and scale and economic viability are also important. From the Forest City Bruce Ratner development proposal we know that 227,000 square feet of new commercial space is proposed. However there is nearly 10% commercial vacancy (FCBR, 2006) at both of Ratner's other existing developments that sit adjacent to the proposed site, the Atlantic Terminal and the Atlantic Center. Ratner suggests that there will be 15,000 new construction jobs generated but independent studies have revealed this number to be 1,500 jobs over ten years (Kim, Peebles, 2004) Ratner suggests that 5 Billion dollars in net new taxes will be generated by this project over 30 years but that does not take into account the initial investment of 100 million federal subsidies and 100 million state subsidies. Independent estimates say that nearly 1.2 billion in subsidies will be given to the developer from public tax coffers. The developments 6.8 million square feet of residential, 7300 units, are split up into 2500 market rate units and 2500 affordable housing units and 1500 condo units (FCBR, 2005) these numbers are misleading because they speak of some equality of planning that will replace the demolished homes with new affordable homes. But by looking closely it is easy to see that 4000 units are at market value and only 2500 will be at "affordable" levels. This number is 6,500 units and looking at the alternative uses plan it is easy to see that 7,300 units are possible. This suggests that 4800 units could be at market value with only 2500 set aside for affordable housing. The estimated average income of the residents in the new development is between $80,000 and $90,000 a year. Independent research shows that the median household income for all of Brooklyn is $35,000 (Kim, Peebles, 2004) The question is for whom is this affordable? This is not intended to be a witch hunt. There are many positive outcomes from development and this project could provide many jobs to the area. The movement of the New Jersey Nets to Brooklyn could be an important step in re-establishing the borough and generating money and jobs for the region and the state. The discrepancies presented are only a cursory review and are shown here for review, not out of bias, out of fact.

The following are a series of images that come directly from the Forest City Bruce Ratner presentation on the development. The next set of images will show the existing character of the site area and the visual impact of the new development. An environmental impact study has been arranged for the project but not conducted at this time. Issues such as noise pollution, increased traffic congestion, Sun and Shadow study etc have not yet been evaluated. Add to this the true numbers from independent economic studies and other factors such as crime and vacancies and the facts paint a bleak picture. The west side of Manhattan had a proposed stadium project that succumbed to reality when the proper studies were conducted, Brooklyn has a atmosphere, history and culture unto itself that stands to change if this project is completed.





Property Owned By the MTA

Property Owned by the City

Property Owned/Controlled by FCRC

* Property Controlled by FCRC Except Block 1127, Lot 27 (1 unit), Lot 35 (2 units), Lot 48 (1 unit)

Source: Ratner Proposal for the Atlantic Rail Yards Project (2005)

Source Below: UNITY - Understanding imagining and transforming the Yards







Zoning Square Feet:

Arena:	**850,000 ZSF**
Office:	**1.9 M ZSF**
Residential:	**5.5 M ZSF (6,000 Units)**
Retail:	**227,000 ZSF**
Open Space:	**7.4 Acres**

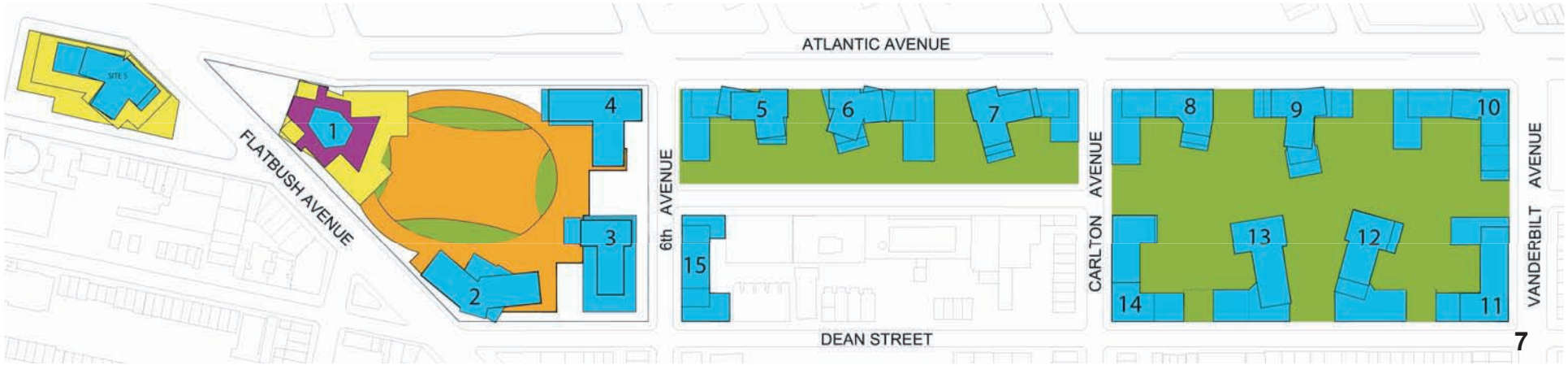
- **Arena**
- **Office**
- **Residential**
- **Open Space**
- **Retail (*in base of buildings)***

Source: Atlantic Yards Arena and Redevelopment Project. Draft Scope of Analysis for an environmental Impact Statement

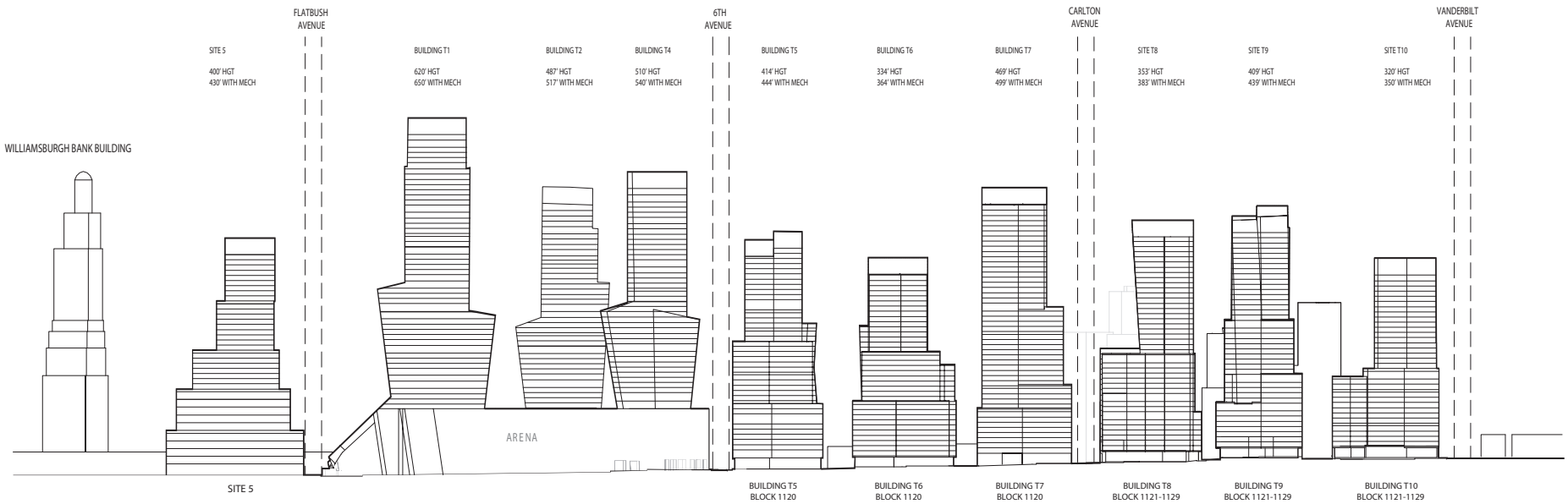
Zoning Square Feet:

Arena:	**850,000 ZSF**
Office:	**428,800 ZSF**
Hotel	**187,000 ZSF**
Residential:	**6.8 M ZSF (7,300 Units)**
Retail:	**227,000 ZSF**
Open Space:	**7.4 Acres**

- **Arena**
- **Office**
- **Hotel**
- **Residential**
- **Open Space**
- **Retail (*in base of buildings*)**

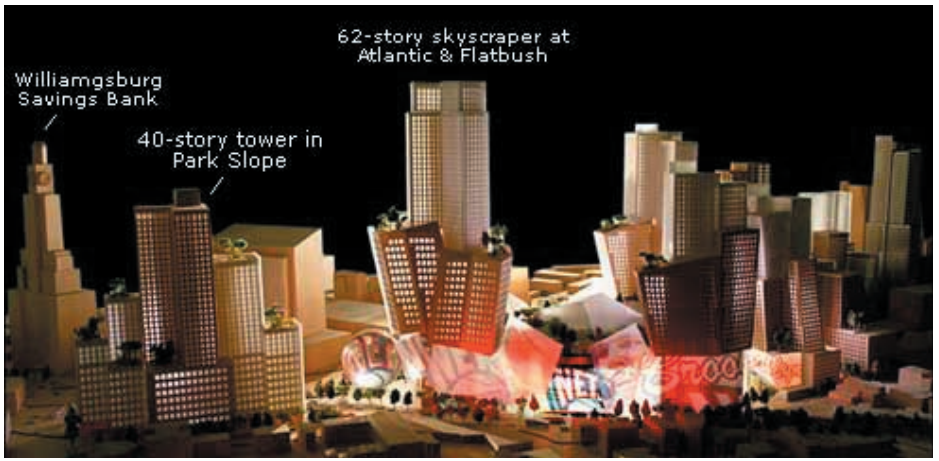


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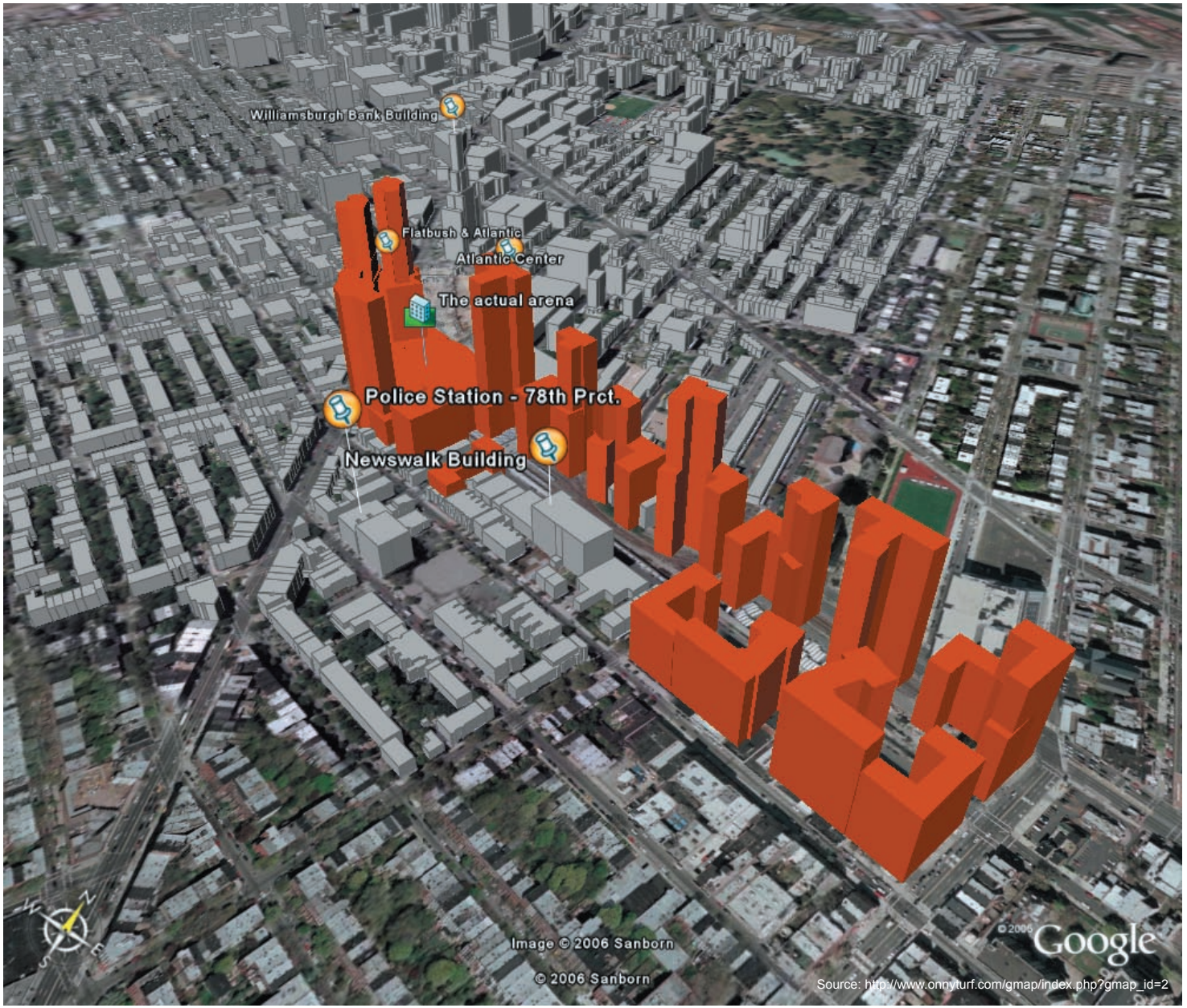
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0 200 400 FEET
SCALE



Source: Atlantic Yards Arena and Redevelopment Project. Draft Scope of Analysis for an environmental Impact Statement

Source: Ratner Proposal for the Atlantic Rail Yards Project (2005)

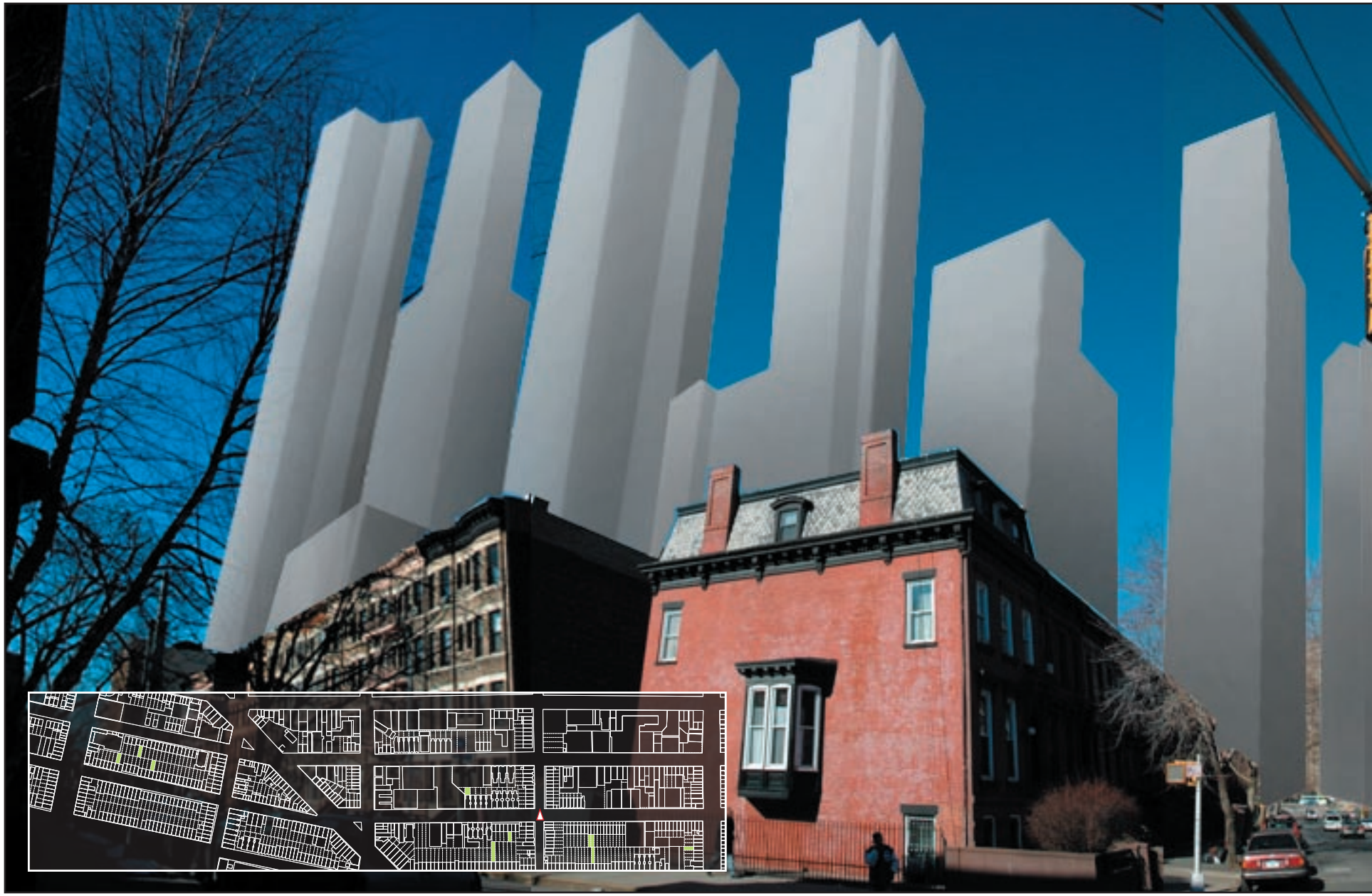

Williamsburgh Bank Building
Flatbush & Atlantic
Atlantic Center
The actual arena
Police Station - 78th Prct.
Newswalk Building
Image © 2006 Sanborn
© 2006 Sanborn
© 2006 Google
Source: http://www.onnyturf.com/gmap/index.php?gmap_id=2



Atlantic and Flatbush Avenues

Source: http://www.onnyturf.com/gmap/index.php?gmap_id=2

Map by Author





Bergen and Carlton Aveune

Source: http://www.onnyturf.com/gmap/index.php?gmap_id=2

Map by Author





Carlton Aveune

Source: http://www.onnyturf.com/gmap/index.php?gmap_id=2

Map by Author





Atlantic Avenue and Clinton Street

Source: http://www.onnyturf.com/gmap/index.php?gmap_id=2

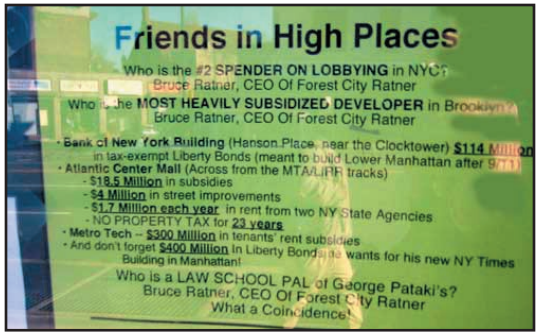
Map by Author

8.4 Community Reaction

Opinions flow freely in Brooklyn, heck, all of New York City. If there is an injustice then there is likely someone with an opinion they want to share. The residents of Prospect Heights that will be displaced by this development have spoken and spoken loudly. There are numerous protest groups, concerned citizen groups, Blogs, new paper articles etc. Groups of designers and artists have developed responses to the project showing how a low rise solution would be a better idea for the space and there is even a group of investors, Extell, trying to out bid Bruce Ratner for the MTA rail yards land. The Extell offer of $100 million seems the right choice over Ratners $50 million. The New York Times has written articles (most con) and there are numerous websites in response to the project. Some are supporters of the project but most are not. Many of the residents and property owners in the area have sold their property already and there are only a few holdouts. At the time the biggest hold out seems to be the MTA. Without a proper environmental study conducted it seems as though the project is currently on hold. Knowing the vagaries of the New York real estate market it is likely the project will happen. The most interesting response I have seen to the proposal has been the numerous signs and billboard, flags and flyers that litter the street surrounding the site. This is truly how the residents seem to feel and they also seem to have the support of the people of the borough and the city.

The following is a brief study of the opinions of the residents expressed through signs. These can be found on side streets and balconies, doors, windows, and stenciled in graffiti. The stadium project may be a success and a boon for Brooklyn or it may become an eyesore and traffic mess in an area devoted to homes and families. In the volatile real estate market of New York there is always a push for development and the money associated with it. Development is progress and progress is necessary. The question arises “Is this the right kind of development for Brooklyn?” The borough has always been an escape from the office building Fiords of Manhattan, a place to get away from corporate iconography in the form of the towering powerful skyscraper. Now, especially after 911, there seems a need for a simpler existence and a more level proposal based on human need instead of the drive of one man. The new development and the stadium can provide Brooklyn with a change, some money, some jobs both temporary and permanent, but can it provide escape and strength to a community that needs it now more than ever? Brooklyn has always been called the bedroom of Manhattan; along with bedrooms come living rooms, dens, kitchens. These kitchens need food and the rail site is a great place to grow it. If the project continues unchecked then at least there should be a McDonalds or somewhere to buy food, eat poorly, and funnel more money out of the community.

Source: Images pages 31- 36 by Author



























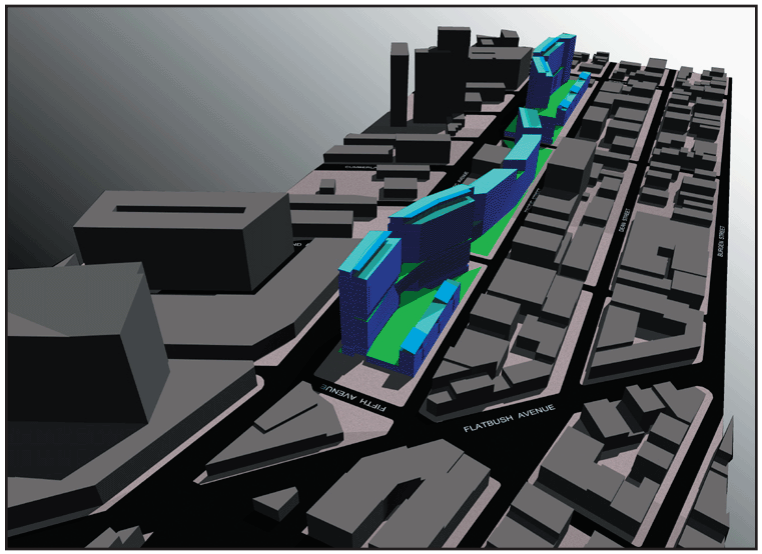


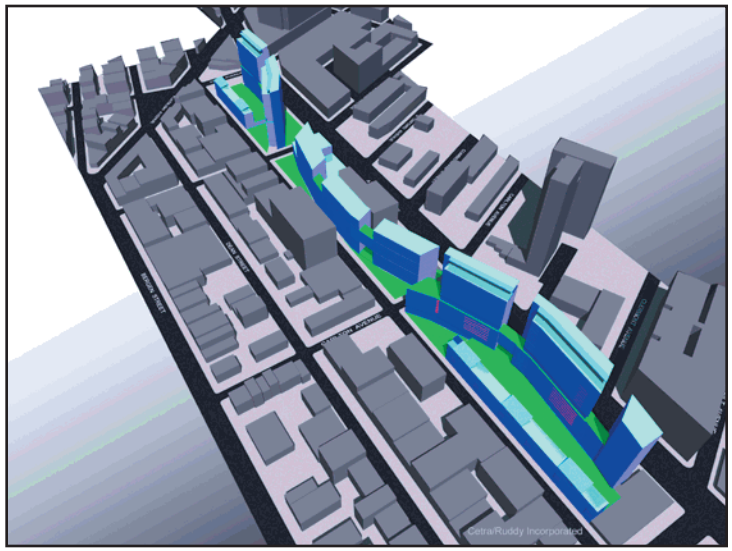


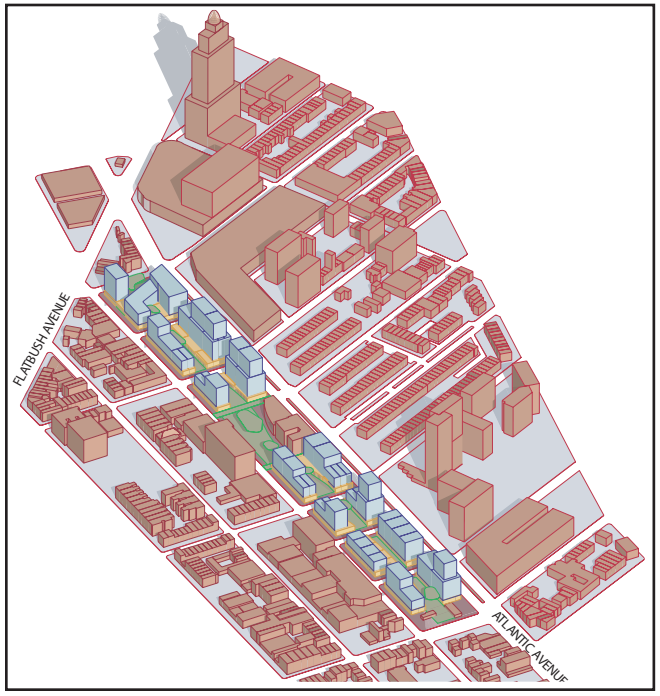
Websites and Articles about the Issue:

http://www.forgotten-ny.com/STREET%20SCENES/ratnerdevelop/underberg.html
http://www.onnyturf.com/gmap/index.php?gmap_id=2
http://dddb.net/
http://www.nolandgrab.org/
http://www.fansforfairplay.com/
http://timesratnerreport.blogspot.com/
http://timesratnerreport.blogspot.com/
http://www.newyorkgames.org/
http://www.ratnerville.com/BrooklynRail
http://www.fieldofschemes.com/
http://atlanticyardsreport.blogspot.com/


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FORCES:
US OUT
US APART
US TO PAY
RATNER'S BILL
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Other Projects suggested for the MTA rail yards site:

Top: Extell proposed development achieving the same density without the need for high rise development. The Extell proposal offered $100 million for the Atlantic Rail Land Site in comparison to the Forest City Brice Ratner bid of only $50 million - Source: Extell Development Group, Numerous Newspapers

Left: The UNITY Project. Another proposal for the rail yards. This proposal is is managed by a group of concerned designers both local and from the city and utilizing the support of council woman Letitia James. Not as dense as the Extell proposal or the Ratner proposal this development tries to maintain connections through the site and provide housing, public space, commercial and open areas http://dddb.net/public/UNITY.pdf





8.5 Evaluation

My personal experience with the area makes me somewhat biased to the plight of the residents. I lived in this area of Brooklyn for approximately 3 years and in New York City for 7 years total. In that time I moved numerous times, living in many of the different boroughs of New York. Brooklyn is truly a unique borough with a life all its' own. Although the crossroad of Atlantic Avenue and Flatbush Avenue, where this development will be located, is somewhat dilapidated it is experiencing a renewal and rebirth that is rooted in the desires of the residents instead of an outside developer. Buildings surrounding the area are being renovated and apartments are being added. The density is increasing without drastically changing the nature of the appearance of the place. Bruce Ratner has an interest in generating profit. He has no love of Brooklyn, its' unique conditions or the people who live there. The residents of the area haven't been consulted or addressed by Ratner and it is clear that his only motivation is profit. The movement of the New Jersey Nets to Brooklyn would be a wonderful addition to Brooklyn but their move shouldn't come at the cost of the neighbourhoods that currently define it. While Manhattan is a dense borough teaming with business and energy Brooklyn is still able to provide an escape and unique situation for all to enjoy. The skyline of Manhattan is dotted with icons of big business, the sky line of Brooklyn is dotted with homes and leisure and life. To continue with this development would change the nature of Brooklyn so drastically that it is unclear if any of it's' charms would remain. Yes this is only a small part of Brooklyn but Atlantic Avenue and Flatbush need to be thought of as the gateway to the heart of the Borough. This massive building exercise will be blight on the borough not to mention a traffic and congestion inducing nightmare. The wonderful industrial buildings that have been renovated into apartments and currently surround the site will be changed from investment to burden. The colorful shops and businesses will be pushed out to facilitate towering skyscrapers and the borough will come closer to becoming it's cousin to the east with its' canyon like walls of brick and metal; fine for Manhattan but foreign to Brooklyn. Pursuing a development or project like urban agriculture will help nurture Brooklyn instead of seek to change it. There is no need of this development and plenty of other open areas that would be better served by new building and a stadium. Keep Brooklyn, Brooklyn and let this development move somewhere else.

8.6 Conclusion

It's impossible to predict the future of the Atlantic Rail Yard Site but it seems important to consider it. There are many people who will be affected by this project and in ways not obvious now. If there is such opposition to the project then maybe there needs to be other options. The development could still go forward and the stadium could still be built; but by using certain strategies that are more people friendly and less economically driven a better project will emerge. No one is suggesting that Bruce Ratner doesn't make a profit from this project or even that he is acting in a malicious manner, he simply isn't responding to the questions or desires of the residents. Proposing that this site become a center for urban agriculture may not be an answer either but it certainly can benefit the residents and community in tangible positive ways. Food and increased health consciousness, jobs, training, education and self sufficiency can be created through using this site to grow. The scale is more in line with the scale of existing Brooklyn and the project reaches out to the community instead of imposing itself on the community. Many of the same techniques and goals of the Ratner project will exist within the urban agriculture proposal for this site. It has to make money, be run as a business and be successful, but the benefits reach deeper than 10 years of temporary work and more places to shop and send money out of the community. My bias is obvious but as a former resident of the area I have a hard time separating myself from the plight of the community. Bruce Ratner already has two developments in the neighbourhood and their success is questionable. The Atlantic Mall (center) was a dying commercial center when Ratner decided to build the Atlantic Terminal building. The result was a change, things seemed to look up for the area, but that was immediately after the terminal opened. What will become of the two development in 10 years. In 10 years the Atlantic Mall went from new development to vacant dying development. The opening of the Atlantic Terminal building in 2005 re-invigorated the Mall, what happens 10 years from now? Is the stadium project needed? No! Is there a chance it will have a positive affect on the community? Yes. Is there also the chance that it will become a blight on the area? Yes.

Images, Sources:

All Images Sourced on Page

Part 3 – Design Study

9.0 Design Proposal

9.1 Design Proposal
9.1.1 Site Diagrams and Description
9.1.2 Study Area Photos
9.1.3 SPIN Farming Method

9.1 Design Proposal

This design study seeks to address the possible phases of an urban agriculture project, the role of the participants, the community and a designer. Although initially there may not be a need of an architect or engineer it is proposed that, after the project has established a foot hold and become a viable business through the strategies outlined in this thesis, the services of a designer will be needed to bring the project to the next phase. The role of the designer is to emphasize the goals of the project, facilitate the growth of the project and establish an identity for the project and the role of urban agriculture.

The design study will illustrate three steady states of the project. The first state is the initial startup and development of the project. This state includes strategies for growing in an urban center using limited resources and relying on a small amount of available start up capital. The second state will illustrate the project as it achieves some permanence within the community and existing businesses. This state will show how re-investment of earned income can help the project grow and change; providing community amenity and positive social influence. The final stage is the future stage of the established and successful urban agriculture project. This stage will describe the expansion of the project to larger lots and support facilities for the project. Although there are many ways an urban agriculture project can develop and exist these three states are developed using the research contained within this thesis. The ideas encompassed within the design will be discussed throughout each stage and the specific design decisions will be based on the conclusions of the previous sections. Many growing methods are possible and, as mentioned in section 7.0, yields can vary depending on methods. This design proposal will utilize SPIN farming which describes growing methods, yields and possible profit. This method is thought to be the most current and reliable based on the author's research and combines current practices with recorded results to produce a reliable base for this project. As the project develops and different stages are reached SPIN farming methods will still be used but animal husbandry, traditional growing and secondary products will be added. The backbone of the project will be based on SPIN farming but not solely. Variety and specialty markets are important aspects of creating a viable urban agriculture project and the existing market of New York City (and similar urban cores) will support exotic and specialty items such as bee honey, rabbit and other livestock and preserves etc. SPIN farming methods will be described in the next section.

Certain assumptions are made about this project and its inception. Although the positive benefits of urban agriculture are numerous there is little common knowledge of them in our society. Urban agriculture is a survival necessity in third world and emerging counties but still in its infancy in North America. These assumptions are necessary to the thesis and the project and through them the benefits of urban agriculture will be better able to be described through the unimpeded development of the project and its design.

Assumptions:

-There is a desire amongst the residents of the study area for an urban agriculture project

-The participants in the project are primarily these same residents.

-Zoning and By-laws have been amended to allow for urban agriculture and related animal husbandry (the specific zoning and By-laws of the study area have not been researched extensively)

-The participants are familiar and expe rienced growers or employ experienced growers.

The available market climate and business atmosphere is supported by personal experience within the Brooklyn area. These markets and the acceptance of urban agriculture among the established business community are addressed in the section that describes a possible business model.

There are many types of land and space available for growing. As outlined in the section on yields (section 7.0) there are many different types of spaces that can be used for growing in the conventional manner, as urban agriculture sites or in a limited capacity such as container growing. While all of these areas provide possibilities for growing only actual vacant lots and backyards will be addressed in these design studies. Use of some of the other types of spaces such as rooftops and school yards, will be discussed in brief

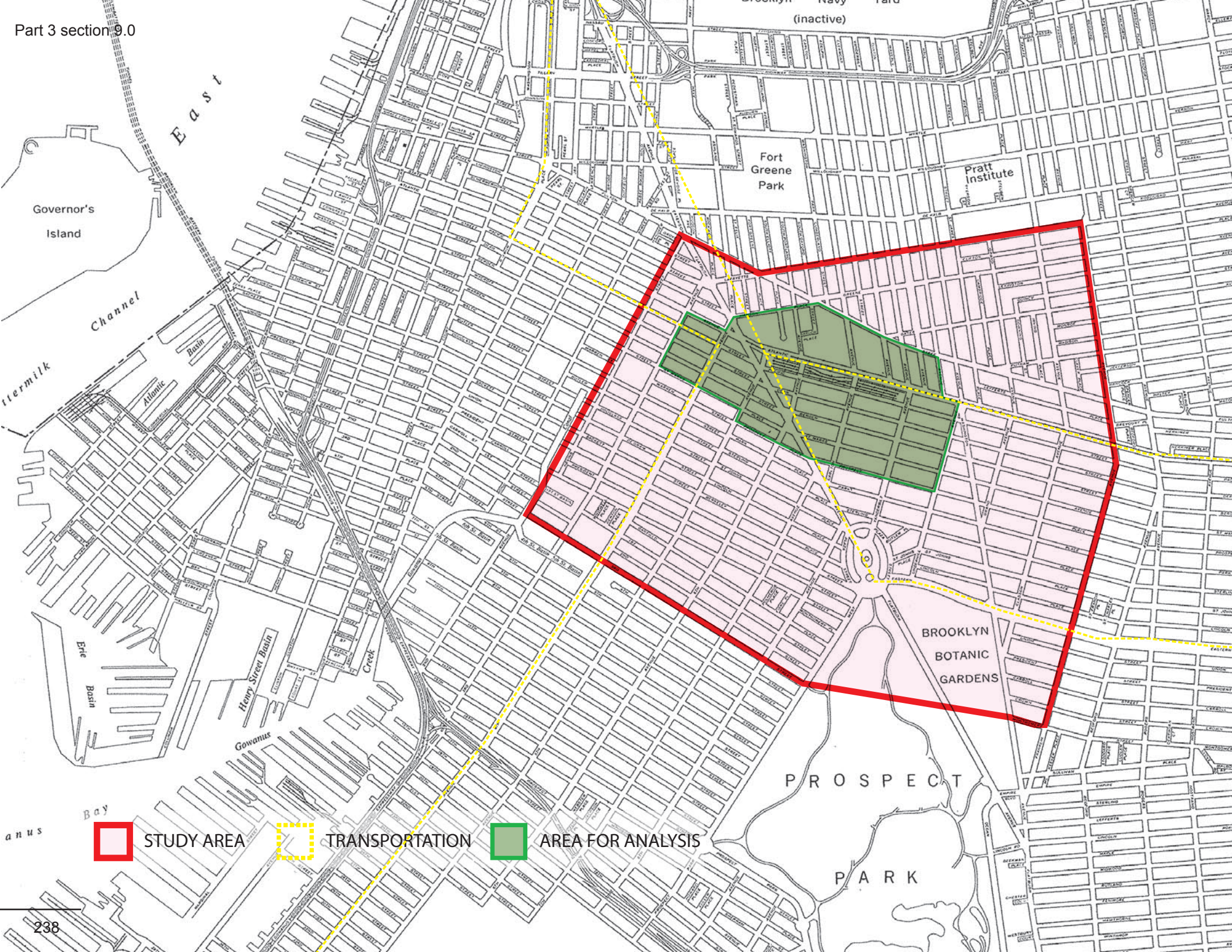
as project contributors. The urban agriculture practitioner should examine all possible spaces that will support growing and make the best use of these areas. This section contains an introduction to the study area and site and will include a section on the possible areas for urban agriculture and growing within the study area. The section is presented primarily as a descriptive photo essay on the study but will also discuss the different areas for growing as laid out in the section on yields. The reason for limiting the design study to only backyard and vacant spaces is to present a reasonable and common scenario for urban agriculture. Although parking lots and parks are excellent places to grow fruits and vegetables the logistics of securing these areas are difficult For each phase of the project six parcels of land, both vacant lot and backyard, are used to illustrate the phase and design strategy. An initial analysis of each of these parcels will be presented in sections 11.4 - 11.6.

Site Description:

The general study area encompasses nearly 200 blocks of the borough of Brooklyn. The definition of the general study area is that it describes an area of reasonable distance from the main study area that will most likely be influenced by the practice of urban agriculture in the main study area. Specific census figures are not listed but the general study area shares similar demographics with the main study area. The main study area encompasses approximately 40 blocks within the general study area. These blocks are contiguous and support many uses from schools and churches to businesses and residences. The main study area centers on the original site of the Atlantic rail yard and radiates from its center. The useable land area of the main study area breaks down to approximately 84762 square metres (20 acres) of vacant lot and 73123 square metres (18 acres) of backyard space. There are nearly 20 + existing community gardens in the area and the Brooklyn Botanical Gardens and Prospect Park sit at the Southeastern edge of the site. Within the business community there are numerous restaurants of differing cuisines and qualities, supermarkets, corner stores (Bodegas) organic markets and co-ops , farmers markets, bakeries and food production enterprises. There are 10 + subway lines that move through the main study area and have stops at numerous places within the site. The Long Island Rail Road serves the site and uses the Atlantic terminal, which sits adjacent to the Atlantic rail yards as a hub for commuter trains. The major road ways are Flatbush Avenue which runs east west, Atlantic and Pacific Avenues which also run east west, Fulton Street to the north, 5th, 6th and 4th avenues that run north / south and Vanderbilt Avenue which runs north / south. The mean income for the area is approximately $44,000 annually with incomes as low as $15,000 and as high as $120,000 annually (NYC Census, 2002) 17.7% persons are below the poverty level and 12.9% families are below the poverty level.

The homes are typically Victorian brownstones with between 3 and 5 levels, multi unit residential apartment buildings (low to mid rise) and some single detached homes. Most homes are listed as multi unit because many residents have converted the lower level, or garden level, floors of their brownstones to apartments for extra income. Typically the brownstone units are single family homes with a separate garden level apartment. The majority of residents (typically 60% and above) are 18 years and older with approximately 15% of the population over 65. Density creates a scheme that sees the majority of apartments listed as single resident occupied and the majority of the population is between 22 and 65 (NYC Census, 2002) with persons per household between 2.60 and 2.07. The cultural majority is listed as primarily Black and Hispanic with White and Asian and other listed as the remainder of the population. Of course these numbers vary depending on what part of the main study area is being considered. Areas closer to the Bedford Stuyvesant differ from those areas closer to the Park Slope sections. There is a good mix of ethnicities, cultures, economic means and professions. This site was chosen for numerous reasons but diversity played a role. (see section 4.0 for more census numbers and a description of the borough of Brooklyn)

The main study site is a wonderful and unique place to live with many different cultures, origins, religions and economic levels represented. There is an emphasis on the residential nature of the area juxtaposed against the corporate realities of Manhattan. People live, work and grow in the study area and urban agriculture presents a way to satisfy each of these pursuits, and, strengthen the community from within. The following pages illustrate the study area and the demographics.

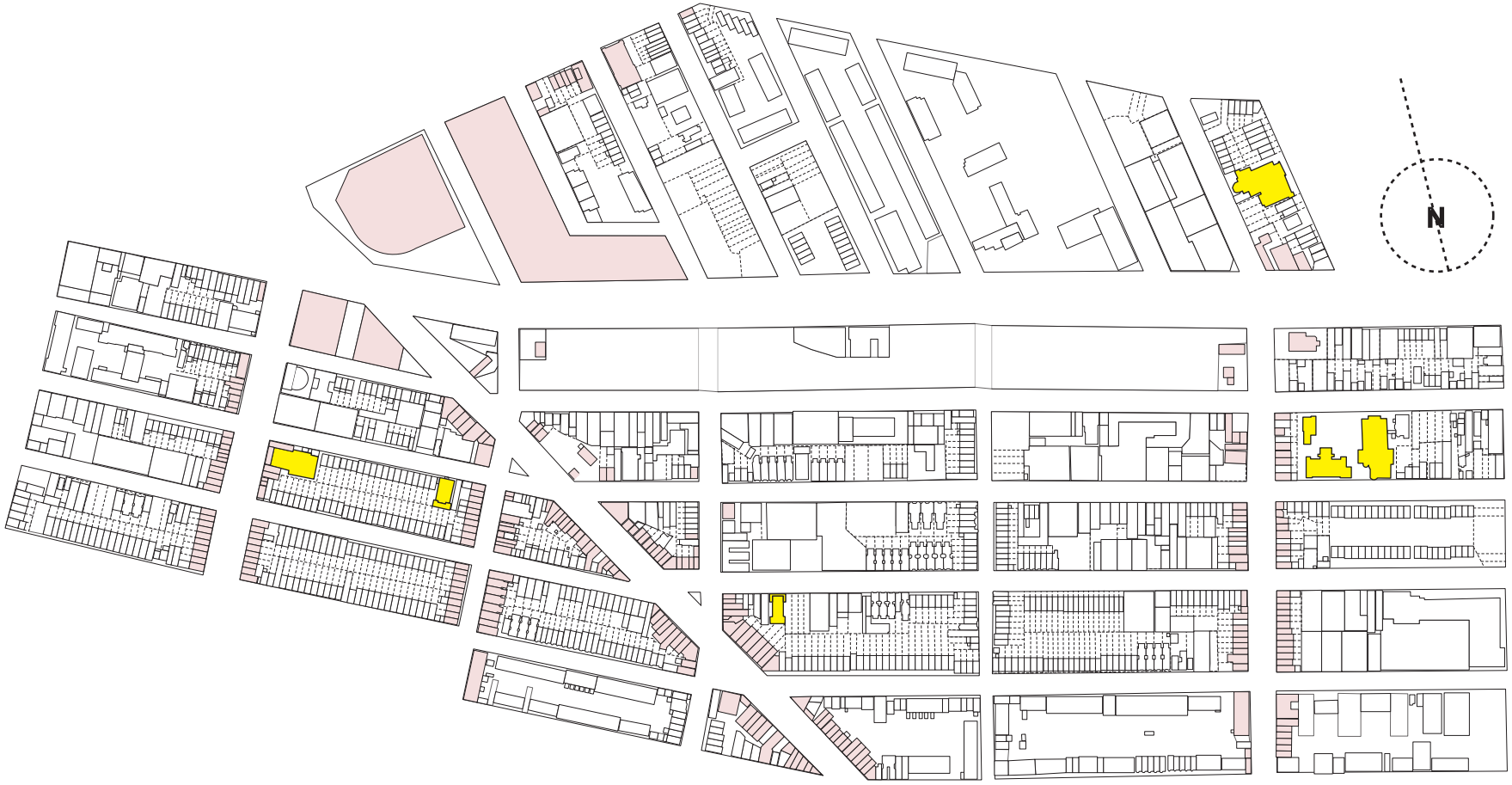

East
Governor's Island
Channel
Basin
Atlantic
Erie Basin
Henry Street Basin
Gowanus Creek
Gowanus Bay
(inactive)
Fort Greene Park
Pratt Institute
BROOKLYN BOTANIC GARDENS
PROSPECT PARK
STUDY AREA
TRANSPORTATION
AREA FOR ANALYSIS


Red Hook
Gowanus Canal


N
BLOCKS
BUILDINGS
VACANT SPACE
BACKYARD
PARKING LOT
PLAYGROUND



BUSINESSES



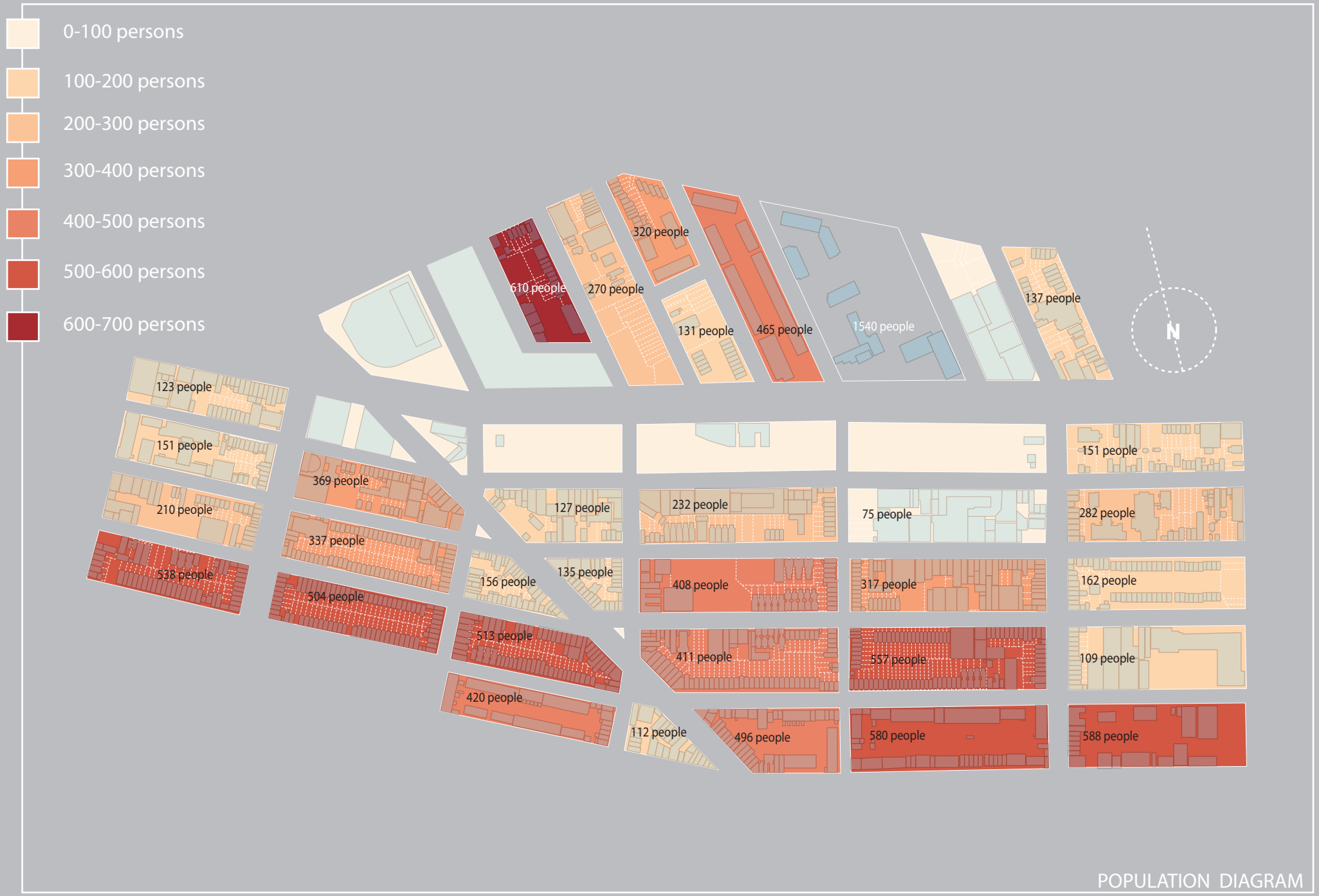
CHURCHES

BUSINESSES


N
SCHOOLS
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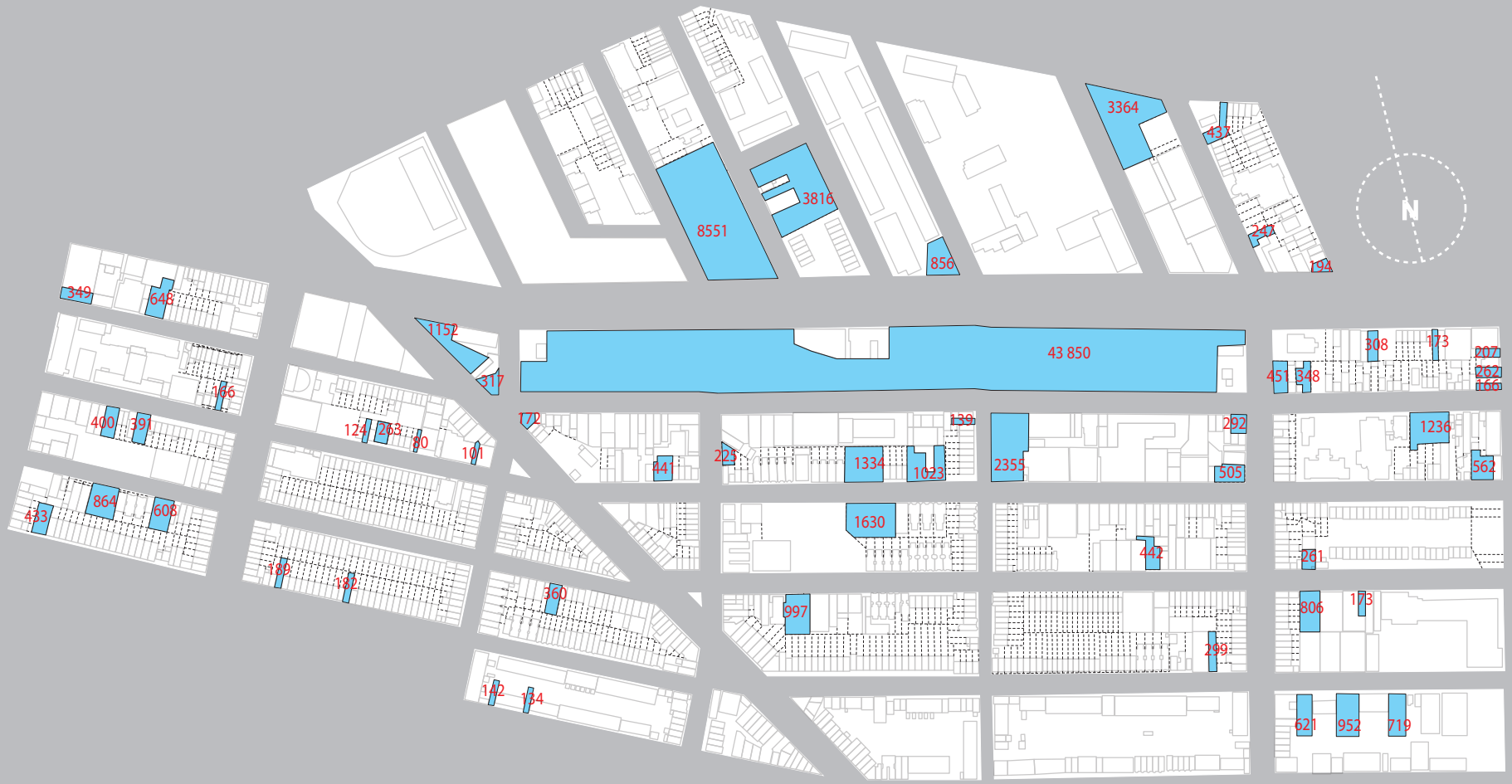

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RESIDENTIAL
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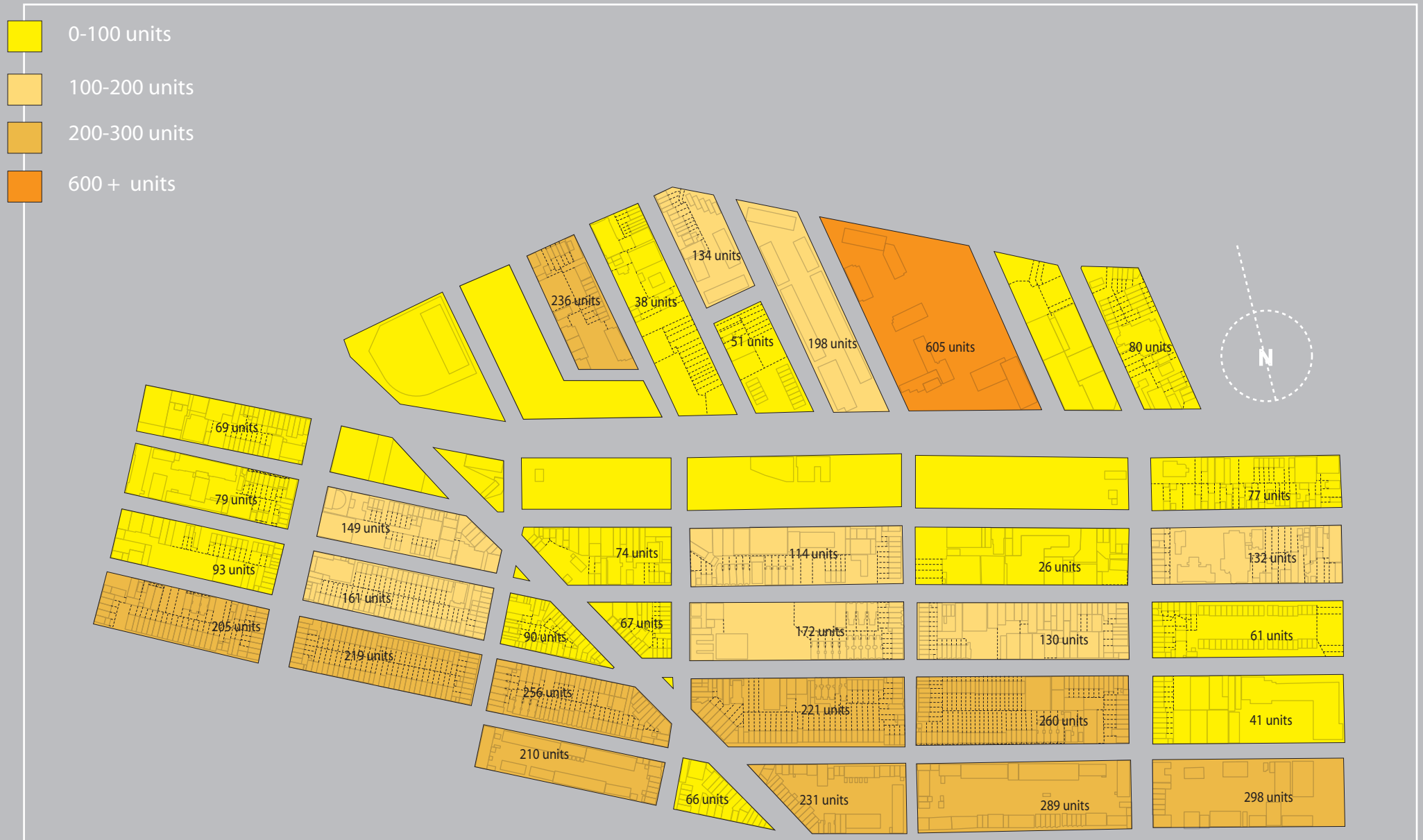

0-100 persons
100-200 persons
200-300 persons
300-400 persons
400-500 persons
500-600 persons
600-700 persons
610 people
270 people
320 people
131 people
465 people
1540 people
137 people
N
123 people
151 people
210 people
538 people
369 people
337 people
504 people
127 people
232 people
75 people
151 people
282 people
156 people
135 people
408 people
317 people
162 people
513 people
411 people
557 people
109 people
420 people
112 people
496 people
580 people
588 people
POPULATION DIAGRAM

VACANT LOT

* AREAS IN SQUARE METRES

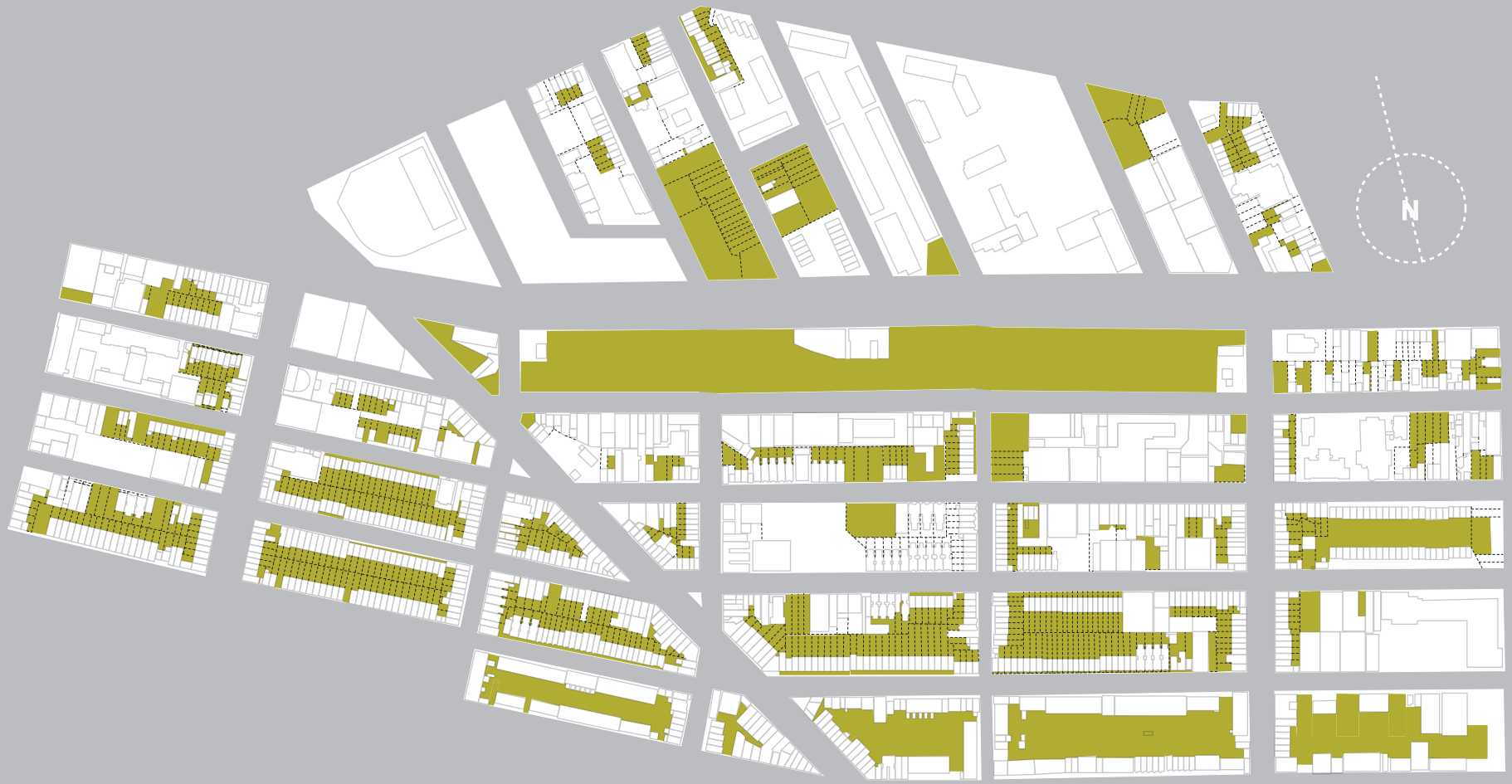


VACANT LOT DIAGRAM



UNIT COUNT DIAGRAM

COMBINED VACANT LOT AND BACKYARD GROWING SPACE



TOTAL GROWING AREA DIAGRAM

9.1.2 Study Area:

When considering the program of the study area it is first important to understand the composition of the study area. Before proposing design concepts for the vacant spaces, backyards and roof tops of the study area the next chapter plans to illustrate the nature of these spaces as they currently exist. As part of this study a brief written description will also be included to describe some of these conditions. Although fairly typical for most of Brooklyn, and definitely the study area, this analysis should not be considered as complete. The public, private realm also exists as a barrier to correctly viewing and documenting all the conditions present in the study area. This analysis should be thought of as a documentation of most of the typical conditions in the study area and greater Brooklyn. In addition these conditions can be thought of as typical for many of the boroughs in New York City and other Urban centers in the world.

Focusing on the study area it is possible to see approximately Twelve typical conditions . These are Backyards, Front Yards, Rooftops, Separations Between Buildings, Gaps at ends of Blocks, Existing Community Gardens, Parking Lots, Parks, Schools Lots, Vacant Lots, Derelict buildings and Street Scapes. Instead of proposing new constructions in place of older existing constructions we can first look at the possibility of utilizing these existing conditions for growing and programmatic elements in the study area. After analyzing these areas we can then propose design projects for the spaces that can assist the community in using these spaces for growing, either passively or actively. Some spaces are already part of a community initiative to grow and do not necessarily need to be re-considered or modified.

1 *Backyards*: Typically separated by fences and walls, removed from the street by one layer of houses. Used as outdoor space either shared in multiple unit dwellings or private in single family homes.

2 *Front Yards*: Most often consist of little planting and green space and are mostly concrete and stone. Sometimes used to park cars, as a front terrace or used to accommodate stairs and a secondary entrance point to the basement of brownstones. These spaces are sometimes planted with flowers and vegetables but primarily are used as a decorative planting space. Separated from the street by a low iron fence or it's more modern counterpart.

3 *Rooftops*: On single family dwellings are sometimes used as additional outdoor space dependent on access. On multiple family units the roofs are commonly used as shared outdoor space. Apartment blocks with multiple units also share these spaces provided there is access. The rooftops in much of Brooklyn take on a more contiguous nature than in separate but adjacent homes. Many times flower boxes, small planting beds and some container gardens are placed on rooftops; also sometimes more extensive tree planting is visible. The rooftops are the most separated private space in Brooklyn even more so than backyards and interiors of homes.

4 *Separations Between Buildings*: Most brownstone and single family houses in Brooklyn share party walls or are built so closely together that they are seemingly one. In some instances there is space between buildings that provide some access to the back of the house or an additional access point. These spaces range from large enough to park a car to a small sliver between buildings.

5 *Gaps at ends of Blocks*: Using co-ordinate with a backyard the spaces at the corners of each block are usually constructed so the sidewall of one house abuts the end of a backyard of another house. This creates a condition where some or all of that backyard is visible from the street and provides a connection between the private backyard and public street. These spaces are perfect existing conditions for use as connectors between street and backyard and between blocks as part of a path system, a place to provide visual connections between spaces and an area to build within depending on the space.

6 *Existing Community Gardens*: are Plentiful in Brooklyn and exhibit a desire by the community to get involved in growing and community events. These spaces are more regulated and less inclusive than what this thesis proposes but they are a good start to the idea of growing locally. Comprised of both vegetables and decorative plantings they exist in vacant lots in the middle of blocks and sometimes more organized and public spaces like prominent street corners.

7 *Parking Lots*: are also plentiful in Brooklyn and can be anything from a paved and painted parking surface to an abandoned lot or yard used to store old vehicles. In response to the obvious need to use these spaces to park cars they still posses a disused area that can be used for planting. This area may be of the periphery of the lot, in movable containers or set above the space needed to park cars.

8 *Parks*: In Brooklyn range from large public parks like Olmsteads Prospect Park or Fort green park to small spaces between homes or at the intersections of roads. They are usually separated from the street by a fence, a row of planting or a copse of trees. They consist of pathways, fountains and benches to sit and contemplate the space or get out of the sun. In some cases they contain a semblance of the community garden and are planted with decorative plants.

9 *School Lots*: are probably the most widely used public spaces being utilized even on off periods as place o play sports and other recreational activities. Probably for ease of maintenance they are almost always completely paved with a possible soft synthetic soft covering area for playgrounds. Sometimes there are trees planted at the perimeter either as part of the interior space or as separation from the street at the exterior.

10 *Vacant Lots*: are the most plentiful space considered for growing. They exist in numerous form and in numerous adjacencies. Sometimes they are over grown and sometimes they are completely paved. They are sometimes fenced of and walled of with plywood hording or in other cases the separate two brownstones and provide a glimpse into the backyard areas.

11 *Derelict Buildings*: are most often left in place instead of being completely removed and provide an ideal opportunity to be re-used as places to grow. In some cases they are abandoned brownstones and sometimes they are large factories and warehouse buildings. These properties provide a existing structure on which to base a new structure or support building.

12 *Street Scapes*: The common view of the streets in Brooklyn are tree lined streets of concrete and paving. These spaces should be looked at in more depth as possible areas to use for growing or changing the nature of the existing conditions.

All of these spaces are either public or private and it is obvious that there should be some consideration of the fact that the privately owned and publicly managed spaces would need to be acquired or loaned to facilitate local growing on a community scale. This thesis assumes that the desire for the community to grow exists and that these spaces are available in some manner for this function; either as community managed or privately held but contributing to the greater project.

The following chapter shows these spaces in more depth and numerous examples of typical conditions. The pictures were produced over a period of 9 days in July of 2005 and show not only the spaces and conditions but also the lush nature of the existing flora in the area. Brooklyn is a perfect place to use as a case study for the purpose of local growing but these ideas and approaches should be considered as possible in many different places and in many different conditions that require additional analysis but can most likely be satisfied in a similar manner and with similar design approaches making these concepts applicable to most cases.


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1BACKYARDS

Backyards in Brooklyn are like a personal private oasis. Although typically more contiguous than a suburban backyard they are usually very private places separated by fences and hedges, trees and walls. Backyards are a very special space to New Yorkers. Outdoor space is highly valued and a premium to those people who live in the rabbit warrenesque apartments of Brooklyn. Even those privileged enough to own their own brownstone treasure their outdoor property . Asking the owners of property with backyards to share their space with others for the purpose of growing could meet with negative responses. Still the backyard should be considered as an important and integral part of any urban growing initiative. If just a quarter of the backyard area in the study area was used enough produce to feed the neighbourhood (plus) could be produced. Backyards can also be looked at as a way of moving people through the study site and the different conditions that backyards present in the study area are illustrated in the next chapter.

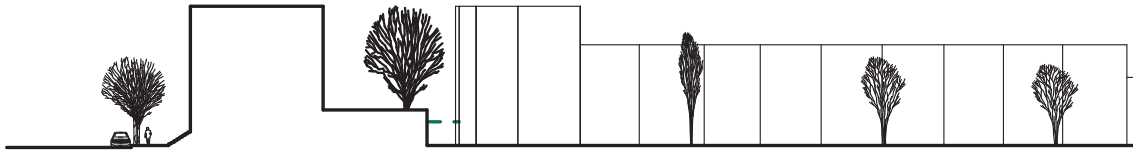




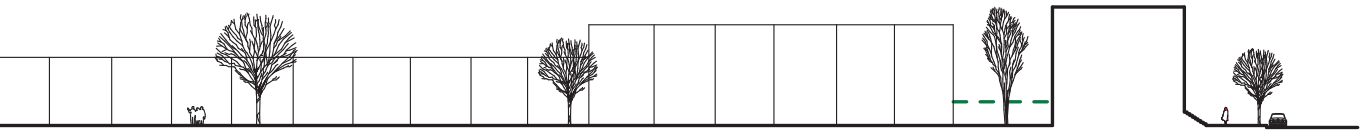
Backyards

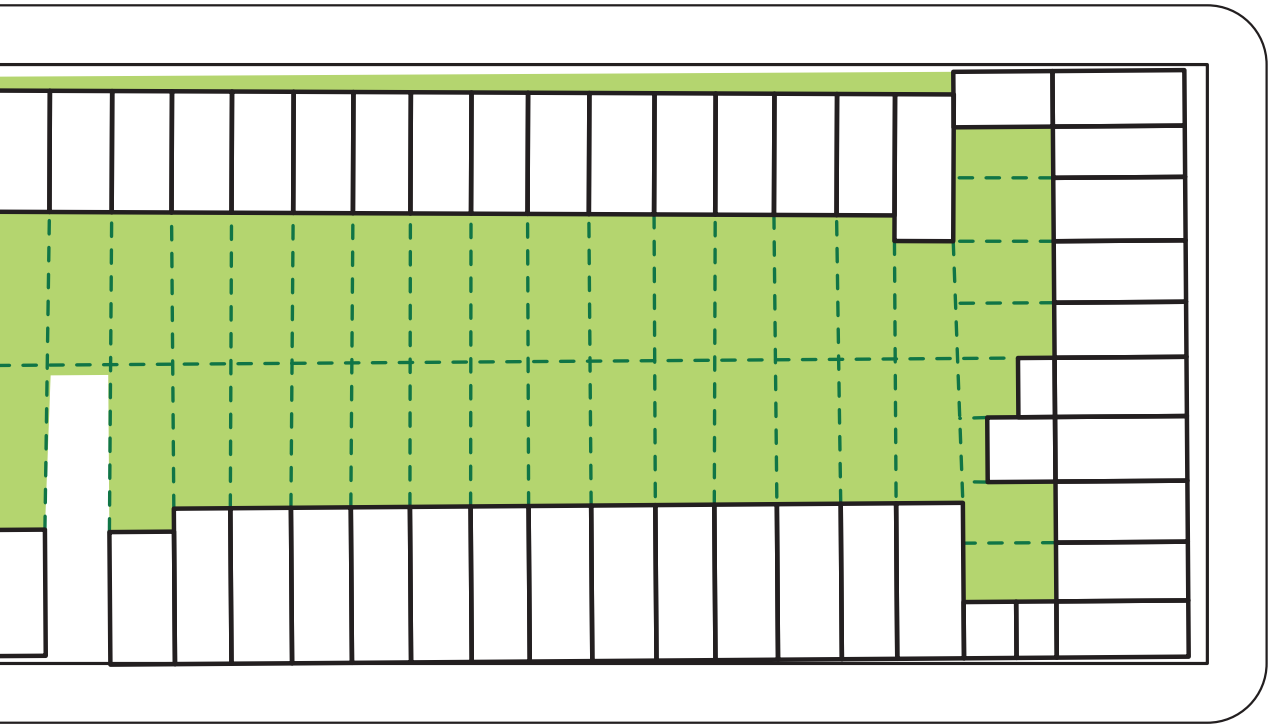
Are a very unique breed within Brooklyn. The typical street is very much concrete and steel, cars and numerous pedestrian. The backyard provides the home owner, or apartment dweller who is lucky enough to have access to a backyard, a place to go and do something that other have to go to a shared space like central park to enjoy. Like the homes surrounding them backyards are varied in form and construction and used in many different ways. The Backyard may be paved, It may have a water element, it can be filled with trees or barren and filled with gravel. Most of the backyards in the study area are the same width as the house they accompany and stretch for half the interior lot. Sometimes they are little used especially when attached to a multi -family dwelling or multiple unit apartment. Other times they are as utilized as the house itself an privy to parties, BBQs, weddings and other functions.

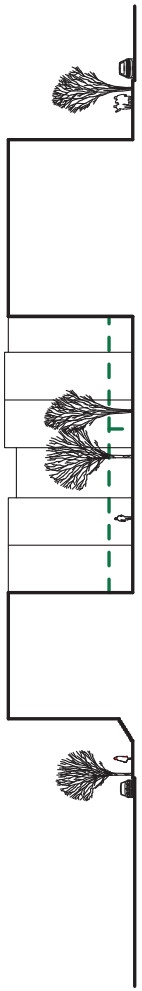
Some Backyards are paved over and used for parking and still others are completely engulfed by an addition or other out building. On the streets with commercial properties like 5th Avenue and 4th Avenue they become part of the business. In the case of a restaurant they are utilized for outdoor seating areas or much needed kitchen space. Some backyards sit adjacent to community gardens and vacant lots others sit adjacent to a side street and, when veiwed from the street seem like portals into another universe. Like Backyards familiar to us all the backyards of the study area are varied in form, function and purpose.















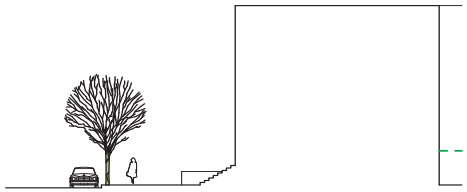






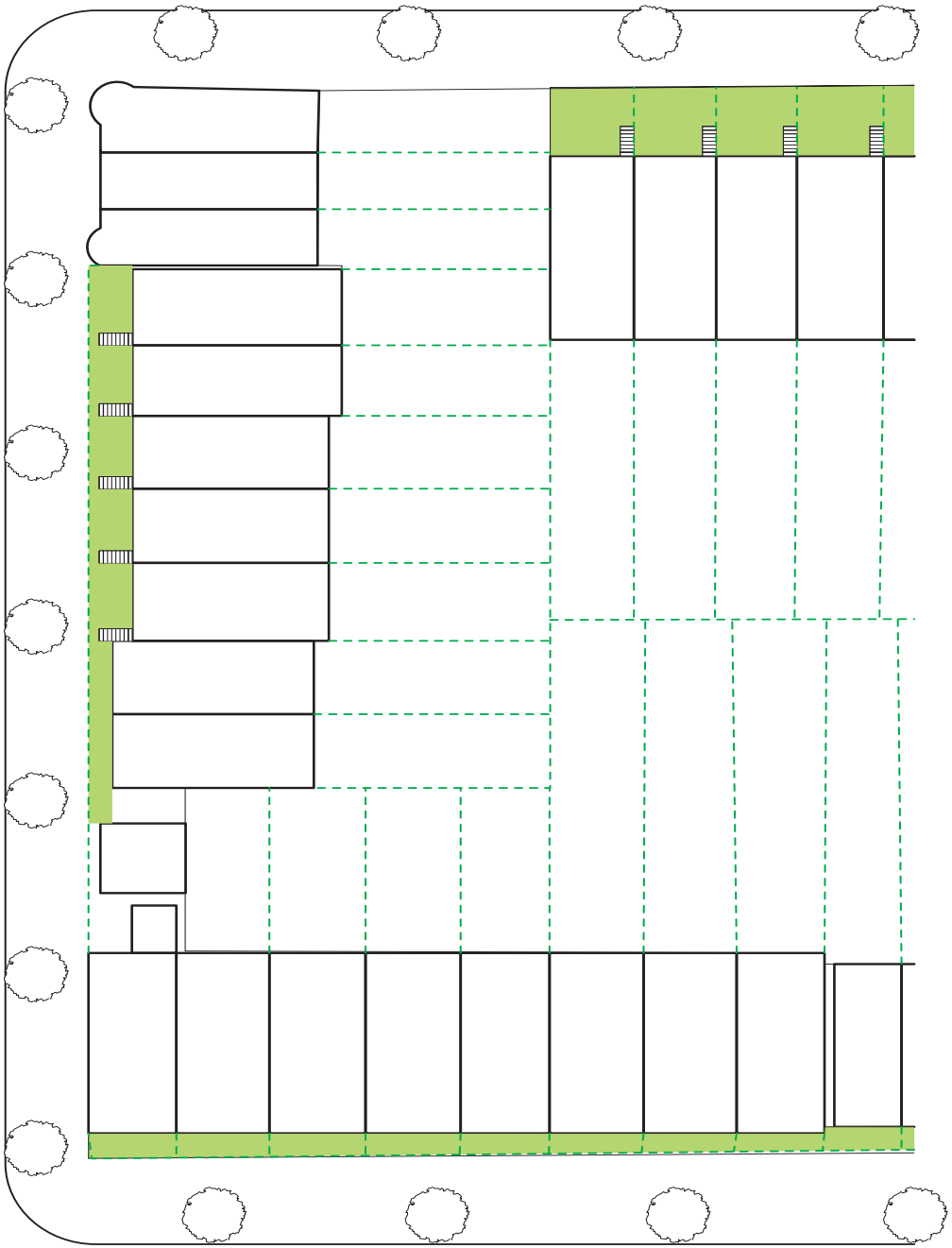
2FRONTYARDS

For the most part the front yards of Brooklyn are paved or even non-existent. They exist as a barrier between street and private home and tend to be comprised of simple planting, concrete and paving, a stair and a possible second entrance to the inlaw suite or basement. The division of spaces is further emphasized by the use of an iron fence and gate, with loafer spikes. A larger stair wall can also be used to begin to separate public and private spaces and heavily planted spaces provide the most thorough separation.



Frontyards

The front yard and front stoop is the quintessential image of Brooklyn and New York. Groups of kids hanging out on the wide front stoop in the summer time watching people go by and the day turn into night. That stoop is the bridge between the city at large and the private interior space of the house. The frontyard is the mediating element that is a barrier, sometimes literally, to the street and the city. The nature of the Brooklyn frontyard is anything from non-existent to heavily planted and used. The front yard can be a small window box sized garden or a long patch of grass . The front yard can be part of a larger image of yards stretching down the block or sit on a corner and wrap the side of the house. Sometimes planted with flowers, the odd vegetable and trees, the older parts of Brooklyn still have working gas lamps in the front yard although probably retrofitted to use modern natural gas. Sometimes the frontyard is barren and mainly for show other times it is an extension of the house storage and all manner of item is stored there from kids toys to large art pieces. There are yards which allow access to the basement or separate ground floor apartment through a door entrance located under the stairs and there are front yards that take on the role of front lobby for apartment blocks. The interior space so maximized that the lobby has been converted to apartments and the frontyard serves as the grand entrance to the building. The fences surrounding the frontyards are old iron and painted black, they have spikes on top of some to stop people from sitting and loafing on them and still others have become like the typical back yard fence and are weaved steel fences extending six plus feet in the air. The frontyard is the barrier, the separation the mediator between public and private. It is the first face of the house and the last vestige of private space before the street. The front yard is as functional or decorative as the owner decides and a typical component of the study area and Brooklyn.






Iglesia Pentecostal
Jesu Cristo. INC





4 ROOFTOPS

An exclusive castle tower without ramparts or a King. Sometimes home to flocks of trained pigeons, other times a place where the homeless sleep, An area for an exclusive penthouse or some other way of looking down on the city. Rooftops are both versatile and functional. Using these spaces to bring the vegetables closer to the power of the sun is a necessity.

Rooftop spaces that exist between two higher buildings offer a unique and enticing condition. Not only can the roof top be utilized for container gardening and other types of growing but so too can the space above the roof between walls. These walls may support a vertical trellis, a series of tiered gardens, other hanging objects or even a structure of some sort braced against the two walls. Isolated from the ground by a minium of one story these space begin to suggest an area used as both a place to grow and place to escape the street. Combining functions a trellis provides a place to grow vine vegetables and a place of repose.

The wall adjacent to the rooftop can also be used as a vertical surface to grow on. The surface may be adhered to with wooden lattice or possible support for a system of planters or hanging baskets. Containers that sit on the roof top temporarily (in season) can use the lattice as support for vine vegetables and flowers. A rooftop can also accommodate water features and may even work to be a filter for storm water. In place of growing vegetables an extensive green roof will benefit the community and also work toward reducing the demand on city resources like plumbing, grey water supply and even electricity. A green roof helps cool the environment and the buildings. The more lush a community the more comfortable.

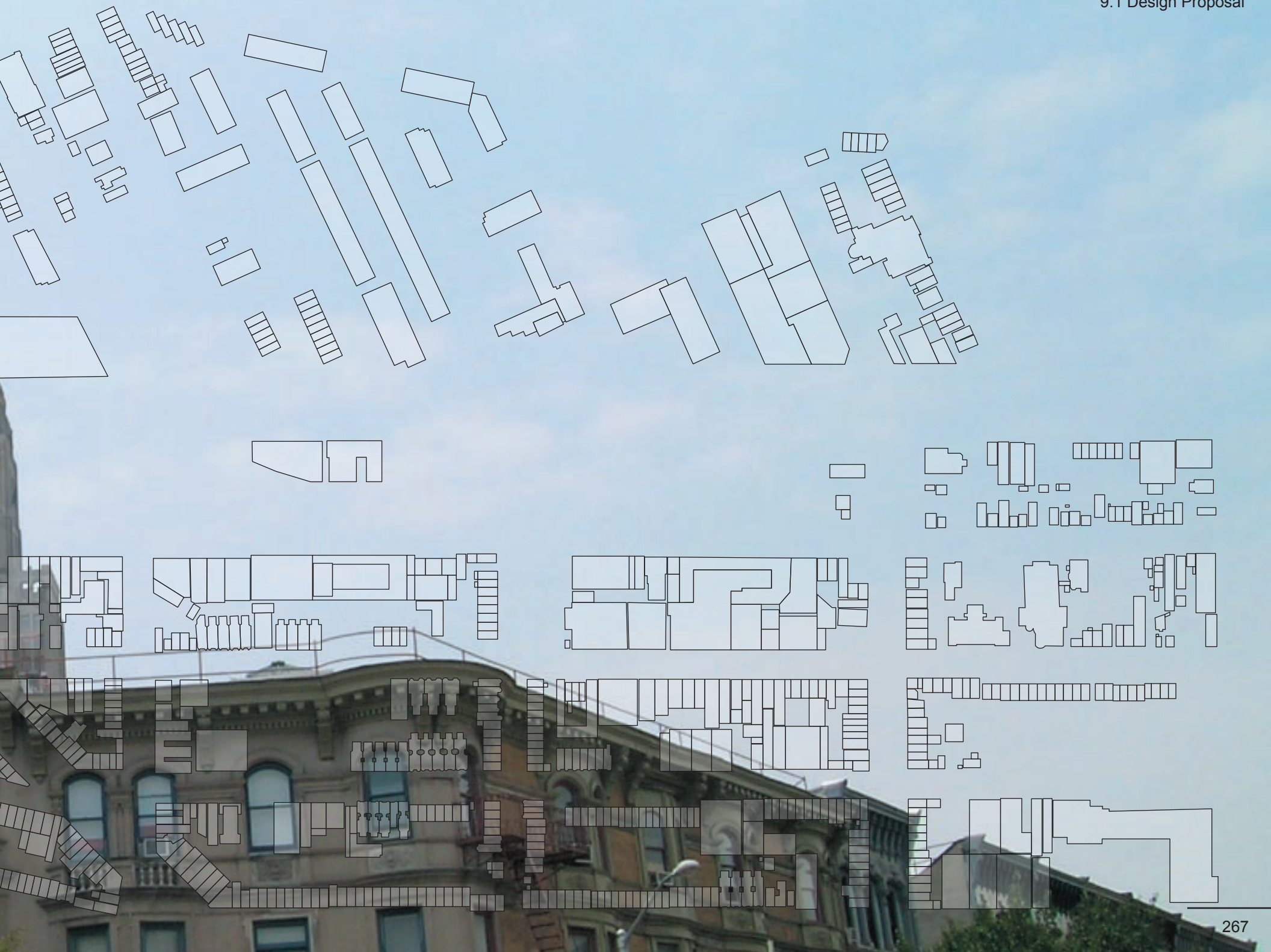




R o o f t o p s

Probably the most exclusive spaces in New York. Every building has one but not everybody has access. Most roofs serve only the one function of shelter from the elements but the number of roofs that also accommodate a roof deck, outdoor terrace, or some sort of access are also numerous. The next best thing to a backyard (or possibly better) is a roof with access. More than a private space similar to a backyard, removed from public view, and much more than a barrier between the city and the home roofs combine these two conditions and make for a private area removed from normal hustle and bustle of the city. The roofs in Brooklyn residential neighbourhoods are typically similar in height and in dimension but there are different configurations. Single family residential units tend to have some roof access in the form of a hatchway or ladder access and still others have used the roof space to expand their interior or recreational outdoor space. Multi unit homes tend to not have roof access as the access would have to be through some persons apartment. Multi Unit apartments tend to share the outdoor roof space and quite often provide a deck space for tenants.

roofs are great places to plant crops because they usually have very good sun exposure. Container gardening is widely practiced on Brooklyn rooftops from a simple planter for decorative plants on a shared roof terrace to more extensive planting on private roofs. Some buildings go as far providing a system that supports tree growth. Rooftops also tend to incorporate other elements such as trellises, covered spaces , shared common rooms and even pools. The Brooklyn rooftop takes on many forms and many functions and is a common component romanticized by many and available to few.






NO PARKING
NOT 5 MINUTES
NOT 30 SECONDS
NOT AT ALL

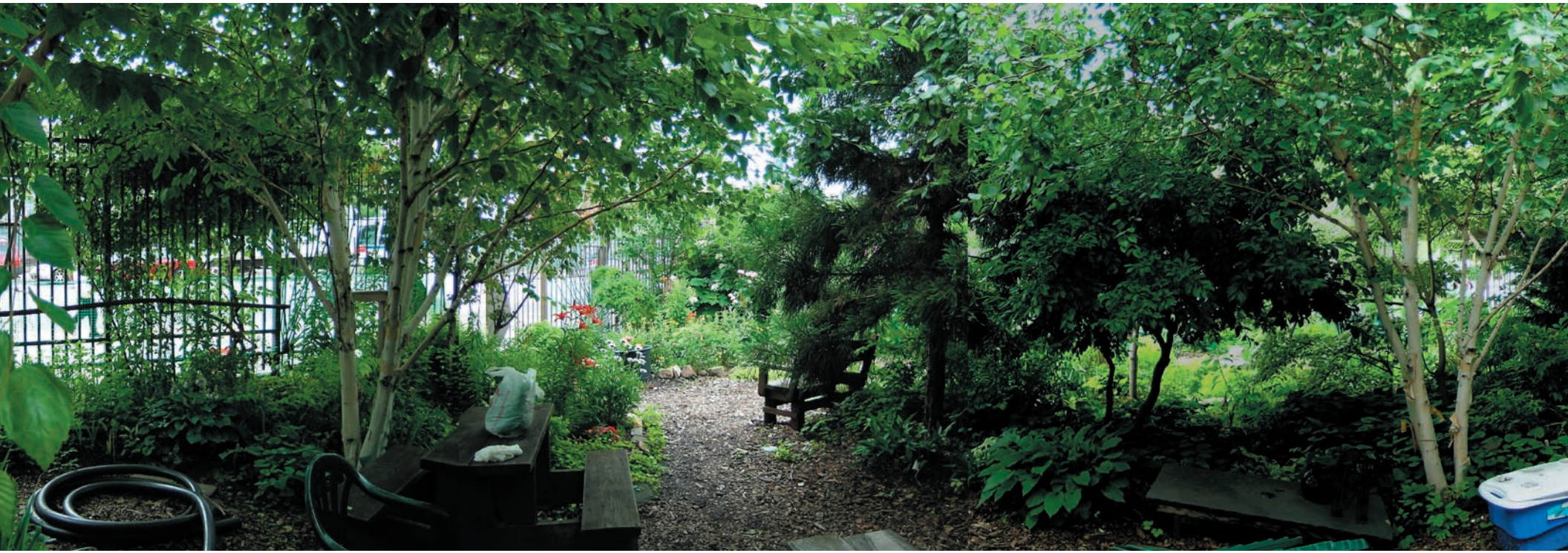




4 SEPARATIONS

Like the gaps into backyards the separation between buildings create both intrigue and possibilities. The glimpse of the world beyond the separation, the gate that stops movement through the enticing passageway , the towering walls stretching above make the separation, although a rare occurrence, a small treasure in an impenetrable wall of homes. Using the space as a way of moving from interior garden to garden or as an indication of the program beyond, like an explosion of green, makes these separations extremely powerful.





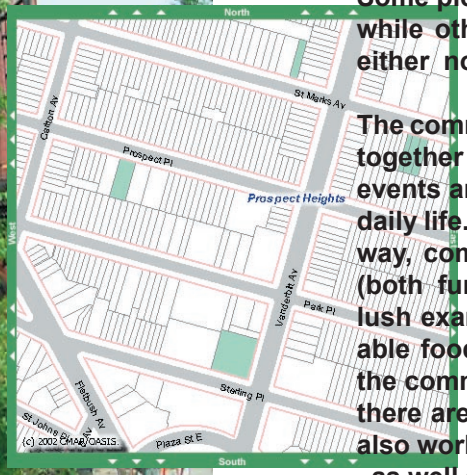
6 COMMUNITY GARDENS

Community Gardens are quite common in Brooklyn. They exist in almost every neighbourhood in some form or another. Sometimes they are in a prominent position and sometimes they are sandwiched in between two buildings; taking a role as green space. Typically fenced in and secured the gardens seem more like preserved plant life than active community space. This garden, although boasting a membership of 40 plus people, was tended by one man . The success of his vegetable plot compared to the utter failure of others was a testament to his devotion.


ental
nd
Community Garden
and











Community gardens

Like the rooftop these spaces seem like places of refuge from the city. Community gardens very in size and composition from something small tucked into a corner or between two buildings to something much larger that stretches through the center of a block and between two streets. Some are very prominent and well kept and still others are seemingly derelict and quickly becoming overgrown and disused. Numbering twelve in the study area according the CENYC mapping database the actual number varies. Some pictured here are not located on the database while others shown in lots on the database maps either no longer exist or are incorrectly entered.

The community garden is a place for members to get together and grow flowers and vegetables, to hold events and workshops and to escape the drudge of daily life. Usually comprised of growing area , a path way, composting facilities and some water source (both functional and decorative) the gardens are lush examples of the possibilities for growing a viable food source in Brooklyn. In some poor areas the community garden is such a coveted entity that there are waiting lists for members. These gardens also work on a community scale by providing youth as well as adults, jobs in the summer growing season that are also as desirable as the memberships.







7 PARKING LOTS

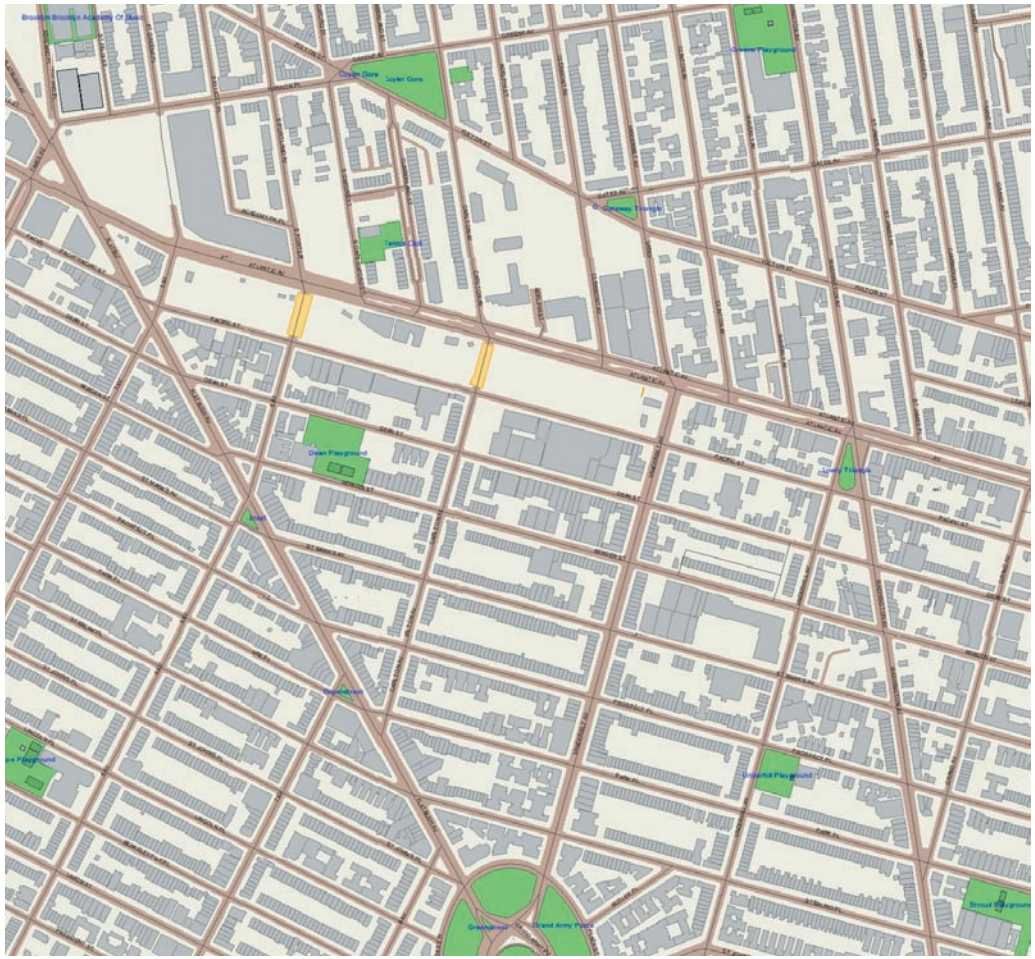
Parking lots range from paved , maintained and highly used, to overgrow long term storage for old vehicles. They are either squashed between two house or adjacent to a warehouse or factory building, sometimes they are little more than a vacant lot that no one seems to care about. Fenced in for added security and filled with quickly rusting fords and Chevys or sitting alongside a housing project for the poor, with Mercedes and range rovers and other icons of the American dream.




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8 PARKS

Olmsteads masterpiece, Prospect park, is slowly getting returned to it's original design. Changed over the years by disuse, maintenance changes and violence. Parks in Brooklyn still aren't safe to be in at night but they are getting better. Created to provide green space for residents they are a strange combination of tree, grass, flowers and fences. They range in size from prospect park to tiny little lots at the intersection of streets. They are beautiful and ominous, green and grey, heavily used and impenetrable.











9 SCHOOL LOTS

It would seem to make sense to combine education with growing and use it to emphasize a new approach to developing attitudes toward local growing, local economy and health. The concrete school lots of the fortified schools of Brooklyn seem ill suited to growing. By making these spaces green and viable then maybe the schools too can remove their bars and steel doors. Nearly impossible to photograph without being accused of illicit activity the photos are limited but the intent great.




PARK
PARK
PRIVATE PROPERTY



10 VACANT LOTS

Vacant Lots are everywhere in Brooklyn. They vary in size and form and in degree of use. Some are over grown like a country field and others are paved over and forgotten. Some have hording protecting them and hinting at what might, or might have, come. Others are worn through my countless pathways leading across them. There are those that are truly vacant,; not thing in them, and those that have the derelict memories of a now non-existent business in the form of palettes, boxes and garbage. Some sit between houses and some between stores, some sit separated from everything, lonely.


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UNDERHILL



11 DERELICT BUILDING

Simultaneously Beautiful and depressing the derelict building is almost synonymous with Brooklyn and New York City. They range from decrepit old factories to abandoned homes. Each suggests a story that is both intriguing and sad, in some cases the old has been replaced by new or is in the midst of being replaced. The derelict building occupies valuable land and hints at a past now long forgotten.







12 STREET SCAPES

Looking at the spaces between objects can usually inform that object more. Sometimes it elevates the object to a higher level and sometimes it actually makes the importance of those spaces manifest. The streets of Brooklyn are the most public space of any. They are were life take place and things happen. Sometimes those things are violent and some times they are miraculous. To forget about the streets would be to forget fifty percent of the area.

9.1.3 SPIN Farming

SPIN farming is a copyrighted method of farming that utilizes small plots and relay planting to maximize yields and minimize inputs. Developed by Wally Satzewich and Gail Vandersteen of Saskatoon Saskatchewan, Canada, and Roxanne Christensen of Philadelphia Pennsylvania, United States the SPIN farming method has been established and used to create a viable organic growing business that has a proven track record and tangible results both in profits and yields. From the SPIN Farming website (http://www.spinfarming.com/) this is the given definition of SPIN farming.

“SPIN is small plot intensive relay farming that is practiced on a sub-acre land mass. Its organic-based techniques make it possible to produce $50,000 in total sales from a half acre of land growing common vegetables. It requires modest capital investment and can be practiced in either rural or urban areas. A SPIN farm can begin with a plot as small as 1,000 square feet, or it can be located on a half acre of city-owned land, or it can be multi-locational [SIC] spread across several residential backyards. SPIN can be applied anywhere.”

SPIN farming relies on an intensive relay system set up to overlap planting and harvesting so as to guarantee continued marketable yields throughout a typical growing season. Coupled with a marketing strategy SPIN farming is proven to yield significant profits. In Saskatoon Wally and Gail manage a SPIN farming enterprise that supports their living expenses and in Philadelphia the Somerton Tank farm project is now seeing revenue of $52,000 annually from a ½ acre site.

Although there are many ways to grow and some may have higher yields and generate higher profits SPIN farming is a documented method that shows proven results.

SPIN farming will be the primary growing method practiced in this design study but will be offset and supported by hydroponics growing, animal husbandry, green house growing methods and some traditional farming. By combining all of these methods a successful urban agriculture project will be able to develop and grow and generate profits on par with other small to medium sized businesses. The secondary social benefits will be possible when the primary goals of a successful business are achieved.

SPIN Methods:

SPIN farming is a proprietary system intended to help establish growing food as a business. Out of respect for its creators and their financial investment specific marketing techniques discussed within the SPIN farming manuals (sold for profit by Wally, Gail and Roxanne to supplement and increase their incomes and support the goals of SPIN farming) will not be included in this section. The general ideas and methods will be discussed and illustrated to give an idea of what initial financial inputs are required and what ongoing investment is needed on a yearly basis to continue the project. If the reader has more interest in the practice of SPIN farming they can purchase and read the SPIN farming manuals at http://spinfarming.com/

Planting:

SPIN farming utilizes three different types of planting to create a sustainable yield through out the growing season.

- Intensive Relay: Three crops are planted in a 2 x 25 foot bed (12” path between beds) successively throughout the course of a growing season. This does not mean three crops a season but rather a variety of three crops relayed weekly. Harvesting and replanting occurring weekly and beginning early in the season. Crops grown include herbs, spinach and lettuces and radishes, beats and other leafy greens.

- Bi-relay: Is similar to Intensive relay planting but, as the name suggests, only two crop varieties are planted. Interchange between intensive and bi-relay can occur. Beans, carrots and peas are grown in a bi-relay section and relayed to faster growing crops or more carrots and peas etc.

- Single Crop area: This planting is more traditional and sees rows of vegetables planted with pathways in between. Crops that will take longer to mature or need space for growth and proper management such as potatoes, tomato plants, squash, garlic etc. are planted here.

The goal of this method is to always have a yield to sell at market each week and to start selling as soon as possible and to continue

selling as late as possible in the season. Early supply of summer crops will be ensurea decent start to sales and a resurgence of certain summer crops in late fall will ensure continued sales late in the season, essentially, elongating the duration of operation of the project. By utilizing the 2 and 3 crop method, and relaying week to week, the supply of marketable produce is constant. Also by staggering the initial plantings there is no lag between planting and harvesting.

Community Supported Agriculture or CSAs are shares of vegetable production sold to community members and others. The idea is to sell these shares before the season starts to generate startup income and then deliver the vegetable shares on a weekly or bi-weekly basis. CSA structure and pricing varies and it is up to the project team and what the market will support to decide what to charge and how many shares to sell. SPIN farming aims to make use of CSAs and weekly farmers markets to support growing.

Startup Costs:

Depending on the size of the project and the startup costs can vary. From the SPIN farming guides produced by Wally and Roxanne it is recommended that all projects need a walk in cooler for vegetable storage, a rototiller to ease planting, farm stand startup costs and a shed. Operating costs are not included in this list and will be listed later. Of course, depending on the size of the individual plots and the project team, some of these costs might not be necessary. A project team member farming their own backyard would be able to store tools and supplies inside their home instead of a shed and certain parcels of land will not support a shed and growing beds. A walk in Cooler can be built in a central location and harvest transported to the cooler for storage and sale prep. Farm stand fees could be higher because it is advised that multiple markets are used to sell the produce. Of course the purchase of a vehicle is another possible startup cost but it is recommended that public transportation and bicycles are used to keep down costs, although the need to transport tables and other market necessities warrant a closer investigation of case by case needs. Other projects, depending on size and location, may need to spend money on irrigation in the form of hoses and timers, manifolds and sprinklers and others will have room to set up a post harvest area which is an additional cost. Tools, storage bins and any other miscellaneous items should be considered.

Operating Costs:

With startup costs out of the way operating costs are minimum. Gas for a rototiller, any rent paid to land owners, seeds, farmers markets fees and packaging supplies are the primary operating expenditures. Again multiple farmers markets may mean increased costs in the form of multiple fees. Some additional costs will be specific early marketing and any required travel i.e. bus passes subway cards.

High Value Crops:

SPIN emphasizes high value crops to satisfy energy inputs and labour costs versus possible profits. Too much time planting hard to rear crops means that the returns are lower when weighed against the time invested. It is up to the individual project to determine what crops are considered high value in the study area but a good rule of thumb is to use easy to grow, high yield crops that are commonly used in cooking and consumed as raw ingredients.

Site Prep:

Although growing conditions may require the use of inputs between plantings, the described method leaves bed prep until the end of the season and uses a thick layer of compost, needed inputs such as lime and other fertilizers and then it is possible to plant a winter crop. In some regions it is possible to continue growing through the winter. Examples are the western coast and southern regions. In the west the winter rains will feed your gardens and weeds, pests, and diseases are actually easier to deal with (Smaus, http://doityourself.com/vegetables/winterveggarden.htm, http://www.naturalhub.com/vegetable_gardening_in_winter.htm) Broccoli, cilantro, cabbage, peas and radish are all vegetables that grow well in winter.

Marketing Plan:

By using strategic market plans it is possible to ensure sales. Although farmers markets are competitive there are ways to combine certain vegetables to generate interest and sales. The specific plan is up to the project. Using CSAs to generate startup income, investigating possible market niches, aggressive sale techniques and fresh organic fruits

and vegetables a successful urban agriculture project is possible. Fruits are also a fairly untested product as Saskatoon, where one SPIN project is situated, won't support many fruits. There is the possibility of higher sales figures and more "added value" products such as fruit cups, gifts and other prepared fruit based products like jams and jellies if fruit is grown. Although fruit can't be relayed it can be grown in a single bed structure and once established can continue to produce yield each season (apples, pears, berries)

Conclusion:

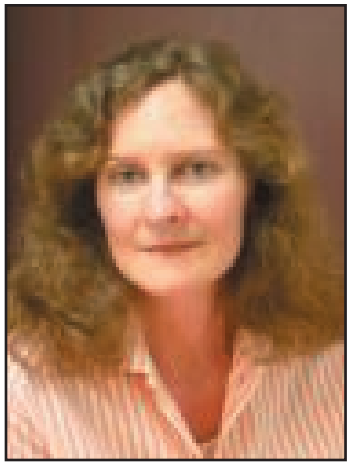
There are many possible growing methods and many opportunities for profit that SPIN farming may not address. However, SPIN farming is a documented success that produces reliable yields and reliable sales. For these reasons it is the method emphasized in this thesis. For more information on SPIN farming or to support the SPIN farming projects listed in this section visit the SPIN farming website: http://www.spinfarming.com/ or the Somerton Tank Farm Project Website: http://www.somertontanksfarm.org/ and of course Wally and Gails Market gardening website: http://www.marketgardening.com/wallysmarketgarden/ Guides on SPIN farming are available for more research for a modest fee and help support Wally, Gail, and Roxanne and the SPIN farming method.

(References: Interviews and correspondence with Wally Satzewich and Roxanne Christensen and SPIN farming Guides and case studies produced by Wally Satzewich and Roxanne Christensen, 2005, 2006)











SPINs Creators: Top to Bottom: Wally Satzewich, Gail Vandersteen, Roxanne Christensen.

Right: Saskatoon SPIN operation and market selling

He Grows Crops in Other People's Backyards

By Wally Satzewich , Saskatoon Sask, Canada

I didn't set out to make a living by farming less than an acre of land inside a city. But that's what my wife, Gail V., and I do full-time.

Unlike other farmers, when I jump into my truck to inspect my crops, I don't bump down backroads and dirt trails. My crop tour takes me through the back alleys of Saskatoon's inner-city neighborhoods. And unlike the huge, monochromatic blocks of golden wheat and tasseled cornstalks that define America's heartland, my farm is a patchwork of 25 different backyard plots that I don't own, and that add up to well under an acre. I started thinking about becoming a farmer when I first went to farmers' markets to buy fresh produce. I got closer to my goal in the mid-1980s when my family acquired a small acreage just outside Saskatoon. Dad had a butcher shop in the city, and Mom was an avid gardener. Her gardening inspired me to experiment with small-scale growing in a 1-acre garden. I was soon returning to the farmers' markets, this time as a vendor selling my own produce. But I had to keep driving a taxi to support myself. Gail and I met when she became one of my customers at the farmers' market. I hadn't yet figured out how to make a living off an acre or less, so Gail and I bought a quarter section of land near the South Saskatchewan River. We grew potatoes, beans, peas and onions. By the early 1990s, I was able to farm full-time, but Gail kept her job as a library technician. Like a lot of farmers, I thought to become successful I had to keep getting bigger. I bought machinery and invested in an irrigation system that cost tens of thousands of dollars. I also hired work crews. But Gail and I continued to live in the city where her job was, and I commuted to the farm. We had a small garden in our backyard, and sold produce from it, too. I began noticing the differences between growing vegetables in our city garden and on the farm. The crops on the farm had lower economic value per unit than the crops of spinach, beets, carrots, radish and salad greens in our backyard. Yet the crops on the farm required a big investment in land, irrigation, machinery and labor. Our garden didn't require much of anything—a hoe, a spade, a rototiller, a hose attached to the faucet on the house.In the country, high-value crops like leafy greens were prone to damage by deer and other wildlife, something not true in the city. On the farm, we left lots of space between plants to allow tractors, seeders and other equipment to traverse the fields. In the city, all we needed was space enough to walk, resulting in much more intensive and productive use of land. Our garden was only minutes from urban farmers' markets, and it wasn't dependent on rainfall or the water level in the river. I eventually realized another, less obvious but very important, difference: Because cities have their own microclimates, the growing season in our garden was longer and the weather a bit more moderate than at the farm. Sidewalks, streets, parking lots and buildings soak up heat during the day then radiate it back at night, keeping our yard warmer than the countryside around Saskatoon. Neighborhood houses acted as windbreaks. I could plant spinach, lettuce, green onion and garlic in our city garden in early April, several weeks before larger growers in the country could get their heavy equipment into their fields. Occasionally, late summer or early fall frosts hit the countryside, but didn't affect our city garden. In 2005, we were one of the few growers whose green beans weren't destroyed by early frost, and we were still selling them at summer's end. My notions about farming were getting spun around and turned on their head. Could it possibly be better to farm in the city than in the country? I decided to go to my spreadsheets and crunch some numbers. I found I could earn a greater profit on much less than an acre in the city than I could on a full acre on the farm—especially if I'd had a bad crop year on the farm. Seed, fuel, oil, equipment repair—they're obviously all part of farm costs. I grossed around $25,000 on 10 to 15 acres on the farm, but operating expenses (not including capital expenditures and debt service) approached $10,000. In the city, I could gross between $30,000 and $40,000 on less than an acre, and costs were under $5,000. Gail and I decided to sell the farm and begin growing produce not just in our own yard, but in backyards rented from others. I put an ad in the newspaper to find backyards and got several responses. Our first lessor thought we were the best thing since sliced bread. She had a 2,000-square-foot garden that we kept clean and productive, relieving her of any work or worry. Today, people actually come to us hoping to lease out their yards. Some are older and don't want the expense or hassle of maintaining their yard—

but they enjoy looking out on a nice garden. Some of the people we lease from are landlords who rent their houses to tenants. The landlords are so happy not to maintain the yards that they give them to us for free. We use water from their outdoor faucets, but their bill is far less than they would pay to maintain the yard. When we do pay a rental fee, it's either a combination of cash and produce, or just cash. Usually, home owners are at work when we're working at their place several times a week. When the owners are at home, they enjoy coming out to chat. With careful calculations, we decide when to grow what crops. In some yards, we grow three or more crops sequentially each season. In others, we grow one or two crops. By balancing high-value with low-value crops, we produce a steady stream of revenue from May until Christmas. We now call ourselves Wally's Urban Market Garden. We sell our produce at the Saskatoon Farmers' Market on Saturdays. It's a producer-only market, with about 70 stalls, and it moves indoors November 1. I love going to market on Saturdays. We know so many people—both vendors and repeat customers—that it's a gathering of friends. We often swap produce with other vendors, taking home items like delicious artisan bread. Being at market makes all the hard work of the last week worthwhile. Now that we make a living as sub-acre, urban farmers, Gail has quit her job. Besides farming full-time with me, she makes floral wreaths and bird feeders to sell at the farmers' market. The bird feeders have wreaths with bird treats on them: seed-coated cookies and sunflower heads; peanuts; dried fruit; pinecones and corncobs slathered in peanut butter and sprinkled with birdseed. Unlike many farmers who get ready for market by harvesting on Fridays, sometimes working late into the night, we harvest all week. We might pick and prep carrots on Monday, onion bunches on Tuesday, potatoes on Wednesday, leafy greens on Thursday and summer squash on Friday. What makes this possible is the walk-in cooler in our backyard that keeps everything fresh. The cooler is our biggest investment—even so, it, our shed, the rototiller and our hand tools cost less than $5,000. One of the many advantages of sub-acre farming is that we usually have several months off after Christmas. That allows us to visit relatives, take a trip somewhere special and recharge our batteries. A vendor we know at the farmers' market sells coffee she grows and harvests on a small farm in Costa Rica. We've visited her farm, and last year spent 10 days working on another nearby farm. This might not sound like a great idea for a vacation, but it really was. We cleaned out pig stalls, then hand-tilled 1/4 acre of land and planted corn on it. Working in the soil and growing things is my passion. I love experimenting with different crops—this last season, I grew spinach-like orach, one of the oldest of cultivated plants; and yellow purslane, a plant many people consider a weed but that has more healthful omega-3 fatty acids than any other plant. I also love growing golden beets. When I was in college, I studied sociology. Ironically, that may have helped lead me to farming—many of the classes emphasized workplace alienation, something that made me want to be my own boss. As a farmer, I like making my own decisions and having control of my work. Sociology may have instilled in me something else: A desire to make a difference in the world. I believe small plot, organic-intensive farming—whether in the city or country—can do that. During the winter, I spend time writing about what I've learned so it can be shared with others. I have an Internet newsletter and chat room dedicated to the subject. I've also cowritten guides with urban agriculture advocate Roxanne Christensen of Philadelphia. This winter, my wife and I are planning to speak at a workshop designed to help elderly immigrants earn money by growing crops in backyards and selling produce at farmers' markets.

If you'd have told me when I first started thinking about becoming a farmer that I'd end up doing what I'm doing, I'd have thought you were crazy. Had I known then what I know now, I could have saved myself a lot of money and stress. But then I might not have appreciated as much the very special life Gail and I have.

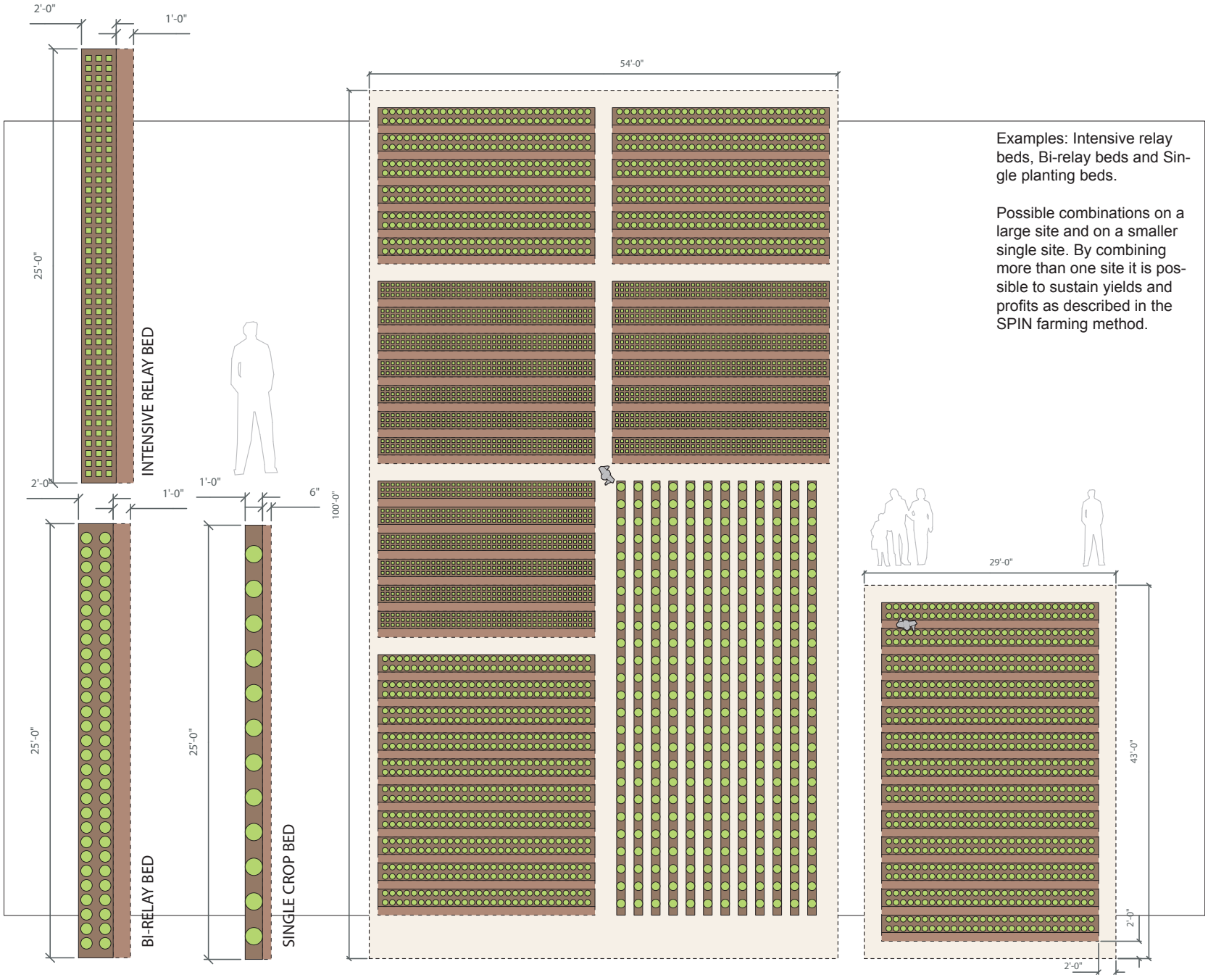
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http://www.farmandranchliving.com/









Examples: Intensive relay beds, Bi-relay beds and Single planting beds.

Possible combinations on a large site and on a smaller single site. By combining more than one site it is possible to sustain yields and profits as described in the SPIN farming method.

Images, Sources:

Page 238

Study Area Map, Area for analysis

-Images by Author

Page 239

Brooklyn Aerial

-Images by Author from Google Earth

Page 240 - 291

Maps and Images of Brooklyn Study Area

-Image by Author

Except: Maps on Page 273, and Page 276

-Image from: http://www.oasisnyc.net/oasismap.htm

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Wally Satzewich, Roxanne Christensen and SPIN

-Images from: http://spinfarming.com/

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SPIN

-Images from:http://spinfarming.com/

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Plan of Planting Arrangements

-Image by Author

Part 3 – Design Study

9.0 Design Proposal

9.2 Site Requirements, General Conditions

9.2.1 Site Requirements, General Conditions

9.2.1 Site requirements, General Conditions

Before beginning an urban agriculture project certain conditions should be assessed. This chapter is presented as a guide to site requirements and general conditions that need to be addressed. It is assumed that the desire to partake in an urban agriculture project already exists and that the persons involved have experience farming, gardening or growing in some manner. As stated in the design strategy section (Part 3 10.1) beginning a project with the least amount of financial input, using existing backyards to grow produce and generating startup costs is the first goal of the proposed urban agriculture project. By utilizing backyards it is possible to keep overhead low and profits high which will facilitate expansion sooner. Other methods can be used to solidify the project and income but for this thesis the proposed method follows a tried and tested scenario of using backyards. Above all else urban agriculture projects need to be run as a business. Without clear planning and financial stability the secondary benefits of urban agriculture will not have a chance develop.

Although these general conditions are in a suggested order it is possible to approach each project differently and certain criteria may not be as important as others depending on the specific situation. Again this is merely a guide and other factors may be involved in different projects. A thorough review of the needs of a project should be complete before moving to these next steps.

Planning

Although an urban agriculture project may have some established roots and methods of operation the next step should be well thought out and planned before beginning. Taking the next step can involve much more than was previously invested in the form of financial responsibilities, land use negotiations, time, labour hours and the future of the project. Like all businesses a plan should be devised for how to expand the project. In some cases a slow expansion should be attempted unless other factors warrant moving more quickly. It is best to have an established customer base and outlet for produce before beginning to expand the project. Making sure that the individual or team is prepared for the next stage, and, they understand and agree on the extent of expansion and new investment. Financial support is up to the project team and they may or may not choose to invest more personal income. Hopefully the project has been run, up to this point, as a business and has savings and finances set aside to facilitate expansion.

Schedule

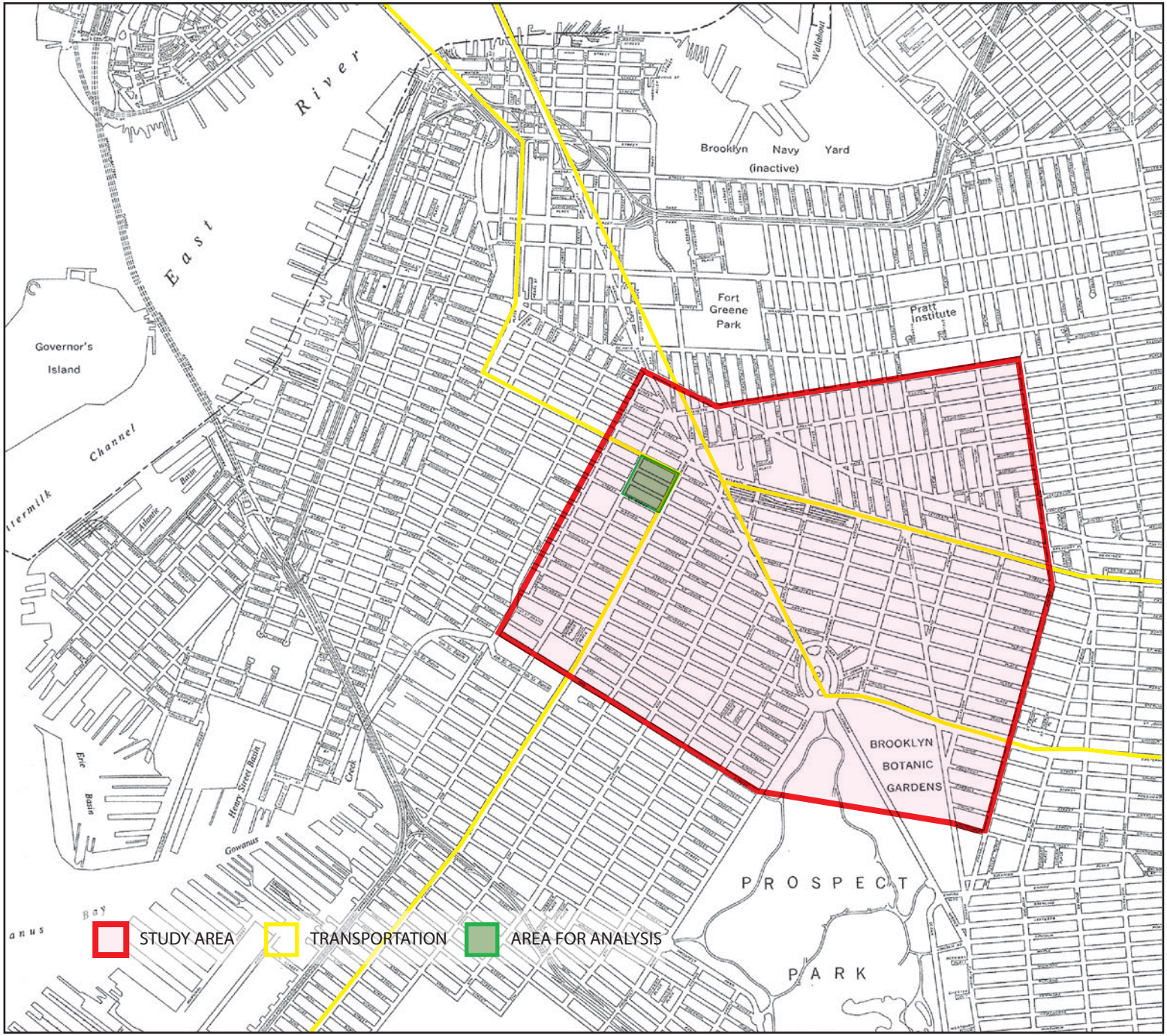
Taking the time to draft up a proposed schedule can make clear the direction of the expansion and help manage investment against returns. Understanding the next steps will allow for time planning and estimation of possible outputs etc. Of course there will be unforeseen obstacles but planning a slight buffer between tasks can help manage the unforeseen. Planning each step of the expansion from site selection to first plantings and harvests will help each team member (or the individual) understand what needs to happen and in what time frame, what goals are to be achieved by what date and at what time the next project step will be fully operational. Not taking the time to plan these steps and understand them can lead to problems that can severely affect the success of the project.

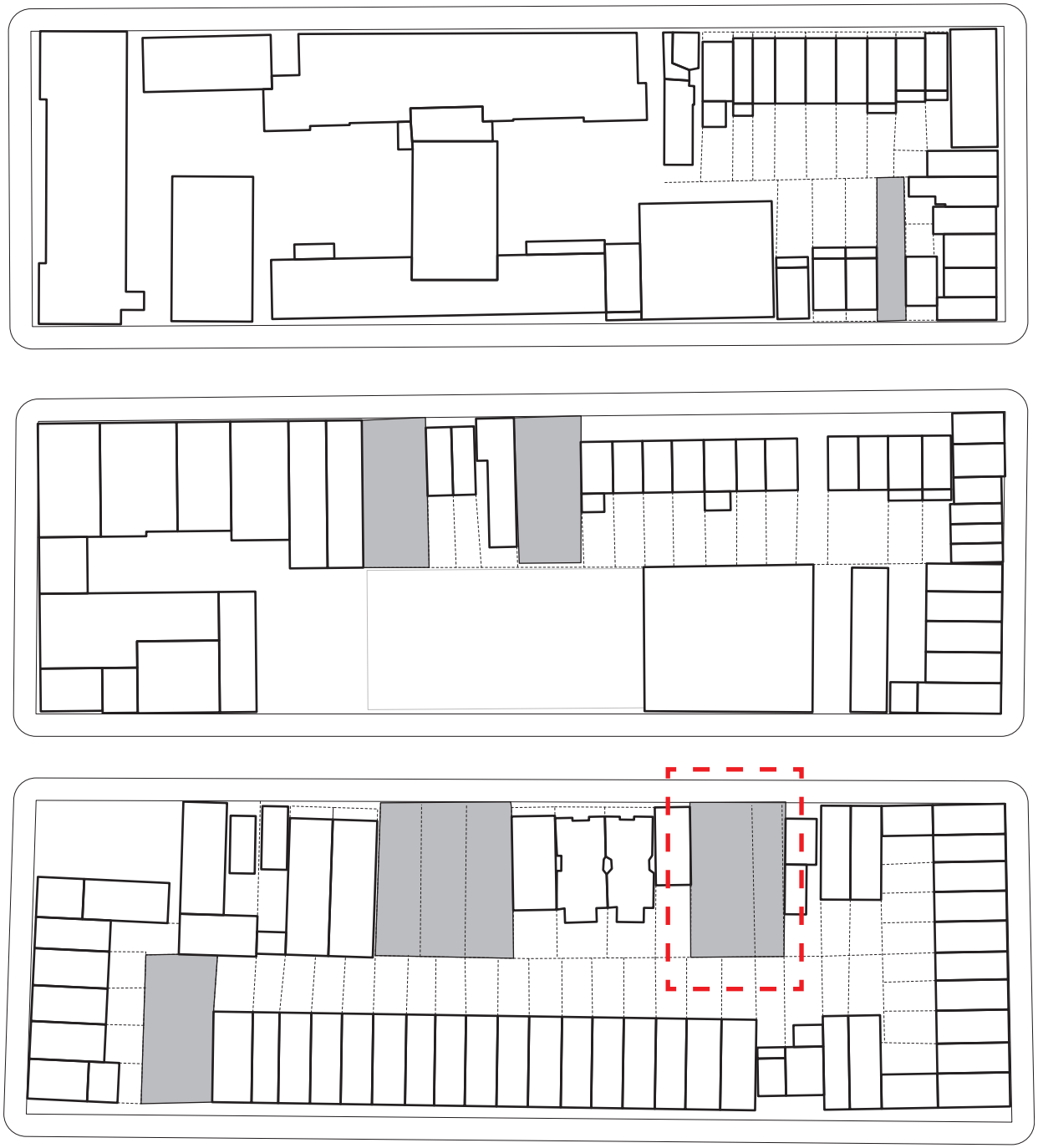
Site Selection

This is probably the most important initial step in establishing an urban agriculture project. Sites can vary so much that taking the time to investigate them thoroughly is very important. Although backyard plots are a good way to establish a project and generate startup income for the purpose of this section it is assumed that Vacant Lots and backyards are the same and all of these initial conditions can be applied to both. The first step in finding suitable growing sites could be via a cursory review of city or state documents showing possible vacant lots. Most city governments have land use data available to the public through city websites (http://www.phila.gov/deptaz/index.html) In addition to government resources other cities also have organizations and special interest groups that document land use in urban centers (http://www.oasisnyc.net/) the city government is a good first step because it allows for one stop shopping. Not only can land use data be accessed but land ownership, zoning etc can also be found. In place of first researching possible available land through government offices a walk around a potential neighbourhood can yield good information. By logging information such as adjacent addresses (vacant lots typically do not have visible address informa

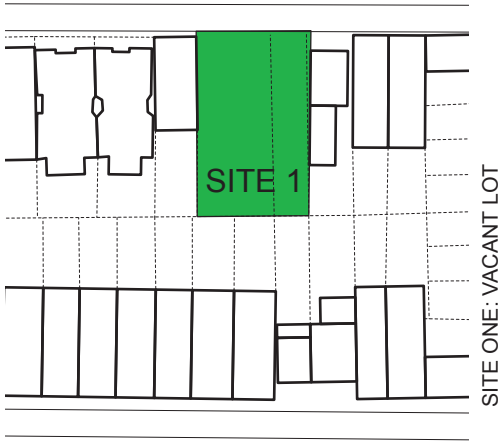
tion) it is then possible to do further research using government resources. Information such as ownership of the site, taxes, zoning etc can be found using these resources and will help secure possible growing sites. Some other factors when considering site selection should also be assessed such as access, adjacent lots and properties, security, proximity to transportation and proximity to other sites included in the project. Access is important for numerous reasons. Sites with limited or controlled access, while more secure, can cause problems. A site that is accessed through a home or apartment will mean that arrangements must be made to gain access on a specific schedule, say weekly or bi weekly. Negotiating the use of keys and security systems can be difficult and can strain relations with a land owner or home owner. Access is also important because from the initial preparation of the site to the final harvest materials and supplies will have to be moved in and out of the site. Small alleyways alongside of buildings may allow a person to access the site but wheelbarrows and bags of compost will be harder. Adjacent Sites and properties are also important to consider for a few reasons. The most obvious is the way they physically affect a site. If sunlight is blocked by an adjacent building then it is probably best to choose another site. Possible changes to adjacent sites could cause future troubles for an established site and environmental problems should also be assessed. Planting vegetables on a site close to a factory or gas station should be done with caution. Rain water run off from a gas station can leech pollutants into a sites soil and adversely affect the crop production. Long term problems can occur if site preparations disturb unknown or buried toxins in proximity to an industrial site or factory. Neighbors are also a concern as they may interfere with successful growing. Although the sites should be open to the public and the community they should also be secured at night to avoid vandalism or damage. Most urban growing projects meet with positive community interactions including an increased vigilance among neigbours (Gerhart, 2005, Kaufman, Bailkey, 2000) but problems can arise and sites can be damaged. Being familiar with a neighbourhood, and making the project familiar to residents, can limit problems. In this same manner security is an issue that must be considered. A site that requires fences on all sides will obviously be more expensive to establish than a site that has a single un-secure side. Simple chain link fences can be used to establish security and still allow for the best transmission of sunlight. Future developments and site improvements can address issues of aesthetics and create more visually pleasing fences and security measures. Sturdy locks on the site and a sturdy storage area with lockable doors will prevent many possible problems. Expensive equipment such as tillers and seed spreaders etc. can be kept at a central secure location and moved when needed. One of the benefits of growing in urban centers is the availability of public transportation. Movement between sites and movement of produce can be facilitated through public transportation. This quickly reduces the need for vehicles and the expenses associated with vehicles. In New York City the Metro Transit Authority (MTA) runs subways and buses twenty four hours a day 365 days a year. These subways and buses travel to almost every corner of the city and surrounding boroughs. Local convenient public transportation can be used to travel from plot to plot, to move supplies and to move produce. With proximity to public transportation, proximity to other sites should also be assessed. Being able to walk between sites is the best scenario. Distances that are slightly further can be managed with a bicycle and supplies can be put in to backpacks and carts.

These initial site selection criteria should also be combined with physical qualities of the site such as terrain, foliage cover and existing obstacles in order to determine the best possible sites for growing. These other physical characteristics will be discussed further in the following sections.

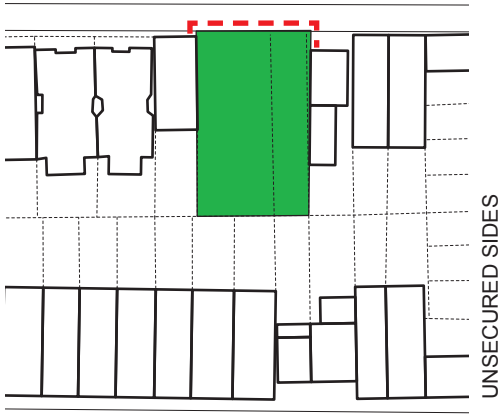

East River
Brooklyn Navy Yard
(inactive)
Fort Greene Park
Pratt Institute
Governor's Island
Channel
Buttermilk Channel
Atlantic Basin
Erie Basin
Henry Street Basin
Gowanus Creek
Gowanus Bay
BROOKLYN BOTANIC GARDENS
PROSPECT PARK
STUDY AREA
TRANSPORTATION
AREA FOR ANALYSIS



SITE CLUSTER: MOST SITES ARE IN USE AS PARKING LOTS, CHOOSE VACANT LOT



SITE ONE: VACANT LOT



UNSECURED SIDES

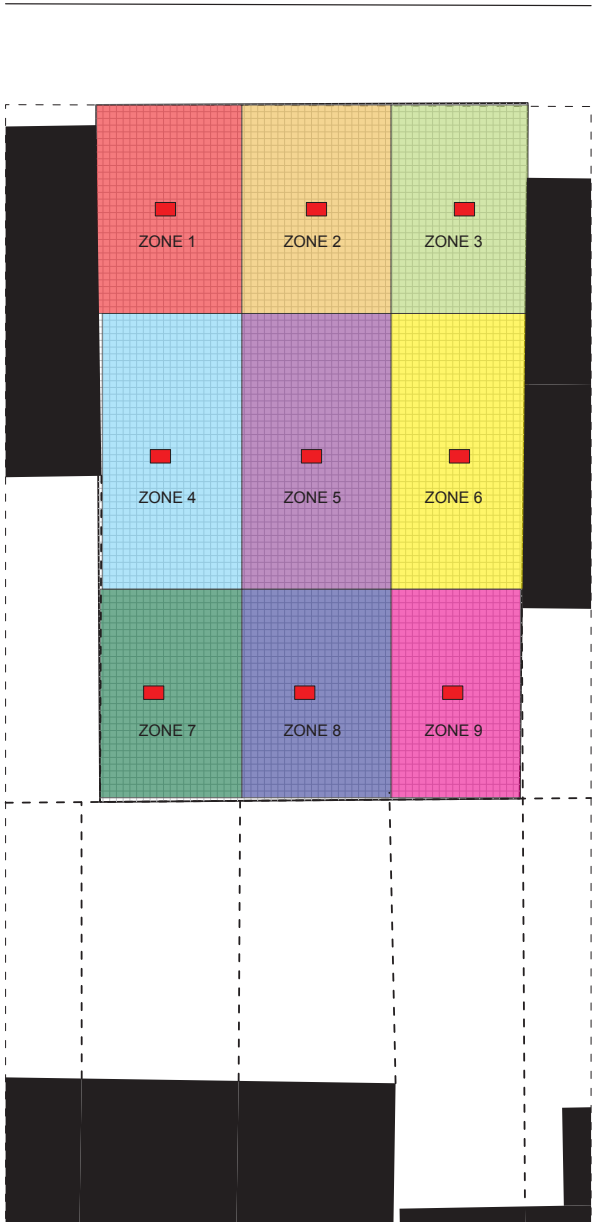


NEIGHBOURS AND ADJACENT SITES

Soil Testing

When approaching an unknown piece of land it is always good to do some soil testing. A soil test kit can be found online for a reasonable price ($10-$70) I found one online that tests 4 different factors including Soil PH, Nutrient Level, moisture and sun exposure. A series of these meters would be a good way to set out and test a possible plot. With the data collected over a few days it would be possible to determine the conditions of the entire site and map it on a simple drawing. This could then be used to plan the layout of the plots. If the site is large enough it is possible to plant according to PH, Nutrient levels and solar levels. Instead of having to change the conditions of the soil i.e. add nutrients to area that have low levels of nitrogen etc. it would be possible to match plants and conditions. The natural balance of the plot could be changed through strategic planting instead of excess work changing the composition of soils. The soil and lot should also be tested for possible contaminants. Older lots have a history of industrial and other unknown uses and care must be taken to establish a history for the site. This especially important in urban agriculture as the previous site conditions may be numerous and hazardous. Independent agencies will do testing of sites and it is possible to send soil samples instead of having the company come to the site. Other means of determining the site conditions, both past and present, are through researching ownership and use documents available at government offices and contacting environmental control agencies and departments within the government. In the United States County Extension offices should have much of the needed information on file. If the site is contaminated then there are ways to de-contaminate it. Phyto-remediation is a new technique that uses plants to leach contaminants out of soils. These plants can then be disposed of or even incinerated. Other types of remediation involve the removal of contaminated soils, capping and covering contaminated areas and laying new soils, aqua remediation (which can have adverse affects if not properly managed) and time; however waiting periods can be years and it is probably best to try and avoid sites that are too heavily contaminated. Environmental and ecology groups can be consulted for options and methods.





Sunlight

Sunlight is the one thing that is fairly easy to test. It is possible to use meters like the ones mentioned above to determine the solar exposure for the site but physical inspection and observation are also an excellent way to see how the sun affects a site. It is possible to use 3 dimensional modeling, as I have done, to approximate how the sun moves across a site over a period of time and there are other software packages that will allow the user to test actual solar radiation energy. When undertaking a large project these might be good options. Sunlight can also be harvested in a manner to better serve a project. The use of highly reflective paints one vertical surfaces and object within the site can help bounce solar radiation to areas that might not get decent direct sun. Direct sun is not always beneficial to plant growth. Cumulative hours of sunlight are more important to plant growth than solar intensity. (Mavi, Tupper, 2004) Direct sun can cause burning and moisture evaporation that is harmful to a plant. Diffuse sun is typically more advantageous (Mavi, Tupper, 2004) Of course sunlight levels and exposures are also in constant flux and this must be considered. The seasonal changes in sunlight occur daily and so one day's exposure will be different from the next days. Again software is available that will allow for approximations on cumulative solar radiation. Combined with other analysis tools these softwares can provide a decent approximation of solar energy levels and where areas of shade and light occur on a site. A good rule of thumb is to try and use sites with good direct sunlight exposures at the height of the growing season and to make sure that preparations are in place for extremes. The use of all methods will most likely provide the grower with a reliable approximation of the conditions to expect but should not be relied on.

MINIMUM SUNLIGHT REQUIREMENTS:

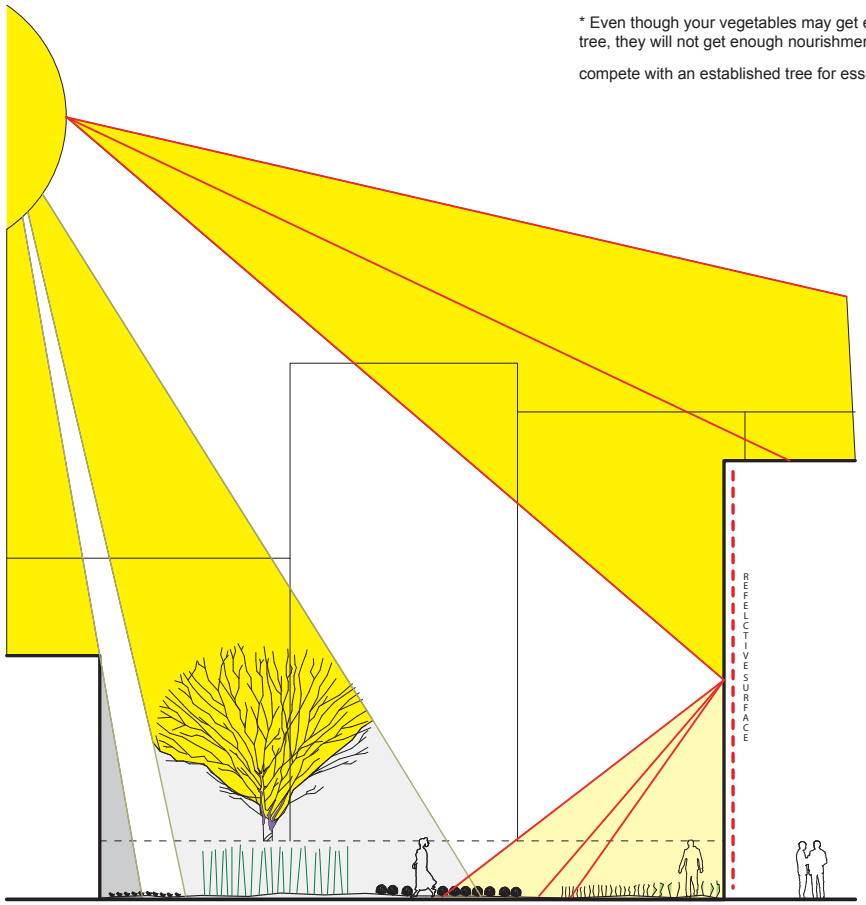
Fruiting Vegetables - eight hours of sun. This includes tomatoes, peppers, eggplants and vine crops such as cucumbers, melons and squash.

Root Vegetables - six hours of sun.This includes carrots, beets, etc.

Leafy Vegetables - four hours of sun. These are your "greens" such as lettuce, spinach and collards.

* Keep in mind that these are minimums. Increasing the amount of sunlight your vegetables receive will increase the yield and quality of your crop.

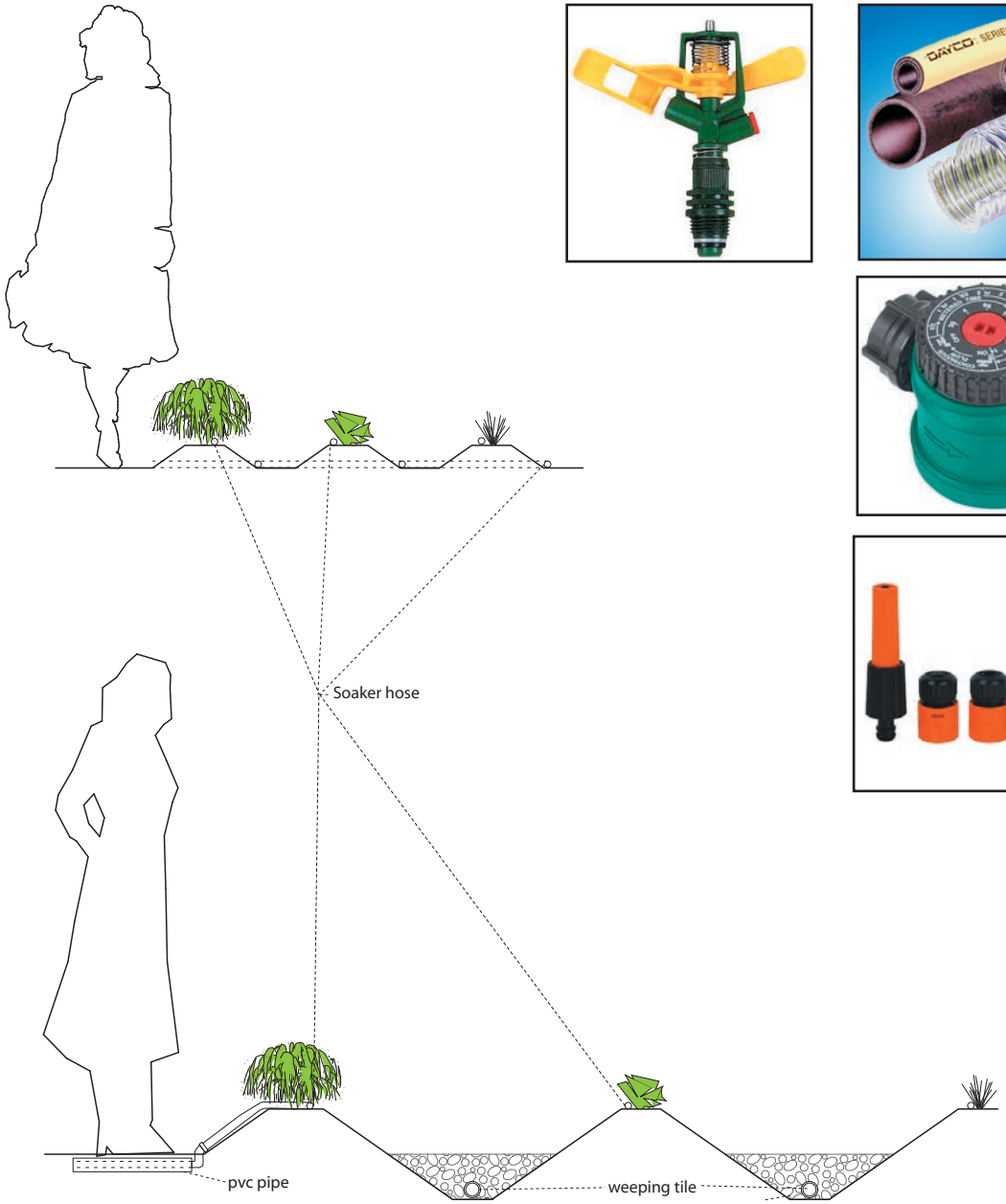
* Even though your vegetables may get enough light when planted near a tree, they will not get enough nourishment and water. Vegetables can't compete with an established tree for essential nutrients and moisture.



Water

Drought conditions are common in urban centers and while natural precipitation can provide much of the irrigation needed it should not be relied on for successful growing. Water sources are common to all homes, be it in the form of outdoor garden spigot or a hose run from the kitchen sink. In the case of a backyard it is possible to hook a sprinkler or soaker hose to a spigot and have the water turned on a few days a week for an hour or two. Rents paid for the use of the backyard plots typically cover the cost of water (Satzewich, Christensen, 2006) For backyards that can not be easily accessed a few times a week timers are available that can turn on soaker hoses and sprinklers. In all these cases it is best to water in the earlier morning or late afternoon when the heat of the day has passed and evaporation is not a problem. Watering by hand using hoses and spray attachments or watering cans is possible but time consuming. Watering done in this way is best suited to container gardening. In the case of vacant lots water can be a bigger problem. The lack of a water supply means that a grower needs to go to great length to transport water to the site. Small tanks on a bike cart are a possible solution to this problem but can also be very time consuming and adds expense to the whole project. Re-directed roof drainage can be gathered in cistern on the site which can in turn supply some of the watering needs of the plot. Re-directed drainage from the garden can also help re-circulate water and make for reduced water consumption. This technique is hard to establish and care needs to be taken to not divert water away from the garden too quickly or plants will not have adequate time to absorb the water and nutrients in the soil will not have time to become diluted in the water and absorbed by the plants. Many existing community gardens in the study area have a water source specifically plumbed to the garden and the supply is paid for by an adjacent land owner or business owner. This charity is the best case scenario and should be pursued before securing the land. Situations involving rain water run off from rooftops and hard top surfaces can cause the transfer of pollutants to the garden and all water sources should be periodically tested. Natural water filtration systems using plants and other bio-filters can help purify water and add a nice water element to a growing space. Another water consideration is the need for a small source of water for seed preparation, and crop cleaning once harvested. A central location can be used to clean most produce but an onsite solution is preferable. Once harvested produce needs to be cleaned, drained and possibly packaged or bunched. Having a post harvesting station with a water supply at larger sites will allow for this. Seed prep and propagation also will require a water source. The need of 50 small seed starters is not as demanding as an entire garden and so can be accomplished with portable water supplies such as a 1 or 2 litre jug of water brought to the site. General maintenance needs should also be considered. If the site has a community element i.e. a place for eating or entertaining then a water source for supplying drinkable water is needed. Cleaning of tools and other things within the garden should also be considered but do not share the same importance as water for irrigation. of the site can be created using a minimal set of materials. PVC piping is a good way to run hoses underneath pathways providing a strong protective cover for the hose. Slightly raised growing beds will create valleys that can help transport a water supply to the entire garden instead of only specific areas. Watering should be applied through longer duration at low levels beneath the foliage of the plants so as to allow for absorption through the roots of the plant. Watering foliage, especially on hot days, can create problems as water droplets can act as small magnifying glasses essentially focusing the sun and burning the plant. Misting and sprinklers can be used but should be limited to early morning and late afternoon. Gravel along pathways can help divert water away from unnecessary watering areas such as the path system. It can also help funnel water drainage into secondary storage areas at the ends of gardens where water can be reclaimed and re-used.



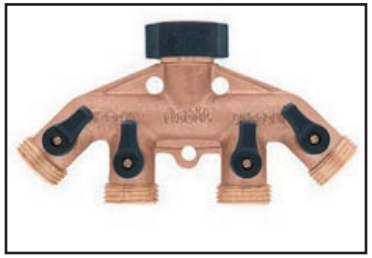

Soaker hose
pvc pipe
weeping tile

DAYCO SERIES 7107 GRIZZLY 3/4



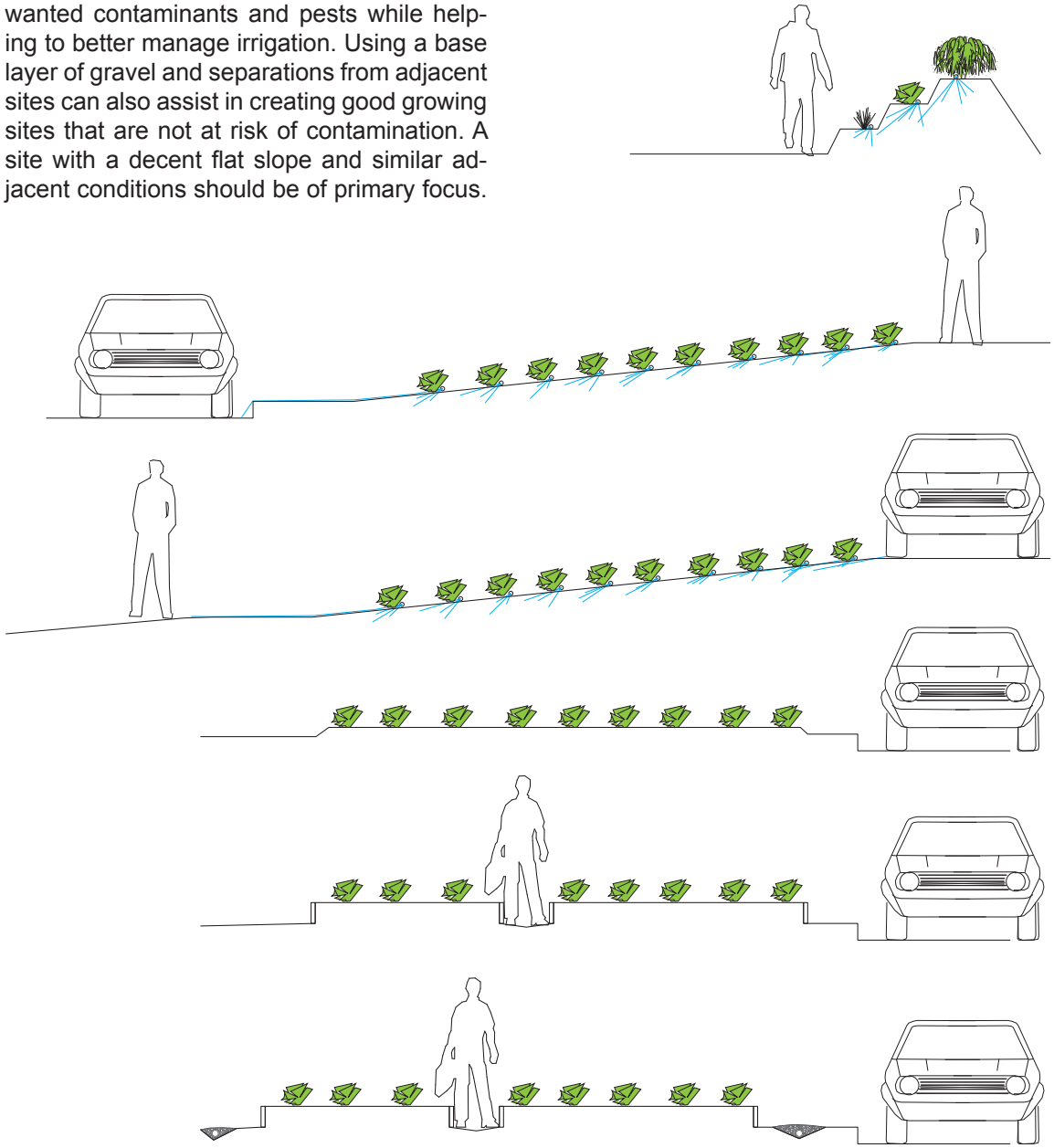



ANGLED



Slope

In urban centers hard top pavement and concrete conditions severely limit the amount of rain water that can be absorbed and can cause a large amount of water to travel longer distances, picking up pollutants along the way and depositing them at places where the rain water can easily penetrate the surface such as a garden. Slope is important for managing this problem. Slope can have a positive or an adverse affect on growing. Terraced growing beds are an efficient means of conserving water as the top terrace is watered excesses drain down through the other beds. However terraced gardens can be harder to establish and maintain. A slight slope in the site will allow for water to drain in one direction. This can be useful for irrigation placement using the downward slope to direct water from the top of the site down. A unidirectional slope can also cause problems and the slope of the area surrounding the site can be detrimental. If rain water run off is directed toward the growing beds it can transmit pollutants. By slightly elevating the growing site above the surrounding area it is possible to manage outside influences such as these. Building a large growing site up to a few inches above the surrounding area can be expensive and require a lot of work. Purchasing and transporting soil to the site can be difficult and very time consuming. Raised beds are also useful for controlling drainage and pollutant problems as well as adding and extra level of defense against pests. Using a combined system that removes soil surrounding the growing beds and places it in raised beds can be an excellent way to prepare the site against unwanted contaminants and pests while helping to better manage irrigation. Using a base layer of gravel and separations from adjacent sites can also assist in creating good growing sites that are not at risk of contamination. A site with a decent flat slope and similar adjacent conditions should be of primary focus.



Existing Foliage

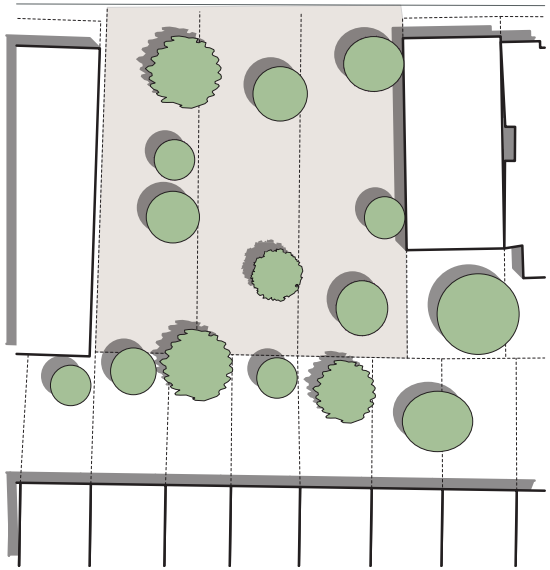
Tree canopy and existing bushes can be both a boon to the project and a problem. Problems are obvious in too much shade generated by large and many trees and bushes with extensive root systems. Sites can also be adversely affected if growing plots must compete with established plants. Sites with too many trees create a situation in which plots need to be worked around root systems and shaded areas. While some smaller trees may be able to be re-located or removed the owners of sites may not allow this. Permaculture enthusiasts have developed systems that include all the natural qualities if the site and utilize them instead of replacing or removing them and may have solutions for existing foliage. Research into permaculture techniques can be done by looking for books on permaculture and attending seminars and classes that teach these techniques.(Permaculture, a designers manual, Bill Mollison, 1988) Benefits of existing foliage can be in the form of shade provided in areas of the site and aesthetic qualities. Shade can be very welcome in the hot summer sun and by combining existing trees and storage and relaxation areas the tree canopy can provide natural shade. Some plants have positive affects on nutrient levels in the soil by either, tapping deeply into the soil to extract nutrients that are lacking at or near the top soil levels and then returning these nutrients to the top soil levels either through leaf dropping or by natural decomposition at seasons end, or, by taking nutrients that may be harmful to certain crops out of the soil altogether. Most gardeners tend to weed to stop competition among planted crops and weeds but others will allow for weeds to exist side by side with plantings for just this reason. Existing foliage can also fortify against pests by creating a natural poly culture situation.

Existing Obstacles

Many vacant sites are littered with garbage and unused materials. Clean up can be a very labour intensive activity. In addition many of these sites have remnants of existing buildings and infrastructure that must be dealt with. Concrete walls and piers can require the use of jack hammers and acetylene torches to cut rebar to remove. The cost of these items is prohibitive even as rentals. The intensive work required to remove these obstacles can also release contaminants into the site that have sat dormant. The best case scenario is to avoid sites with existing obstacles but these obstacles can also be good foundations for infrastructure such as storage sheds and planting / harvesting benches. Each site will have to be assessed and the obstacles evaluated. Vacant sites that have obstacles such as old walls and columns etc are still useful and should be considered if offered at little or no cost to the project. Container gardening can be situated on a site with too many obstacles and intermediate storage and supply can be located nearer to other vacant sites.

Permits and Permissions

If at all needed the required permits and permission should be obtained. This may be in the form of government permits to use the land for growing or permission from the land owner to use the site. Neighbours and adjacent property owners should also be consulted if possible to advise them of what will happen and what the goals of the project are etc. This will hopefully prevent future confrontation and problems. Most cities do not allow for raising livestock within city boundaries, those that do most likely require permits and review by health inspectors. It is assumed that the raising of small livestock such as rabbits and chickens, bees and fish is allowed. The proper authorities should be contacted and all reviews conducted. It is best to go through this permitting step as soon as possible to avoid unforeseen problems before too much is invested in the site. Although sometimes troubling and limiting, city laws and bylaws need to be adhered to.



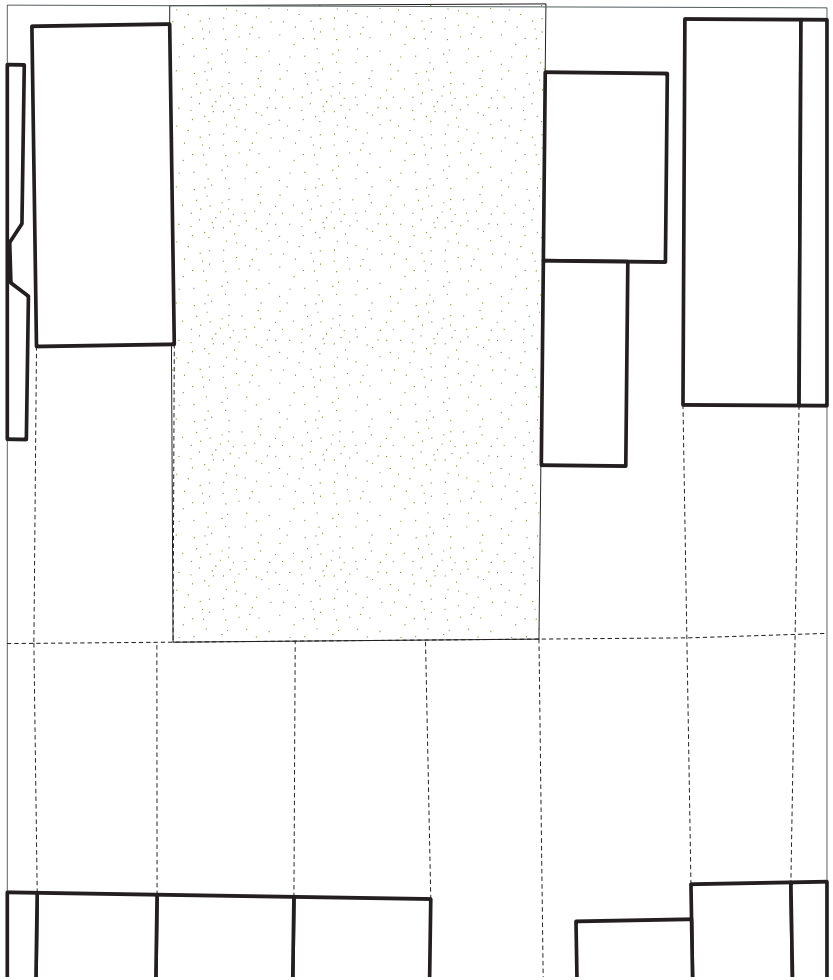
Preparation

Site prep includes all of the above factors. This section discusses the actual physical prep of the growing plots in brief. The SPIN farming method makes use of three types of planting, the intensive relay method that plants at least three crops a season in one plot, the bi-relay method that plants two crops a season in the same plot and the more traditional single crop method. Preparation of the site needs to consider and place these three types of planting. If at all possible the site should be prepared a full season before planting starts. This will allow for all the inputs to permeate the growing beds and for soil conditions to reach optimum levels. A crop of winter wheat during off season will enhance the soil conditions and, when tilled over, will provide the best growing conditions at the start of the next season. Depending on the number of people involved many of these preparations can be done simultaneously. To prepare the site it needs to first be cleaned and tested. Garbage and excess ground covers should be removed and plots laid out using stakes and strings. Any grade changes should have already been decided and any additional soil and stone delivered to the site. It is hopeful that all necessary changes happen using existing materials available through rearranging the site instead of adding to it. With the sod removed the plots need to be tilled and inputs added. Drainage can also be completed at this point. If a water source has not already been added then this is also the time to do the necessary digging and plumbing making sure to properly insulate and protect the fixtures, if at all possible this work should be done by a professional plumber. Using existing spigots is possible and a hose system should be laid out so as to reach all the corners of the site. Be careful to make sure that adequate pressure is available or a second water source may be needed. Security in the form of a chain link fence should be constructed although many vacant plots already have fences for liability reasons. Organic inputs of compost should be added to the plots with additional emphasis on the necessary inputs to level out PH levels and nutrient levels (Lime, peat, etc) Following the SPIN methods beds of 3 feet by 25 feet should be used as much as possible. This layout is comprised of a 1 foot by 25 foot path and a 2 foot by 25 foot planting bed. Variations of this plot layout can be used to maximize any excess space. The goal of the initial stage of the project should be to maximize plots and therefore maximize profits. Any seedlings are assumed to be previously seeded and of an acceptable maturity for transplant. These seedlings are trees either fruit or aesthetic or functional cover. They are planted now so as to allow for early development. Any structures needed to serve the site, additional fences, storage sheds, seeding tables etc can be built on site or off site and transported for final assembly at any time however if a growing will not actually start until the next season then these structures can wait until that time. This allows for more money to be generated from existing growing projects before materials needed for structures are purchased. Once the wheat is planted and the excess growing areas fortified with compost and inputs a covering of hay can be used to protect the growing beds over winter.

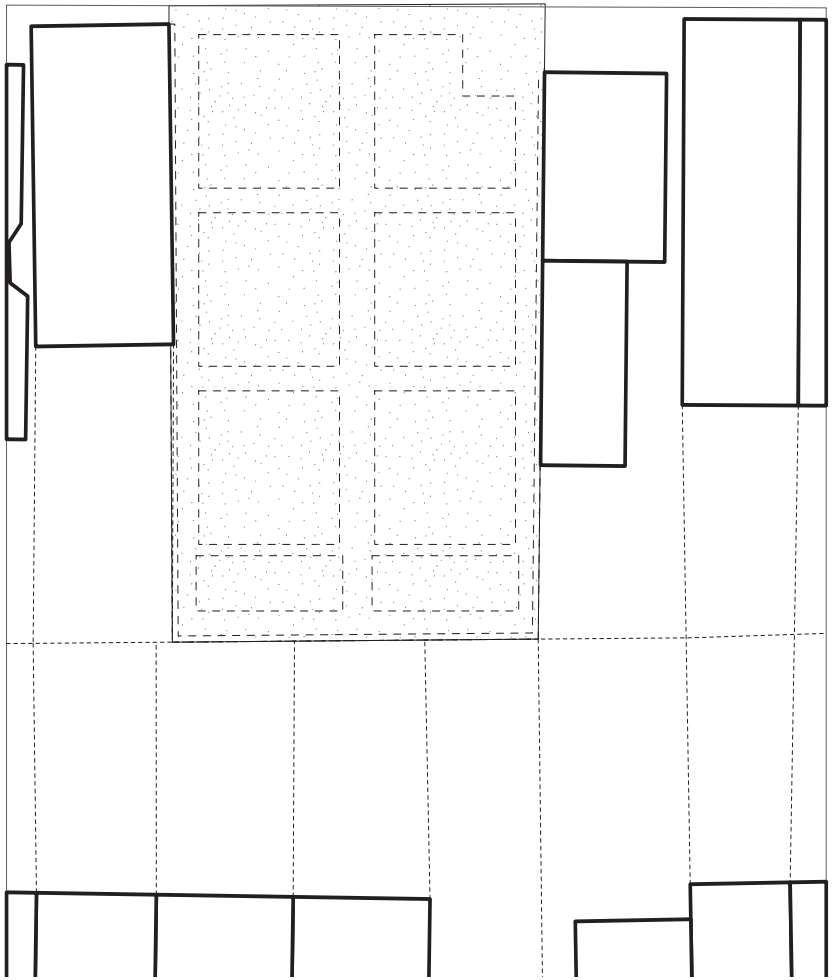




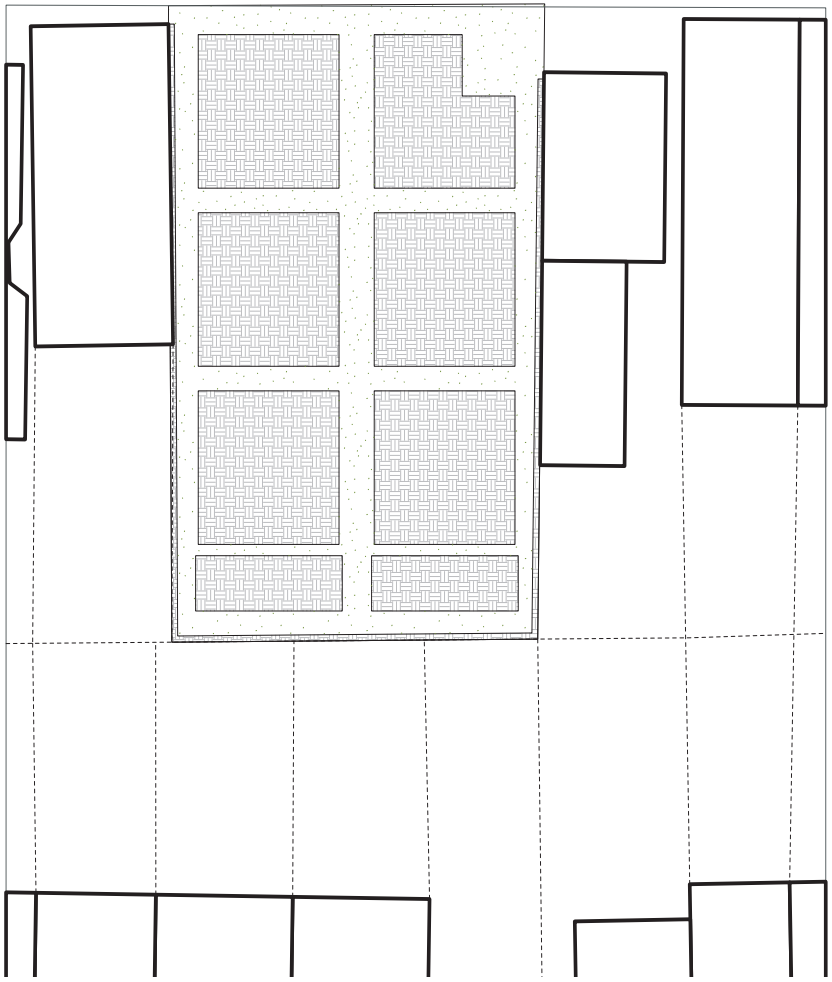




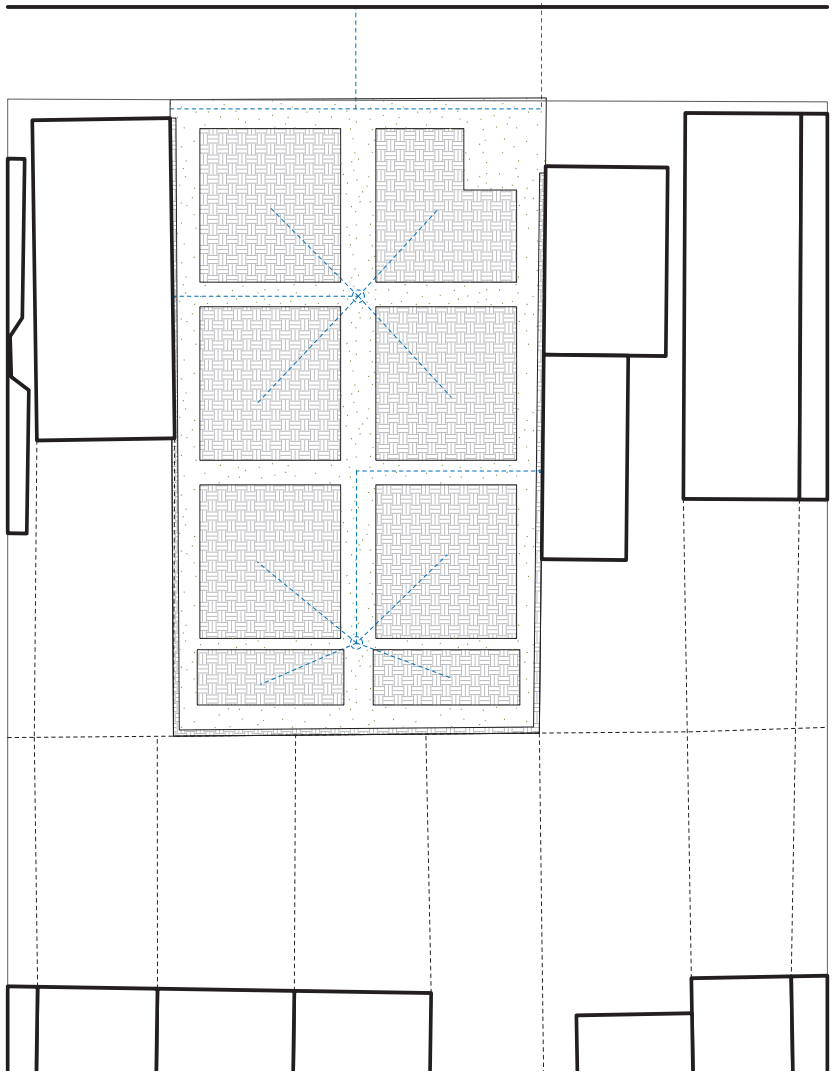
Site Selection:
Choose a decent site with good solar exposure, adequate access and gentle slope. Test soil for nutrients and contaminants. Clear site of garbage and compost unwanted foliage and plants for future use. If possible start to talk with neighbours and community about the garden. Early interest will be beneficial for many reasons including added security and early detection of possible problems.



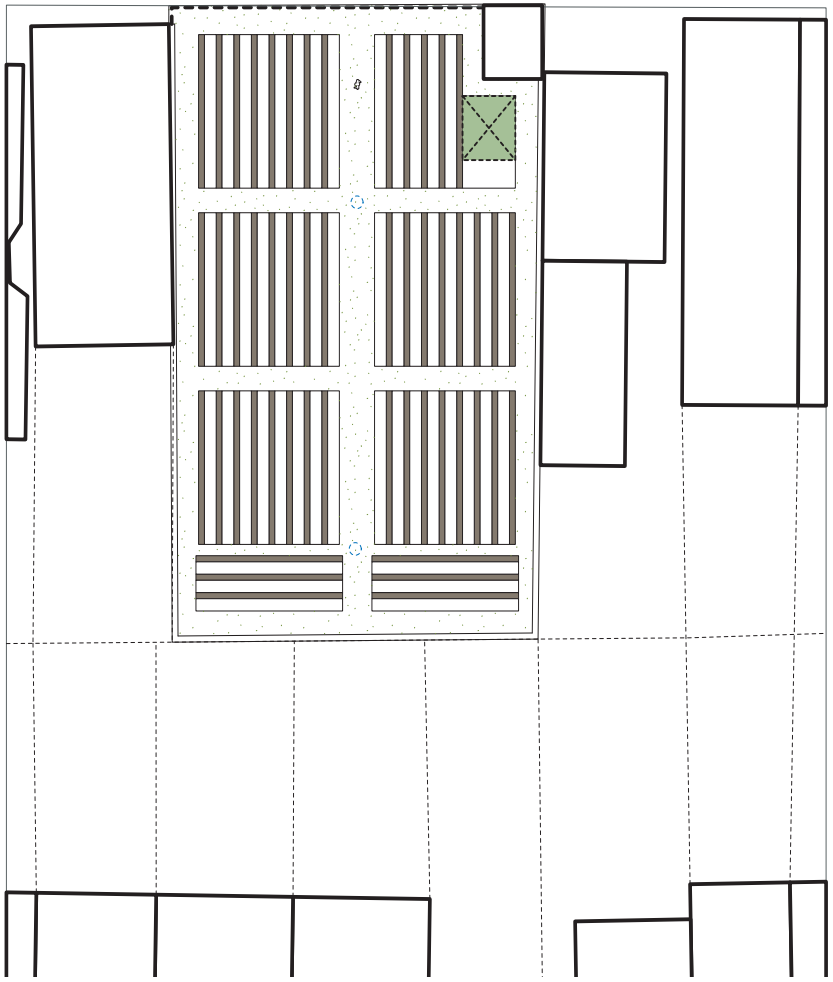
Arrange Beds:
Plan out bed layout on paper, measure and stake off beds. String tied to deep set stakes will help keep the layout clear. A tape measure and other measuring tools will help during this step. It is easiet to complete this part with the help of someone else, friends, family, team memeber etc.



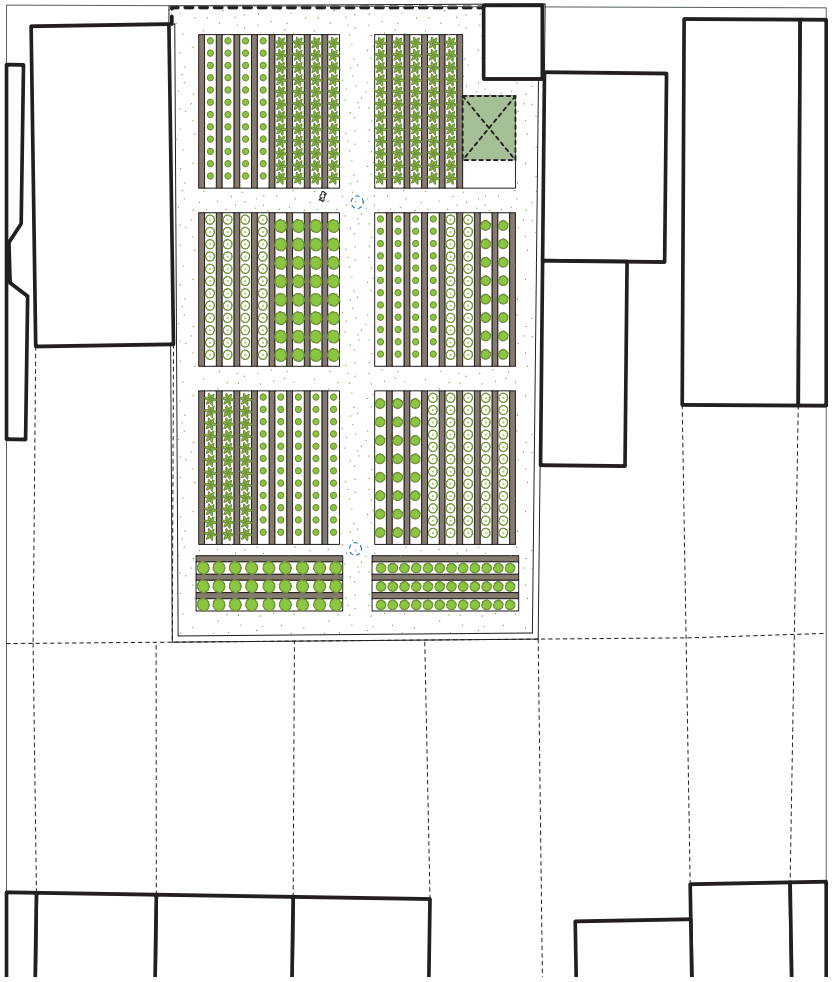
Beds, Plots:
Using an edger cut through the sod and remove in strips. Remove and re-use or compost sod. Clear beds of rocks and other objects and using a roto-tiller, till soil. Inputs will be added later. This is a preliminary step to aerate and loosen soil. Inputs should be added later when preliminary construction work is done. Raised beds can also be built and put in place at this step. Perimeter beds are for flowers and herbs.



Water Sources:
After loosening the soil it is a good time to put in water sources. If needed place water sources under ground and have central tap access in the garden. Dig a perimeter drain and draining to street if possible. This will separate the garden from possible pollutants. A perimeter tap and hose can also be used instead of piping and hard set taps etc.



Further Construction and Prep:
Arrange beds and pathways, add inputs such as compost and fertilizers and build fences and structure if needed. Planting a winter crop and leaving the garden until next season will help fortify the garden beds and prepare them for next season. Tilling the wheat into the soil will added nutrients and growing structure. Periodic review and analysis of the site during this off season time is recommended.



First Plantings:
As soon as possible in early May or April plant seedlings and crops. Re-tilling before planting will ease planting and make sure that nutrients are well combined with soil. Tend and manage the garden following the SPIN method, replanting after harvest of Intensive plots and Bi-relay plots. Addition of inputs is not necessarily needed and can wait to the fall but soil can be re-tested and re-accessed.

Structures

Although care should be taken to make the necessary structures as aesthetically pleasing as possible they really only need to serve one purpose. Most established growing projects minimize cost and build or buy only what is needed to maintain their projects. Initially a simple structure can be created and folding tables and simple tarp covers can be used to provide a space for prep work and harvesting. Eventually it would be good practice to strengthen the project within the community by building both functional and attractive structures. A storage shed needs only be secure but can also be, like the Dutch allotment cottages, aesthetically pleasing and serve as more than just a storage shed. Additional structures may eventually be built on the site that better serve the community. Whatever is eventually created should use natural materials and inexpensive and readily available materials.





Composting

With the initial preparation of the site should also come the establishment of a composting area. All the ground covers and excess foliage can be placed directly into the compost and a little compost and hay can be added to form a decent base for the next season's activities. There are numerous forms of composting and the proper one for the site can be determined and built. Although the additives from the first season will probably not breakdown fully and be available for the next season when growing starts establishing a compost base now will make the transition to growing easier.

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Composting Methods:

Cold or Slow Composting: As the name suggests this method layers compost and lets it sit to breakdown. There is little management of the compost needed.

Types of Slow Composting:

-**Sheet Composting:** Material is laid directly on top of growing area of in a sheet of compost

-**Trench Composting:** A trench is dug and filled with composting materials. It is left to sit for a few months and then either planted on directly or tilled under with the soil and planted

-**Cold Bin Compost:** Use a bin to compost layering material and let sit for a few months to a few years. Take material from the bottom

-**Heap Composting:** Again, as the name suggests this is composting by placing material in a heap.

Hot or Fast Composting: Although faster this method requires specific elements and is very intensive.

-Elements Needed: A minimum of 1 cubic yard to start, A blend of greens and browns (carbon - Nitrogen ratio) Proper moisture content, Frequent turning to provide aeration, Particle size of less than 2"-3"

Vermicomposting: If you live in an apartment and you create mainly kitchen and table scraps then vermicomposting is probably best. Vermicomposting uses worms and a soil base to break down waste and turn it into useable compost. Typically these types of compost are smaller than others and can be stored in a small to medium sized plastic box with a lid

One pound of worms can turn 65 punds of waste into compost in 100 days.

(http://www.compostinfo.com/Default.htm)





Off Season

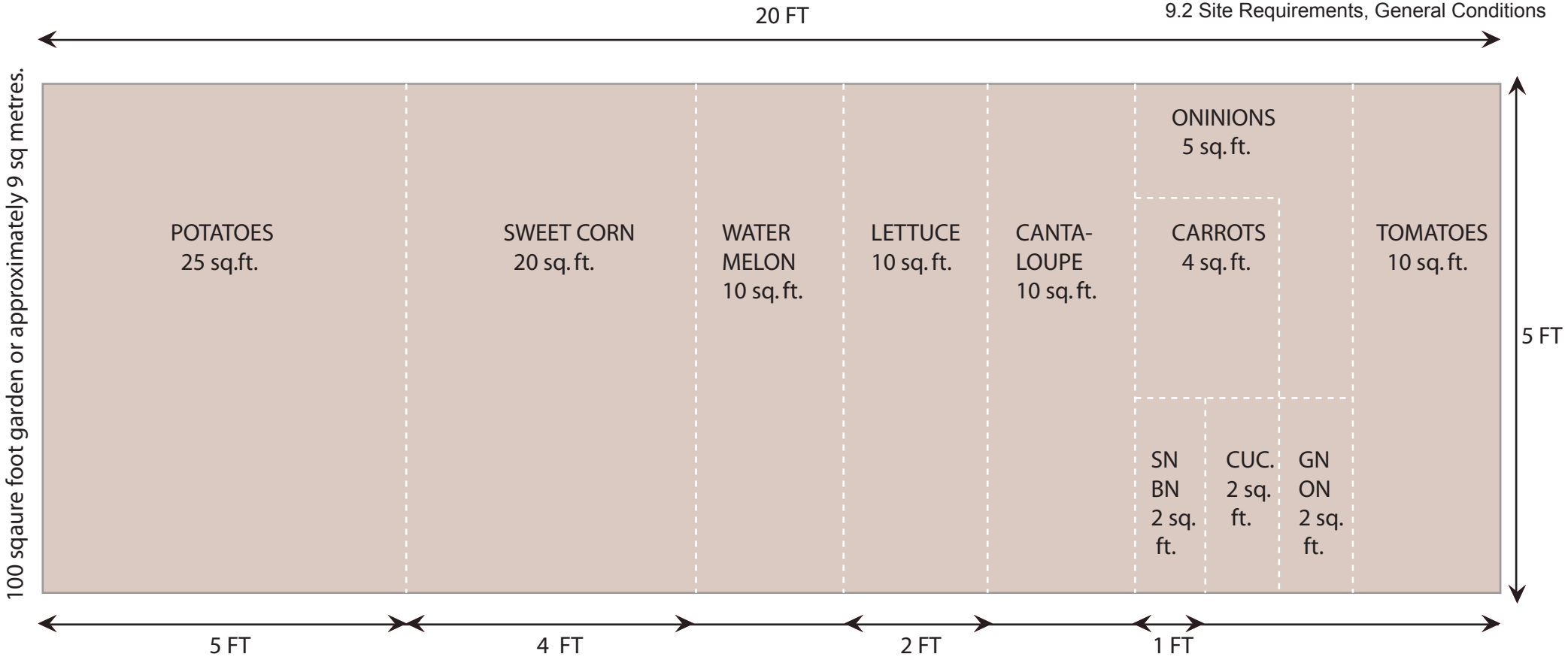
With the site prepared and the wheat planted a visit to the site once or twice a week will ensure that the crop begins to grow and that any unforeseen problems are caught quickly. Seeding and preparations for planting can happen during the off season and any tools that need maintenance can be tended to. Produce that will withstand off season storage can be moved to cold cellars or coolers and, if needed, sold during the off season to supplement income. Those fruits and vegetables that can't be stored should be pickled, canned and bottled or turned into preserves and sauces for sale or personal use. During this time decisions of planting and market strategies can also be determined and planned.

Plants

Decisions on what crops should be planted can be assessed at anytime. By visiting supermarkets and restaurants and talking to people who use fruits and vegetables in the area it is possible to determine what crops will sell best. Visiting farmers markets and talking to vendors will help to make decisions about what will be a good choice for specific markets around the city. There are many choices for what to grow but specific vegetables are easier to grow and sell better at the market. Site will need to be maximized and many different sites will be limited to one or two crops. Still it is good to have an idea of what types of plants thrive together and what types have problems. Plants that share an appetite for the same nutrient will spend more time competing for that nutrient than growing to maturity. While a poly culture planting is best the benefits of natural pest control and disease control of poly cultures can be achieved by mixing two main crops and a series of herbs and flowers. Natural pest and disease suppression should be a primary goal and it goes without saying that all planting should use organic techniques and inputs. By changing what plants are grown in the main plots every 2-3 months it is hopeful that pests do not have time to establish themselves. Like all things pest and disease are unpredictable and crops may succumb to these problems no matter what precautions are taken. Through using raised beds, mixed plantings that change periodically and natural pest deterrents such as specific herbs and flowers it is hoped that problems of pest and disease will be limited. The plots should also be laid out in order to take advantage of the natural path of the sun. While some plants need a lot of sunlight (Peppers, tomatoes, corn) others can exist with more limited direct sun (Cabbages, Spinaches) (Bowen, 2005) Plant layout should take this into account and plots should be arranged to maximize growing while also maximizing area. Many good guides and books about specific plant requirements are available.

Given enough time and energy inputs most plants will grow in a seasonal North American climate. However it is best to choose plants that sell well at farmers markets and supermarkets. Variety and exposure to new foods are excellent reasons to grow unique fruits and vegetables but the struggle to grow them may not be rewarded with sufficient sales to justify the attempt. When the project is established and earning profit there will be time for experimentation and introduction of specialty fruits and vegetables. Taking the time to figure out what sells and working it into a marketing strategy will help solidify sales and profits. Combining certain crops at farmers markets will also help them sell for example a bag of mixed greens, ready for use in a salad, may sell better than single heads of lettuce or spinach. Also by concentrating on high value crops, those that sell well and at a good price for the labour and energy inputs required to grow them, profits will be higher. Below is a list suggested by the creators of the SPIN (www.spinfarming.com) farming method for high value crops. Different regions and cultures will value different crops above others and a crop list should be decided on per region and per project, In Minneapolis Minnesota the Hmong people grow fruits and vegetables for Hmong, Vietnamese, Thai and other asian cuisines. Hot peppers, savoury roots and potatoes sell best at the local farmers market.

Beets
Bunching onion
Carrots
Fresh garlic
Fresh herbs arugula, basil, cilantro, dill
Green beans
Lettuce
Radish
Red scallion
Salad mix
Scallion
Spinach
Swiss chard



PLANT COMPATIBILITY CHART

VEGETABLE	Close Neighbour	Distant Neighbour
BUSH BEANS	Potatoes, lettuce, tomatoes	Onions
CARROTS	Leaf lettuce, onions, tomatoes	-
CORN	Potatoes, beans, cucmbers	-
CUCUMBERS	Beans, corn	Potatoes
LETTUCE	Carrots, cucumber	-
ONIONS	Tomatoes, lettuce	Beans
POTATOES	Beans, corn	Cucumbers, tomatoes
TOMATOES	Onions, carrots	Potatoes

BENEFICIAL HERBS AND WEEDS

1.) Lemon Balm (tea) 2.) Chamomile (tea) 3.) Oregano (Herb) 4.) Marjoram (Herb)

5.) Valerian (root is medicinal) 6.) Dandelion (weed) 7.) Stinging Nettle (Weed)



* FRO M THE SUSTAINABLE VEGETABLE GARDEN - John Jeavon and Carl Cox-Ten Speed Press, Berkley California

Pests

Consideration should be given to pests and disease and as stated above certain plants, herbs and flowers can be used as natural deterrents. Also stated above is the use of poly culture planting to minimize pests and disease. The simple concept is that variety prevents a pest or disease from establishing a foot hold on crops. Mono cultures can quickly succumb to pests and disease but poly cultures prevent a pest or disease from "locking on" to one specific crop which renders them ineffective. The worst case scenario is that one plant variety does succumb to a pest or disease but the other varieties are protected. Organic sprays and other natural methods, although more time consuming, are also effective at treating outbreaks of pests. A little vigilance can go a long way toward stopping a problem. There are websites and literature available that provide specific strategies for fighting Pests and disease naturally using organic products. (http://www.extremelygreen.com/pestcontrolguide.cfm)



PESTS LISTED ALPHABETICALLY A - G

Pests/diseases (alphabetical)	Beneficial insect solutions	Other organic solutions
Anthracnose Identify		Lime Sulfur Spray Garden Dust Copper Dust 7% (Bordeaux)
Ants		Diatomaceous earth Rotenone-Pyrethrins Spray Sharpshooter insecticide
Aphids (Cabbage Identify) (Corn leaf Identify) (Cotton/melon Identify) (Green peach Identify) (Greenbug Identify)	Aphid parasitoids (A.colemani) Aphid parasitoids (A.ervi) Aphid parasitoids (A.matricariae) Aphid midges (A.aphidimyza) Ladybugs (Hippodamia convergens) Green lacewings (Chrysoperla) Insidious flower bugs (O.insidiosus)	Garlic Barrier Garden Dust Hot Pepper Wax BotaniGard ES Tobacco Dust Horticultural & Dormant Oil Rotenone 1% Dust Rotenone-Pyrethrins Spray Sharpshooter insecticide Neem Oil (100% Pure) Rotenone 5%
Apple maggots		Garlic Barrier Rotenone Copper Dust Rotenone 5% Surround W.P. Kaolin Clay
Armyworms Identify (Fall Identify)	Beneficial Nematodes (Sc) Mini-wasps (Trichogramma minutum) Mini-wasps (Trichogramma pretiosum) Green lacewings (Chrysoperla) Insidious flower bugs (O.insidiosus)	Garlic Barrier Dipel 150 Dust Hot Pepper Wax Neem Oil (100% Pure)
Asparagus beetleIdentify		Rotenone 5% Rotenone-Pyrethrins Spray Garlic Barrier Garden Dust
Bark beetles Identify	Beneficial nematodes (Hb/Sf)	
Bean beetles Identify (*see* also Mexican bean beetles)		Sharpshooter insecticide
Billbugs (Blue Grass/Hunting Identify)	Beneficial Nematodes (Sc)	
Black spot Identify		Lime Sulfur Spray Copper Dust 7% (Bordeaux)
Black turfgrass ataenius Identify		Milky Spore

Marketing

As stated in the introduction of this section urban agriculture needs to be run as a business (Christensen, 2006) Projects that seek to combine urban agriculture and other social goals often fail or have to focus on only one goal. By establishing a financially viable and successful urban agriculture project the secondary social and cultural benefits of urban agriculture will follow. Marketing techniques such as advertising and promotion need to be considered if a project is to succeed. Marketing can be as important to a project as the actual growing. Specific techniques are best left to experts in marketing and advertising but some simple ideas such as establishing a brand and brand awareness, more aggressive selling techniques such as subway stands that sell fresh vegetables to consumers and maximizing the market by selling produce at as many city farmers markets as possible can go a long way to solidifying profit sources. Although some of these ideas seem like big business schemes they will still be rooted in good wholesome and healthy food.









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Study Area Map, Area for analysis

-Images by Author

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Soil Tester

-Images from: http://www.lusterleaf.com/images/index.html

Garden Zone Diagram

-Image by Author

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Solar exposure Section

-Image by Author

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Watering the Garden

-Images from: Unknown Website

Page 307

Misc Garden tools and equipment

-Images from: http://www.leevalley.com/

Watering and Drainage Section

-Image by Author

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Drainage Section

Site Plan

-Images by Author

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Preparing the Garden

-Images from: http://curiousgeorgecottage.org/?p=310

and

http://www.sbceo.org/~harding/garden2.html

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Site Plans and Enclosure Structure Detail

-Images by Author

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Watermelon Harvest from the Somerton Tank Farm Project

-Image from: http://www.somertontanksfarm.org/

Tent Canopy

-Image from: http://www.elitedeals.com/canopy.html?ovchn=GGL&ovcpn=Canopies&ovcrn=[tent+canopies]&ovtac=PPC

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Different Composting methods

-Images from: http://www.compostinfo.com/tutorial/methods.htm

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Garden Planting Diagram and Helpful Herbs

-Image by Author, Compiled from information found in "The Sustainable Vegetable Garden" John Jeavon and Carl Cox, Ten Speed Press, Berkley California, 1999

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Asparagus Beetle

-Images from:http://www.oznet.k-state.edu/hfrr/extensn/problems/asparagu.htm

Chart of Common Garden Pests

-Image from: http://www.extremelygreen.com/pestcontrolguide.cfm

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Misc Marketing Images

-Images by Author

4.5.1

Part 3 - Design Study - Form - Case Studies - Phase 1

10.1 Phase One The Beginning, Steady State

10.1.1 Introduction
10.1.2 Methodology
10.1.3 Scenario

Introduction:

Each phase will start with a brief description of the methodology used to determine the amount of available land area for growing. Following this description will be a scenario describing the people involved and the ideas behind a business plan and the way the project is run. This **PHASE 1** scenario will be the catalyst for the next two phases and will need more in the way of description than the other two. The profit and investment numbers generated through the first phase will help support the next phases.

Methodology:

The idea of practicing agriculture in a heavily built up urban core can meet with some theoretical problems and some realistic ones. Throughout this thesis the issue of land value has continually been a "thorn" in my side. In third world countries the need for survival through food production far outweighs the need to develop land and profit from it. In a North American city, even a city in decline, the perceived value of vacant land or disused land prohibits the use of it for anything other than commercial property development. Although many parcels of land sit vacant, tax delinquent and unused they are still valuable in the eyes of the land owner. Yes there may be owners that are far sighted and see the benefits of supporting urban agriculture, investing in the green future like venture capitalist John Doerr (http://www.wired.com/news/technology/0,70641-0.html?tw=rss.index) but it can be assumed that when there is money to be made owners will be reluctant to give their land to a needy cause. The grass roots startup nature of an urban agriculture project makes it difficult to support the idea that the vacant land is rented or, in the least, rented for market value. How then can an urban agriculture project begin and solidify itself and tackle the land value issue. Taking a page out of the book of Wally Satzewich it is possible to deal with the land value issue and begin an urban agriculture project.

Wally started his own urban agriculture through utilizing unused backyards. Initially Wally and Gail had a small traditional farm on the outskirts of Saskatoon. Realizing that they could expand their growing enterprise if they could also grow in the city Wally and Gail looked into a place to grow within the city boundaries. Wally's mother was the first to offer a solution in the form of her own backyard. Due to her age she was unable to continue growing on her own in the backyard. By allowing Wally and Gail to grow their produce in her backyard she was getting the benefits of an aesthetically pleasing garden and helping to grow food and support her son. More backyards soon followed and Wally and Gail merely paid for their water usage each season. More than just the elderly gave their backyards to the project and soon Wally and Gail had enough local growing space to discontinue the use of their traditional farm. They sold the farm and continue to grow on approximately on half acre of combined space in the city.

The genius of this idea is in the multiple benefits to multiple causes and people. An urban agriculture project can start slowly and with care and then develop at whatever pace is needed without the problems of high land rents, purchasing land and other overhead costs. The land owner gets the positive benefits of a productive backyard, an aesthetically pleasing space, contributing to the greater good of the community and may even become involved in the project itself. Water usage can be paid for and vegetables can be traded for land use. When the project grows there is the possibility of a permanent solution and if the land owner decides to move, or change the arrangement then nothing is lost and the project need only find another plot of land.

For this phase it is suggested that a small group of people (discussed in the section on the scenario) band together and begin growing utilizing the method described above. The amount of available land for this first phase will be determined using NYC Census numbers from the 2000 census.

The 2000 New York City Census shows that there is approximately 10 percent of the total population above 65 years of age in the study area. There is approximately 40 percent between the age of 25 – 44, and 20 percent between the ages of 45 – 65. The total approximate population for the study area is 11536 with an approximate 5132 housing units. Taking into account that not all of these units have a backyard and that many of these people share accommodations it is difficult to get an exact number of available backyards. However from the NYC census we can determine that there is an average 2.25 people per unit and for the sake of this study we will consider the total number of units, multiplied by 2.25 and then divide that

number by the percentage of age. This is not the final step however and we need to consider four more factors. The first factor is that there is no definite age of the people of 65 or older, they may be closer to 65 than they are to 95 and may still be capable of fully enjoying their backyards. To address this factor I will use a reduction of 15 percent of the final number. The second factor involves the likely hood that not all the people with backyards, over 65 will want to donate their space. Again a reduction of 15 percent will be used. Third we need to consider that not all of these units have backyard access and from the maps generated we can see that we need to reduce the number by 20 percent. The final number then needs to be divided by 2.25 to determine the total number of available households, and therefore, backyards for the project. It should be considered that younger households will want to become involved in the project and that a percentage of these people will want to donate their space to the project. After applying a reduction of 20 - 40 percent, for lack of backyards, to the two younger percentages we should consider that 10 percent of each age category will participate.

The likely hood is that younger people will become more involved than this percentage suggests but it is better to be on the cautious side. Another factor to consider is the changing typical demographic. The baby boomer generation is getting older and soon will most likely make up a much larger percentage of the total population. It is already 2006 and so percentages from the 2000 census have changed. Add to this the duration of each phase of the project and the major land area growth in the third phase may be in the form of more backyard usage then the form of new vacant lots.

So for the methodology section of this phase we can see that the equation of possible available land area looks like this:

Total Housing Units (2.25 people per unit) = A (10 percent 65 or older) = Y-(15 percent age variability) = N – (15 percent involvement) = B – (20 percent no backyards) = C / 2.25 = X total backyards

And we need to add the younger generation involvement for each group which equates as follows

Total Housing Units (2.25 people per unit) = X (20 percent 22 – 44 yrs) = Y - (10 percent involvement) = N – (70 percent no backyards) = C / 2.25 = YG1 total backyards

And

Total Housing Units (2.25 people per unit) = X (40 percent 45 – 65 yrs) = Y – (40 percent involvement) = N – (40 percent no backyards) = C / 2.25 = YG2 total backyards

Using these equations and using some land area listed as vacant land it is possible to get initial numbers for the total available land area for the first phase of this project. Obviously the total available backyards will be a large number and require a large number of people to manage and grow on this land area. The total should only be considered as possible for use in the phase one part of the project. Using another equation to determine the amount of people involved will come from taking the total number of available backyards, applying an average backyard size to the number, converting this square metre area to acres and multiplying that number by 4 people per acre (2 per half acres according to Wally is possible) and then determining how many people are involved in the project initially. Using some typical layouts per backyard we can then determine possible yield, apply a reduction percentage to the yield to account for failure, climate problems, disease etc and generate possible economic returns for the site. The backyards in the study area are of varying sizes but using an average size will provide that most realistic situation for this study. As for the possible profit from yields we will again use the sources for these numbers that we have, Wally's Saskatoon operation and the Somerton Tanks farm. Both projects list between $100.00 and $300.00 per plot (7 Sq M), per harvest depending on the quality of the harvest. We will use the conservative number of $100. Wally has documented sales based on the $300 amount per plot, per harvest are entirely possible.

Number of people needed to farm the available land

Total number of available backyards (Average backyard size) = X (1 square meter = 0.000 247 105 acre) = Y (4 people) = Total number of people needed

Average Yields

Typical Layout of backyard in square metres (possible profit per plot) = Project Profit



Scenario:

Matt and Nancy have lived in the Brooklyn neighbourhood of Park Slope for 30 years. They bought their 4 story brownstone in the 1970s for $30,000. Matt is an architect and Nancy recently retired from her job as a physical therapist. They are both in the mid to late 50s and have two boys who live in the city. Matt has always had an interest in the community in which they live and his practice in located on 5th avenue and St Marks. Business has been up and down but seems to be steady right now, mainly renovations of local client homes and small additions. Nancy worked as a physical therapist for 35 years and she's looking forward to her retirement now. She likes to paint and dabbles in photography. They both have been avid gardeners for sometime working in their backyard and their front yard planting flowers, herbs, and vegetables. They are both members of the local gardening club that meets twice a month at a local church. The group consists of 25 members, most from the area or adjacent neighbourhoods, the members range in age from early 20s to late 70s. Matt and Nancy have been having a lot of success recently with zucchinis' in their garden and are considered the experts in the group.

One week in early February (the group meets all year) one of the younger members gives a talk on urban agriculture. He's recently returned from a conference on urban agriculture and has some new and interesting ideas. He talks about urban agriculture and its use in third world countries and he talks about the social programs associated with a lot of the urban agriculture projects in North America. Then he shows some slides from his trip to the Somerton Tanks Farm in Philadelphia (The conference was in Philadelphia) he tells the group about Wally and Roxanne and spin farming. Everyone agrees that it's an interesting concept and they all love the combination of a job and a hobby they all partake in, some joke that they wish they were young enough to try it.

The next week Nancy casually mentions to Matt that she is going to look into urban agriculture a little more, what with all her free time and all. Matt lets her know that it's all he's been able to think about since the presentation and that he's really interested in researching it further. They both agree to spend some time looking at urban agriculture options and then maybe present their findings to the group. 2 days later George, a group member, drops by Matt's office and invites him out for lunch. The conversation quickly turns to the urban agriculture presentation and George tells Matt that he and his wife, Sally, are really interested in the idea and have even gone as far as ordering the SPIN farming guides available on the Web. They continue to talk about the idea over lunch and agree to meet on the weekend to talk about it.

The next month Matt, Nancy, George, Sally and 10 others from the group make a presentation on to the rest of the group on SPIN farming and urban agriculture. They suggest that the group seriously considers starting a side SPIN farm business and ask who might be interested. To their surprise everyone is eager to get involved

and they group schedules a special meeting for the next week to discuss the idea.

The special meeting goes well and it's determined that they have enough backyard space amongst them all to start the project. Those that work a full time job will help out nights and weekends and the others will manage the project during the day. At first the project is organized in a traditional manner, utilizing the SPIN techniques, but not going as far as purchasing the needed supplies to build a walk in cooler etc. Their first few harvests won't be for a while as the winter turns to spring and the gardens are dug and planted. The project gets off to a good start with everyone eager to make it a success, still more of a hobby than a business they decide to pool some money to buy seeds etc. The profits from the first market will go to paying the money back and buying new supplies. May comes quickly and the first harvest is bountiful.

The group grabs some folding tables and sun umbrellas and heads to a local farmers market on the Saturday following harvest. They have to pay a small fee to set up their tables, which they pay and then go about wooing the crowd. Sales are okay for the first hour but soon peter off. So far they've sold a quarter of their harvest and most people seem to be moving past their table to other vendors with better looking produce. After a full day the group sells about 1/3 of their harvest and has to lug the rest back with them. A group meeting is hastily arranged and the problems of the market are discussed. Most people speculate that their harvest had time to wilt a little because they picked it a few days before the market, john suggests that simply setting zucchini, squash, lettuce and carrots on a plain table might not be the best way to entice buyers. The group discusses for a while longer and agrees that they need to review the SPIN literature and form a better strategy for the next market; Sam suggests that they form teams of growers and marketers. The growers will be responsible for arranging the new growing procedures and the marketers will look into how to maximize sales. The daily take is $300 and at least that pays back their original investment.

Two weeks later the group meets again and discusses the strategy for the next harvest and the next market. Matt, in charge of the growers, suggests that the group harvest, clean and bundle, bag their harvest the day of the market and John, the market head, suggests that groups go to different markets that day, use a more structured selling method using combined harvests of spinach and mixed greens, zucchini and carrots and peas and beats. He also thinks that some more colorful tables and signs will help them look more professional and sell more. John also suggests that preparing the harvest by washing and bundling is a good idea. The next month and a half sees great success with most market teams coming home with money and no vegetables. Serious discussion is given to the idea of a cooler and Mark, a local business owner, offers the back of his store for a place to put the cooler. This way harvesting and prepping can happen at intervals and more time can be given to combining and bagging fruits and vegetables. The expense for the cooler is approximately $5000 but the group has no problem contributing as the last few markets have been super successful. Some of the children of group members have taken an interest in the project and help out carrying, planting, harvesting and prepping food. Sam has been approached by people in the community about buying some of the groups fresh vegetables and he's arranged 20 CSAs at $300 a year. The season progresses rapidly and the group is becoming more and more successful. With the amount of money they are making it's decided that they have to re-pay their success and give back to the community. They contribute 10% of profits and 10% of harvest to local charities and plan to increase the percentage next year.

The group continues for a few years, expands their sales and their membership reaches 45 people. More backyards are being used, more CSAs are being sold and local restaurants are using their fresh fruits and vegetables. The group incorporates and forms a co-operative. Soon they realize that they must expand the project and begin to approach elderly people in the community to see if they can use their backyards to increase their land base. Some local land owners have volunteered their vacant parcels of land with the understanding that they may need to sell them in the future. Others are approached and asked if they will donate their disused land to the project. Some say no but others see the benefits of having an unused piece of property managed by a group of growers to produce fruits and vegetables.

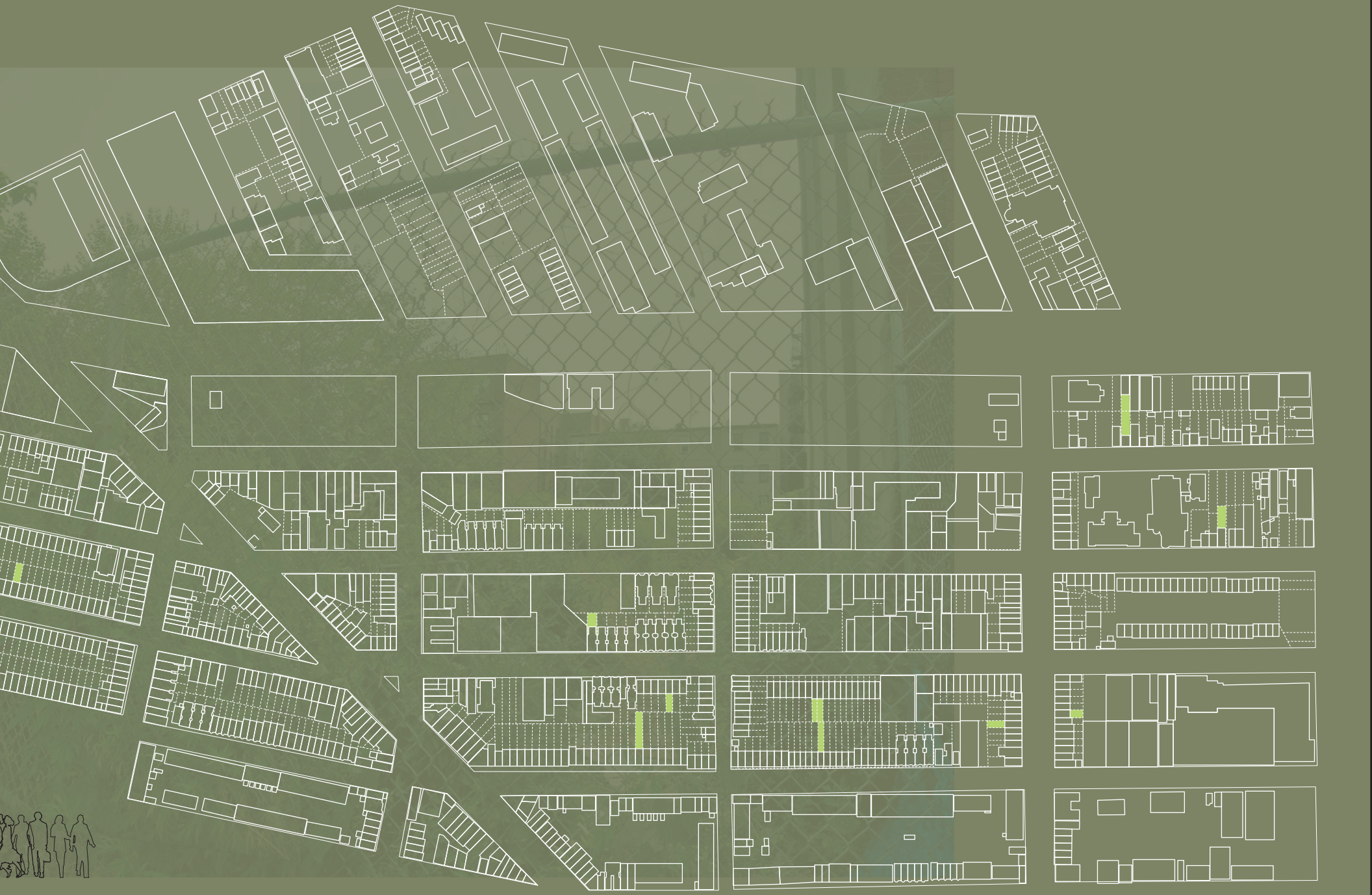
It's been five years since the first form of the project and it's time for expansion.

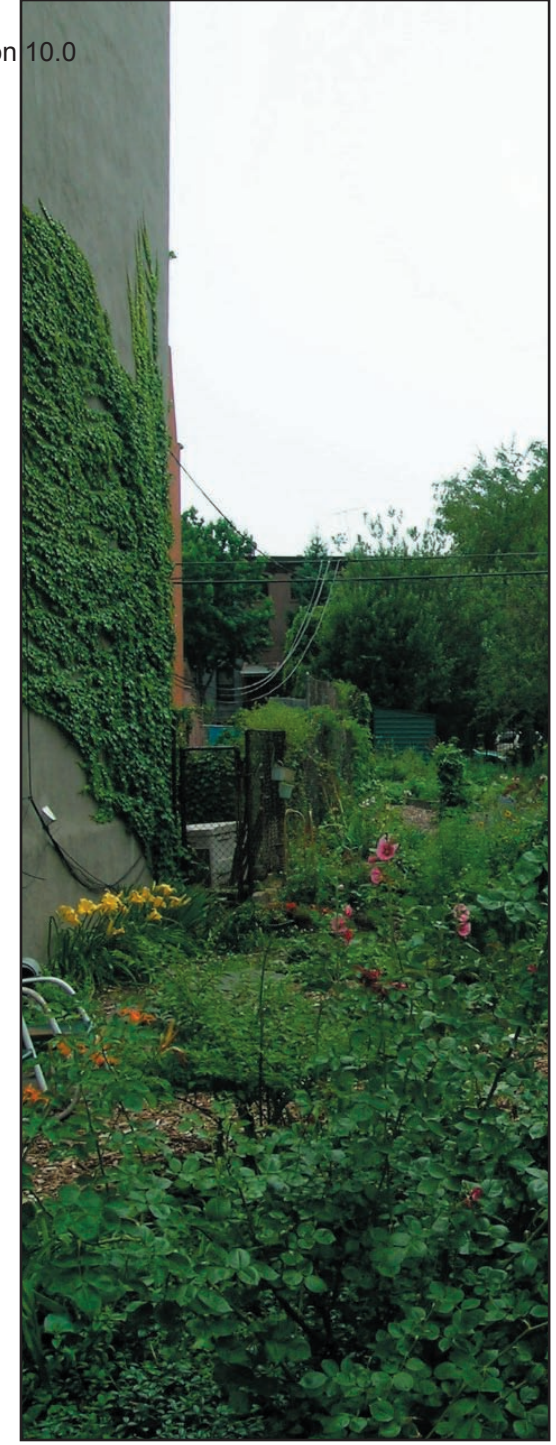
Beginning: Year 1 group 25 members, 1642 square metres of land, 200 plots

The first group of growers is the original group of 25. They share 14 backyards worth of useable land for planting. The Project is run using this land for 1 year and profits are divided among the participants, re-invested in new seed for the next year and a small amount of money is needed to pay farmers market dues and fees. The area of the 14 backyards is 1642 square metres (0.4 acres) The land is managed by all 25 people with each person working a total of about 2 hours a week on the project (50 hrs a week / 25 people) with more emphasis on harvesting days. Some group members work from home and therefore find it easier to water the gardens on a daily basis and perform the daily task necessary to produce a good crop such as monitoring for disease and pests and basic weeding. The other group members tend to throw a lot of their time into the harvesting and prep work and a weekly farmers market schedule sees most group members working 1-2 hours a day (Saturday, Sunday) at the market. This eases the workload on all the members but also maximizes profits and success. The harvesting and marketing starts late the first year and only 14 weeks see sales. At first the profits are low but as the group realizes that they can break into teams of 2 and go to 10-12 markets a day on the weekend they are able to completely maximize their sales. Soon the money is getting bigger and bigger and Sam and John have to drive around to the markets on the weekend to pick up profits (or risk losing them in a mugging etc) The last three weeks see the biggest sales with summer crops available in mid September.

Harvets / Replant	Saturday Sales	Sunday Sales	Meeting / Profits
04.01.06 P	None	None	None
04.08.06 H	None	None	Strategy
04.15.06 P	None	None	Progress
04.22.06 H	$2500.00	$3000.00	$5500.00
04.29.06 P	$1000.00	$750.00	$1750.00
05.06.06 P	$500.00	None	$500.00
05.13.06 H	$5000.00	$5000.00	$10,000.00
05.20.06 P	$900.00	$300.00	$1200.00
05.27.06 P	None	None	Progress
06.03.06 H	$7000.00	$3400.00	$10400.00
06.10.06 P	None	None	None
06.17.06 P	None	None	None
06.24.06 H	$6500.00	$1000.00	$7500.00
07.01.06 P	None	None	None
07.08.06 P	$1375.00	None	$1375.00
07.15.06 H	$10,000.00	$6700.00	$16700.00
07.22.06 P	None	None	None
07.29.06 P	None	None	None
08.05.06 H	$14,000.00	$8000.00	$22,000.00
08.12.06 P	None	None	None
08.19.06 P	None	None	None
08.26.06 H	$15,000.00	None	$37,000.00
09.02.06 H	$12,000.00	None	$19600.00
09.09.06 H	$17,000.00	None	$31,300.00
24 weeks total	$92775.00	$28150.00	$120925.00 Total







Explanation of Result:

Although Wally and Gail are only able to make approximately $52,000 a year from a SPIN operation on a ½ acre collective land area the group was more successful due to three factors.

First they are working with a slightly longer growing season. Temperatures in New York for late March early April allowed for earlier planting and therefore earlier harvesting. The elongation of the growing season into late September allowed for later harvests of produce typically thought finished by September and therefore increased late season sales. Compared to the shorter growing season of Saskatoon the New York City climate allows for a longer growing season. We will assume 4 harvests a season.

Second, the larger team meant that each plot was well tended and produced excellent crops each harvest. The experience of all the group members meant that potential problems were noticed quickly and dealt with before they became a problem. The larger group also made harvesting, cleaning and transporting to market easier.

Third, the great public transportation infrastructure of New York City allowed the group to split into smaller sub groups of 2 and 3 and travel to more than one farmers market per day on the weekend. Where Wally and Gail were able to make brisk sales each weekend at a farmers market the group was able to see similar sales but at 12-15 markets each day each weekend. Using Wally's estimate of $100 per growing plot per harvest and per market the group could potentially make $480,000 per 24 week growing season if they could plant and harvest each week. The plants need time to mature and grow so a more realistic number based on three harvests a season would be 1/6 of that number or $80,000 a season. The first year saw a slow start and sporadic sales due to inexperience. As the group grew and learned sales began to increase and strategies for growing, harvesting and selling emerged. The late season profits were higher than the earlier season profits due to this transition but also due to an abundance of crops typically thought of as only available mid season. The next year will see increased profit based on the lessons learned from the first season and the use of a walk in cooler to preserve freshness between harvests and markets.

Available land 1st year = 1642 sq. m

Plot size = 7 sq. m

Total Plots = 234 plots

Total Plots used = 200

Value per plot per harvest = $100.00

Total Harvest per season = 4

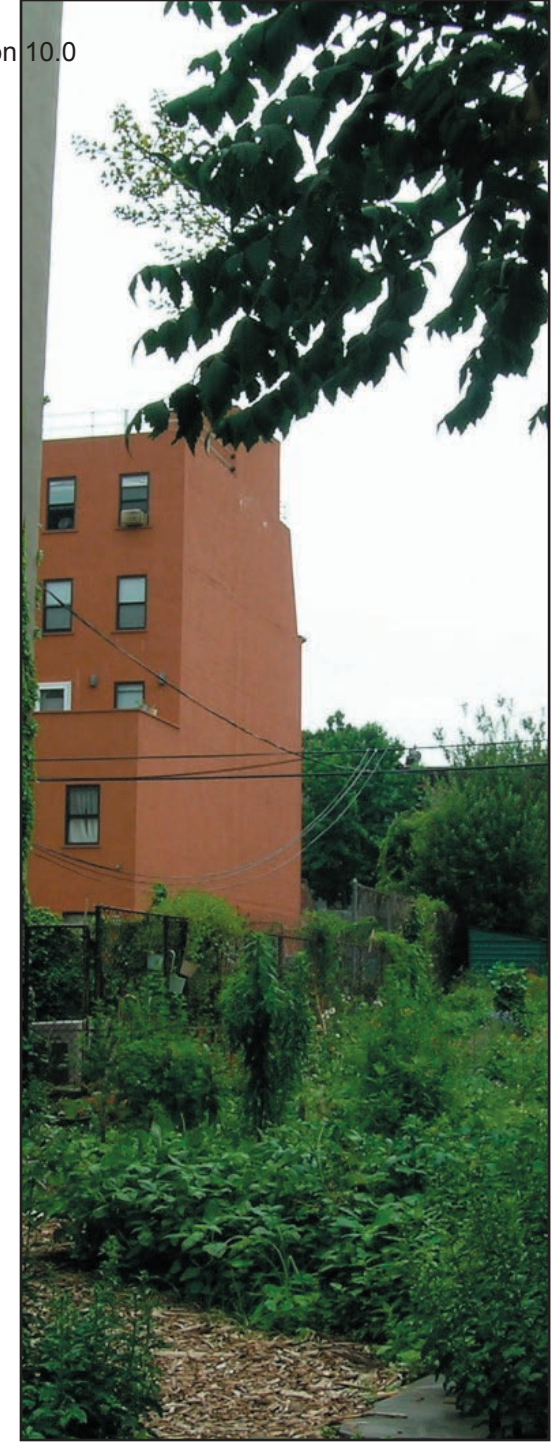
Total Possible Profit = $80,000
1st Year Profit = $76,000

Overhead = water ($50 / month per backyard) 14 backyard = $700.00, Seeds ($200 per backyard) 14 backyards =$2800.00 Farmers Market Fees = $500 per market per season = 15 ($500) = $75,00 per season, Transportation = 30 (25 people)(4 months) = $3000.00, Total Overhead per 1st season = $14,000

Profit = $76,000 - $14,000 = $62,000
1st season.







Changes:

As the group grows and more local community members start to grow in their own backyards fences come down between neighbours. Combining forces these yards make larger plots with shared resources and shared management. Sam and John Have always worked together on Sam's yard and with the inclusion of Sylvia's yard and Robert and Rose's yard they are the driving force on their block.

Before the expansion a meeting is held to discuss the idea of expanding the project, the logistics of such a task and the realistic problems that might come. A few people voice their concern that more plots will be harder to handle but others defend the expansion noting that it's not that hard to walk between blocks to turn on a sprinkler or soaker hose and weeding can be done week to week. To satisfy all the group members its decided that a list of possible properties will be generated before a commitment to those properties is made. This way a plan can be devised that will facilitate groupings of properties to ease maintenance and harvesting,. Any plots too far away or with very limited access will not be considered and each scenario will be looked at on a case by case basis.

Sam and John decide to volunteer their services for the initial land scouting. They will take a week and approach people they know from the neighbourhood who might want to get involved or who might be able to lend or rent their property to the project. There are a fair number of elderly people in the area and neighbours have mentioned that it doesn't seem as though they are keeping up their backyards as much as they used to. Sam and John will go to these homes and explain the project to the people. Hopefully they will be able to get enough land to expand the project without wasting too much in the way of overhead expense. Secretly Sam hopes that he'll be able to quit his job as a bus driver and work on the project full time. Matt offers to design a little brochure that describes the project. Sam and John and others can use it to tell other people about the project.

Matt asks people to bring in pictures of their gardens for the next meeting and he will generate the brochure and maybe even a website.

Up until this point the project profits have been divided amongst the team members. The first year saw each member earn approximately $4250.00 a season for their time and commitment. As the years progress and the profits increase there is a lot of talk about forming a co-operative and re-investing much of the profit into the project. Charitable donations in the form of money and fresh food are also made on behalf of the project. It's agreed that, after start up costs and expansion costs are covered all the profits from the ist expansion season will go back into developing the project further, expansions, building needed sheds, tools etc and other improvements. The remainder will be divided into two investment groups. One will support the project in the future and the other will be invested on behalf of the members to be used for the future for college funds, retirement etc. Julia and her husband Mark own a small accounting practice and investment







firm in the area and agree to do the work pro bono. Annual reports are provided so that the group can monitor their investment.

Money needed for project development will be handled on a case by case basis and only used on approval of the majority.

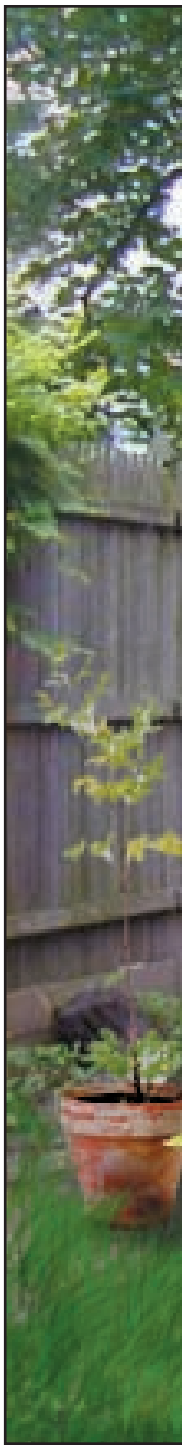
Lucy

As a renter Lucy is stuck. She wants to be a member of the project but her landlord won't let her alter the backyard in any way. She talks to some other group members and they suggest that she tries container gardening. Lucy is an avid grower and has been growing herbs and flowers in her house for years. She takes some of her existing plants and transfers then to the backyard like she does every year but she also gets some new larger pots and containers and plants vegetables. Her production levels are not the same as the people who have a full backyard to utilize but she does have a lot of success.

One benefit of container growing is the ability to start a majority of the seasons crops indoors before the weather will support out door growing. The other project members typically start most of their crops off in propagators and then transplant them outside in the spring. Lucy is able to start most of her plants in the actual pots and containers she will eventually move outside. This saves her a few steps and allows her to use more space than the backyard alone. She is able to get the first round of planting outdoors and use the sunny areas of her house to start the next round. As a lot of the first round comes ready for harvest Lucy can simply exchange the harvested container for another container from inside her house.

Another added benefit is in the form of marketable plants. Matt and Lucy talk one day and realize that people might be interested in not only buying fresh vegetable but also buying plants and seedlings that will allow them to grow at home. The transportation of the seedlings and growing plants is a little more difficult but manageable. They also realize that they can start selling plants on lucy's front stoop like a garage sale. This reduces the need to transport the plants to a farmers market, preserves their customer base for fresh vegetables at the market, and allows them to keep selling the seedlings and plants on her steps. The seedlings are as easy to start as placing a seed in some soil or expandable, soil less, growing medium like peat moss discs, adding a little water and placing them in a sunny area. Fresh herbs cost 10 cents for the soil, 5 cents for the small plastic container and a few cents for the seeds. They are able to sell seedlings for 50 cents to a dollar a piece. Larger plants sell for between $2 and $5 a piece.







Beginning: Year 5 group 45 members, 3450 square metres of land, 480 plots

After 5 years the group has expanded to 45 members and 30 backyards. The total land area available now is 3450 square metres which breaks down to a useable 480 plots. With 4 harvests a season at $100.00 a plot the projected profits this year are close to $200,000 from market sales alone. The group has generated a good reputation for super fresh well managed produce and a lot of community members now go directly to the plots closest to their houses to buy, instead of the markets. The group has learned from this and tends to charge a little more per pound for off site sales. CSAs have also been extremely profitable and about 30% of the gardens produce solely for these orders. The demand has meant that the group is able to also raise their prices on CSAs but want to try and keep them reasonable. Each share is now sold for $350 a season and guarantees the share holder to at least 5 pounds of vegetables a week and 8 lbs if it's available. The surplus is added to the vegetables for the markets and sold weekly. Although CSAs aren't as profitable as market sales they are a great way to generate all the startup money needed to get the project started each season. More members also means more markets are available and at least 35 people travel as far as Jersey City, Montauk, Sheepshead bay and other far out areas. The days are long but the profits are great. The group decides it's time to seriously expand and go about looking for more space to farm. The backyards are great but vacant lots will also be considered.

Harvets / Replant	Saturday Sales	Sunday Sales	Meeting / Profits	Site Sales
04.01.11 P	None	None	Strategy	
04.08.11 P	None	None	Strategy	
04.15.11 P	None	None	Planning	
04.22.11 P	None	None	Pre-harvest	
04.29.11 H	$14,000	$16,000	$30,000	$1000
05.06.11 P	None	None	None	$300
05.13.11 P	None	None	None	
05.20.11 P	None	None	None	
05.27.11 P	None	None	Pre-harvest	
06.03.11 H	$12,000	$13,500	$25,500	$1200
06.10.11 P	None	None	None	$1000
06.17.11 P	None	None	None	
06.24.11 P	None	None	None	
07.01.11 P	None	None	Pre-harvest	
07.08.11 H	$18,000	$16,000	$34,000	$750
07.15.11 P	None	None	None	
07.22.11 P	None	None	None	$500
07.29.11 P	None	None	None	
08.05.11 P	None	None	Pre-harvest	
08.12.11 H	$14,100	$15,900	$30,000	$2000
08.19.11 -	None	None	None	
08.26.11 H	$13,600	$14,800	$28,200	
09.02.11 H	$11,000	$14,000	$25,000	
09.09.11 H	$16,430	$12,111	$28,541	$1400
24 weeks total	$99130.00	$102311.00	$238591.00 Total	$8150.00 + $30,000 CSAs





Expansion: PHASE 1, project is 5 yrs old.

Sam and John begin to knock on doors in the late fall. Most of the other group members are working full time at their day jobs and thinking about and planning the expansion in the evenings. Meetings are held weekly now and any unresolved issues are discussed. The cooler crew, those members assigned to building the new walk in cooler for the expansion have decided that they need either 4 walk in coolers, or larger coolers. Some group members have invested their own money in fruit trees and it's agreed that apples and pears will store through much of the winter in the cooler.

Each week during the meeting Sam and John present their most recent additions to the land area and the issues involved with each specific parcel. Some people are really excited about letting the group use their land, others are less excited but see no problem with their unused backyards being put to good use. Still other people want to join the project. Some people only have a small amount of space but offer it to the group. Discussions about how to use the spaces are carried out and it's agreed that any close, free space, should be used. These spaces could be used for keeping bees (a recent idea amongst the group to expand their production) or rabbits and chickens or simply used as a mid point for storage between groups of plots. There is still some concern that the expansion might be too much for the group to handle but planning is starting to address these problems. One thing is clear; the expansion will take a lot of effort and everyone agrees that any new plots and growing will begin slowly and progress at whatever pace will support it. There is no interest in trying to get the whole expansion up and running by the next year and the group members are well aware that trying to do this may cause failure in the rest of the project.

with a larger group in place now and some new members from Sam and John's door to door efforts its agreed that the expansion will progress first by developing the parcels of land owned by new group members, the plots with easy access and good general conditions next, Small plots after that and finally any possible vacant lots will be converted. Although the vacant lots are the best suited to growing due to their easy access its understood that the problems of ownership, security and water supply are difficult to reconcile and so should be addressed last.





Expansion Equations:

The following equations show the possible available land for the first Phase expansion. These should be considered separate from the narrative of the proceeding and previous sections. Although they support the narrative they are intended to illustrate the possible expansion and not the expansion as suggested in the narrative.

Total Population of the Study Area
= 11536 People

Total Housing Units of the Study Area
= 5132

Total Backyards Available for Expansion:

5132 (2.25) = 11547 (10% 65 yrs or older) = 1154.7

1154.7 - (15% age variability) =
1154.7 - 173.25
= 981.45

981.45 - (15% involvement) =
981.45 - 147.21
= 834.24

834.24 - (20% no backyards) =
834.24 - 166.84
= 667.39

Total Possible Backyards = 667.39 / 2.25 people per backyard
= 296 Total Backyards

Younger Generation 1

Total Backyards Available for Expansion:

5132(2.25) = 11547 (20% 22-44yrs)
= 2309.4

2309.4 - (10% involvement)
= 2309.4 - 230.94
= 2078.46

2078.46 - (70% no backyards)
= 2078.46 - 1454.92
= 623.53

Total Possible Backyards = 623.53 /2.25 people per backyard
= 277.12 Total Backyards1

Younger Generation 2

5132(2.25) =11547 (40% 45 - 64yrs)
= 4618.8

4618.8 - (20% involvement)
= 4618.8 - 923.76
= 3696.04

3696.04 - (40% No Backyards)
= 3696.04 - 1478.41
= 2217.63

Total Possible Backyards = 2217.63 /2.25 people per backyard
= 985.61 Total Backyards2

Equations and legend:

Elderly

Total Housing Units (2.25 people per unit) = A (10 percent 65 or older) = Y-(15 percent age variability) = N – (15 percent involvement) = B – (20 percent no backyards) = C / 2.25 = X total backyards

Younger generation 1 (22 - 44 yrs old)

Total Housing Units (2.25 people per unit) = X (20 percent 22 – 44 yrs) = Y - (10 percent involvement) = N – (70 percent no backyards) = C / 2.25 = YG1 total backyards

Younger generation 2 (45 - 64 yrs old)

Total Housing Units (2.25 people per unit) = X (40 percent 45 – 65 yrs) = Y – (20 percent involvement) = N – (40 percent no backyards) = C / 2.25 = YG2 total backyards

Percentages:

Population:
- 10% 65 or older
- 20% 22 - 44 yrs old
- 40% 45 - 64 yrs old

Backyards:
- 20% no backyards (older established home owners
- 70% no backyards (younger, apartment dwellers)
- 40% no backyards (middle aged, almost half own homes, backyards)

Explanation of Results:

Certain assumptions were made to determine certain percentages used in the equations. The total population percentages come directly from the 2000 New York City census and represent the differences in ages. The involvement percentages come directly from personal observation. From living in the area for years it was easy to discern the typical age groups for certain health habits and food habits. The elderly liked many of the same foods that a lot of the younger generation were typically buying at the supermarket. These foods were more health conscious decisions such as foods high in fiber, organics and fruits and vegetables. The middle age group tended to also buy similar products but had more disposable income to spend on restaurants etc. Extrapolating from these factors I assumed that the youngest group would be most involved physically in the project, the elderly would be most involved as concerns support and land use and the middle age group would be less involved than both. This would also be due to time and job commitments. The percentages of backyards available stems from the assumption that the youngest age group would not own their own homes and live in an apartment, the middle generation would own their own homes but use their backyards and that the elderly would own their own homes but not use their backyards.

The total number of backyards available far exceeds the number that can be easily managed by the current project group and represents only the possible number of backyards. This number is probably half of what the equations show. Many buildings are multi unit dwelling which means shared backyard or out door spaces. Even the typical brownstone unit has one separate apartment used as a way to generate extra income for the owner.

Although the equations generate a total number of available backyards of 1558, the New York City 2000 census lists a range of percentages for single family home and multi unit dwelling between 7% and 40% The average single family percentage is approximately 15% applying this to the total number of available backyards the number reduces to approximately 233 total backyards. Given the mixed nature of homes in the community this number seems a more reasonable amount and so will be used for the PHASE 1 expansion study.

Total Number of available backyards from Equations =1558

Typical percentage of lots devoted to single family residential units according to the 2000 NYC census = 15%

1558 (15%) = 233 total available backyards.

For the remainder of the study 233 total available backyards will be used. The average size of each backyard will be assumed to be 115 square metres. This is then a total of 26795 square metres of available growing land. Each plot is 7 square metres. 26795 / 7 = 3827.8 plots for growing. At $100 a plot, per harvest, 4 harvests per season = $1.5 million possible profit per season. This does not take in to account the existing plots and vacant lot use. Adding this number provides another 200,000 approx. per year and Community Supported Agriculture (CSA) sales will push the possible profit over $2 million a year. The total land area is 6.62 acres. According to the equation for labour this means that approximately 26.5 people need to work this land. Of course this would be almost full time each season and intensive. The group of 45 people now means that approximately 6 people per acres are available. Dividing the total profit of $2 million by 26.5 people would generate a yearly income per person of $75,471 (temporary seasonal)

Total Land Area Available:

233 Backyards (110 square metres average size) = 26795 square metres available land

Total Plots possible:

26795 square metres (7 square metres plot size) = 3827.8 plots

Total Possible Profit :

3827 plots ($100 per plot, per harvest)(4 harvest per season) = $1.5 million per season + $200,000 existing profit per season, $30,000 CSA profit per season = $1.73 million per season

Labour Needed:

6.62 acres (4 people per acre) = 26.5 people

Average Seasonal Income per person:

$1.7 Million / 26.5 people = $65,000 a season



PHASE 1 EXPANSION 200+ NEW BACKYARDS, 3800 PLOTS, 6.62 ACRES



Seth

Due to an unfortunate accident Seth has been in a wheelchair for the last 5 years. Always an active person who loves the outdoors it was hard for Seth to make the adjustment to a modified lifestyle. After 3 years of feeling sorry for himself and frustrated at the situation Seth decided to do something positive instead of living in the negative. He began to get involved in wheelchair sports and activities and soon realized that he could be as active in the wheelchair as he was without it, possibly more active.

As a result of his accident Seth was awarded a large insurance settlement. With the money he decided to make some investments and made sure he never had to work again if he didn't want to. Seth worked for years as an investment banker and new very well how to make his money work for him. After a year of careful manipulation he decided to invest in real estate. Purchasing two brownstones in the Prospect Heights neighbourhood in Brooklyn and a small 6 unit apartment building in Manhattan Seth choose one of the Brownstones for his house. At first the backyard was over run with weeds and bushes and garbage but a chance meeting at the grocery store one day soon had Seth's whole backyard changed to a place to grow food and enjoy being outside.

While purchasing carrots for a stew at the local grocery Seth ran into one of the projects biggest proponents, and one of it's most active and outspoken members John took no time to tell Seth exactly what he was doing wrong.

"You know you could grow your own carrots instead of buying these crappy ones"

Volunteered John having noticed the 5 lb bag of carrots that Seth was putting into his basket

"How am I supposed to garden?"

Responded Seth with a hint of sarcasm.

"Oh I think we can figure something out"

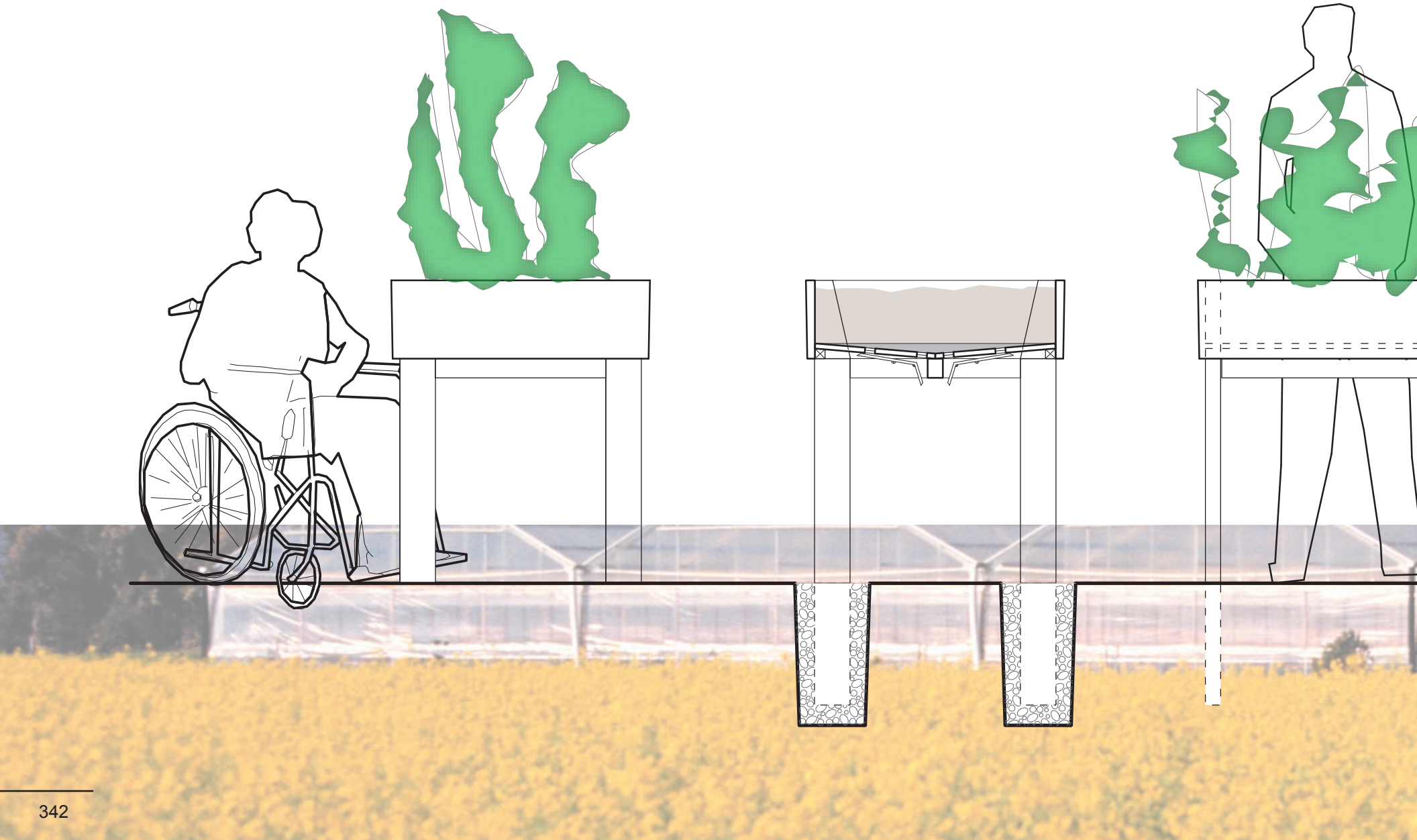
And that was all it took. With a little money and some planning and the help of Matt's design talents John and Sam and Matt and Seth spent two weekends clearing the backyard and building raised planters that Seth could use to grow his own food. Simple wooden boxes supported on four by four legs with a thick support beam running under the primary box were filled with grade "A" soil, fertilizer and some peat for cohesion. Seth spent every night and all the spare time he had reading about gardening and farming . He began attending meetings and quizzed all the members about techniques, problems and solutions.

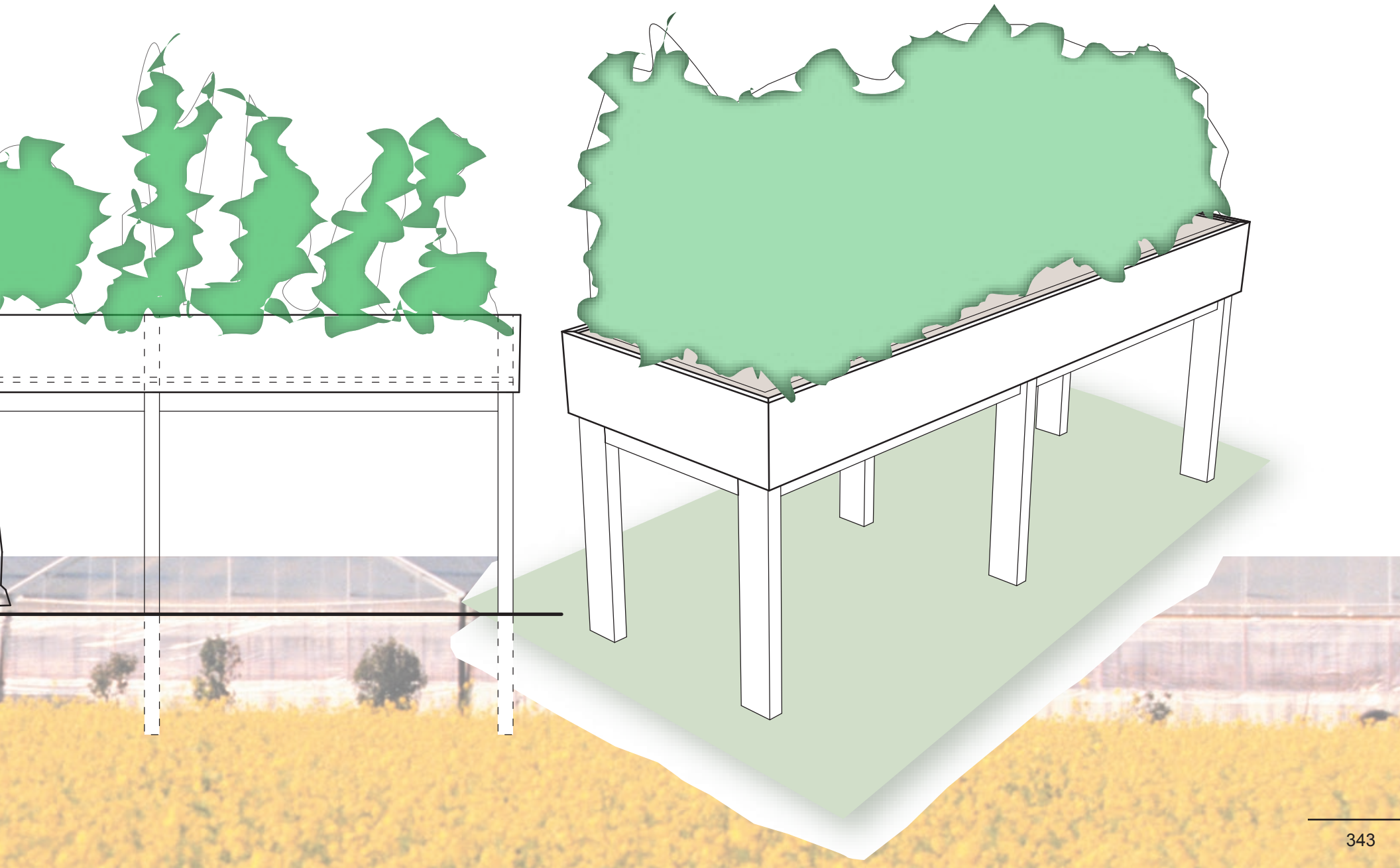
By the beginning of the next season Seth had become an expert in the ideas of growing food and soon put them to practice in his backyard space. By the end of the first month Seth was already contributing to the groups weekly sales and loving every minute of it.

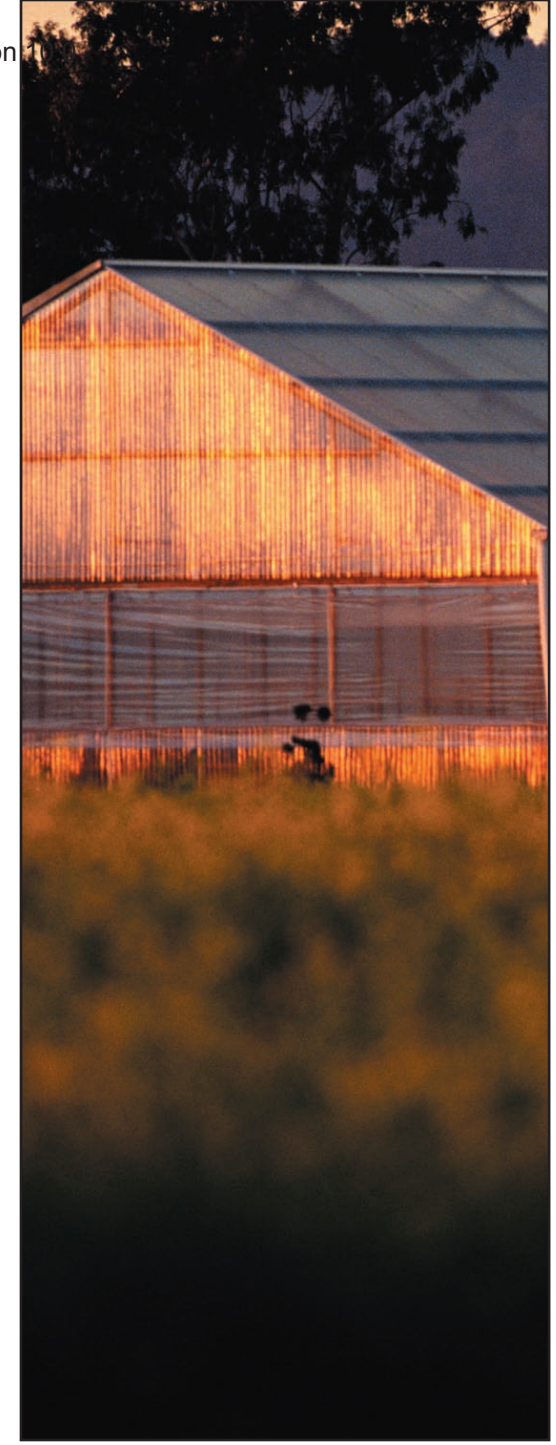
Some problems with the initial design became obvious that first year and Matt and Seth worked through the winter on new designs and ideas. At the first glimpse of spring they began building the new designs.











Morton

Morton had been hanging around the group for a s long as they had been having meetings, although, he never did join the actual group. No one really asked him questions or wondered why he always showed up. He sat in the back and listened and would occasionaly put up his hand for votes; the group had just accepted him as he was and always counted his vote like they did the group members. One day Jo-Ann decided it was time to talk to him and find out a little more. She waited until break one meeting and approached Morty . She asked him how old he was, he was 17. She asked him where he lived and he said he lived in an apartment in Brownsville. Seeing that her general questions were not having the desired affect of drawing him out she took the direct root and asked him why he always came to the meetings but never joined, never came to outings, market days?

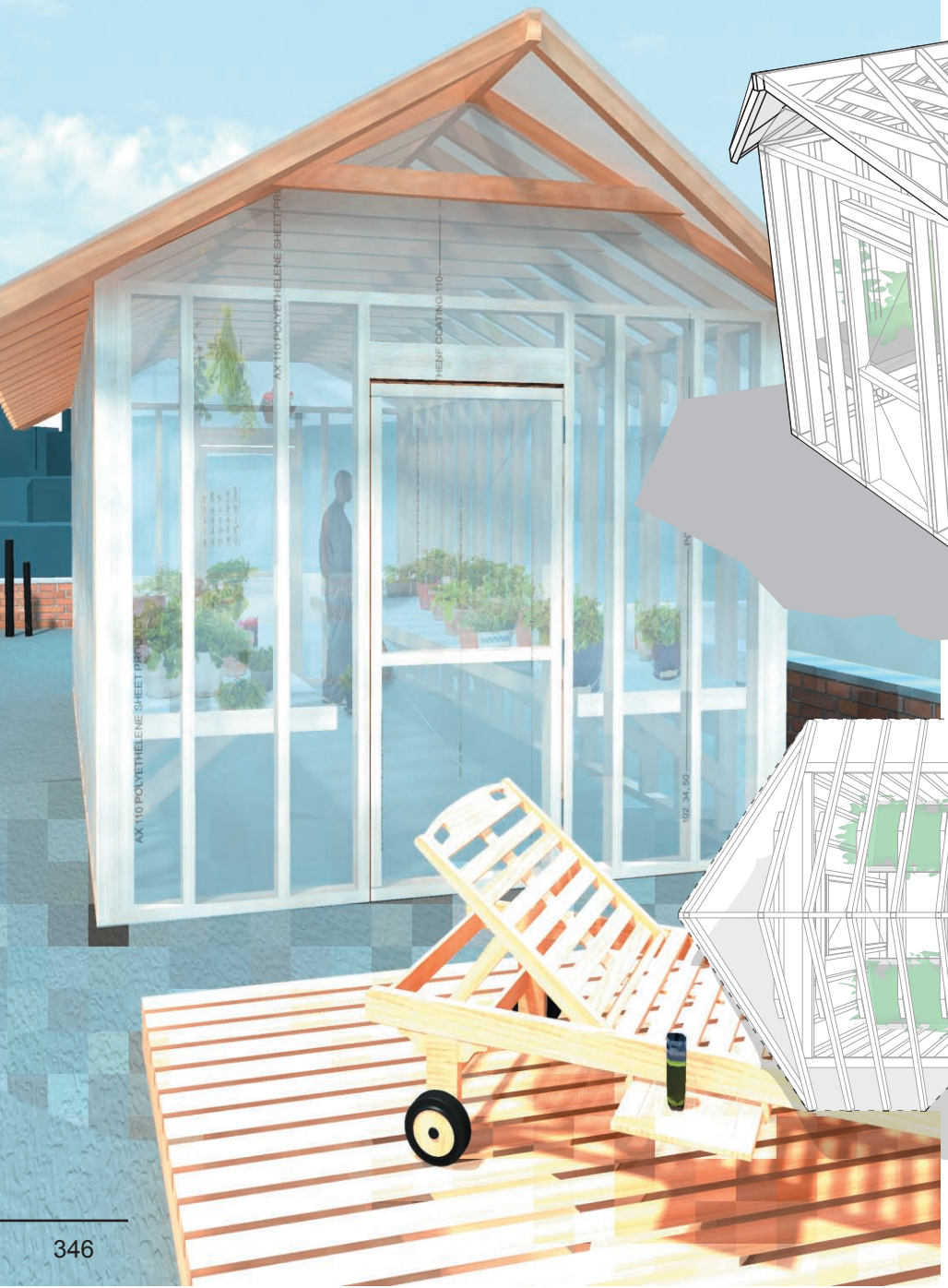
He looked a little surprised and maybe a little scared but he began to tell his story and Jo Ann listened with great interest. He had moved to New York from North Carolina when he was 7. His family had been farmers but they lost their land and had to move to the city to live with his mother's parents. He had always loved farming and growing but just didn't have space to grow in his 2 bedroom apartment that he shared with his mom, dad, 2 sisters and grandparents. He was afraid that the group wouldn't let him join if he didn't actually grow something but he felt strongly about what they were trying to do. He loved coming to the meetings and taking part in the votes. He asked Jo Ann if it were okay that he still came to the meeting to which Jo Ann replied that, not only was it okay, but maybe the group could help him find a away to grow in his neighbourhood.

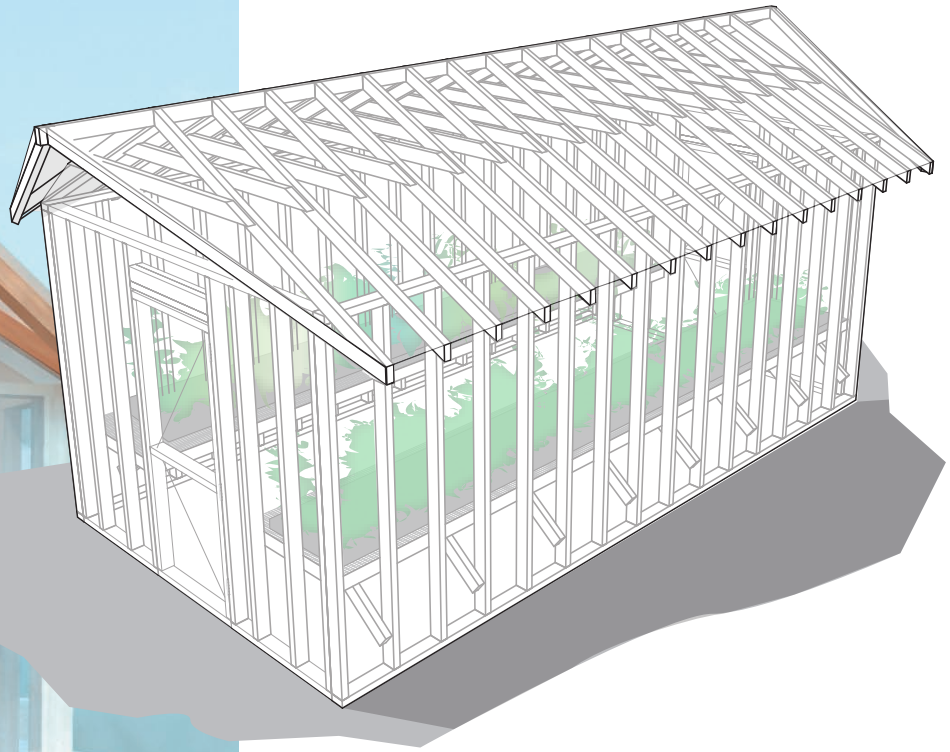
2 Months later, with a small investment from the group, Jo-Ann, Morton and 5 other group members went to the home depot, bought $600 worth of wood and spent the afternoon ratcheting , sawing and generally toiling on the roof of Morton's apartment building. Jo -Ann had arranged with the property management company to allow for a small green house to be built, by the group, on the roof. The agreement was that it could remain in place until there was a need to change, or stop. The building had to be able to be dismantled quickly and without too much trouble and moved at a moments notice.

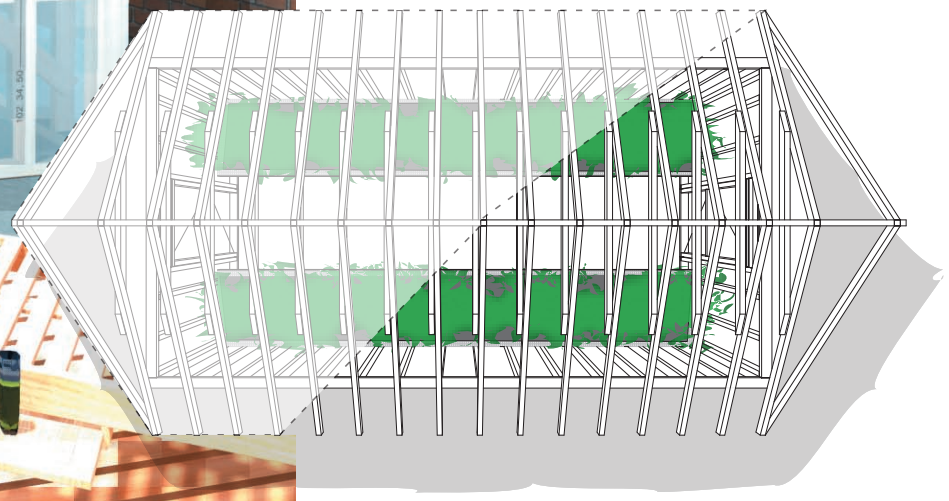
Morton grew mainly herbs that first season and used the extra space in the rafters to dry some of the garlic that the group produced. His herbs were tended with care and he produced a bountiful crop. He would pick the best bunches of herbs just before market days, collect them in buckets, lower the bucket through the roof access hatch using rope and wash and prep the herbs in the kitchen in his apartment. Binding bunches of parsley, basil, tarragon, rosemary and other herbs together with simple twine he would place the bunches in wicker baskets for transport to the market. He later grew onions and chives varieties and other savory fruits and vegetables. He seemed to have a knack for the unusual plants but everything he grew he grew with care, skill and ease.

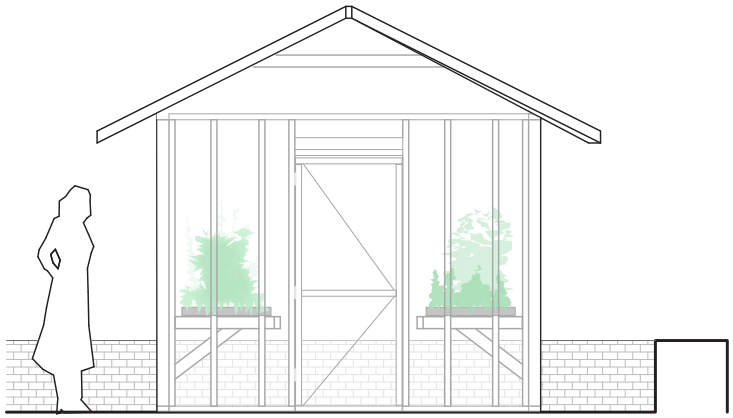


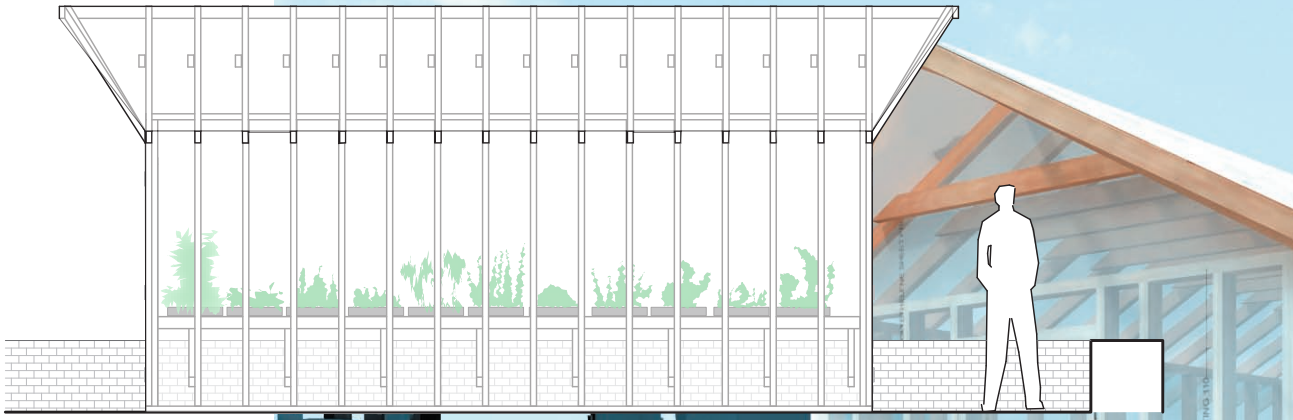

POLYETHENE COATING 110

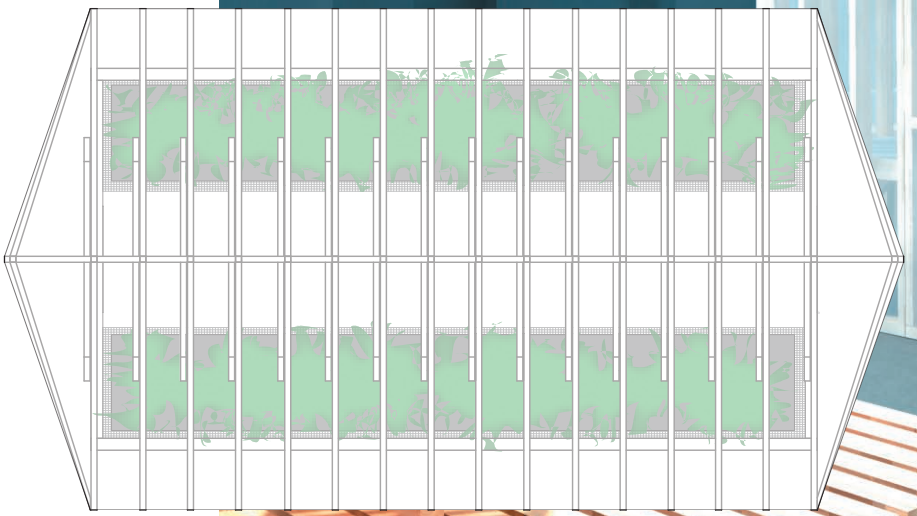












Cost of construction:

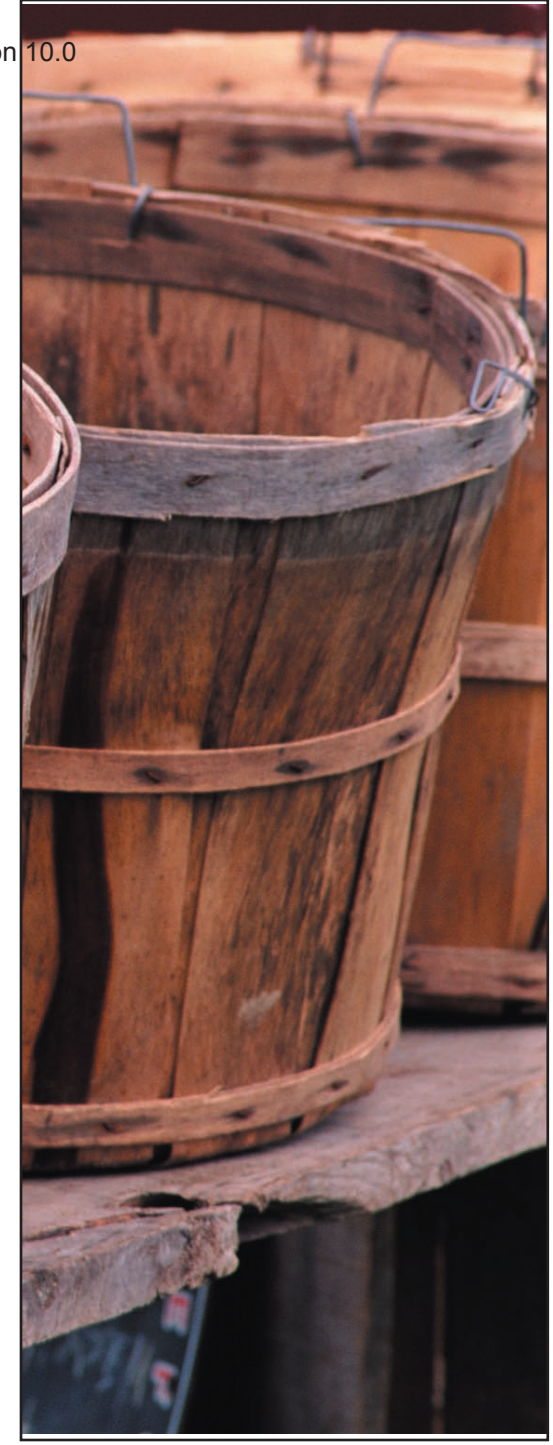
120 2"x 4" x 10' Construction Grade Spruce @ $1.88 = $225.60,

3 Rolls of 3' x 12' Wiremesh @ $15.99 a roll = $47.97

5 Rolls of medium denisty Vapour Barrier @ $20.00 a roll = $100.00

Misc fasteners and equipment = $40.00

Total cost for construction = $413.57

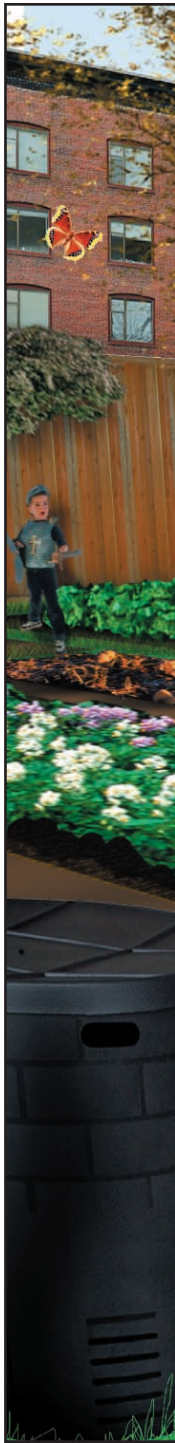


Kevin and Other Things in Mind

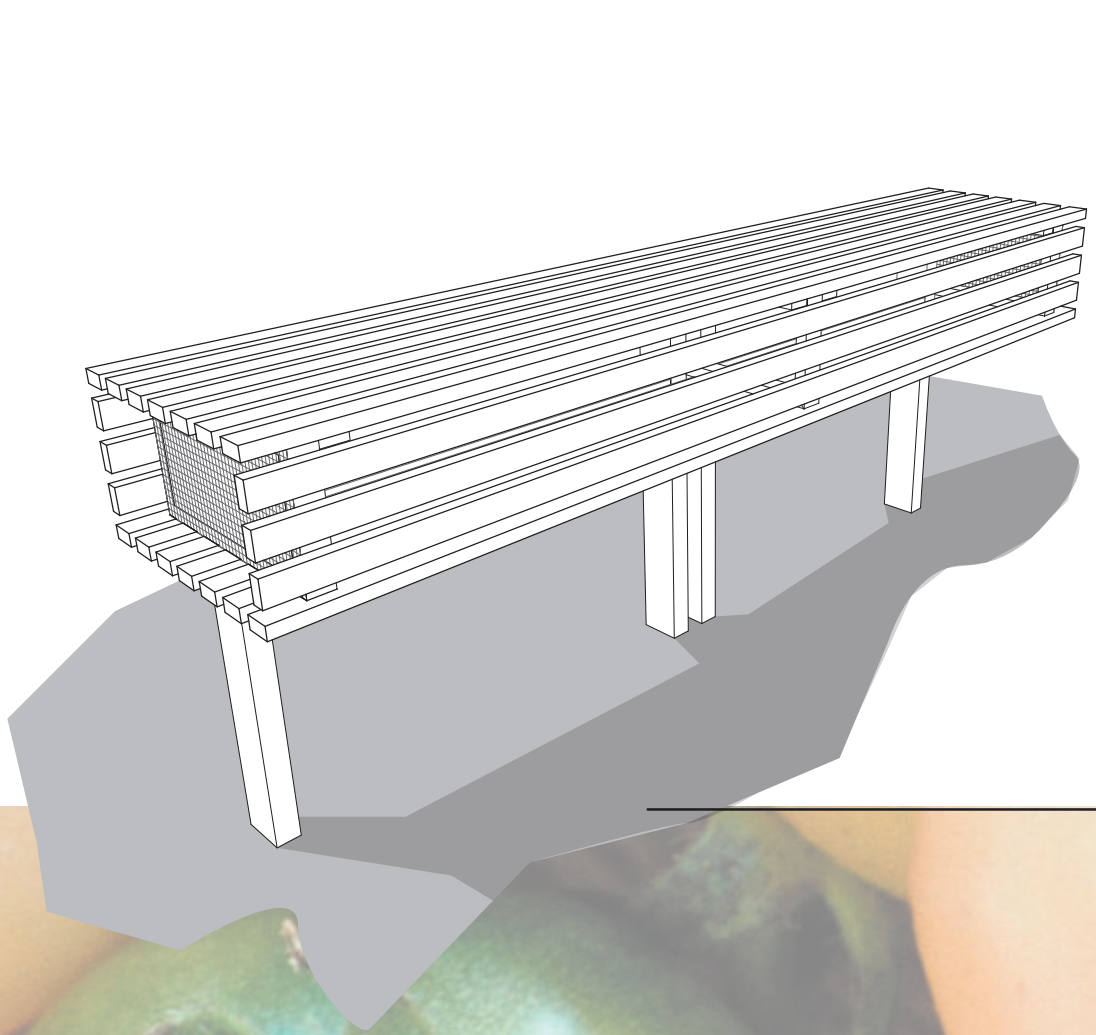
Kevin became a member of the group after Sam and John went door to door to find new spaces to grow. Keving had been an avid gardener for some time and showed the guys his current garden. They asked him what the planting bench like structure was and Kevin beamed with excitement. He told them how he'd worked for a long time without the benefit of a good work surface. He finally got frustrated one day and decided to build something for himself. He also needed a place to store supplies and tools as the back hallway of his house was getting crowded and his wife was getting upset. He couldn't afford to build a shed nor did he have the space for one. Really all that he needed was a durable work counter with a way to secure his tools and maybe some pots, propagators and some fertilizer. His young son Sebastian was at the inquisitive age and Kevin worried that he might get into the sharper tools and hurt himself.

After thinking about it for a week Kevin had devised a simple work surface that doubled as a securable storage box. By making the base a hollow box and the top work as a lid and a place to put plants, tools, and other things Kevin was able to store his tools in the box and prepare his plants and harvests on the top. The lid was simply hinged at the back and had a clasp that could be padlocked. All sides were open to the elements to prevent rot and any areas that needed to be protected from the elements had a simple plastic lining with an overlapping plastic lid affixed to the underside of the lid. The sides were wire mesh and the legs were set into 2 foot deep holes packed for stability with different grades of gravel. The idea was to be able to move and re-locate the benches if need be. The gravel seemed to be providing enough drainage that the legs were still sturdy and free of rot.

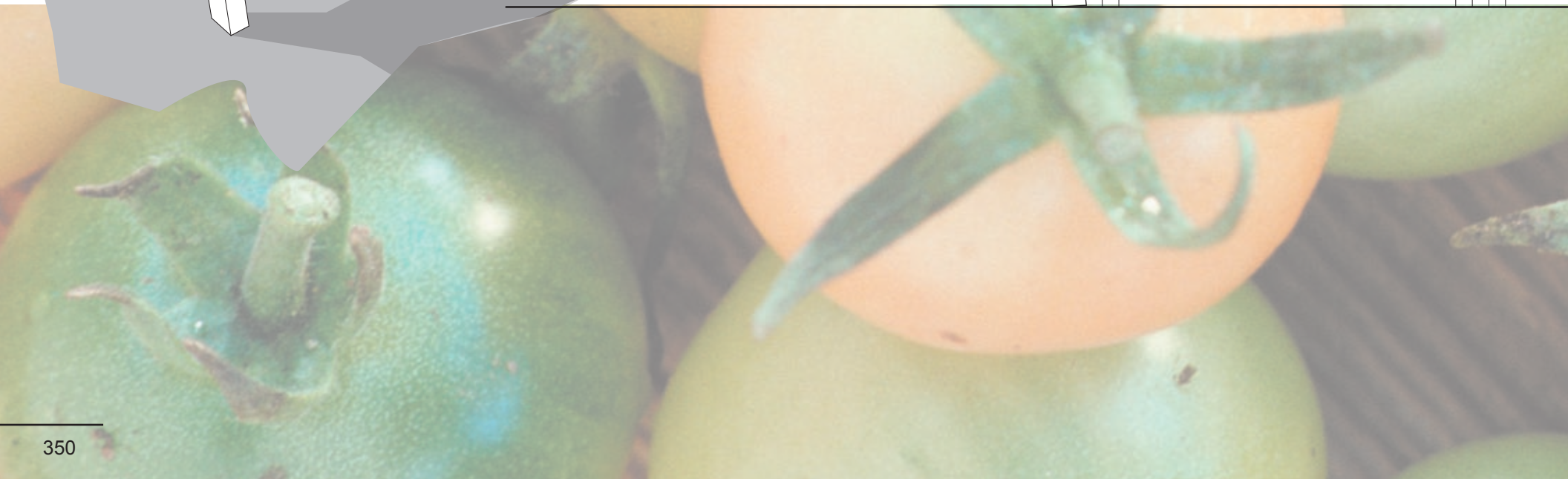
Kevin had a lot of other ideas for simple structures that support growing and require the minimum of money and expertise to build and maintain. Sam and John were very interested and introduced Kevin to Matt at the next meeting. They became close friends and started to discuss other designs. Matt had been thinking a lot about expanding the project and the different support structures and other things the group might need. Morton's greenhouse and Seth's raised planters had really inspired Matt to think about design and growing and now he had a like minded "Partner in Crime"

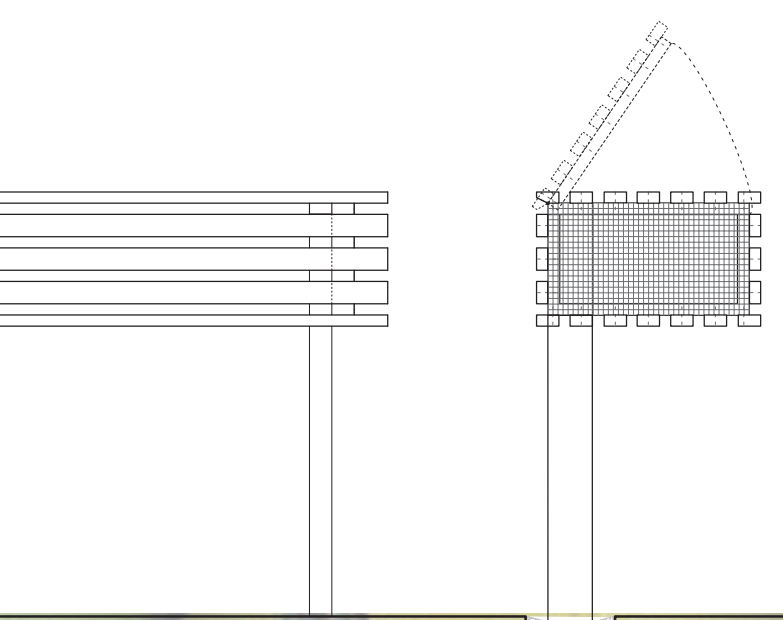


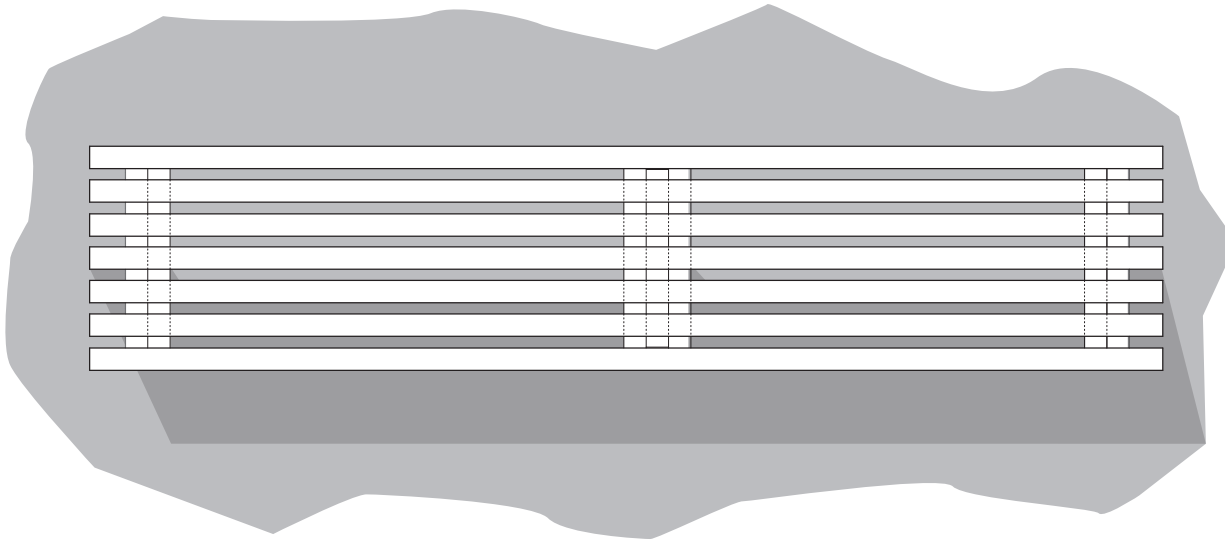














Conclusion

Phase one might seem, to the uninitiated, as very rudimentary and simple. The effort exerted by the theoretical study group is far less than one would consider when thinking of farming. The disruption of daily life and physical property and properties is limited to simple plots in backyards and a little time each week given to meeting, tending weeds and a few hours at a market selling. Indeed it is rudimentary and simple and that is the whole point of this phase. In order to start an urban growing project dedicated to producing and selling food little more is needed than some space, some seed and some knowledge and effort. The beauty of this is that it illustrates very clearly how easy and affordable growing food in an urban setting can be. Many projects and social programs end up getting bogged down in bureaucracy and management issues, money and confusion. Urban farming can be started by anyone, anywhere and with a modicum of effort. The homeless person on the street could steal away a small parcel of hidden land and with $1.87 purchase seed and plant a tomato. Land is commodity in most urban centers and the argument against urban agriculture tends to involve the value of land and real estate speculation. Land that has sat vacant and tax delinquent for years is considered too valuable to be used for anything other than a dumping ground, fenced “No Mans Land” or, as some have jokingly put it, “Open Air Drug Store” The reality is that urban farming is such a fluid process that a piece of vacant land could be used indefinitely for growing food and be quickly abandoned and turned back over to what ever the landowner desired it for. The Phase one section of this thesis is presented as a possible scenario. It includes the simple strategy of using backyards and rooftops, stoops and balconies to contribute to a larger whole as a growing entity. The crux of the strategy is utilizing existing back yards that are unused and would sit idle due to numerous factors. These spaces exist and the opportunity is there to use them to get a foot hold on urban farming and develop a viable sustainable project and business. Part 3, section 9.1 illustrates that this strategy is already in place, and working, in the real world in Saskatoon Saskatchewan, and Philadelphia Pennsylvania. These two examples utilize the SPIN method of farming and consist of a small parcel of land and the labour of only two people yet are profitable and sustainable. Phase one proposes a larger land base, more available labour and a plethora of markets for what the theoretical project produces. The profits generated are based on real numbers from the SPIN examples and the probable harvests and yields are based on the SPIN examples of which one is less than 100 miles from the study area. This clearly illustrates that the environment and climate will support growing food. The expanded land base is supported by the larger population and city area. Saskatoon’s population in 2001 was approximately 250,000 (http://www.innovation.gc.ca/gol/innovation/site.nsf/en/in02008.html) and Brooklyn’s is approximately 10 times that at 2.45 million. The SPIN farming project in Saskatoon runs on 1/2 acre and the theoretical land use proposed in Brooklyn is nearly 7 Acres. Clearly this is very possible and realistic. Phase one is meant to be a steady state, something that exists for a period of time and establishes urban agriculture in Brooklyn New York. It is supported by a local population that, through personal experience, the author knows to be interested in social and community issues such as organic food, community independence and health related issues. This steady state is possible and sustainable.

Design

Similar to the level of human effort and involvement proposed for Phase one, the design required for Phase one is less based on need and more out of simple utility. The majority of manipulation and planning, construction and alteration is in the form of creating fertile planting beds and containers. As each specific case is unique there is no “One” Solution or proposal, only a suggestion of ideas and considerations. Maximizing production is the ultimate goal and so spaces become maximized for growing and minimized for experiential needs. All corners, nooks, crannies and surfaces are considered fair game and will be used if needed. This includes vertical surfaces best used for climbing plants and storage and roof tops and balconies that may have decent solar exposure. The few examples illustrated in Phase one are meant to generate interest and show possibilities for inclusion in the growing process independent of facility. These tools and objects that could both assist the project, and allow for certain members to grow, are presented as opportunities for design. The emphasis is on use, simplicity of construction and affordability. Materials used can be found at local hard-

ware stores and lumber yards and the objects can be constructed in place with simple hand tools. Cost is kept down by using rugged but inexpensive construction materials such as construction grade lumber, wire mesh and vapour barrier. This has the added benefit of durability in a considerably more hostile environment than the norm. Elements are created to be temporary and movable. They are bolted together or affixed using sturdy screws and fasteners that can be removed and reused in a new manner. Foundations are made using materials such as crushed stone and treated lumber so as to be functional and avoid rot but also be pliable and avoid permanence. Where possible all consideration is given to growing successfully first, ecologically sound practices secondly, function and use is third and aesthetics last. That is not to say that no thought is given to appearance but there will be other opportunities for aesthetic needs in the following phases. Phase one presents utility and development, it should be considered the incubator in all manners.

Growing in an urban area is open to all and should be made as easy and affordable as possible. Backyards and alleyways, balconies and rooftops and disused spaces can be used to grow food. This food can supplement diet and income and helps reduce the need for un-natural growing practices and reliance on Big Agribusiness. Working in the outdoors is great exercise and the food produced is full of nutrients and vitamins and will not only strengthen local economies but also local health. Growing food in a group can provide a social outlet and creates community independence. Large urban centers such as Brooklyn and greater New York City are vibrant markets for fresh produce with nearly 7 million inhabitant and 15 million commuters entering the city every day. Local transportation makes moving food grown in local communities easy and opens access to all markets within 50 -100 miles. Using backyards to start and develop an urban farming practice might seem simple but simple is hard to fail.

The next section will illustrate the next Phase and steady state scenario. Unlike this first phase it will seek to expose a greater number of people to the ideas of urban agriculture and begin to interact with the community in a more overt way. The initial group will still run and manage the project but the proposal is that urban agriculture can co-exist with social concerns and work to aid and benefit the community. As discussed in many sections the urban agriculture project must be financially viable and strong and first run as a business before it can successfully handle other needs and desire. The social aspect of urban agriculture is obvious as it is a means to feed people and better a community. With escalating profits it is possible to take on a duel role as successful business and community builder. Like any business it is possible for an urban agriculture business to begin to give back to the communities that have supported it’s growth. The positive outcomes of growing food in an urban area can transcend the basic goal of healthy diet and help to create healthy communities.

Images, Sources:

All Images by Author

Part 3 - Design Study - Form - Case Studies - Phase 2

10.2 Phase Two building the community

10.2.1 5th Avenue
10.2.2 Bergen Street
10.2.3 St. Marks
10.2.4 Derelict Building NY

Introduction:

The Phase one section of this thesis sought to explore a way to initiate an urban agriculture project with limited investment and limited means. The primary idea utilizes existing backyards, either belonging to interested parties or people who may not be using their backyards such as the elderly, to establish a land base for crop production. This process required little in the way of initial financial investment and benefited both the project and land owners in numerous ways. Using the SPIN farming methodology it was possible to estimate profits for this theoretical project and show that it is, indeed, economically feasible to farm in urban centers. The initial investment in terms of moneys and time was low but the results were high with returns being 5 – 10 times greater than investment. The Phase one section of the thesis also illustrated more than just economic benefits to those people involved in the project. Increased physical exercise, social interaction and community building, fortified diet and self sufficiency were shown as just some of the secondary benefits of the project. It was clear from the simple scenarios that transportation of produce was simple using existing public transportation and that the size of the existing market, in this case greater New York City, supported brisk sales, and, that these same ideas could be applied to most metropolitan cities in North American and abroad. Simply stated phase one proved that urban agriculture is possible.

Phase two seeks to expand on these ideas but to study through design and written scenario the role of urban agriculture within the community that maintains it. Instead of exploring the role of an urban agriculture project as it expands out into the larger marketplace how can it help build and support the community at its door step? As discussed in previous sections the parcels of vacant land within American cities are numerous and in some cases vast. They range from small privately held parcels, maintained and undeveloped, waiting for increases in real estate prices to others that sit vacant, tax delinquent and in disrepair. These spaces are perfect places to use urban agriculture to strengthen the community and re-build neighbourhoods.

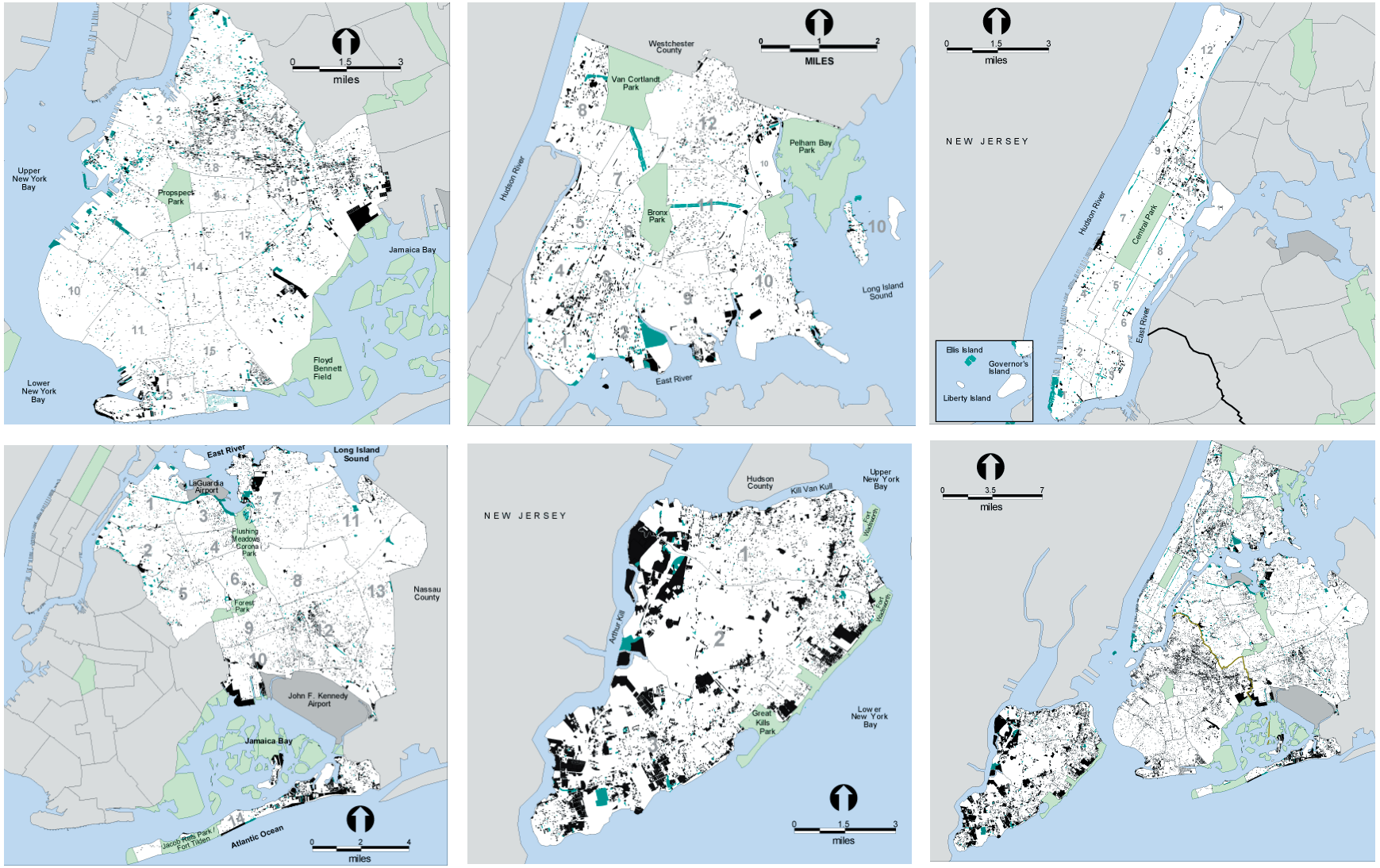
Methodology:

In most areas the vacant plots can be found alongside manufacturing and warehousing, on main thorough fares and on residential streets. In Brooklyn they exist in a myriad ways. Four vacant lot sites are examined in phase two, the residential lot, the main street lot, the vacant building and the enclosed, shaded, center lot. Each of these vacant lot types is unique but not unique to the area. The main street lot, located on a busy commercial street, may occur a hundred times along the same long street; only in different configurations, with different ownership conditions and different physical settings. It would be impossible to address each and every vacant lot scenario. Phase two seeks to describe options for a specific set of sites in order to explain the possibilities within the greater whole. As Phase one explored the creation of an urban farming project within the context of Brooklyn, phase two looks at the development of specific sites in a way that works with and respects the existing community fabric of Brooklyn.

Whereas the phase one section investigated profit and planting techniques and ideas this phase will not take into account these factors. Not that maintaining a profit and proper planting techniques are not as important during this phase of the project, only that they are now assumed and the study is intended to look at the nature of urban agriculture and the community. More than profit, options for the use of space, and how it supports the community and relates to the different established activities within the community, is the focus.

Vacant lot information can be found by researching city government websites and real estate offerings. A simple walk around most neighbourhoods will provide a good idea of what is available.

In Brooklyn the land classified as unused , vacant and miscellaneous is recorded at nearly 1900 acres (1867) or 4.8% of the total land area of the borough. Compared with other boroughs Brooklyn actually has the 2nd lowest amount of available land with only Manhattan, having only approximately 600 acres of vacant land, being lower. However, the vacant land in Brooklyn tends to be centered around residential communities and transportation routes. In comparison Queens has nearly triple the amount of vacant land (5602 acres) but much of it is located in manufacturing corridors and is either too distant from main transportation routes or heavily contaminated due to past uses. A comparison of vacant land available in the different boroughs can be seen in illustrations 11.5.1 - 11.5.6



11.5.1 - 11.5.6 From top left, Brooklyn vacant land, The Bronx vacant land, Manhattan vacant land, Queens vacant land and Staten Island vacant land. total vacant land New York City. (Source: http://www.nyc.gov/html/dcp/html/landusefacts/landusefactsmaps.shtml)



11.5.1 5th Ave Brooklyn New York.

Neighbourhood:

5th Avenue in Park Slope Brooklyn is a commercial street comprised of street level businesses, 2nd floor offices and mixed residential apartments. It is a busy street with a lot of foot traffic and car traffic. Common business types are restaurants, Bodegas and small shops selling everything from food to high end design goods. Although similar to the more upscale 7th avenue in central Park Slope 5th avenue has the distinction of combining both upscale and traditional types of Brooklyn businesses. The street is decidedly more varied and mixed with regard to culture and income level and tends to show a more traditional version of a Brooklyn neighbourhood.

Lot:

The specific lot is on the corner of 5th Avenue and St Johns Place. It is approximately 1600 square feet in area at 20 x 80 feet. It runs almost perfectly East, West with a 5 degree derivation from North. It is bordered on the South and West sides by sidewalk and street and on the North Side by a four story building with a business on the first floor and apartments above it. The East side is bordered by a residential 4 story house. The site is gently sloped from East to West and has an existing chain link fence. The site is presently zoned as residential.

Design Considerations:

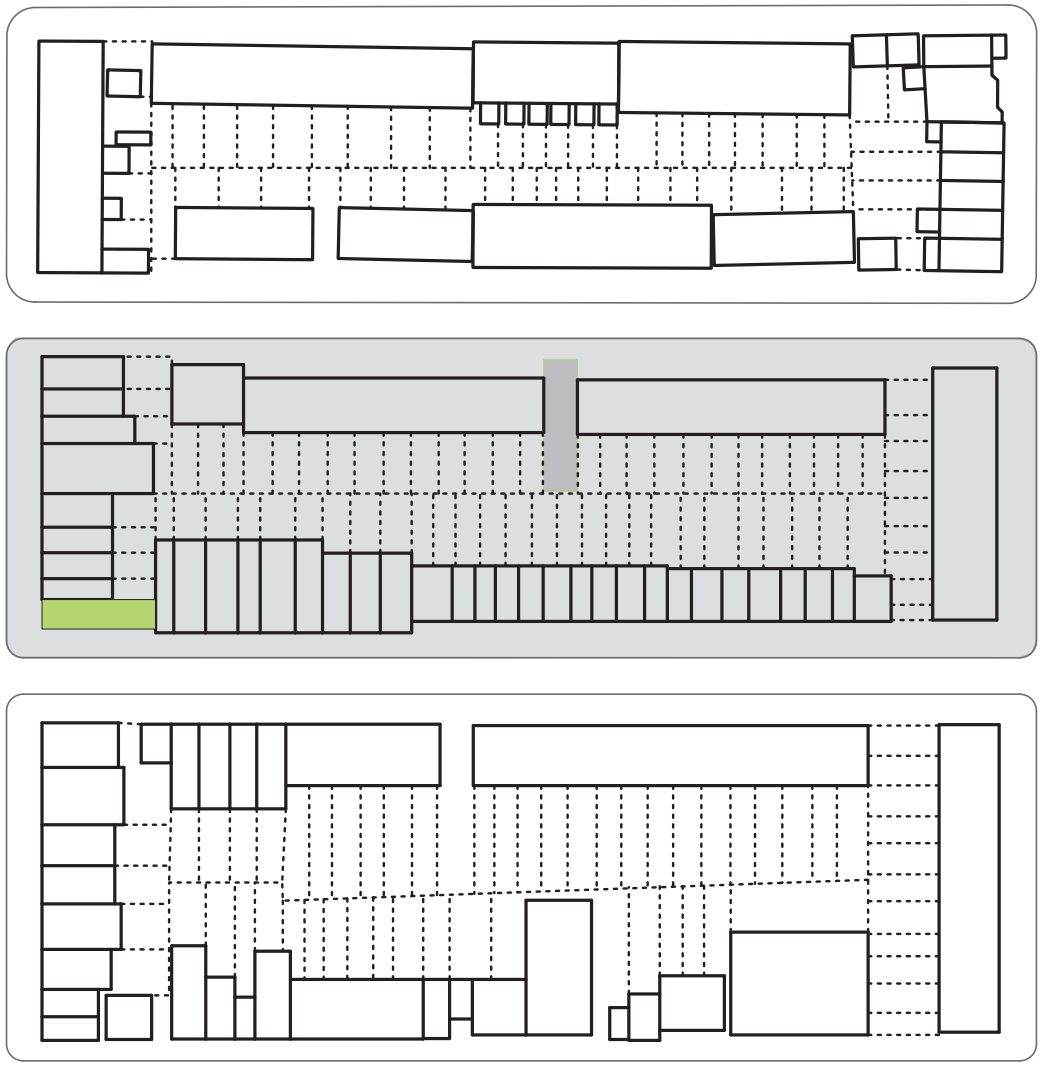
This site represents not only, a medium sized lot but also a lot with a very public face. Obstacles to planting this site obviously revolve around its very public nature. Almost too small to combine growing and other community amenities the question of usage is important. With a maximized planting there will be little room for anything other than a small storage area and possible sitting area. The planting will extend from the center to the perimeter and all will need to be protected from damaging foot traffic and vandalism.

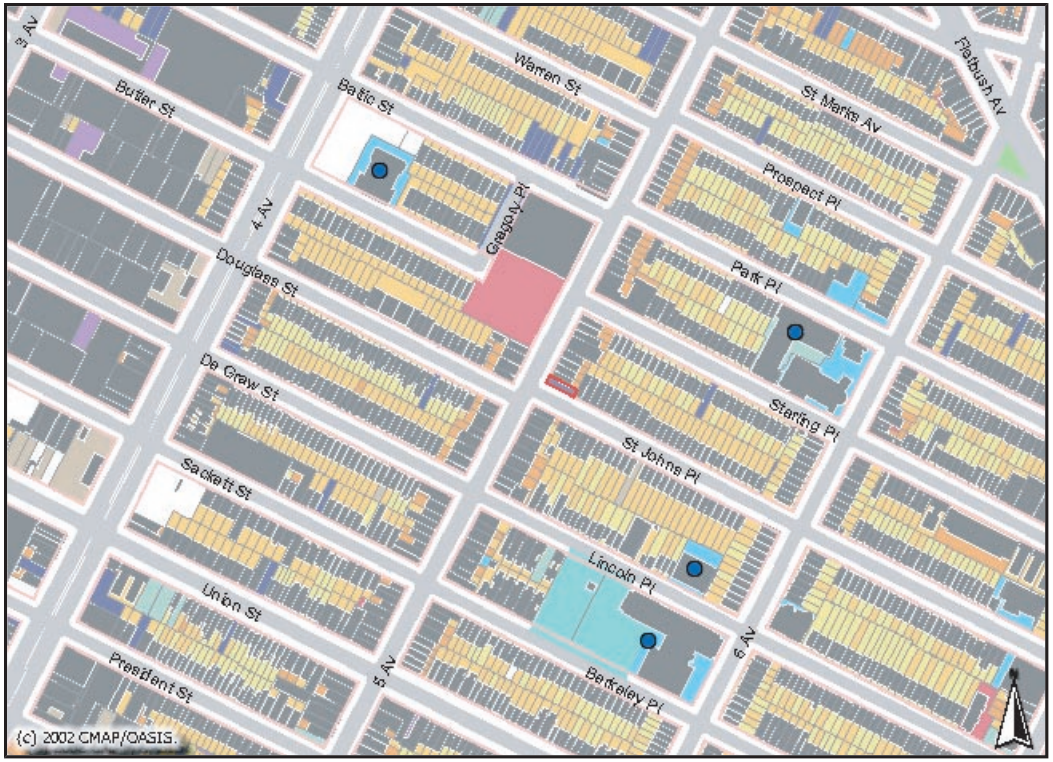
Climate:

The site gets 4 plus hours of almost direct sunlight and 4 hours of 75% or more sunlight a day in the summer months. The North East corner of the site gets the least amount of sunlight and should be set aside for infrastructure. Soil quality is unknown and needs to be tested. Precipitation was an average over 10 years of 4.49 inches in June with a high of 10.26 inches and a low of 0.19 inches. Precipitation was an average over 10 years of 3.48 inches in August with a high of 5.85 inches and a low of 1.87 inches. The average temperature over 10 years was 67.26 degrees Fahrenheit for June with a high of 71.4 degrees and a low of 64.3 degrees. The average August temperature over 10 years was 71.8 with a high of 77.2 and a low of 68.1 degrees.

Strategy:

Primary to this site is soil testing. There is the possibility that the site will need to be re-mediated and protected against further damage. The gentle slope of the site, and the fact that it sits at the low end of a hill, may require elevating the planting areas above street level to avoid contamination due to rain water runoff. A small gap should be provided at the East side of the site and this gap should be properly drained to divert water runoff. Maximized planting is the initial planting strategy for all small sites. Secondary considerations of community amenity should be thought of as future considerations with the possibility of combining some community amenity in any system used to elevate the planting beds. Security considerations can also be accommodated with this structure. Price should be kept low for any changes to the site and wood and other organics are suggested as building materials. Fences will need to allow for sunlight considerations and pest control can be managed through raised beds and a strategy of mixed planting, natural herbal deterrents and other natural solutions. Organic inputs will be used to enhance nutrient levels and a winter crop of Wheat will be grown and tilled under in the spring. A rotation strategy of 2 years planting 1 year fallow will be used with 1 year fallow being used to grow grass and wheat and for possible grazing. Design studies will show intent and strategy direction..





width of map is **0.50 miles**.

- Block/Lot Boundaries
- Community Gardens
- Green Spaces Along Streets
- Mixed Use
- Transportation & Parking
- Streams, Lakes, Waterbodies
- Streets
- Buildings
- NYC Parks
- 1 & 2 Family Residential
- Commercial
- Industrial
- Bridges/Overpasses
- Schools
- Playgrounds
- Multi-family Residential
- Institutions
- Vacant Lots



Information about the Lot you identified:
Borough: Brooklyn Block: 944 Lot: 1 Police Precinct: 78
Address, ZIP Code: 137 5 AVENUE, 11217
Lot Area: 1600 sq. feet Lot Frontage: 20 feet Lot Depth: 80 feet
Number of buildings: 0 Year built: 0
Number of floors: 0 Building Gross Area: 0 sq. feet
Residential Units: 0 Total # of Units: 0
Landuse: Vacant Land
Zoning: R6A: Residential
Commercial Overlay: 0 Zoning Map #: 16C
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
Floor Area Ratio: 0 Max. Allowable Floor Area Ratio: 3
(FAR may depend on street widths or other characteristics. Contact City Planning Dept. for latest information.)
Owner: 137 FIFTH AVENUE,LLC.
More building information: NYC Dept. of Buildings
More property information: NYC Dept. of Finance Assessment Roll
More zoning information: CITI Zoning Guide

Source: The Bytes of the Big Apple (TM) PLUTO (TM) and Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning, 2004.



2000 Census	Kings County,	NY Region	Nation
% Urban:	100%	95.27%	79.01%
% Rural:	0%	4.73%	20.99%
% White, not Hispanic:	34.67%	57.47%	69.12%
% African American, not Hispanic:	34.26%	15.59%	11.98%
% Asian, not Hispanic:	7.48%	6.49%	3.58%
% 2 or more races, not Hispanic:	2.93%	2.15%	1.78%
% Hispanic, all races:	19.8%	17.68%	12.52%
% Pop. under 18 years old:	26.72%	24.64%	25.64%
% Pop. 65 years & over:	11.49%	12.54%	12.43%
% Pop. Native to US:	62.21%	76.37%	88.95%
% Pop. Foreign Born:	37.79%	23.63%	11.05%
Median HH Income (1999):	$32135	$56,502	$41,994
Median Family Income (1999):	$36188	$66,066	$50,046
Per capita Income (1999):	$16775	$27,372	$21,587
% HH w/ Income < $10,000:	19.28%	10.07%	9.54%
% HH w/ Income > $200,000:	1.63%	4.64%	2.37%

Source: NYPIRG's Community Mapping Assistance Project, 2004; U.S. Census, 2000
.


Gregory Pl
5TH Ave
Douglass St
Degraw St

Scenario:

As the project began to generate more and more profit and expand from being a fairly obscure enterprise to being a well known mini industry it became quite clear to the group that they needed to begin to consider the needs of the community ; their community. Summer jobs for local students and fresh locally available produce were obvious benefits from the existing project. Re-investment of profits within the community had a trickle down effect that , although not easily quantified, was still beneficial. But the group realized that both the existing benefits to the community and new unforeseen benefits could be nurtured and grown just like the plants that were the “roots” of everything.

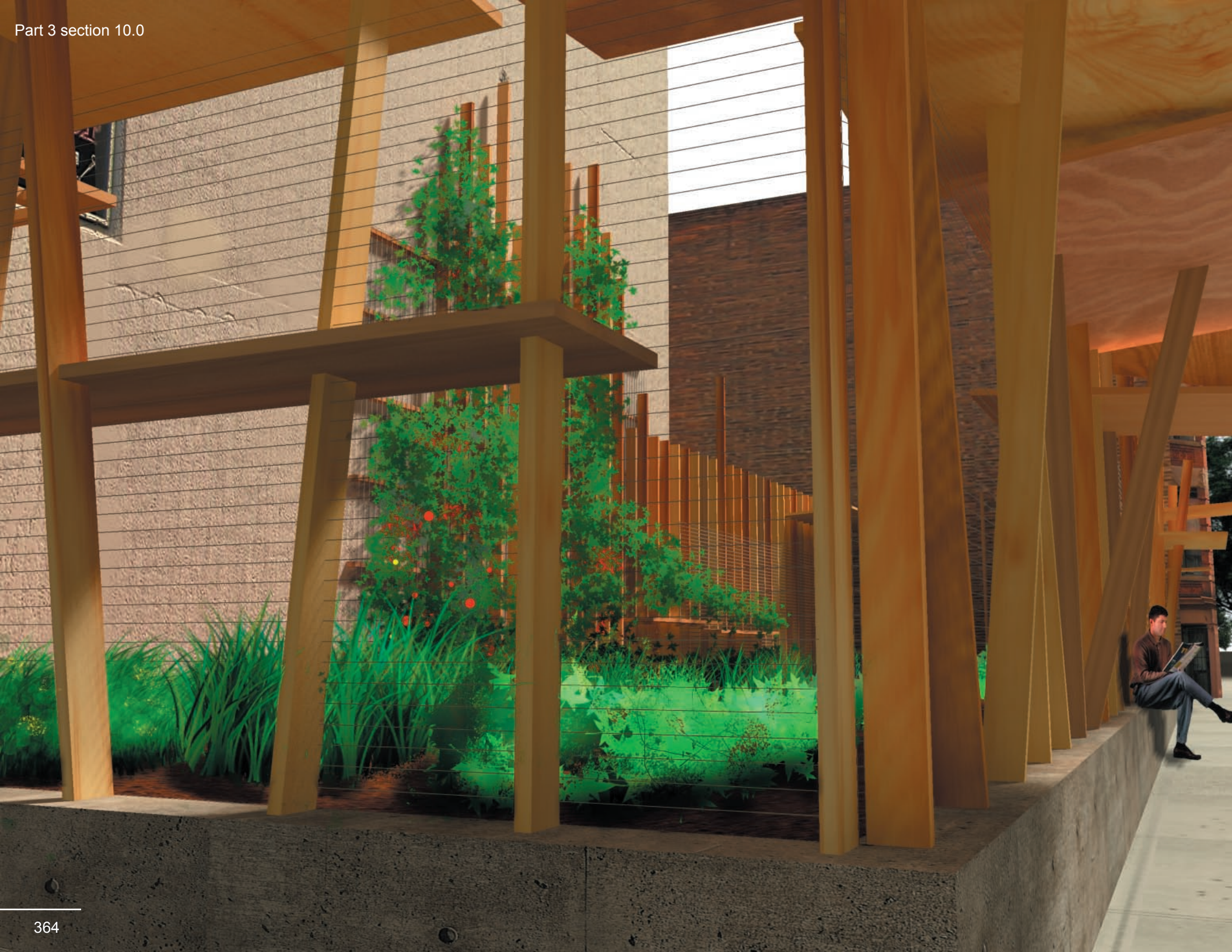
The group began to discuss the use of vacant land with local property owners and mutually beneficial arrangements with local businesses and land owners were soon reached. It was obvious to all that the project had many positive outcomes and most people were eager to support it in some way. The land owners realized that their land, that was sitting vacant, could be better used to support the community rather than remain disused. Local business owners realized that selling fresh produce grown locally was far more marketable an idea than food grown thousands of miles away.

The first site the project approached was a vacant lot at the corner of 5th Avenue and St. Johns place. The land had sat vacant for as long as most older group members could remember. At first finding the owner was the real problem. A brief search of records at the local government offices found that a Mr. T Liedbaum was the owner of record. A week after finding the owner’s name and tracking down what ended up being the current owner, Mr. Liedbaum’s nephew Seth, an arrangement was made. Seth hadn’t any plans for the land and, as he said numerous times during their meetings, “most of the time I forget about it” He was happy to provide the land free of charge provided that the group agreed to clean it up and maintain it. The groups initial plan was to use it as a planting area and more public visual face for the larger project They would develop the land to provide amenity for the community over time as funds would allow. Seth agreed to this plan but stipulated that he must retain the right to develop and sell the property if needed. The group understood Seth’s rights as the land owner and agreed, a period of 1 months notice before this could happen was decided and the group began to plan the clean up and remediation of the site.

The first 2 years saw a simple re-use of the site without much more in the way of improvements that new planting beds and some paint, year three saw the creation of raised beds, a wood fence with canopy cover and a series of training / learning seminars on growing held weekly at the site through growing season, year 5 saw the creation of an integrated seating / meeting area with small market component that linked directly to the adjacent backyards that had since become a part of the project. Produce was grown in the backyards, sold at the market, and eaten and enjoyed on the stepped seating. Soon the corner of 5th avenue and St Johns place became “The” place to meet and interact in the community. The development itself was carefully planned by the group to integrate growing space and community amenity. The raised growing bed provided a place for people to sit and meet and became a visual icon for the project within the community. The market place allowed for sales and a concrete example of local growing to share the same space and also provided for a place for the community to gather, a makeshift plaza.

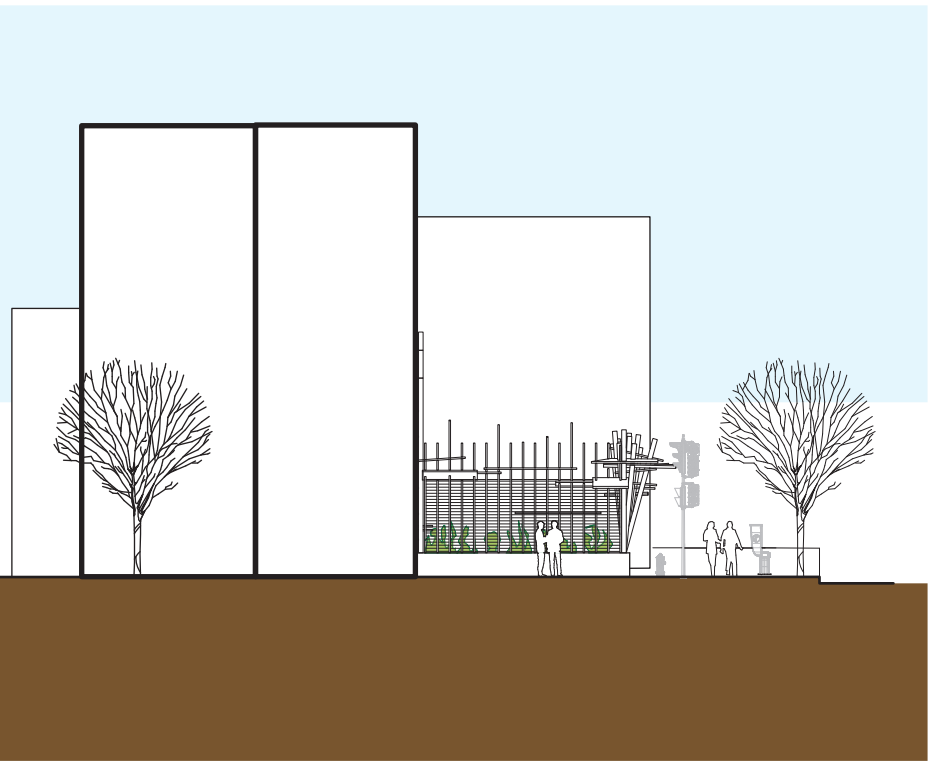


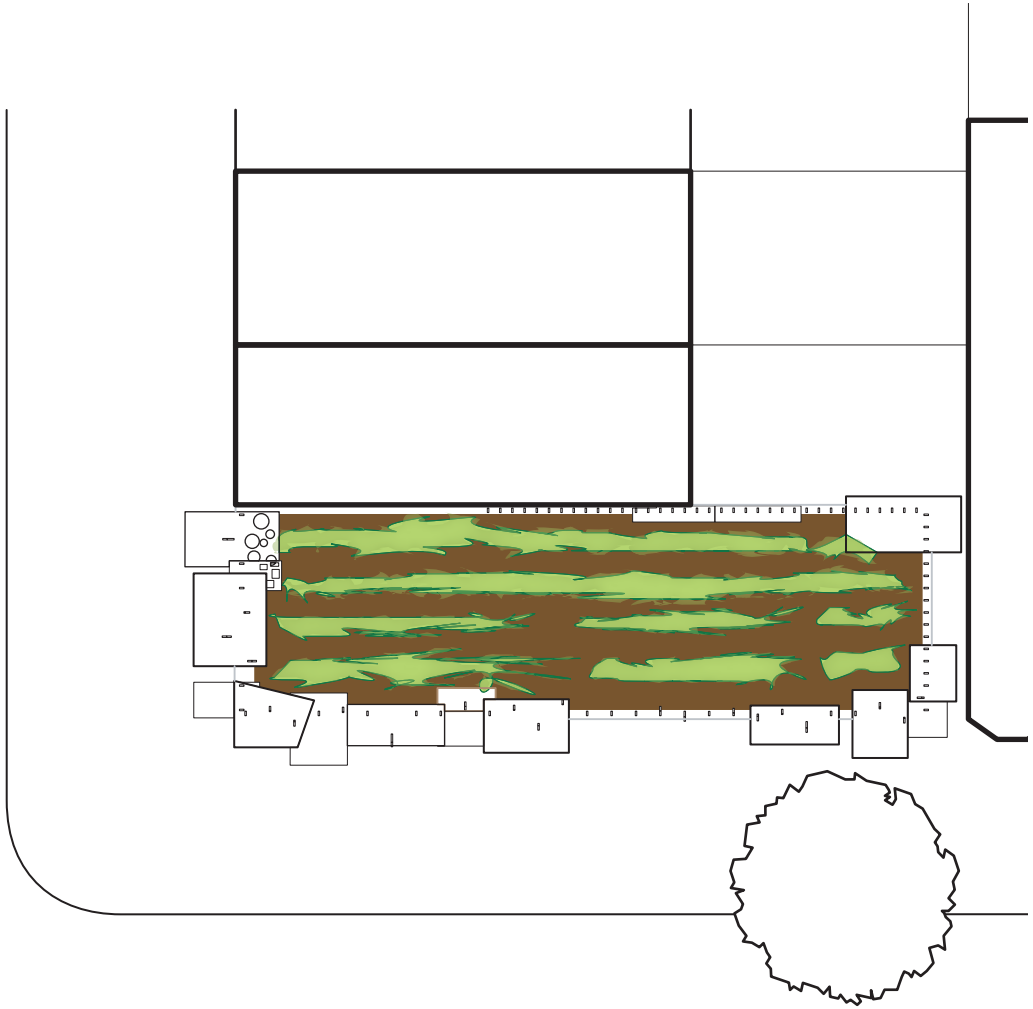

5thAve.
783-8354




5thAve.
UNISEX

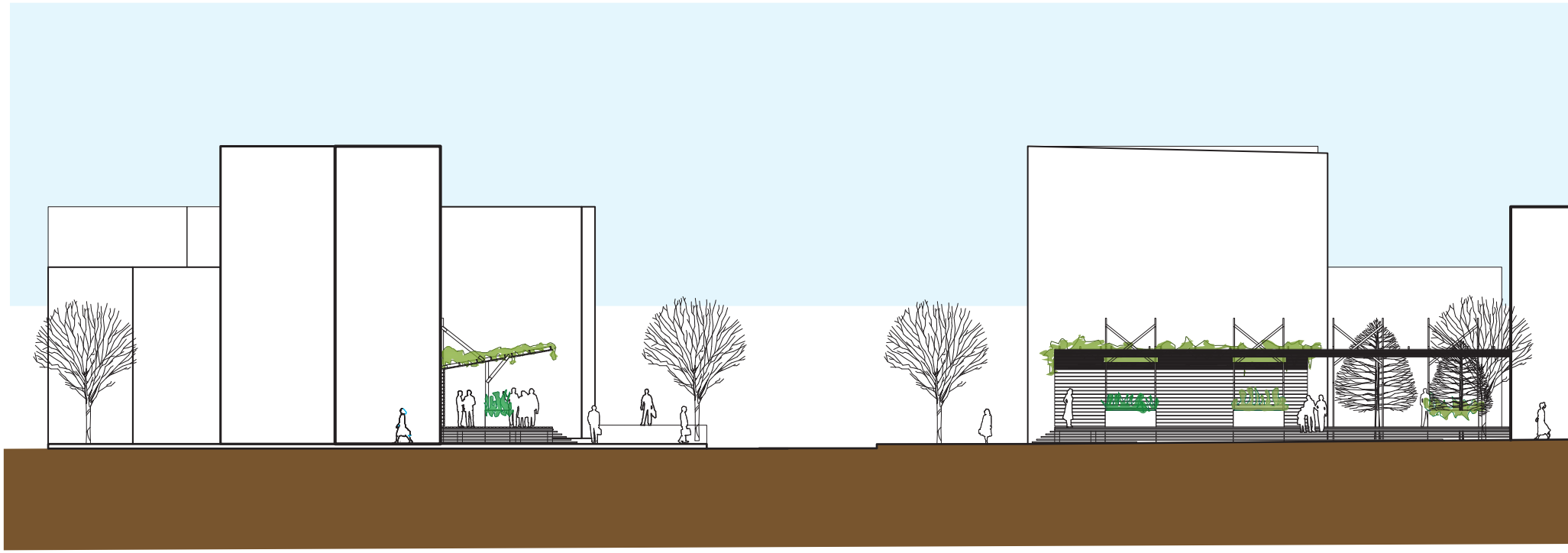


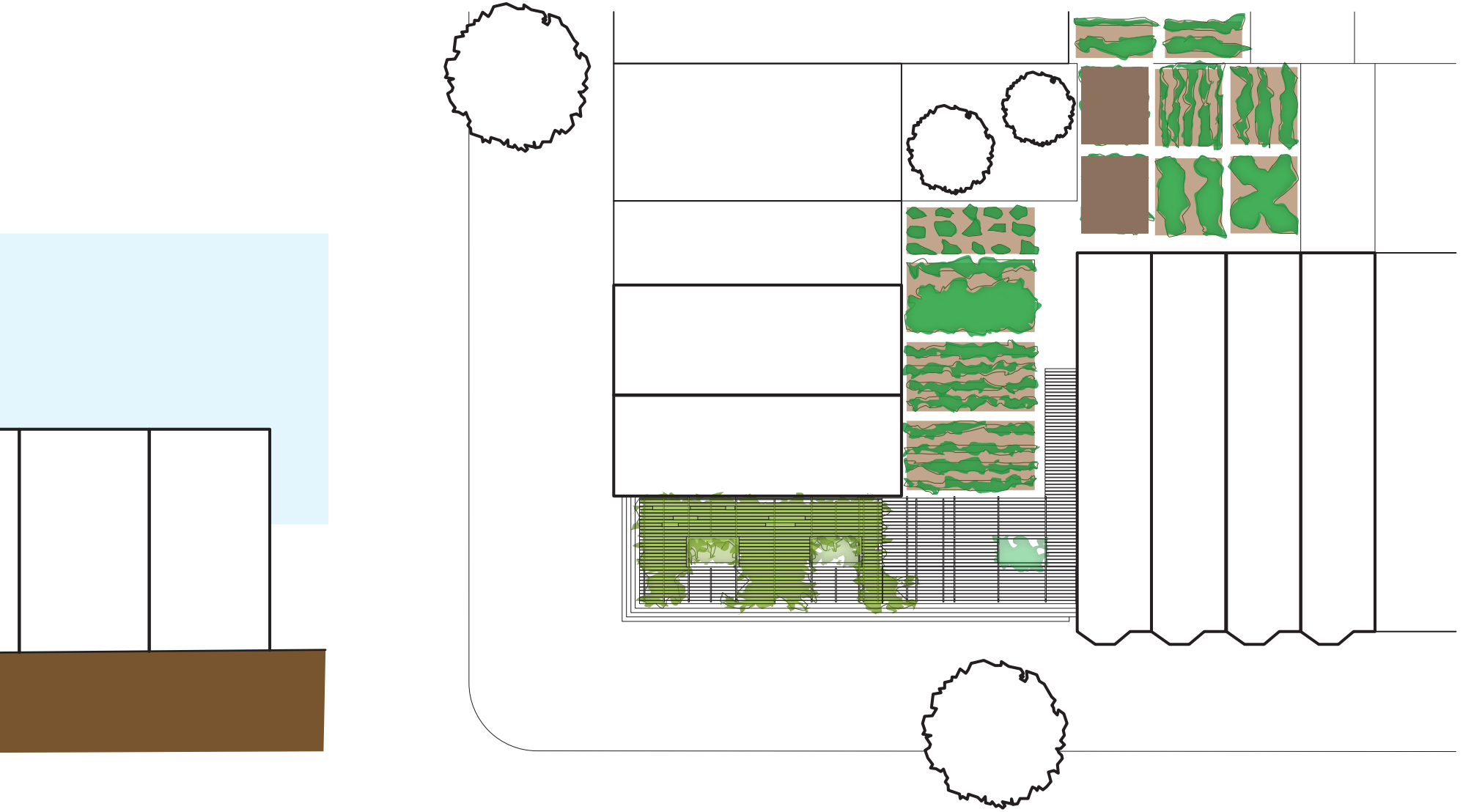














11.5.2 Bergen Street Brooklyn New York

Neighbourhood:

Stretching nearly 6 miles from East New York Ave to Court St near the waters edge Bergen Street stretches through many neighbourhoods in Brooklyn and many different social and political zones. The specific block that this site is located on is mainly residential with a history of small scale industrial manufacturing. The block sits adjacent to the local police precinct, a school and school yard and commercial businesses along heavily traveled Flatbush Avenue. The 1, 9 and 3, 4 trains stop at the Bergen street subway station that enters from the small triangular block at the Southwest base of block. The proposed development for the new arena on the Atlantic rail site would not necessarily require the demolition of the homes on this block but most certainly would change the nature of the neighbourhood and most likely lead to the voluntary displacement of the inhabitants.

Lot:

The lot itself is located in the center of the block. Although it sits adjacent to the backyards of the neighbouring homes it is in fact listed as vacant; a small anomaly within the volatile land market. There currently is no direct access to the site from the street but space between homes could allow a place of access. The site is small at only 40 feet by 31 feet and bordered on all sides by fences or buildings. There is also significant foliage and tree coverage which might make the site unsuitable for growing that requires a lot of direct sunlight. Other possibilities should be considered. At 1240 square feet the site is not that much smaller than other sites but its limited sunlight, and lack of street access may make it impossible to utilize for the project. It is included here as an example of possible vacant sites that may or may not be usable.

Design Considerations:

Access is the primary problem with this site and one of the most important design factors. There is a small alley way to the Southwest of the site and the possibility of arranging some sort of agreement with the neighbouring land owners for access. The next problem is the lack of direct sunlight. Although the included illustrations show 60% plus of direct sunlight daily that number should be thought of as optimum and would obviously change when foliage and tree canopy are considered. It is impossible to gain access to the site to actually determine the true sunlight conditions so limited direct sunlight is assumed. Due to the limited amount of sunlight this site would be perfect for animal husbandry or the keeping of bees. Composting on a large scale could also be accomplished on this site or storage etc. Just because a site doesn't receive optimum sunlight does not mean that it can not be used for the good of the project.

Climate:

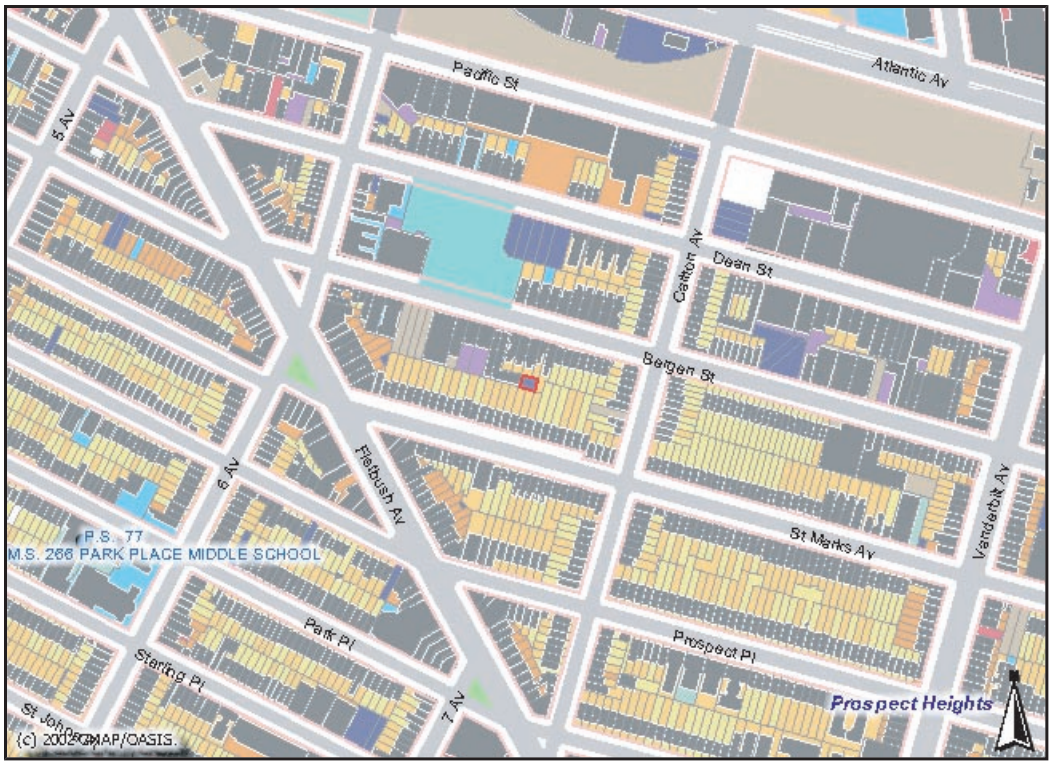
The site gets limited amount of direct sunlight and probably 50% diffuse sunlight daily. Soil quality is unknown and needs to be tested. Precipitation is the same for the entire project area as stated in the previous section The aver-

age temperature is also the same for the entire study area as stated in the previous section..

Strategy:

Animal husbandry is the best use of this site at the moment. Chickens could be kept in a coop for eggs and eventual slaughter and the enclosed nature of the lot makes it an ideal choice for natural grazing. Plants that might do well under more diffuse light conditions such as herbs and some flowers could also be grown and the chicken droppings could be managed and included in a composting scheme. Home owners of the neighbouring properties could be hired or volunteer to watch and maintain the chickens and compost etc. or access could be negotiated. Bee hives are also highly recommended due to their small footprint. Chicken rearing and bee hives, flowers and herbs and a composting scheme would allow this site, despite it's small square footage and limited sunlight, to become a valuable contributor to the project. Premium products such as eggs, chicken meat, honey, flowers and herbs typically generate more per pound than fruits and vegetables. This suggests that a multifunctional site such as this one could be far more economically viable than other sites strictly devoted to growing vegetables. Proper permission for animal rearing in an urban center would have to be granted





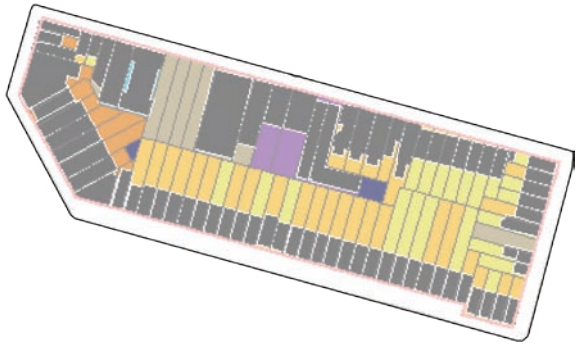
width of map is **0.50 miles**.

- Block/Lot Boundaries
- Community Gardens
- Green Spaces Along Streets
- Mixed Use
- Transportation & Parking
- Streams, Lakes, Waterbodies
- Streets
- Buildings
- NYC Parks
- 1 & 2 Family Residential
- Commercial
- Industrial
- Bridges/Overpasses
- Schools
- Playgrounds
- Multi-family Residential
- Institutions
- Vacant Lots



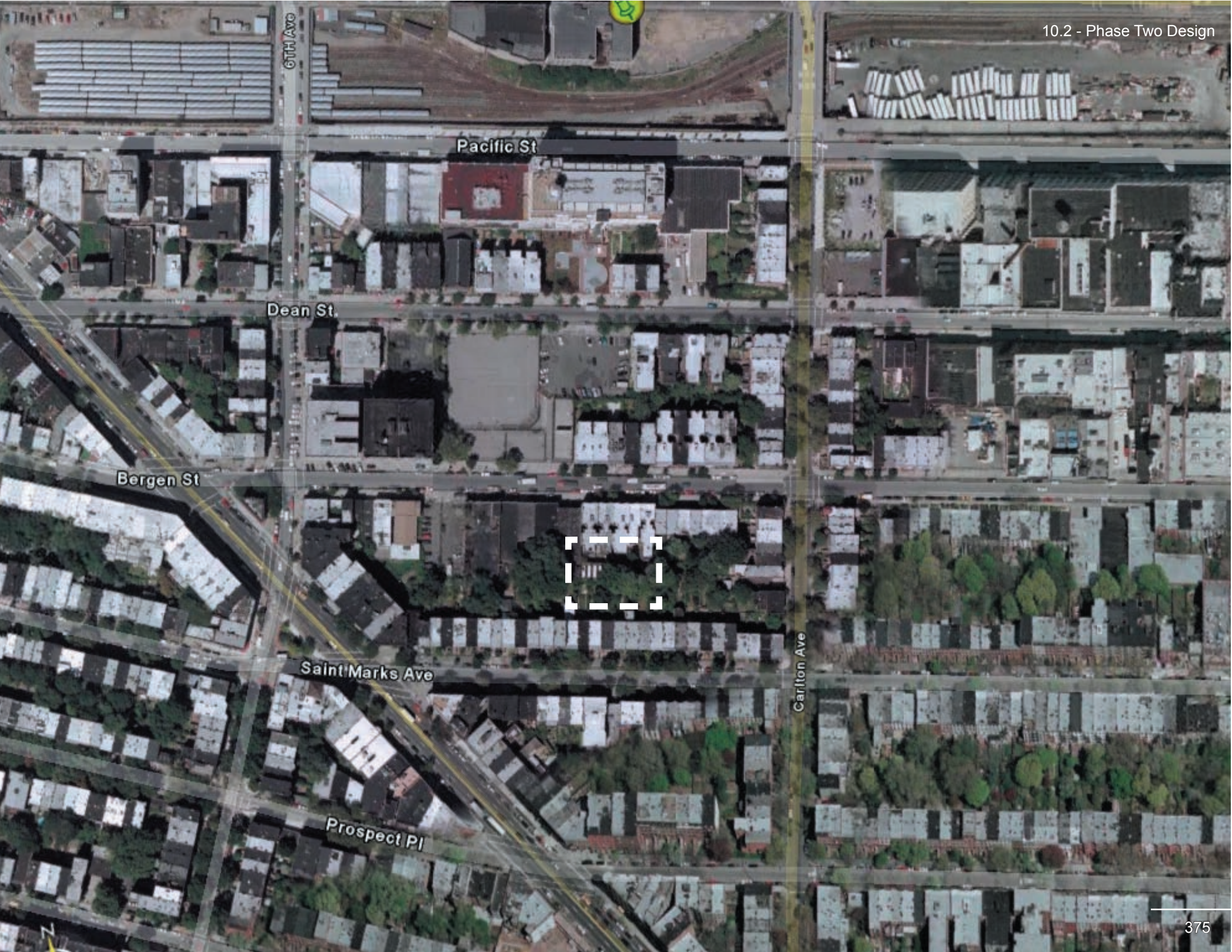
Information about the Lot you identified:
Borough: Brooklyn Block: 1143 Lot: 140 Police Precinct: 77
Address, ZIP Code: BERGEN STREET, 11217
Lot Area: 1240 sq. feet Lot Frontage: 40 feet Lot Depth: 31 feet
Number of buildings: 0 Year built: 0
Number of floors: 0 Building Gross Area: 0 sq. feet
Residential Units: 0 Total # of Units: 0
Landuse: Vacant Land
Zoning: R6B: Residential
Commercial Overlay: none Zoning Map #:
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
Floor Area Ratio: 0 Max. Allowable Floor Area Ratio: 2
(FAR may depend on street widths or other characteristics. Contact City Planning Dept. for latest information.)
Owner: T LEVINE
More building information: NYC Dept. of Buildings
More property information: NYC Dept. of Finance Assessment Roll
More zoning information: CITI Zoning Guide

Source: The Bytes of the Big Apple (TM) PLUTO (TM) and Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning, 2004.



2000 Census	Kings County,	NY Region	Nation
% Urban:	100%	95.27%	79.01%
% Rural:	0%	4.73%	20.99%
% White, not Hispanic:	34.67%	57.47%	69.12%
% African American, not Hispanic:	34.26%	15.59%	11.98%
% Asian, not Hispanic:	7.48%	6.49%	3.58%
% 2 or more races, not Hispanic:	2.93%	2.15%	1.78%
% Hispanic, all races:	19.8%	17.68%	12.52%
% Pop. under 18 years old:	26.72%	24.64%	25.64%
% Pop. 65 years & over:	11.49%	12.54%	12.43%
% Pop. Native to US:	62.21%	76.37%	88.95%
% Pop. Foreign Born:	37.79%	23.63%	11.05%
Median HH Income (1999):	$32135	$56,502	$41,994
Median Family Income (1999):	$36188	$66,066	$50,046
Per capita Income (1999):	$16775	$27,372	$21,587
% HH w/ Income < $10,000:	19.28%	10.07%	9.54%
% HH w/ Income > $200,000:	1.63%	4.64%	2.37%

Source: NYPIRG's Community Mapping Assistance Project, 2004; U.S. Census, 2000
.


6TH Ave
Pacific St
Dean St
Bergen St
Saint Marks Ave
Carlton Ave
Prospect Pl

Scenario:

Many of the abandoned pieces of land sat at strange crossroads. The multiple parcels of land, existing for years without much change, had become less defined and more homogenous than would seem normal. Backyards grew together and odd gaps emerged between what was “owned” and what most people referred to as “lost” Parcels of land bordered on all sides by backyards and parking lots , school yards and brick walls were more numerous than was obvious at first glance, and, for all intents and purposes “free” to use.

The central nature of these parcels meant that for the most part there was limited to no sunlight exposure. Some parcels were bathed in sunlight for hours at a time and these were used to grow vegetables, others were lit by diffused light bouncing from all sides but not directly. The group had been discussing animal husbandry and this seemed an ideal time, and the ideal parcels, to give it a go.

A few different parcels were located , most central to the block, that provided enough land to raise some livestock. Considerations such as access and security were considered and most of the parcels chosen were close to a group members home or business. In some cases the back fence of the members home was co-incident with the used parcels. Portions of fence were removed and a small gate put in. Next the group had to be careful that the lots were protected and didn’t pose any nuisance or health threat to locals not involved in the project. The group wanted to raise animals but that didn’t mean the neighbourhood approved. Animal rearing in the city center was in effect illegal and a bothered neighbour, either by noise or smell, could call the health inspector.

Next actual structures to house the animals had to be created. Again the groups architects sketched up a few different ideas and the handy amongst the group members built the structures. A series of bee hives, a chicken coop and a rabbit hutch were decided on. Bees were easy and Mr. Spinner had experience as a bee keeper. Rabbits were quite, small and desirable. Chickens would be raised for slaughter and for eggs. Some in the group asked about goats and lambs and some wanted to try pigs. It was agreed to proceed slowly and work larger animals into the project once a baseline had been set and the temperature of the neighbourhood taken.

Arrangements were also reached with local restaurants and stores to supply fresh chickens and rabbit, eggs and honey. Due to the different nature of this part of the project a small group decided to manage it independently from the rest of the project. Not to separate profit and project development but to make it more manageable. A lot of new issues and problems would need to be dealt with and dealt with fast. Majority of the large group was always preferred but almost impossible to reach without a full blown meeting these days. The problems that could pop up with animals would mean that decisions had to be made quickly and the smaller group meant that was a possibility.

The first issue that popped up was how to actually obtain breeding stock. Steve and John made some calls and found a few farmers outside the city who were willing to provide chickens and rabbits to the group for a small fee and they drove out one Saturday with Derricks van to pick them up.

The next issue was the animals health and proper assurances to restauranteur and businesses that the animals were disease free. As with everything the group did the animals were to be raised organically and free range but the initial health of the animals had to be checked. As it turned out Mr. Spinner’s wife, Margo, was a retired veterinarian. She agreed to chicken the animals and monitor their status every week.

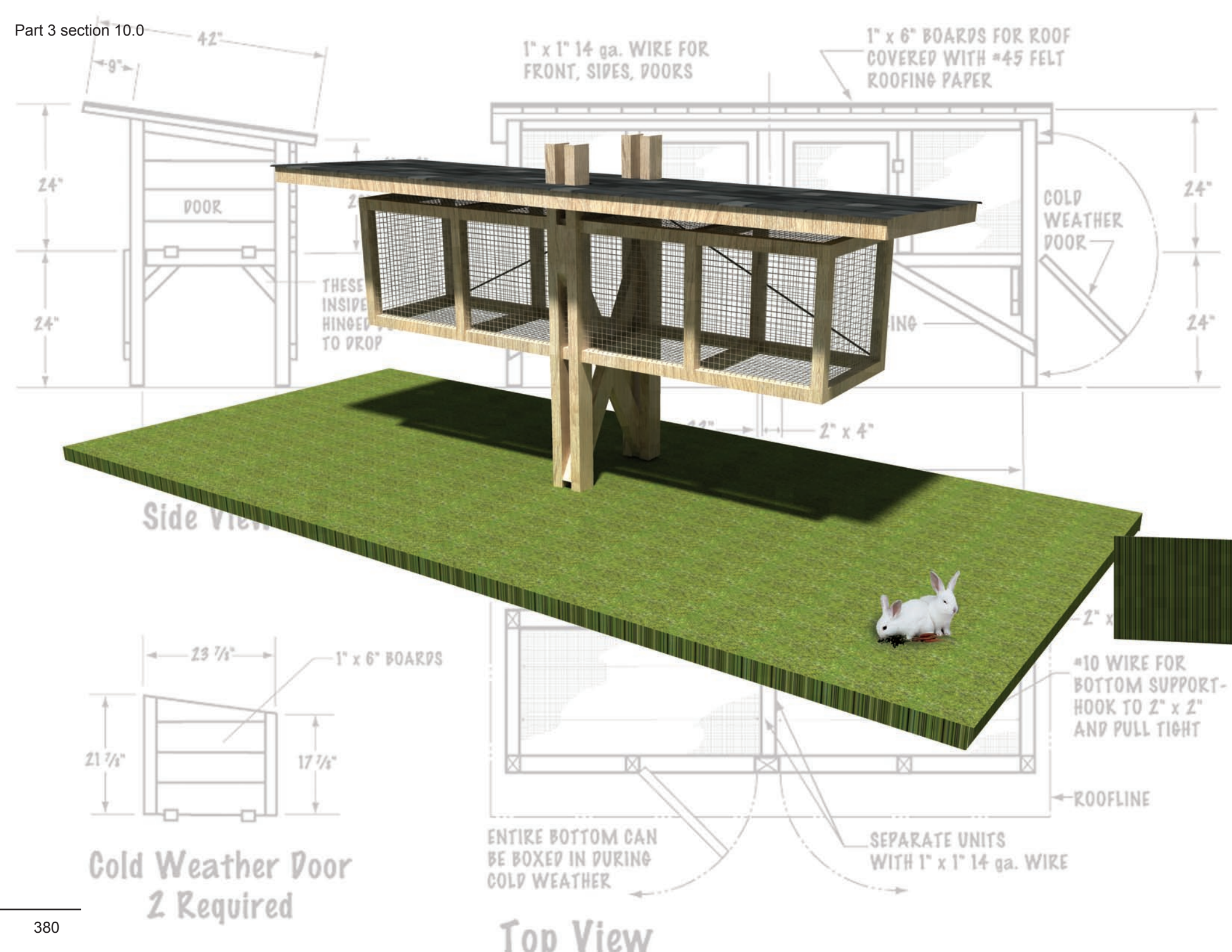
The first year was a real mess with many problems and a few close calls but the second year was better and the third year saw a profit and an organized and established customer base. Honey was produced from the 300 + hives and chickens and rabbits were plentiful. Many stores in the area started to sell the honey and the fresh eggs couldn’t stay on the shelves. Slaughtered rabbit and chicken found their way into local restaurants and more upscale establishments in the city. The rabbits and chickens that couldn’t be sold to restaurants were included in the weekly markets, frozen and shipped in coolers full of ice.

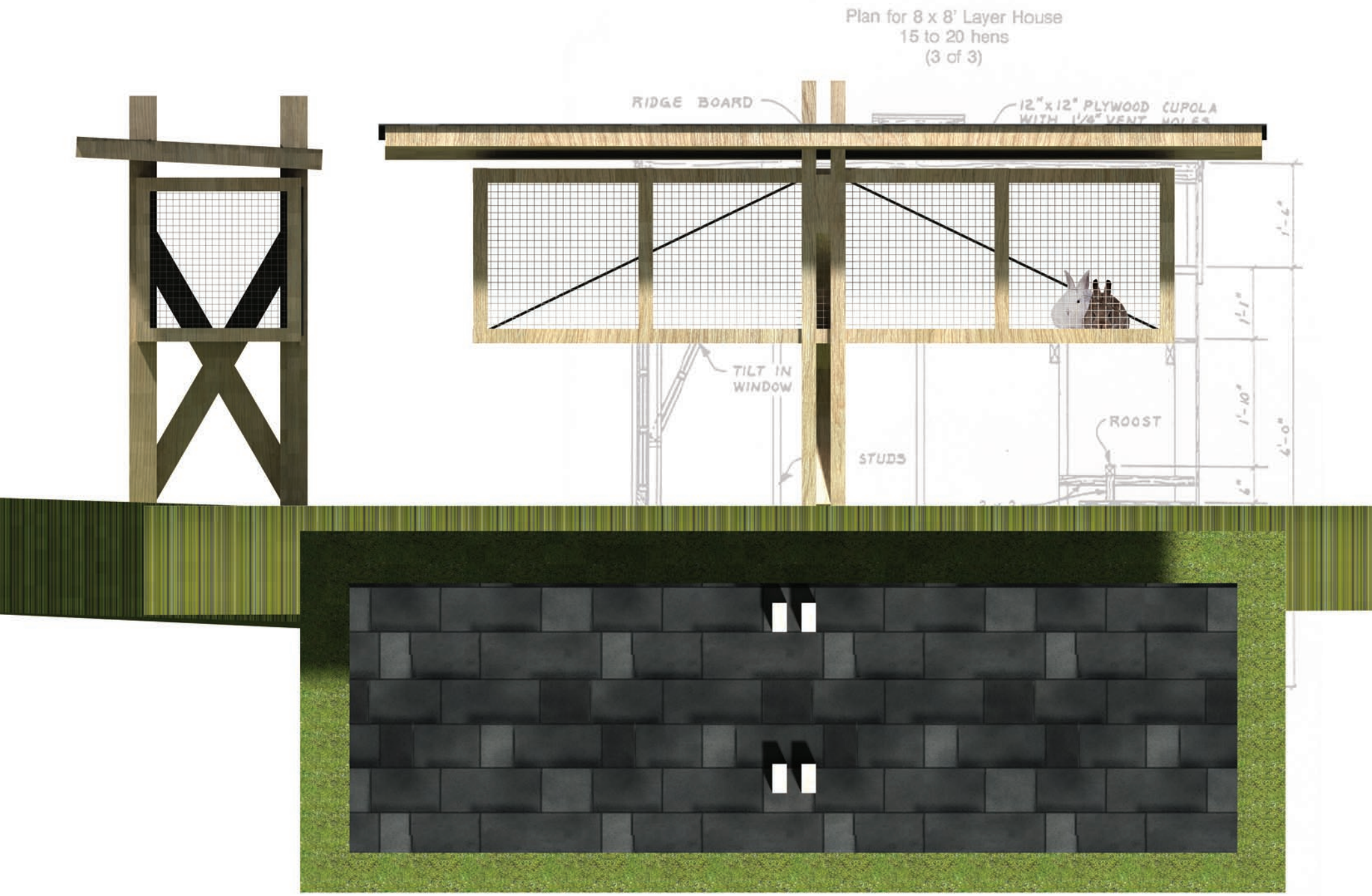
Although difficult to setup and maintain at first, animal husbandry proved to be a good investment and a popular product.





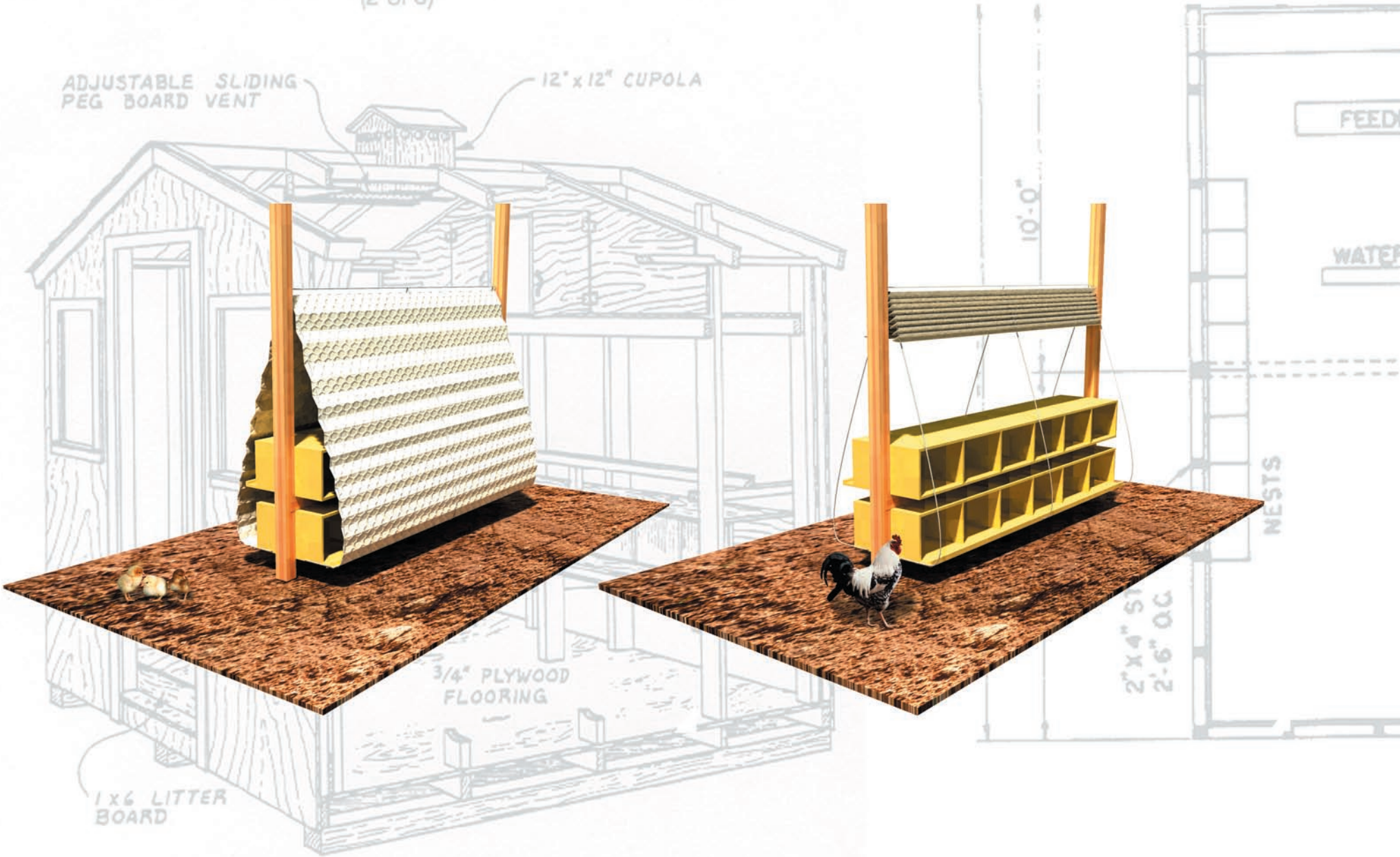


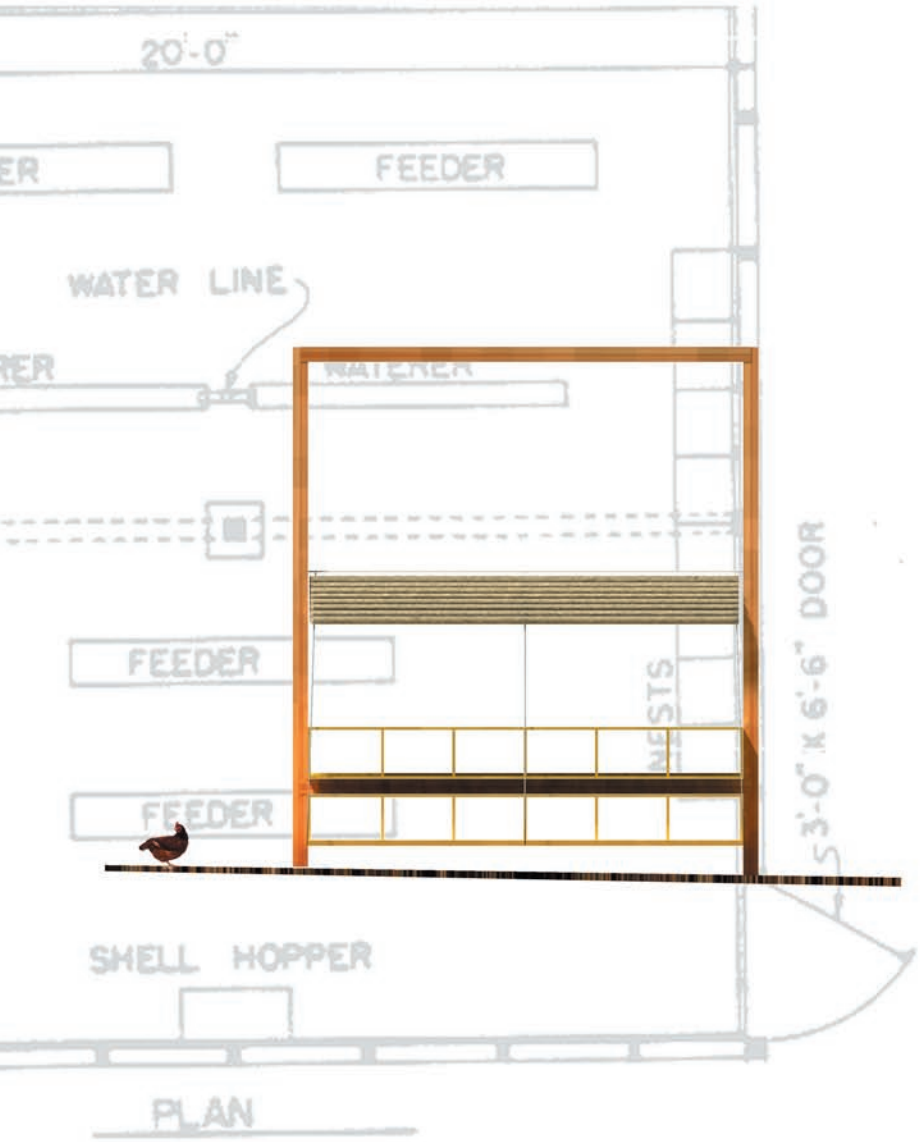

42"
9"
24"
DOOR
24"
1" x 1" 14 ga. WIRE FOR FRONT, SIDES, DOORS
1" x 6" BOARDS FOR ROOF COVERED WITH #45 FELT ROOFING PAPER
COLD WEATHER DOOR
24"
24"
2" x 4"
Side View
23 7/8"
1" x 6" BOARDS
21 7/8"
17 7/8"
Cold Weather Door
2 Required
#10 WIRE FOR BOTTOM SUPPORT-HOOK TO 2" x 2" AND PULL TIGHT
ROOFLINE
ENTIRE BOTTOM CAN BE BOXED IN DURING COLD WEATHER
SEPARATE UNITS WITH 1" x 1" 14 ga. WIRE
Top View

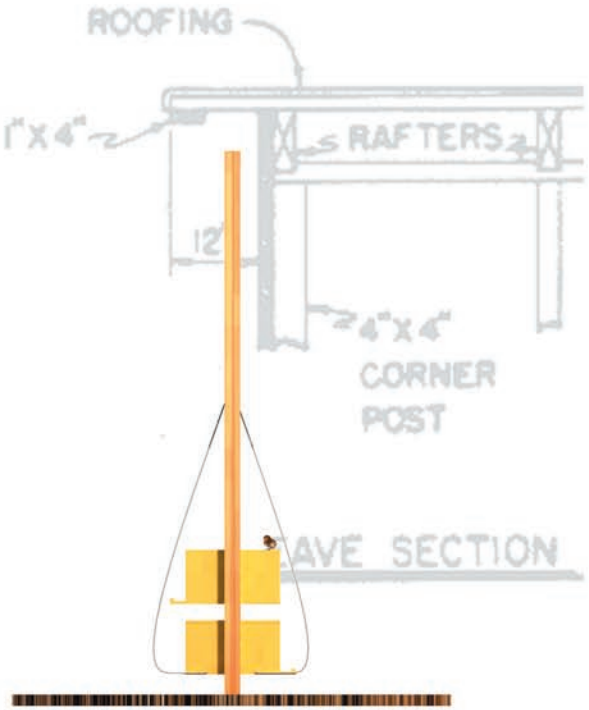

Plan for 8 x 8' Layer House
15 to 20 hens
(3 of 3)
RIDGE BOARD
12" x 12" PLYWOOD CUPOLA
TILT IN WINDOW
ROOST
STUDS






Plan for 8 x 8' Layer House
15 to 20 hens
(2 of 3)
ADJUSTABLE SLIDING PEG BOARD VENT
12" x 12" CUPOLA
10'-0"
FEED
WATER
NESTS
2"X4" ST
2'-6" OC
3/4" PLYWOOD FLOORING
1 x 6 LITTER BOARD
CUTAWAY VIEW


20'-0"
FEEDER
WATER LINE
FEEDER
FEEDER
3'-0" X 6'-6" DOOR
SHELL HOPPER
PLAN


ROOFING
1"X 4"
RAFTERS
12"
4"X 4"
CORNER
POST
AVE SECTION





11.5.3 St Marks Street Brooklyn New York

Neighbourhood:

The area where this site is located approaches the boundary between the more upscale Prospect Heights neighbourhood and the poorer neighbourhood of Crown Heights. Although the actually border is not definite a cursory review of the area will make manifest the distinction between the two neighbourhoods. Immediately across from the site is a set of small warehouses and manufacturers and a school. The lot itself is surrounded by multi-residential units and shares the block with an existing community garden. Vanderbilt Avenue is the first main street directly west of the site and Atlantic Avenue is a few blocks north. Both these avenues are a mix of street level businesses, offices, multi-residential and single family homes.

Lot:

The lot is one of the largest vacant lots in the study area and is actually comprised of three separate parcels. The combined square footage is approximately 8232 square feet. The site is gently sloped from the center of the block to the sidewalk at the out edge. The end of the lot closest to the center has numerous bushes and trees that provide a natural fence between the lot and adjacent properties. Being one of the largest sites there is ample opportunity for diverse planting and a possible linkage between the lot and the existing community garden. age temperature is also the same for the entire study area as stated in the previous section.

Design Considerations:

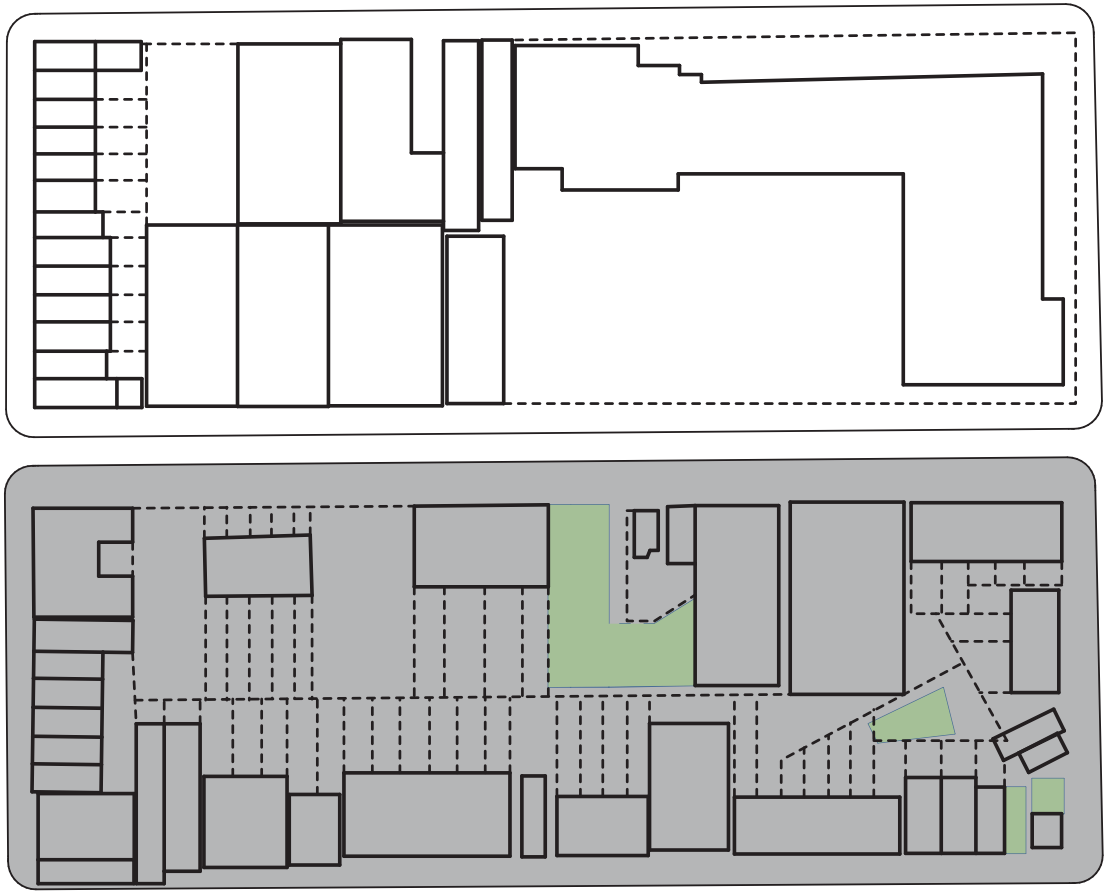
This is a large site with good natural light. The proximity to a school makes it a great teaching resource and the multi-residential units surrounding the lot mean increased density and hopefully increased usage and interest. The size allows for numerous crops and a possible mixture of animal husbandry, vegetable and fruit production and community amenity. Maximizing the site, like all the initial proposals, should be considered but the added benefit of providing for immediate community involvement needs to be assessed. It is possible that community amenity at the early stage of the project could help the project grow just as much as financial success.

Climate:

Again with all these sites soil quality is unknown and needs to be tested. It should be possible to conduct research into the history of all of these sites through title searches and city record. Knowing the history will help establish soil conditions and possible contaminants. Precipitation is the same for the entire project areas and was an average over 10 years of 4.49 inches in June with a high of 10.26 inches and a low of 0.19 inches. Precipitation was an average over 10 years of 3.48 inches in August with a high of 5.85 inches and a low of 1.87 inches. The average temperature is also the same for the entire study area and over 10 years was 67.26 degrees Fahrenheit for June with a high of 71.4 degrees and a low of 64.3 degrees. The average August temperature over 10 years was 71.8 with a high of 77.2 and a low of 68.1 degrees.

Strategy:

This is a great site with ample space to plant and good natural light for a large part of the day. The school across the street is an opportunity to teach the benefits of urban agriculture and also stimulate community support and involvement. The site should be maximized with numerous types of plantings, a small area reserved for animal husbandry such as chickens or rabbits or possibly pigs and a small orchard could eventually be established. The lot itself is located in an area with small storage and shipping warehouses and small industrial businesses. It is centrally located within the greater project area and seems an ideal location to setup a weigh station of sorts. Cold storage could be co-located with growing space and used as a mid point for many of the backyard gardens. Weekly produce could be brought to this one main area and cleaned, bagged and stored in a walk in cooler until the weekend sales. Weekly deliveries could also be supplied from this location with a loading area and parking for delivery trucks, bicycles and cars. Walk up access and a small sales station could also be established. Like many of the other structures proposed a growing system could be integrated into the building itself. Secondary storage of surplus tools could also be stored for group access later. More than one of these “Warehouse” building types would need to be created to serve the project as it grows.





Information about the Lot you identified:
Borough: Brooklyn Block: 1152 Lot: 19 Police Precinct: 77
Address, ZIP Code: 250 ST MARK'S AVENUE, 11238
Lot Area: 2096 sq. feet Lot Frontage: 16 feet Lot Depth: 131 feet
Number of buildings: 1 Year built: 1930 (Year Built is an estimate)
Number of floors: 2 Building Gross Area: 1644 sq. feet
Residential Units: 2 Total # of Units: 2
Landuse: One and Two Family Buildings
Zoning: R6B: Residential
Commercial Overlay: none Zoning Map #: 16C
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
Floor Area Ratio: 0.78 Max. Allowable Floor Area Ratio: 2
(FAR may depend on street widths or other characteristics. Contact City Planning Dept. for latest information.)
Owner: GUERRA, CHERRYL P
More building information: NYC Dept. of Buildings
More property information: NYC Dept. of Finance Assessment Roll
More zoning information: CITI Zoning Guide

Source: The Bytes of the Big Apple (TM) PLUTO (TM) and Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning, 2004.



Information about the Lot you identified:
Borough: Brooklyn Block: 1152 Lot: 31 Police Precinct: 77
Address, ZIP Code: 270 ST MARK'S AVENUE, 11238
Lot Area: 3603 sq. feet Lot Frontage: 27.5 feet Lot Depth: 131 feet
Number of buildings: 0 Year built: 0
Number of floors: 0 Building Gross Area: 0 sq. feet
Residential Units: 0 Total # of Units: 0
Landuse: Vacant Land
Zoning: R6B: Residential
Commercial Overlay: none Zoning Map #: 16C
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
Floor Area Ratio: 0 Max. Allowable Floor Area Ratio: 2
(FAR may depend on street widths or other characteristics. Contact City Planning Dept. for latest information.)
Owner: PRESIDENT REALTY INC
More building information: NYC Dept. of Buildings
More property information: NYC Dept. of Finance Assessment Roll
More zoning information: CITI Zoning Guide

Source: The Bytes of the Big Apple (TM) PLUTO (TM) and Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning, 2004.



Information about the Lot you identified:
Borough: Brooklyn Block: 1152 Lot: 171 Police Precinct: 77
Address, ZIP Code: 272B ST MARK'S AVENUE, 11238
Lot Area: 2533 sq. feet Lot Frontage: 50 feet Lot Depth: 64.67 feet
Number of buildings: 0 Year built: 0
Number of floors: 0 Building Gross Area: 0 sq. feet
Residential Units: 0 Total # of Units: 0
Landuse: Vacant Land
Zoning: R6: Residential
Commercial Overlay: none Zoning Map #:
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
Floor Area Ratio: 0 Max. Allowable Floor Area Ratio: 2.43
(FAR may depend on street widths or other characteristics. Contact City Planning Dept. for latest information.)
Owner: MCLAREN, RONALD
More building information: NYC Dept. of Buildings
More property information: NYC Dept. of Finance Assessment Roll
More zoning information: CITI Zoning Guide

Source: The Bytes of the Big Apple (TM) PLUTO (TM) and Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning, 2004.

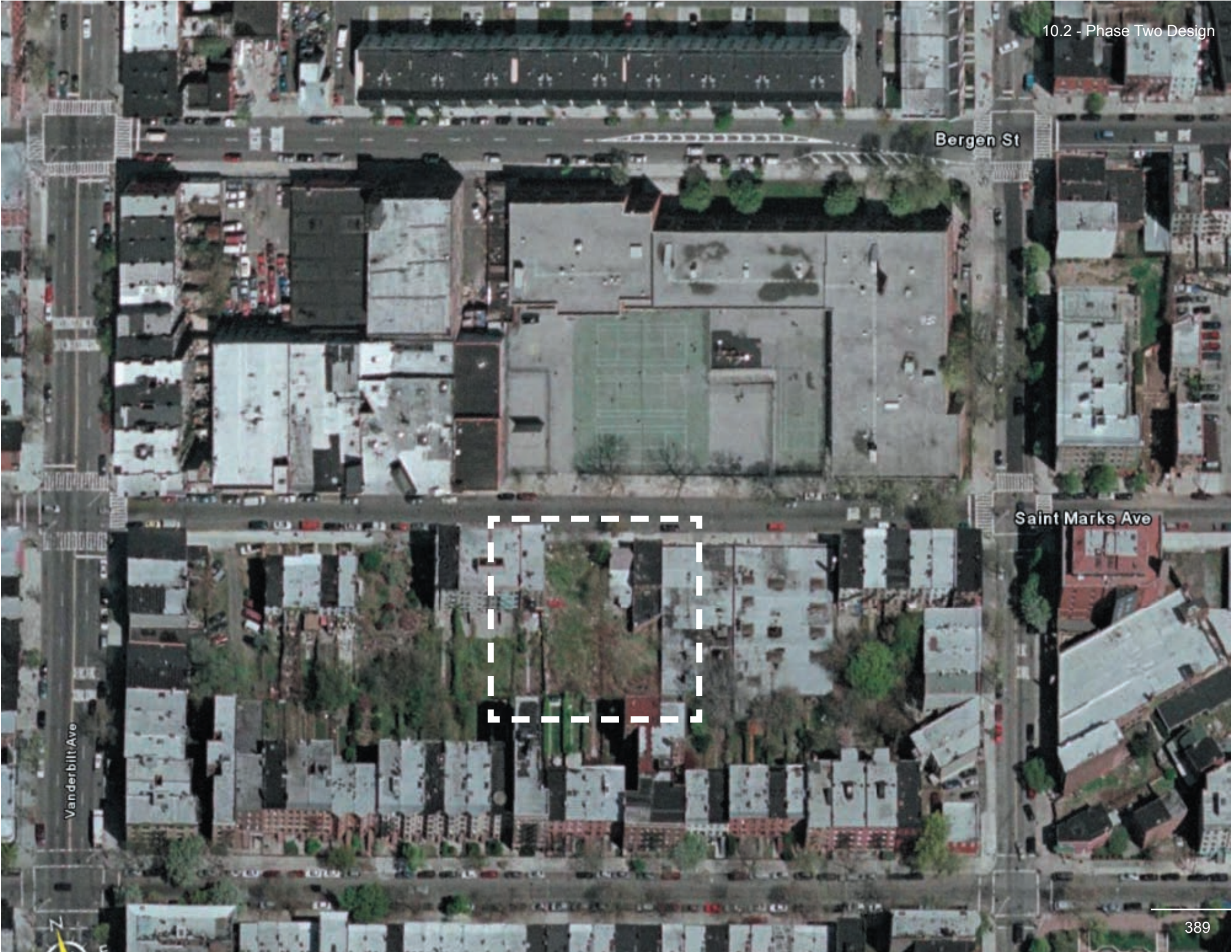
Block/Lot Boundaries
Community Gardens
Green Spaces Along Streets
1 & 2 Family Residential
Commercial
Industrial
Streams, Lakes, Waterbodies

Streets
Buildings
NYC Parks
Cemeteries
Multi-family Residential
Institutions
Vacant Lots

Bridges/Overpasses
Schools
Playgrounds
Piers
Mixed Use
Transportation & Parking
Natural Areas

width of map is **0.50 miles**




Bergen St
Saint Marks Ave
Vanderbilt Ave

Scenario:

The St-marks site was one of the abandoned lots first integrated into the main project. As backyards were being set up an enterprising group of local youth decided to clear out the lot and use it to plant vegetables. As the years progressed and the project became established it was realized that a lot of the groups time was spent transporting produce to one central location for transport to local markets. This usually involved project members bringing produce in bags and small boxes to a local parking lot. Then the vegetables were resorted and divided amongst the sales crews who then took the subway to local Saturday / Sunday markets. Sometimes people would actually drive a large amount of the produce to each market, meeting the sellers there. This was often confused and mismanaged and produced more problems than it solved.

At one monthly meeting the group decided it needed to create some local places within the project to store and clean, bag and divide the produce from many of the different backyard gardens. The teens in charge of the St-Marks site offered their site for this but the group was hesitant. The site had always been acknowledged as a great contributor to the project but also generated a lot of concern due to it's uncertain nature. At any moment a transient landlord could return and kick the project off the site or worse yet, bring legal proceedings against the group for trespassing. The teens agree that, before they can use the site, they must find the real owner and ask permission or determine some other solution. After an very exhaustive search that takes 3 weeks to complete the group come to conclusion that the owner of the site passed away nearly 20 years earlier and that their are no heirs. Through the process of discovering the true owner the city is made aware of the abandoned land. At first the group is worried because this could mean a quick end to the project site but soon become more optimistic as they find out the City must auction off abandoned pieces of land. A friend of the group tips them off that the auction is being held in a weeks time and that public notices about the auction (a requirement) usually go unnoticed and only interested parties with a previous knowledge of the auction attend. The group decides to send two senior members to the auction with the directive to not exceed $10,000 for the land.

A week later the two members return to the anxious group. The auction is over and the two look dissappointed. The $10,000..... was....TOO MUCH. It turns out that the tip was correct and no one else showed up. The land was purchased at auction for $530.00 by the two without opposition.

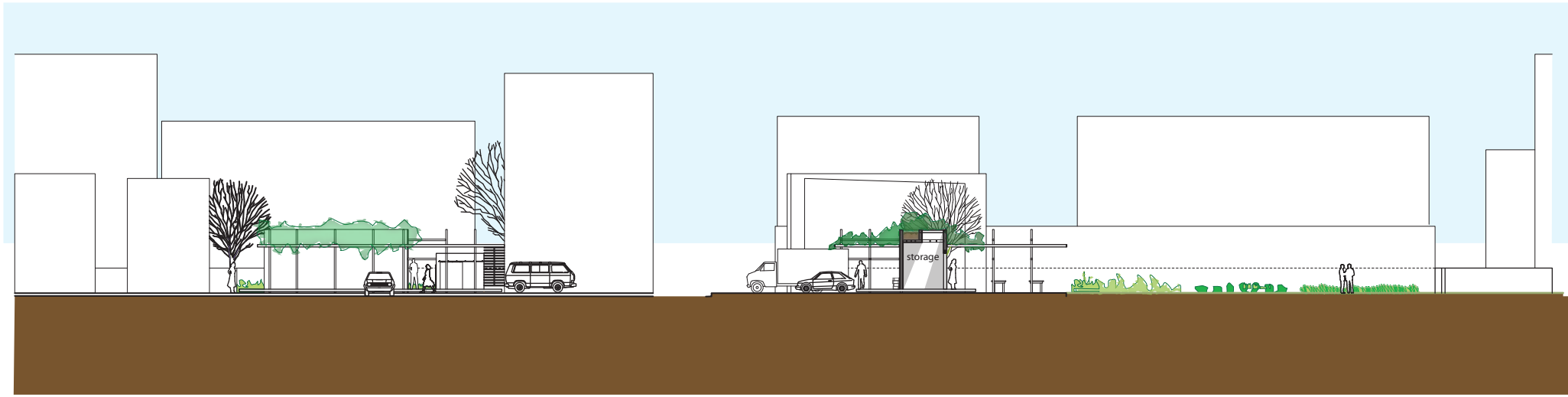
Two months later the site is completely cleaned up and the building process has begun. The teens had always left a large hedgerow at the street front of the site to hide what was happening behind it but now they were building a loading dock, roof, walk in cooler and storage area. The walk in cooler had two sliding doors. One to allow produce from the on site gardens to be brought into the cooler and another for the vegetables that had been dropped off from the backyard gardens to be put in the cooler to await cleaning and bagging**.** The local storage area not only held tools used for the on site gardens but also for project members that needed to quickly borrow a tool for their own backyard gardens. The roof was built reinforced to allow for a planting of local plants, vines and flowers. In the summer the vines grew so long that they cascaded off the roof and provided a canopy of shade. Stairs on the west side of the walk in cooler allowed for roof access to maintain the walk in cooler air system and the roof planting. Two large tables served as cleaning and prep areas in the back , supplied with water from a line established and maintained by a local business man.

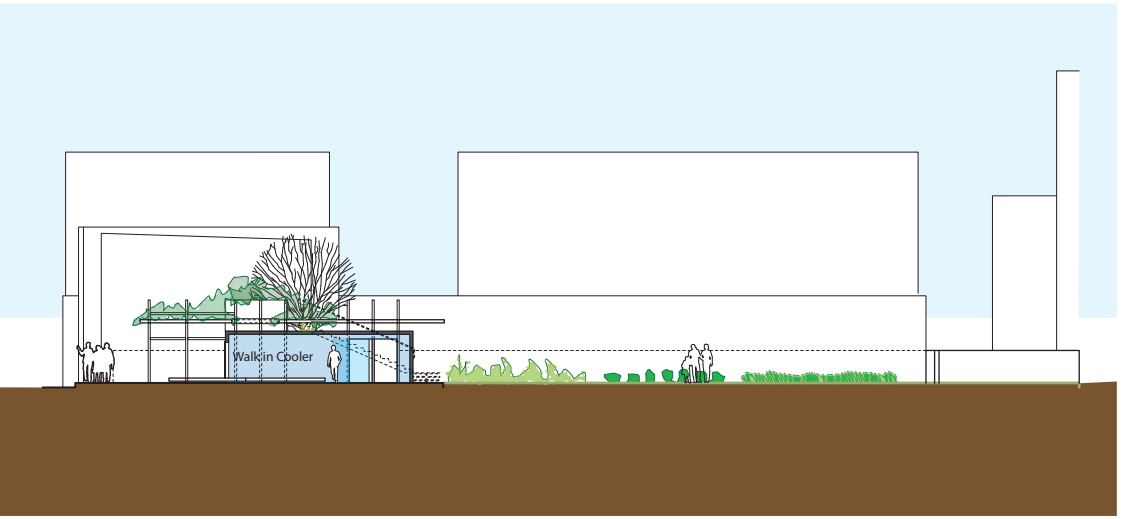
On the weekdays the site was always buzzing with deliveries, pickups and passer bys. Not only did the site serve as a gathering point for locally grow produce but also for just plain old locals. Many an afternoon saw numerous community members congregated under the shady roof, talking, playing cards or just watching the deliveries come in and go out. This kind of use was encouraged by the project members and many of the locals became members this way. Some afternoons would see a group of students from the local school working in the garden. An arrangement between the group and the school was reached to teach lessons on growing to the students in exchange for occasional help. Over the years this program became an actual course in agriculture and botany and was offered to all students at the school.




C&T 203



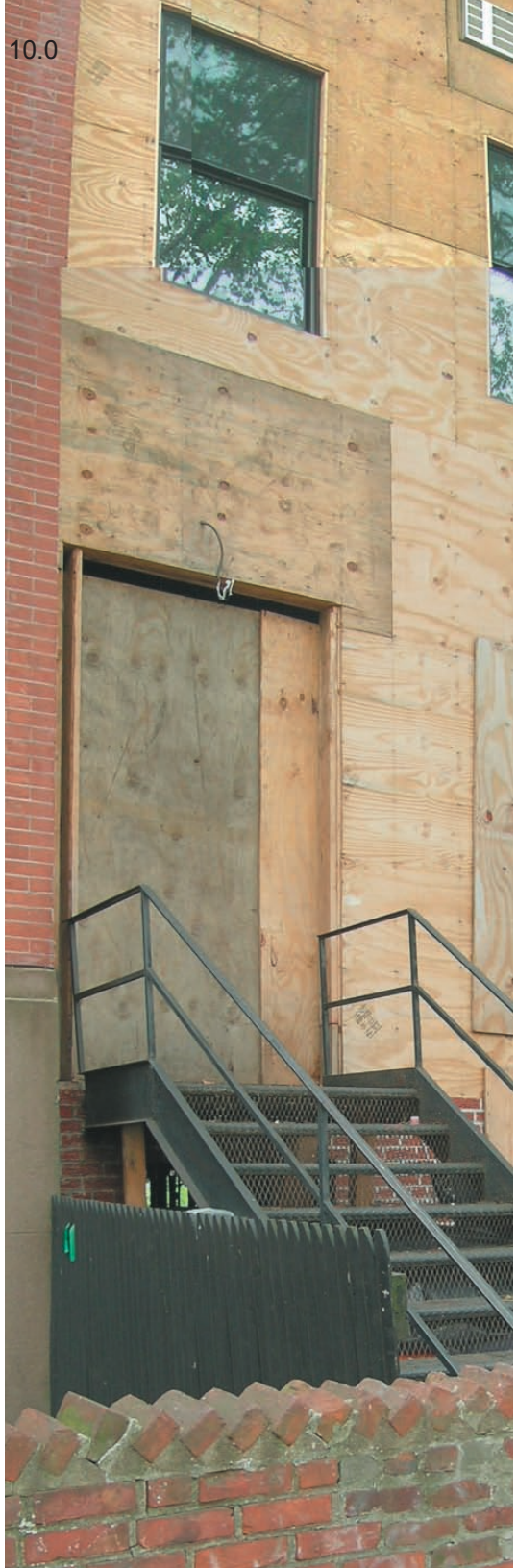

storage


Walk in Cooler









11.5.4 Derelict Building Brooklyn NY

Neighbourhood:

This type of building can be found in almost every neighbourhood in Brooklyn, from the most affluent to the most squalid. Some of them are in disuse, some have been condemned, some simple have no owner anymore and no one to take ownership. Many are being converted to new homes for re-sale while others sit vacant for years

Lot:

With no specific building in mind the lot is not easy to describe. The buildings themselves are typically 3-4 story brownstones, long and narrow with a small front yard and larger backyard. Most of the buildings share a party wall on both sides and are built out of brick. I've personally witnessed a few being stripped out to the floor joists and rafters, standing open to the elements. Left that way until someone is inspired or fool hardy enough to sink a few hundred thousand dollars into purchasing the shell and the renovation / remake. There is something elegant about an abandoned building, a hint of the past and a nod to the possible. These buildings take on many forms and many states of abandonedment, the ability to use them in many different ways is present. Using them to assist urban agriculture seems the perfect comment on what exactly urban agriculture strives to make reality.

Climate:

The beautiful thing about a derelict building is the ability to also control the climate. Something as simple as rain water collection on a rooftop to something much more involved such as a hermetically sealed structure, climate controlled through mechanical means. The difference is in the investment, both financial and temporal.

Strategy:

The building would seem to lend itself to multifunction. Growing and other needed amenities such as sales, meeting spaces, offices etc. However something as simple and as reusing the shell of a building to facilitate growing seems the logical first step. Establishing plants in the base of the building, hanging from joists and rafters and opening would be an interesting re-use of a building, a building that most likely plays some role in the fabric of the neighbourhood, even if that role is eyesore. Slowly transforming a building through it's use as, what is essentially a productive member of the community , is an interesting proposition. Let the building grow amongst the community as the plants themselves grow, stimulating other businesses to grow and beautifying and reclaiming what was once derelict.





Scenario

Behind the scenes many people on the community had been using the derelict buildings. The homeless sought shelter in them, the addicted used them to ply their trade. Kids would play in their foundations and birds and rats lived in their nooks and crannies. The derelict building was first brought to the group's attention by one monthly meeting attendee that always stood at the back and looked hungry. The meetings were held in a local church and all were encouraged to come. This man turned out to be homeless and had been using the meetings to get warm and get a little food; sandwiches were usually supplied. Through the summer months people had brought in seed samples to share with the group and it turns out this man began to bring these plants back to abandoned building he lived in and plant them in the backyard and crumbling foundation. As the group discussed giving back to the community the man from the back mumbled something about his house and the meeting went silent. All the heads slowly turned and gazed intently on the man. He mumbled incoherently for a while until someone said out loud (in typical NY fashion) "Speak Up"

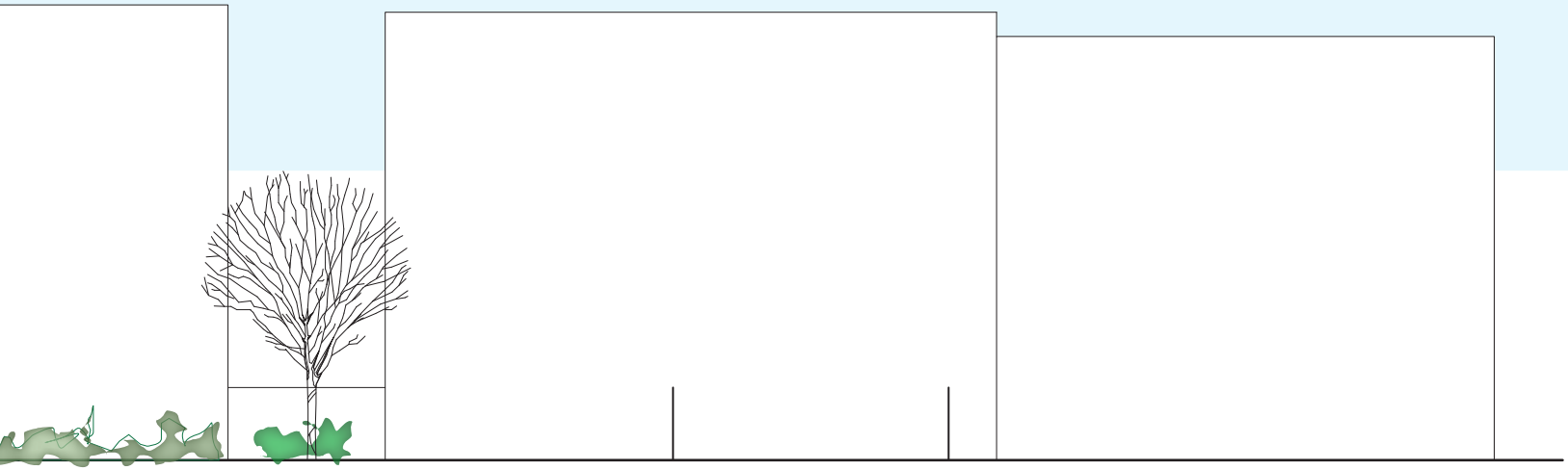
He said his name was Ondrei and he lived in an abandoned building in the neighbourhood. He mentioned that he thought no one owned the building and that it could probably be renovated and re-used to grow plants. The group listened silently, occasionaly nodding their heads in agreement as Ondrei laid out his plan for renovation and re-use to the entire group. After he was finished someone

from up front yelled out ‘He’s right, lets do it” That started the ball rolling and soon Ondrei was in charge of planning the renovation and re-use of his “home” The property was investigated again and found to be abandoned. It was brought to the City’s attention and again an auction was held. It sold for a lot more that the first property but it was still within the groups budget and cheap for any piece of property in NYC. A loan from a local bank was arranged and the proper permits were obtained. In slightly less than 6 months the abandoned building was transformed into a store front, offices and a green house. The backyard was turned into gardens with a small seating area for customers buying pastries and coffee from the store (it sold produce from the project but also locally produced pastries and goods) and of course a small apartment was built on the third floor for Ondrei. He was made head gardener and seemed very pleased. The store expanded to sell other goods produced in the neighbourhood, some made from the fruits and vegetables from the project. Other businesses soon popped up on the same block, taking over other disused storefronts and offices. The transformation was slow but eventually successful and the group began to re-habilitate other abandoned buildings. Sometimes these buildings were kept as mere shells and gardens were planted at their center and others were developed into similar store / office spaces. One was eventually turned into a headquarters for the group and it stayed as such until someone mentioned the Atlantic Rail yards.









Conclusion

Phase 2 shows that more can be accomplished with an urban agriculture then simply growing fruits and vegetables within a city. The juxtaposition of Brick and Mortar and Seed and humus suggests the other avenues that must be explored when pursuing urban agriculture. Profit is paramount to the success of an urban agriculture project but is not the only need or want. If the people involved in the project must ask the people of the neighbourhood to tolerate their pursuits then they must also be prepared for push back. This is inevitable especially when animal husbandry is considered. To mediate discomforts and concerns effort must be given to working “with” the community instead of against them, or secretly.

Considering the needs of the community, both immediate and future, the project group may be successful in establishing positive attitudes toward the project among community members. Beyond the simple benefits of green space, healthy food, food security and economic improvements the group can attempt to combine specific needs of the project with possible amenities for the community. If a building is needed, shed to office, for the project to work in an efficient manner then why not try to include some considerations for the neighbourhood.

Aesthetic improvements also improve land values, active urban spaces decrease crime and gardens are excellent green spaces for children to play. The project will inevitably need certain storage areas, distribution hubs, markets and a public face. By incorporating spaces and amenities for the community these needed buildings serve two ultimate purposes. The spaces them selves do not need to be programmed, dense cities, from my experiences, tend to be inhabited by people who lead instead of follow. A place to sit, a table like surface, simple shade will encourage congregation. Congregation can encourage education, social interaction and even in the most greedy of circumstances, encouraging local use of these spaces provides a ready customer base.

Consider the project area as one that needs to serve, and be served by, the community.

Design:

Like the factors that govern a gardens possible growth, the areas for design of the nature put forth in this section can be just about anything. New buildings structures should try to fit into the nature and atmosphere of the surroundings, old buildings should not be changed so drastically as to raise alarm or angry feelings, people feel strongly about the places they live, change can be hard and produce drastic reactions.

Again natural materials and recycling is encouraged. Simple storage sheds do not necessarily need to be marvels of technology. Design that is not culturally and socially conscious is a waste of time in an urban environment. Diversity is important but diversity for diversity’s sake is ridiculous.

Encouraging multi-use multi program design is important to a successful project. Spaces that serve the needs of the project but also serve the needs of the community need not be complex in their construction.

Secure spaces are important so as to limit liability and damages. Vandalism should be anticipated but non destructive forms of expression such as graffiti should be allowed. While some might find graffiti disagreeable it can be a beautiful art form and will typically serve to garner support amongst locals.

Skateboarding and other sports can also be encouraged. While no one wants a skateboarder to knock someone down they are typically more responsible and caring then people give them credit for.

Homeless people should not be discouraged from sleeping near or in project spaces. They are part of a community as well and need somewhere to sleep like anyone.

These ideas are only a fraction of the type of consideration needed when working in the community to better the community. When designing for the project each unique space should be looked at in depth.

Images, Sources:

Page 357

Brooklyn Land use maps

Maps from: Source: http://www.nyc.gov/html/dcp/html/landusefacts/landusefactsmaps.shtml

Page 360,374,388

Brooklyn Street Maps
Maps from: http://www.oasisnyc.net/oasismap.htm

Page 361,375,389

Brooklyn Aerials
Maps from: Google Earth, Modified by author

All Other Images By Author

Part 3 - Design Study - Form - Case Studies - Phase 3

10.3 Phase Three The Future, Steady State

10.3.1 Introduction
10.3.2 Methodology
10.3.3 Scenario

Introduction:

Coupled with an interest in urban agriculture the Atlantic Rail Yards were the catalyst for this thesis. The idea expressed within this thesis can be applied to numerous cities and in varied ways. In order to root the ideas expressed in this thesis in a tangible and existing condition the borough of Brooklyn was used and specifically the neighbourhoods surrounding the Atlantic Rail Yards. This area is the crossroads for a good deal of the people living in Brooklyn. It is a transportation hub, common ground, a landmark and a source of numerous controversies. The Brooklyn Dodgers once considered this crossroads as a site of their new stadium. More recently another proposed stadium has generated outrage and controversy amongst the residents who live in and around the site.

As described in Section 9.3 Part 3 of this thesis a large scale stadium and multiuse development is proposed for the Atlantic Rail Yards site and the adjacent blocks. The sheer scale of the development is seen as in opposition to the traditional scale and atmosphere of the surrounding neighbourhoods which are typically residential in nature. Also in section 9.1 Part 3 of this thesis the history of the rail yards site, and it's role in the commerce and development of Brooklyn is described. The site has existed as a hub of activity within Brooklyn for over 100 years. Currently it plays a role in the transportation infrastructure, It has a history of being central to the commerce and trade in Brooklyn and it once played a role in the farm industry that existed in Brooklyn. It seems right that it comes full circle and is incorporated into the new development of urban agriculture in Brooklyn. Instead of towering glass and steel towers, sitting in opposition to the nature of Brooklyn, taking money out of the borough, why not develop it as the new hub of a new industry in the heart of Brooklyn.

Phase three looks to the future of urban agriculture in Brooklyn. A new industry expanding, rooted in local development and business, giving back to the community instead of taking and providing a place to gather, grow and work at a place already considered as a center in Brooklyn. Preserve the history of the place instead of wiping it out in the name of money and try to re-use the existing conditions to create a viable place of business. Development is not synonymous with a clean slate. It can incorporate existing conditions and should be sensitive to the surrounding environment and desires of the people who will, eventually, use it. There is a case to be made for advancement and progress but that argument can be satisfied with the knowledge that progress can be achieved on varying scales. Previous chapters of this thesis have shown that urban agriculture is a viable business. Just because it doesn't immediately return millions of dollars doesn't mean that it is a worthless investment. The returns to the community, and the environment are numerous and vast and these returns are provided without a trade off of quality of life in the borough. If anything urban agriculture only enhances the quality of life.

Methodology:

The Rail Yard currently exists as temporary holding space for Long Island Rail Road (LIRR) commuter trains. Between the peak commuting hours of 10 and 3 they sit vacant. There is no doubt that the yards are being used by the LIRR and that they serve a purpose but it is important to also consider the impact they are having on the adjacent neighbourhoods in their current capacity. The rail yards act as a barrier to movement, sitting like a scar through the earth, dividing Bedford Stuyvensanton (Bed-Stuy) from Park Slope, an inverted wall if you will. The visual impact is striking as you move through the site. The development of businesses and homes in evident at the western edge of the site and disappears as you move East. The Western edge is a vibrant hub of activity whereas the Eastern edge is abandoned factories and lots and what would seem to be the border between valuable property and unused (and unwanted) vacant lots. All of this happens in a mere three blocks.

Why not take this land and turn it into a valuable and contributing commodity. The site itself is ideal for growing with almost continuous daily sunlight through the optimum growing season. There exists two abandoned buildings that can be re-used and unique site amenities that provide a perfect framework for building and design. The proximity to the local rail hub (Atlantic Avenue Station) makes the site an ideal place to interact with the community. People passing through the site will be able to pause at the site and purchase food, eat at the restaurant, walk the

gardens or simply stop and relax. Those people who are headed to the site to work or learn, shop or participate in some way need only take a train and walk half a block from the station. Ideally a link from the garden to the rail hub will be established and commuters can pass through the site on a daily basis. The adjacent rail links provided a perfect way to move produce from the site and to transfer supplies and products to the site. If a direct link to the rail line can't be established, or re-established, then people need only move a half block from the garden to the trains. The sunken nature of the site makes it ideal for security considerations and the central location of the site makes it a perfect project hub. The site itself can support numerous gardens, animal housing and simple amenity such as a shady area on a hot day.

A weekly market is proposed, a restaurant, a supermarket, a space for learning, a space for food development and food preservation, maintenance and construction, water storage, composting, grain storage and other amenities are to be incorporated into the rail yard site. The site will foster self sufficiency and be a catalyst for expansion into the remainder of the borough and the establishment of similar hubs in the other boroughs.

The Atlantic Rail Yard is a perfect site for the advancement of urban agriculture and for developing urban agriculture as a positive and successful business in the borough on Brooklyn.

Neighbourhood:

The Atlantic rail yards sit at the center of one of Brooklyn's biggest transportation hubs. Numerous subways, commuter rails and buses move through this area. The actual yards are situated at a grey area between many different neighbourhoods. These neighbourhoods range from the wealthy Park Slope to the poor Bedford Stuyvesant and Crown Heights. Once an area of much manufacturing and commercial business the nature of the area is one of renewal; some forced some desired. The central location and the varied cultural and socio economic qualities of the area make it the prime candidate for the project center as well. Millions of people move through this area every day and there is a prime opportunity for growing and selling fruits and vegetables to a ready market.

Lot:

The lot is currently being used as temporary holding for the Long Island Rail Road (LIRR) commuter trains that service Atlantic terminal. In the morning and in the evening the space is filled with trains waiting to move into place and pick up commuters. The eastern end of the site is used by the Metropolitan Transit Authority (MTA) for bus storage and the rest of the lot is occupied by two buildings, one vacant and the other houses a storage company. The site is 414,000 square feet or 11 acres and sits 20 feet below street level at it's highest point and closer to 30 feet below street level at its lowest point. Although surrounded by tall buildings the orientation of the site (east, west) means that it receives almost constant sunlight without obstruction

Design Considerations:

This site was chosen as the initial focus site for the project, before using other lots throughout the surrounding neighbourhood was even considered. It is perfectly located and has abundant positive features that make it an ideal place for urban agriculture. The existing buildings on the site and the ones at the western edge of the site should be renovated and could house support facilities, supermarket, restaurant, apartments etc. The proximity to the rail terminal provides, not only, a market for the produce but also a possible means of interacting with the site through opening up the underground transit to the site directly. The nature of the site at the center of many neighbourhoods makes it neutral ground that can both benefit and involve many different types of people from many different backgrounds.

Climate:

Soil contamination due to the rail service should be expected and remediation will be needed. The natural slope of the site and direct sunlight are excellent qualities for the growing. Precipitation is the same for the entire project areas and was an average over 10 years of 4.49 inches in June. Precipitation was an average over 10 years of 3.48 inches in August. The average temperature is also the same for the entire study area and over 10 years was 67.26 degrees Fahrenheit for June. The average August temperature over 10 years was 71.8

Strategy:

As stated above this site was the main focus of the thesis for sometime. It is still a very important part of the thesis and, given financial ability, should be among the first developed. The site itself will have to go through a period of remediation to be determined. This will provide excellent time for renovation of the existing buildings and site improvement such as proper fencing, drainage separations (to prevent rain water run off re-contaminating the site) and planning for development of the site as growing area.

The site should be all about the public face of the project and be used to not only grow food but educate the public on he benefits of urban agriculture. As money is generated and the project expands investment in renovating the site should be a primary focus.

The Rail Yard is approximately 11 acres in total size. With a series of paths and outbuildings there is room for approximately 175, 1260 square foot planting gardens or 220500 square feet of planting space (not including walls and roof tops)

The two existing buildings, although of unknown construction, should be used as a basis for any renovation project.

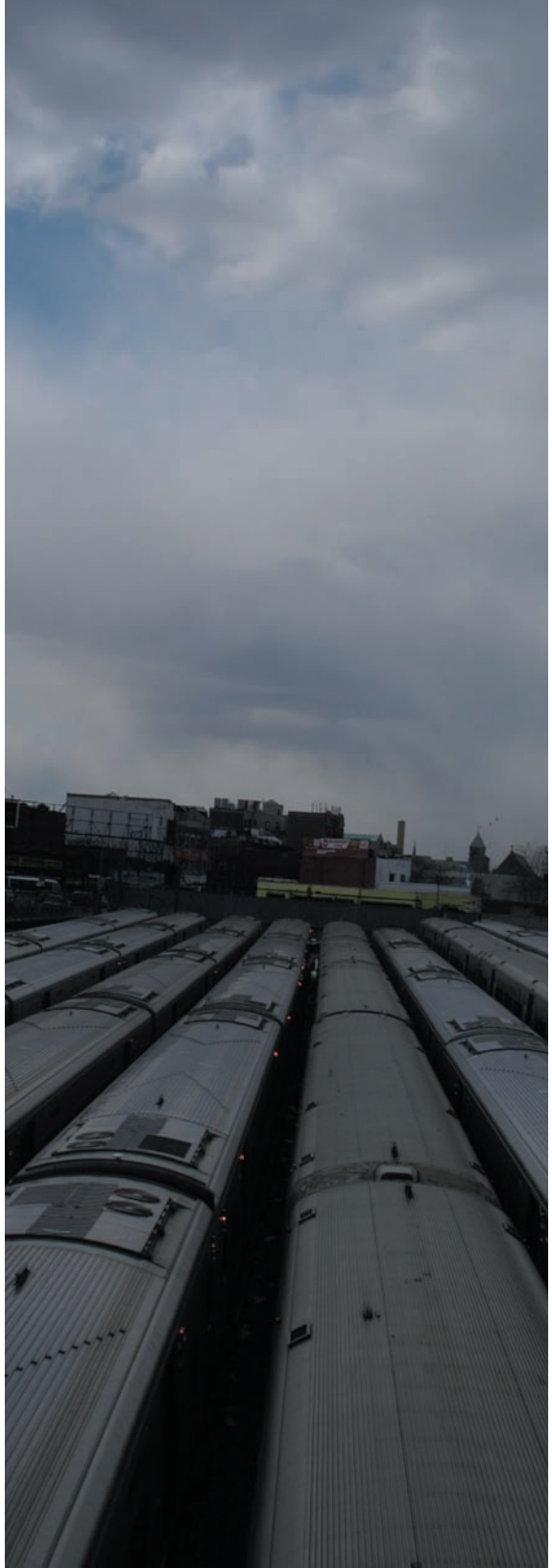
The parking lot area East of Building 2 can be used as a space for a weekly market to include fruits and vegetables produced on site and in the project area as well as food and crafts etc from outside sources. The market will be free to anyone who wants to sell wares provided there is space. Additional sales can be made directly from the garden plots if the growers so decide or from inside the supermarket.

The train siding at the eastern end of the site will be converted from train storage to a series of out buildings and storage areas that can house everything from tools to compost production.

A series of rain water basin will have to be installed on site and the rain water will be used to feed the gardens. Garden run off will be directed back to the basins to be re-used. All organic waste will be re-used in some matter, either as compost or as mulch etc.

At least two entrances to the site will be created, one to the West and one to the East. These entrances are to encourage movement through the site. Secondary access to the site should be through the buildings and the two ramps that provided vehicle access to the site.

These concepts will be explained further in the remainder of this chapter. The site is large enough to accommodate many different activities. Power generation through solar energy and wind power should also be encouraged and any other ecologically beneficial practices should be used.





Information about the Lot you identified:
Borough: Brooklyn Block: 1119 Lot: 7 Police Precinct: 88
Address, ZIP Code: 630 ATLANTIC AVENUE, 11217
Lot Area: 0 sq. feet Lot Frontage: 495 feet Lot Depth: 200 feet
Number of buildings: 1 Year built: 0
Number of floors: 1 Building Gross Area: 0 sq. feet
Residential Units: 0 Total # of Units: 0
Landuse: Transportation and Utility
Zoning: M1-1: Manufacturing
Commercial Overlay: none Zoning Map #: 16C
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
Floor Area Ratio: 0 Max. Allowable Floor Area Ratio: 1
(FAR may depend on street widths or other characteristics. Contact City Planning Dept. for latest information.)
Owner: MTA/LIRR
More building information: NYC Dept. of Buildings
More property information: NYC Dept. of Finance Assessment Roll
More zoning information: CITI Zoning Guide

Source: The Bytes of the Big Apple (TM) PLUTO (TM) and Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning, 2004.

Community Garden:
Name: Friends of Pacific Street Garden
Address: 679-73 Pacific Street
Cross Streets:
Neighborhood:
Block: 1119 Lot: 7
Jurisdiction: MTA

Settlement Decision: This Garden not included in Settlement
Garden Description: No description available
Source:
Year Founded:
Click Here For Detailed Information
Source: Council on the Environment of NYC, 2004



Information about the Lot you identified:
Borough: Brooklyn Block: 1120 Lot: 1 Police Precinct: 88
Address, ZIP Code: 676 ATLANTIC AVENUE, 11217
Lot Area: 0 sq. feet Lot Frontage: 825 feet Lot Depth: 200 feet
Number of buildings: 1 Year built: 0
Number of floors: 1 Building Gross Area: 0 sq. feet
Residential Units: 0 Total # of Units: 0
Landuse: Transportation and Utility
Zoning: M1-1: Manufacturing
Commercial Overlay: none Zoning Map #: 16C
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
Floor Area Ratio: 0 Max. Allowable Floor Area Ratio: 1
(FAR may depend on street widths or other characteristics. Contact City Planning Dept. for latest information.)
Owner: MTA/LIRR
More building information: NYC Dept. of Buildings
More property information: NYC Dept. of Finance Assessment Roll
More zoning information: CITI Zoning Guide

Source: The Bytes of the Big Apple (TM) PLUTO (TM) and Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning, 2004.

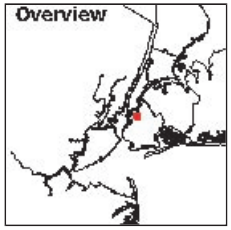


Information about the Lot you identified:
Borough: Brooklyn Block: 1121 Lot: 1 Police Precinct: 88
Address, ZIP Code: CARLTON AVENUE, 11238
Lot Area: 0 sq. feet Lot Frontage: 200 feet Lot Depth: 750 feet
Number of buildings: 1 Year built: 0
Number of floors: 1 Building Gross Area: 0 sq. feet
Residential Units: 0 Total # of Units: 0
Landuse: Transportation and Utility
Zoning: M1-1: Manufacturing
Commercial Overlay: none Zoning Map #: 16C
(PDF version of most recent City Planning zoning map & proposed zoning changes for this area.)
Floor Area Ratio: 0 Max. Allowable Floor Area Ratio: 1
(FAR may depend on street widths or other characteristics. Contact City Planning Dept. for latest information.)
Owner: MTA/LIRR
More building information: NYC Dept. of Buildings
More property information: NYC Dept. of Finance Assessment Roll
More zoning information: CITI Zoning Guide

Source: The Bytes of the Big Apple (TM) PLUTO (TM) and Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning, 2004.

- Block/Lot Boundaries
- Community Gardens
- Green Spaces Along Streets
- 1 & 2 Family Residential
- Commercial
- Industrial
- Streams, Lakes, Waterbodies
- Streets
- Buildings
- NYC Parks
- Cemeteries
- Multi-family Residential
- Institutions
- Vacant Lots
- Bridges/Overpasses
- Schools
- Playgrounds
- Piers
- Mixed Use
- Transportation & Parking
- Natural Areas

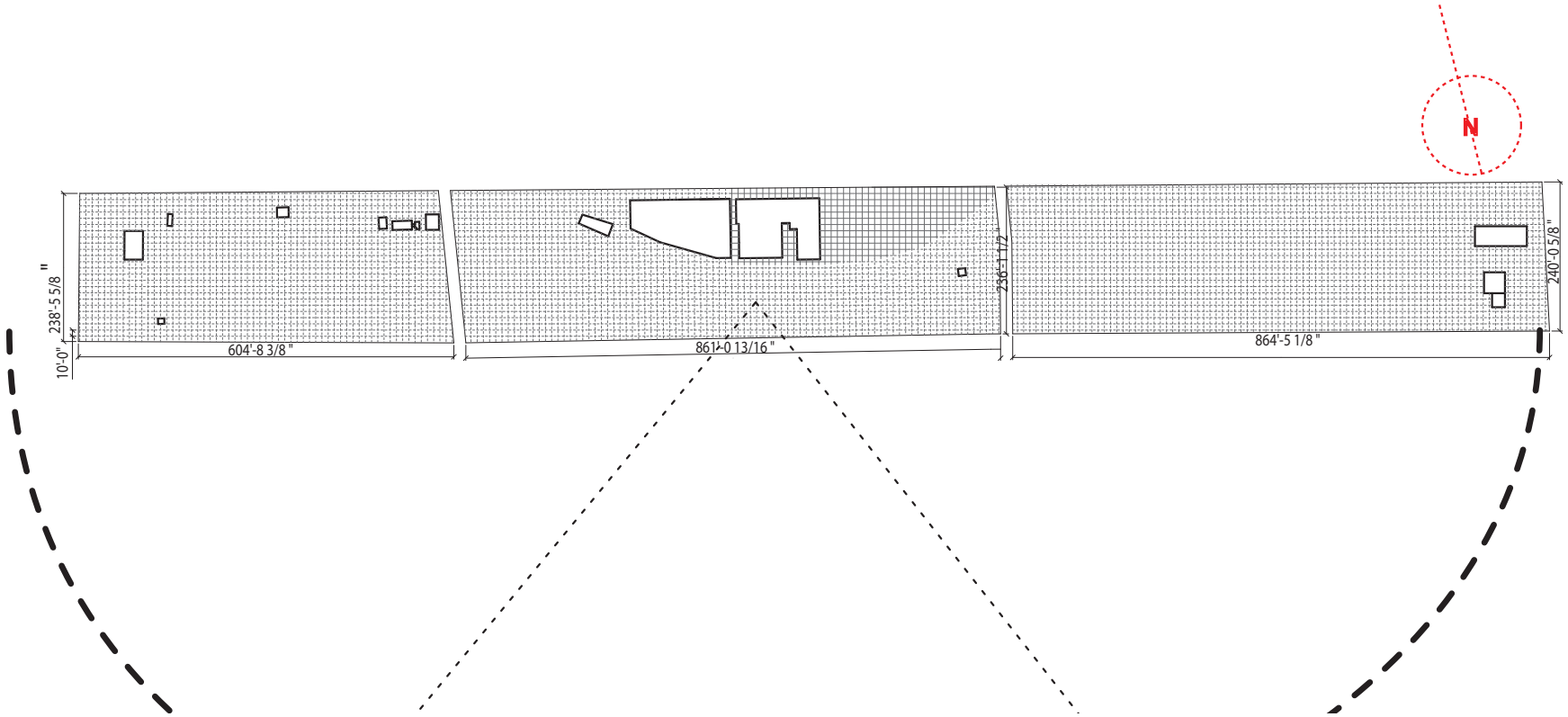
width of map is **0.50 miles**

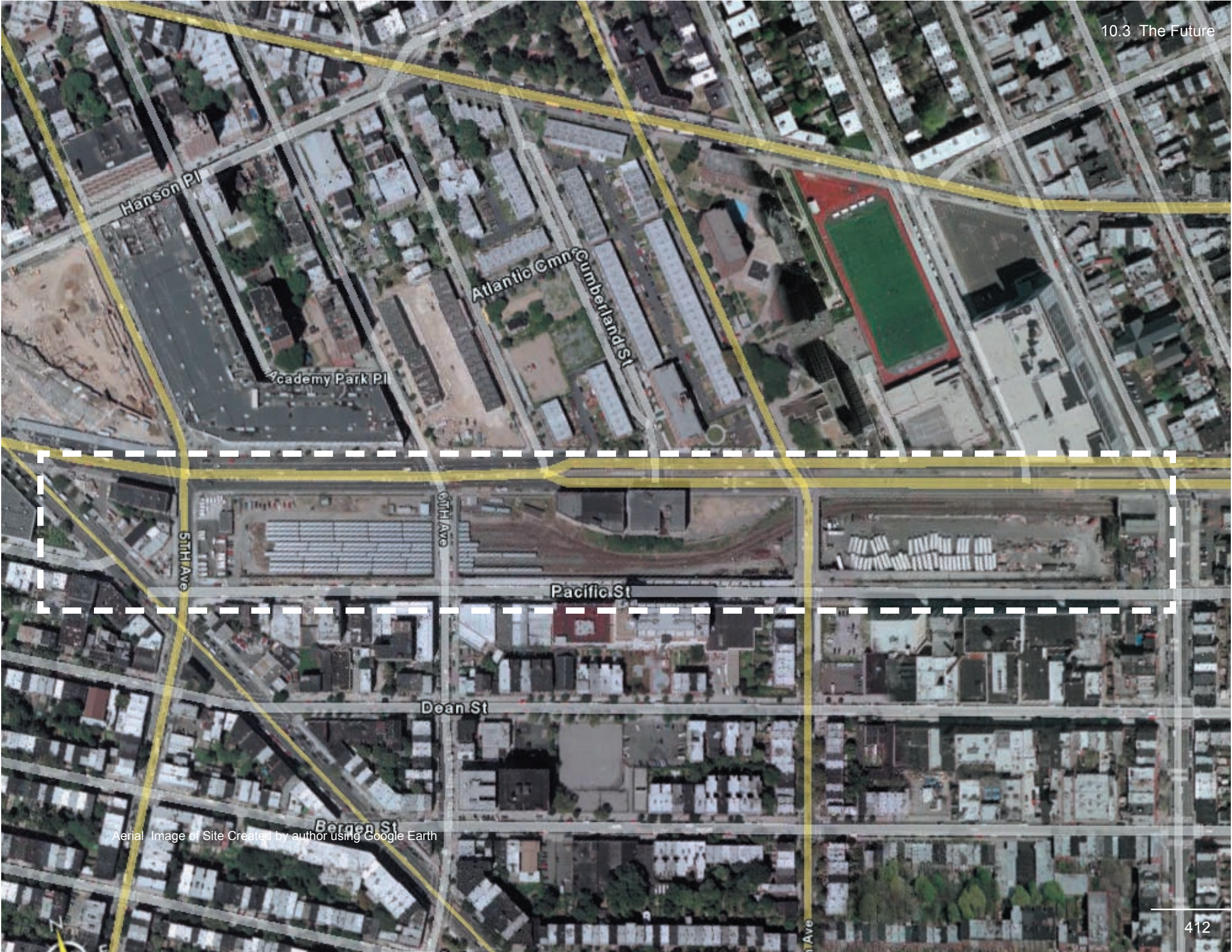


Lot Data for 5th Avenue Lot
Source: NYCOASIS: http://www.oasisnyc.net/

11.3.5 Atlantic Avenue Site Analysis

Sectional and planemetric studies are used to determine the general physical components of the site. A 3 dimensional study is used in conjunction with solar path data to generate the shade and sun studies for this analysis. Below is shown a diagram of the approximate sun path at mid June. The path will change form the beginning of the season to the end become less elongated with the transition from spring to summer and then more elongated as the winter months are approached. The lot data and vacant lot dimensions are obtained from an online source called OASIS-NYC which documents land parcels within the NY area including Brooklyn. To the best of my knowledge all information is up to date an accurate.





Aerial Image of Site Created by author using Google Earth

Scenario:

As the little gardening project grew and transformed into the borough wide phenomenon of urban agriculture it was noticed by people in power. Not all the attention was good. Some bigger businesses saw a drop off in their profits as more and more people preferred to deal with the fresh fruits and vegetables created by the group. Still others saw the whole process as chaotic and unkempt and wanted to regulate what was essentially a grass roots movement (if you'll excuse the pun) The nature of the project was one of necessity and economy. Sites were transformed and developed with the tools at hand and with the materials that were affordable. Those purveyors of glass and steel found little use for a rag tag, overgrown garden sitting beside their development property and began to organize to fight the ever expanding venture. Their plan was to take their concerns to city council and fight to regulate how, what, and where these gardens could pop up.

Little did they know that the Brooklyn project was gaining attention from another group of people. Namely the city council and neighbourhood board. Even the Mayor had expressed interest in the project and had asked his aid to set up a meeting amongst the group leaders and himself. Where big business saw blight the Mayor saw an opportunity to help his city grow and develop. The Brooklyn project was proving to be very successful with numerous gardens, shops, markets, a small fleet of cars, a larger fleet of bicycles and even a few recent land purchases. Not only was the group itself seeing success but revenues for local businesses were at an all time high. The trickle down economics were hard to argue and if big business was scoffing the small business owner was in heaven.

The city council meeting came, and went. The mayor was so incensed when the big business representatives suggested closing and removing some of the gardens that he vowed (albeit in his head) to be a champion of the project. The other council members echoed the Mayor and a few representatives from Brooklyn (2 members of the project) even went as far as to suggest that the big businesses might want to look at relocating to New Jersey.

Within 2 months of the meeting a very unique piece of property became available in the heart of downtown Brooklyn. The Long Island Rail Road (LIRR) was building a new train yard in Red Hook Brooklyn, site of the new IKEA megastore, and was looking to get rid of it's commuter holding area at the Atlantic Avenue terminal. The site was a prime location for a center for the project and Matt was quick to point out the many possible benefits of locating there to the group. He had immediate agreement from the bulk of the group and a plan was devised for obtaining the land. It was going to be a long shot but with the help of the local businesses and maybe some loans or grants they might be able to buy the site, or at least a piece of the site.

Josephine, one of the city council members and a project gardener for 5 years suggested that they approach the city and see what options might be in place to obtain the land. Steve, a local resident, group member and university student mentioned that they should look into eminent domain law. He told the tale of the Dudley Street Initiative in Boston that used eminent domain law to obtain ownership of vacant land from the city redevelopment agency. (http://www.dsni.org/)

The Dudley street group was successful because they developed a comprehensive redevelopment program. Matt and a few other group members decided to spend the next week trying to create a similar strategy and then present their argument to the Mayor. The land was not necessarily up for sale but no other use was planned at the time of the LIRR re-location. In reality the land was city owned and leased to the LIRR. The lease was for 100 years and would still be the responsibility of the LIRR unless some other party was willing to lease the land. Developers in the area had already approached the LIRR to sublet the property and these offers were given serious consideration.

It took Matt and his group 2 weeks to develop there plan and they had to reschedule one presentation to the City council already. Josephine told Matt he better not miss another and that some resolution on the land was going to be reached by the end of the month. The Mayor and sitting council was to vote on at least 5 other proposals already. The group needed to be done and done now!

August 24th 2010, 7 years after the group began as a simple gardening club, as many members as could fit, crammed into the city council chamber to hear the groups proposal.

Local business owners came, people from other boroughs, people from other cities, all jostled and smooshed into the chamber. Everyone wanted to hear what the councils response to the groups proposal would be? Would they agree? would the group get the land? did the Mayor really side with big business and tax revenues as they all suspected?

Matt began his presentation by going into the concept of density and urban sprawl, citing example cases of over development and the horrors it caused in communities around the world. He talked about the environment and ecology and was about to start in on the history of Brooklyn when his wife caught his eye and gave him that signal of hers that always meant “Shut up and get on with it”

The Presentation:

Matt unveiled the presentation boards and turned on the projector. The first image was of the site, shot from one entrance and looking East, people were walking along the grass pathways between lush gardens, underneath shady trees and towards the center of the site, the two existing buildings now obviously renovated. There were numerous gardens and numerous people working in them. The existing walls of the site were strapped with wood lattice and another series of plants grew from raised planters. Almost all horizontal and vertical surfaces had some sort of plant growing on them and the affect was that of being immersed in a different world, an oasis amongst the brick and concrete of Brooklyn. There was a long stairway at the West end of the site that Matt explained would become not only and entrance but also a place to congregate and meet. Plants grew down the steps and trees rimmed the outer edge of the site. In the middle of the stairs was an entrance canopy that served to bring people into the adjacent underground subway terminal. Cucumbers grew on one side of the canopy and squash grew on the other, flowers grew along the street edge side.

Gardens stretched into the center of the site and mingled in among the gardens were areas to rest and sit amongst the trees. Some were just grass, others had rustic tables and chairs set up as if for a banquet. In still other areas was a more formal canopy structure that was also, said Matt, a central location for water storage collected from the site and neighbourghing buildings. The water would be used to irrigate and serve grey water functions in the building, a separation between the city street and the garden center kept contaminated water of the site. The gardens them selves were large enough to be handled by a few people or one industrious person. Matt’s work benches with internal storage sat at the perimeter of the gardens and a water source was plumbed to each corner and center of the garden. Matt paused for a second and mentioned the needed remediation. A series of tests would have to be conducted to see if it were possible to use the land. He was hopeful that the land could be completely remediated in 3-5 years and that they could use that time to generate the funds for the redevelopment and renovate the existing buildings.

He then started to talk about the buildings, the restaurant and supermarket, the canning and bottling, the school the greenhouse. At this point Matt was fairly excited and his words began to jumble a little. Still the Mayor and the council members got the gist of what he was saying, a center on the site that served as a school, greenhouse and marketplace, support functions etc. The existing parking lot to the East of building two would be converted into a n outdoor market place, local growers and farmers from the Hudson valley and Connecticut would be invited to sell their wares, local craftspeople could sell there as well as in the supermarket. The old train ramp would be converted into a series of steps that again functioned as a meeting place but also as a way to move people two and from the market and restaurant and the classes held in the building. The steps had smaller gardens inset and the walls of the ramp were also strapped with wood lattice and used for growing. The outdoor market had covered and uncovered stall areas that worked on a first come first serve basis. The restaurant looked out over the garden and had not one but four cooking areas. The idea would be to invite famous chefs (and not so famous chefs) to come and cook at the restaurant, using one of these spaces for a period of time, they could stay in the guest rooms above and would have full access to the garden and project at large. Other people, lecturers and teachers would also be invited The green houses would be used to conduct classes, start plants indoors in the off season, do research and maintain some of the more fragile crops like some specialty herbs. The buildings also contained a workshop, a canning and bottling area, cold storage and green roofs. Matt thought that one of the old sub-

way lines still ran adjacent to the basement of building two, and, with some investigation thought that it might be able to be rejuvenated and reused to ship to and from the site.

The old train siding and repair shed still existed to the East of the existing buildings and the rail seemed to stop at a newer concrete wall at the West of the siding. The siding itself was a great place to setup site storage, both seed and tools as well as small livestock, and to also provide a place for composting, harvesting and planting prep and general work. A series of enclosures would be created, some fully enclosed some merely a lockable door, and a new concrete work surface and work tables would be built. Two of the storage sheds were big enough and designed to be secure so as to accommodate a small tractor and power tools. Most gardeners liked doing things by hand but the roto-tiller certainly helped.

The gardens to the South East of the storage area were just as ample as those on the West of the site and even skirted the edge of a terraced section of the site, providing ideal working areas for the elderly and the disabled. The existing LIRR tunnel could either be closed or left as another possible way to enter the site. The old bus ramp at the Eastern end of the site would remain and allow for pedestrian access to the site as well as provide a way to move larger equipment to the site.

All in all the presentation lasted just under an hour, Matt had forgotten a few things but felt pretty good about the presentation. The group members all clapped and congratulated Matt and his team on a job well done, someone thought they also saw the Mayor smile and clap a little too but no one could be sure. The Mayor did thank the entire group for their time and let everyone know that the council would make a decision in the next week. Everyone filed out of the council chamber and it seemed to sigh as the last person passed through it's swollen doors, as if finally catching it's breath.

The next week was an complete debacle as most people were too concerned with the outcome of the presentation and the Mayor's impending decision to do anything. The old men at the corner market (they had taken to sitting on the steps of the market to play cards or chess or just talk) put fourth the pros and cons of the design and seemed to take odds on whether or not the land would be granted to the group. The group members held almost nightly meetings to discuss the possible outcome, some planned, some just by accident. Dinner parties turned to complete discussion of the presentation, some said Matt did an excellent job and some said it was good but they would have done this or that differently. Josephine was completely absent during this time, some thought to avoid confrontation, others figured she was too busy fighting for them all. What none of them knew, not Matt or Sally, or Steve, or the old men down at the market or the dinner party guests, not the big business folks or the other people from the other boroughs or the out of towners, was, that the Mayor wasn't working hard to make a decision, the council wasn't in session. The Mayor was at his cottage and the council members were on retreat. There was no discussion of the land, no fact checking or budget analysis. The presentation binders from each group were sitting on some clerks desk waiting to be filed. The LIRR was satisfied and had already moved to complete their new storage yard and the old Atlantic rail yard sat vacant, waiting.

The Mayor had made his mind up that very day of the presentation. He expressed his feelings to the entire city council and found they all agreed. Eminent domain law would be used and the land was going to be given to the project. The LIRR would be released from it's lease. The big business representatives would be upset but the Mayor would guarantee them more favorable rulings when it came time to develop 4th avenue. The project wanted a small piece of property in the heart of Brooklyn and the Mayor agreed. The site could be used to build towering skyscrapers but it was better used to develop the public face of Brooklyn. Not a theme park or massive sports arena but a clear sign that Brooklyn was committed to it's citizens and the borough. A call would be made on Monday and on Monday Matt's wife would come home to find him lounging on the front stoop of their brownstone, smiling, from ear to ear.



Program:

The tale of the site is pretty simple; take a large 11 acre site, prepare it with as many 1260 square feet plots as can comfortably be situated in some layout, Provide a source of water and possibly some shade. Give the gardener a work surface for prep and harvest and that's about it.

Between all these plots and little run some nice pathways that are shaded at places with trees and have places to stop and rest and to eat and think. These paths lead to and from stairs and ramps and ultimately to a market and a restaurant and a place to learn in the middle, tiered planting and a series of outbuildings at one end and a subway entrance and welcome center at the other. Due to the site being 20 - 30 feet below grade these ramps lead out, and in, to the site and the restaurant and market and school exist on many levels instead of just one. They are housed in existing buildings that, instead of being torn down, were renovated and improved during the period in which the site was re-mediated. They have a cover of growing material like a carpet of green that covers the building. The restaurant serves produce grown on site and is prepared by world famous chefs who come specifically to work with the fresh organic fruits, vegetables and meats. These same foods are also sold at the market so that you can take home with you the necessary ingredients to make your own delicious meals. A lecture is being given on the roof in one of the greenhouses about hydroponics and one is being taught in the classroom about soil PH, another about growing tomatoes is being hosted in the main site on one of the educational plots. There is no time to learn now, you'll have to return, you make your way along the path leading to the subway, picking up a bushel of carrots along the way from one of the gardeners you meet and hurry to get your train. You step into the entrance to the subway located on the East end of the site and move to the stairway to the platforms.

You board the train and as it leaves the platform it passes by an opening in the wall that provides you a view of one woman working in the garden.

She was lucky enough to be granted the use of one of the plots on the main project site. She uses it during the day on the weekends; a respite from the week of work in Manhattan. The weekend is not her only time in the garden. During the summer months she likes to wake up early and tend to the garden before she heads into work. Lots of people pass by her plot and stand on their way to work and she always manages to sell some tomatoes and carrots to the commuters She even has a few regulars and one lady waits for her to change and they usually ride in together. The lady who waits is also involved in the project but on a neighbourhood scale. Her entire block has opened up it's adjoining backyards and they all work the plots as a group. every member needs to devote a total of an hour and half a week and for that they get a bountiful harvest once a week. She likes to buy from the lady in the main project site because she grows nicer tomatoes. The lady likes to work her shift at night when she gets home from work, everyone usually works more than their allotted hour and half and so the nights usually turn into a bit of a party, every other day they cook as a group and sit around the large dining table that sits in the middle of the garden shaded by some trees (inspired by a similar construction on the main project site) and is used as a seeding table most of the time. Everyone cooks a special dish each time trying to vary the tastes and recipes. Things they can't grow themselves they buy from other growers on the main project site or from the supermarket there. On the weekends grains and breads are sold at the outdoor market and people stock up. Sometimes they close off the entire street and erect a huge table that feeds the whole block and some of the adjacent blocks that are also involved in the project. People who may be passing by and don't live in the area are always invited to join the festivities. It is said that two adjacent blocks further

down Burgen are already connected by new green space where the children of the street play and people grow flowers and suntan and BBQ.

The lady's son has a job with the project. On Mondays, Wednesdays and Fridays he does the bicycle circuit with the compost carts. His little train travels all the neighbourhoods connected to the project (the sectors he's assigned) and collects old vegetables, egg shells, coffee grinds and grass and leafs. In exchange he hands out processed compost and seed. The process lasts most of the day and it can get hot and smelly in the sun but it is a good summer job. On the other days of the week he either delivers water or he rides the garden bike (his favourite) Some people involved in the project can't get a lot of rain water where they live and it is costly for them to supply their own from municipal taps so he brings large jugs of water for use in the garden. He usually trades these same people the water for whatever percentage of their growing they can spare. Some people grow flowers which are light, some grown zucchini and cucumbers which are not; anything is better than the water itself. The garden Cart is a tray of hydroponics that gets loaded onto the bicycle that looks like a reverse tricycle. It looks like a backwards trike with a garden growing on it. The boy then drives the cart around the neighbourhood to restaurants, those less mobile citizens of the project and the elderly. The seemingly silly contraption allows these people to pick their own vegetables; either allowing for the ultimate in freshness or for those who have trouble bending and weeding a garden to become part of the project. Some of the kids involved in the project take the empty growing pallets to the same people and sit with them for a few hours as they work on their gardens, then they drive it back to the main project site and it is loaded into a storage rack and allowed to grow, only to return later for harvest. The height of the bicycle and the construction of the support system allows for someone to sit and work in the pallet garden without bending or undue stress.

At night the boy likes to attend some of the classes on growing, the environment and marketing. They are always great classes full of either hands on experience or good discussion. The boy secretly dreams of being an investment banker who gardens in his spare time. The classes are taught by people involved in the garden. Sometimes that means that it's experts on a matter or sometimes it's someone like the lady who works in the garden who wants to pass on her tips for growing tomatoes. Every few weeks a series of classes will be held and taught by the invited guests. Usually there is one invited teacher or expert in a field and usually one chef, bakery, butcher, or other person involved in the food industry. In exchange for passing on some knowledge these guest get free room and board and usually get heavily involved (if they aren't already) in the project. Everyone from the lady in the garden to some famous actors and politicians, professors and even an astronaut have been to the school to teach (some say also as students)

Where does the compost the boy collects go? Well on site there is also a large area for processing compost. Being a project based on healthy eating and good ecological and environmental practices organic growing is the only thing practiced. Natural waste and vegetable matter, grass clipping, leaves, tree branches, natural cottons, worms, egg shells, straw, wood chips, garlic skin, breads, chicken and rabbit poop; all are composted and returned to the earth from whence they came. Although not discussed among the more sensitive members of the project, and the visitors, what the Chinese call "Night Soil" is introduced to the composting process. The building itself is comprised of a large shaded and insulated room for cold composting, an open field devoted to sheet composting where project members are encouraged to bring their chickens to peck at bugs and deposit waste and finally a large room with shelves capable of holding hundreds of small blue and black bins for worm composting. The Cold compost is an experiment in composting that tests

turn around. Water is cycled through the compost and an occasional stirring and agitating is required. The sheet compost is a large field where compost is dumped, spread a little and let to sit. Grass clippings, wood chips, leaves and small branches are mixed in and let to sit. In the winter the area is covered in a few sheets of recycled cardboard and covered in a sheet of black plastic. The following spring this sheet compost and what is left of the cold compost is mixed together with a soil mixture and used to re-vitalize the garden plots. The plots themselves are covered in a similar manner with fall weeds and other growths encouraged before covering. These plants add a valuable nutrient to the soil come spring. The worm bins are constantly turned over all year being the most active of composting techniques. The compost generated is used in lessons and to begin seeds for the next season. All over the site there are bins for organic matter and everyone is encouraged to bring their scraps to the site. if you bring in 10 lbs of scraps you get 5 pounds of produce. Bins are also set up around the neighbourhood and the vacant lots that are used to grow. These are checked every few days and brought back to the main project site for processing.

Also near this composting area is the rain water run off collection area. A series of pipes is collected at a series of Biofilters. Rain water from the adjacent buildings and the street run off is funneled to these filters (a series of tiered beds with reeds and other water plants that naturally filter the water) and from there they are fed into supply cisterns for the site requirements. In the event of over flow that water is either recycled through the filters or diverted to large cisterns below the main site. This water is made available through a simple well system. Needed water is hand pumped from the supplies or fed through hoses and pipes to spigots at each Garden plot. Neighbourhood block groups can also use the expertise of the project members to help set up their own rain water collection and the workshop to build the needed components. In addition to the temporary support structures that are used on each vacant lot site there is also a temporary water collection system set up. This water collection, on the main site, or at the vacant site, is also used as diverted run-off. That is; in some situations the run off from specific buildings and surface is diverted before it reaches the Biofilters. It is fed into integral storage systems on buildings and on growing systems and used for drip irrigation. The green walls that cover the existing buildings take advantage of this system having a reservoir built in that the diverted run-off fills and then drip irrigates the wall through a series of weeping tubes.

The connection throughout the site is one based on visual cues and understood objects like growing walls and planted areas, Trees are used as both shade and place markers. The wandered can easily find their way through the larger project site by following these cues and through a system of paths set up to move in and out of private growing areas and public gathering spaces. The people involved in the larger block projects can choose to open up their yards to the city at large and allow people to move through their growing spaces. Most choose to become involved on this level but some mediate the flow of people by having operable gates and moveable growing walls that can be used to close an area off for a period of time. Either over night at special moments during the day. The growing walls are preferred because they are less visible as gates and seemingly become part of the larger project even when dividing it and keeping people out.

Some buildings are covered in green growing walls. These walls are less like a wall of vines and more like wild brush grown in the vertical dimension. They are full of wild flowers, herbs, some fruit and the odd birds nest. They work as both an indicator of the project and the path through it and also as a n active contributing growing surface. Some people have encouraged cucumbers and other vine plants to grow and bare crop. It is possible

to see the odd person atop a ladder harvesting vine ripened tomatoes up to 20 feet in the air. The walls themselves are fastened either to the existing concrete structure or hung in portions from the roof. There are punches where windows are coincident and a tube can be seen poking in and out of some of the more sparsely vegetated screens. The walls are usually almost damp like a dewy forest seems and tend to cool the air around them. Some screens grow well and others seem to be burnt by the sun. Still others are barely able to grow anything at all. It's said that they will bloom later. The experience that this creates is one of variety and a more natural growing system not based on chemical stimulants or processes. The result is a natural environment that preserves the ecological foot print of the existing project goal. These growing walls extend out to the entire site. Where possible trellis systems have been established along walls with gardens at their base or raised on terraces. These growing walls sometimes serve more than just growing acting as handrails up stairs, support structures for roofs and as the actual roofs on some of the multi-purpose shelters scattered around the site.

The renovated buildings themselves serve as many different purposes as possible. The restaurant also serves as a classroom, the cold storage serves as an area to bottle and preserve produce. The next series of diagrams illustrate the different areas in the buildings, their use and how they are staffed.









Business Plan:

With the new site and a centralized operating area the group decided to solidify their business plan for the project. There was always an unspoken goal of selling their entire harvest every week. For the most part this was possible but with the added land, the added partners in the form of local farmers (local to lower New York State and the Hudson valley) and added goods and services the group needed to have an organized plan for creating, maintaining and growing their sales. The entire group knew that the project would only be as successful as their sales.

There was no real trouble selling most of the produce they already produced. They had a good loyal client base that returned to them every week for their groceries. Secondary goods like jams, preserves and prepared foods also saw decent sales at local markets but could be slow depending on the time of year. The new land they obtained would increase their production and new members were joing monthly.

The group decided to continue to sell at local markets as well as their own central outdoor market and supermarket but also decided to develop eight new sales initiatives. With the anticipated new production and the already established relationships with other growers the group knew they had to find at least four new reseller partners (local supermarkets) 12 new restaurant partners , 10 new food production partners and 100 new individual customers. On top of this they saw an opportunity to offer a wider variety of products through distribution arrangements and with national chains if possible.

In addition the group needed to maintain their existing businesses and customers as well as their charity involvement (they always gave a percentage of their production to local food banks and soup kitchens)

The new strategies included the following strategies for achieving their business goals.

1.) Increase their market reach by establishing more regular deliveries to the City (Manhattan) via bicycle and local transit. The benefit to the client was fresh picked produce everyday delivered to their place of business . This was primarily aimed at restaurants and independent supermarkets.

2.) Increased contact with larger food chains such as whole foods and Degastino's supermarket chains, traditionally high end organic produce suppliers. This was achieved through typical business meetings but also project tours and invitations to the site and the use of the guest apartments for a few days to experience the operation.

3.) local cooking classes held by local chiefs to entice local customers. Invitations to chefs from the City to be a guest chef for a week at the site.

4.) Online sales and services. Selling prepared goods online and seeds and growing supplies to the public. Also consultation services to other communities emphasizing local growing.

5.)Pursuit of school board contracts in the 5 boroughs. Many schools in the area already took part in the project by establishing and using small gardens on school land but the group had the ability to tackle the entire 5 boroughs and offer fresh produce for school lunches.

6.) Increased small animal production. Fresh livestock to restaurants and supermarkets was an already growing sector of the project and with the new site came an increased opportunity to raise more, and more diverse, livestock.

7.) Production of specialty items such as honey, a rare mushrooms, with decent yields and higher profit margins, were also being expanded . Restaurants and food production companies were in demand of these items and would pay for a readily available stock.

8.) Hydroponics and aeroponics, new to the group for the most part but also helped to maintain production through the colder months.

With a decent business plan in place these added initiatives would allow the group to grow it's sales and it's success. In addition the group began to look into expanding into other boroughs. There were numerous areas in the city already familiar with the project and already in contact with the group to garner assistance..



Main Site:

Pathways
Treed areas
Eating areas
Places of relaxation
Entry points
Transition points
Access to support buildings

Main compost area
Rain water collection reservoir
Water filtration system
Animal coral
Terraced Gardens
Educational plots

The space surrounding the specific plots should be able to be utilized in a number of ways There should be entry points at the beginning of the site and the sides in the form of ramps or stairs and at the eastern edge a subterranean entry to the subway that allows commuters to move through the site an interact with it. These entry points need to be numerous but also controlled. Either the entire pathway system should be treed or, depending on how that affects light, there should be spots throughout the site that are treed and act as way posts. These treed areas can serve also as places of relaxation and also take on the additional role of places to gather and eat, used by the gardeners or the community or both. These areas could also incorporate a system of shading devices at different levels etc. The support buildings should also be connected to the site on different level, through direct openings to the base site, stairs to other areas and places that open to the public at certain point. A main compost area should be established that can be utilized by the entire garden and community as needed, a place to collect and process compost but also distribute and educate. Sewage could also be processed at this area. Rain water collection and storage should also be accomplished and so should water filtration through natural bio-filters. Also in the space should be a way to consider animal husbandry so out buildings for housing animals and corals should be considered with possible grazing areas.



Building #1,#2

Management offices
Restaurant
Supermarket
Shipping and receiving
Woodshop / workshop
Cold storage
Lecture areas
Hydroponic growing
Guest Rooms for lecturers
Communications centre
Fresh Market area
Canning / Bottling
Classrooms

The existing Buildings on the site need to be converted to support centres for the entire project. These two buildings are in the middle of the site, they have multiple access points and lots of floor area. The educational centre and main interactive functions of the project need to be run out of these buildings. Multiple levels should be given over to both the restaurant function and super market /market functions. This way those functions are accessible from both street level and garden level and can work independently or together. The educational function of the project should also be handled in these buildings and can be classrooms, lecture halls, hands on growing areas and hydroponics. In conjunction with these educational spaces should be a set of guest rooms for lecturers that consist of an office space, small kitchen and sleeping quarters These rooms may be used by educators or guest chefs or other people involved in the project. A small communication centre that specializes in media / marketing and outreach could also be housed in the 2 existing buildings. The space would be used for strategic and business planning. In addition these buildings could also site a possible workshop, canning bottling space and cold storage.



Site: Gardens:

Planting bed
Work Table
Water Source
Proper Drainage
Direct Sun

Each garden plot of 1260 square feet will meet the bare minimum of amenities needed for successful growing. Simplicity in the garden will help make the specific beds easy to alter and rotate without having to move specific structures of personalized items. Gardeners will be encouraged to create and manipulate their specific plots in any way they please but with the knowledge that they are responsible for clean up when rotation happens. The purpose of rotation is to avoid pests and disease as well as over use of specific nutrients in one garden. This process is important and therefore drives the simplicity of the plot design. Some smaller parcels exist that will allow for the planting of flowers and exotics along the pathways and at the small patches set aside for general use. Gardeners are encouraged to plant any crop they like but the additional smaller gardens will be used to maintain the character of the site. Water and proper drainage are integral to each plot.



Subset: Restaurant

Kitchen
FreshTable Prep
Teaching centre
Different eating areas

The restaurant should serve to subsidize the project income but also as an outlet for the type of food and vegetables produced in the garden centre. The entire place should be fairly open concept so that the chefs and patrons exist in the same space and share in the experience of cooking and eating and enjoying the produce of the garden. Guest chefs could be invited to come and cook and share their talents with the community but also experience the vegetables and fruits and other things produced at the project. The restaurant could also be a form of income to the gardeners of the project allowing them to utilize the kitchen to produce things that they can sell in some form or another such as home recipes or baked goods, dried spices etc This space could be used as a meeting room or classroom and general gathering / function space depending on the need.



Subset: Supermarket:

Vegetable stalls
Imported goods not produced onsite
Some common staples to encourage usage
Fresh meats
Butcher
Bakery
Lunch Counter and Coffee etc
Organic foods from the community and outside producers
Non food products like cooking supplies

The supermarket should exist and work more like a Co-operative with a wide variety of fresh foods supplied by the garden and the community but also imported organic products and common staples that will bring people who might not otherwise use the store. Members can join by contributing money but also by contributing produce and other prepared and canned / bottled goods. A butcher and baked goods could also be supplied as well as a quick lunch counter with prepared daily prepared foods and sandwiches etc. http://www.wedge.coop/

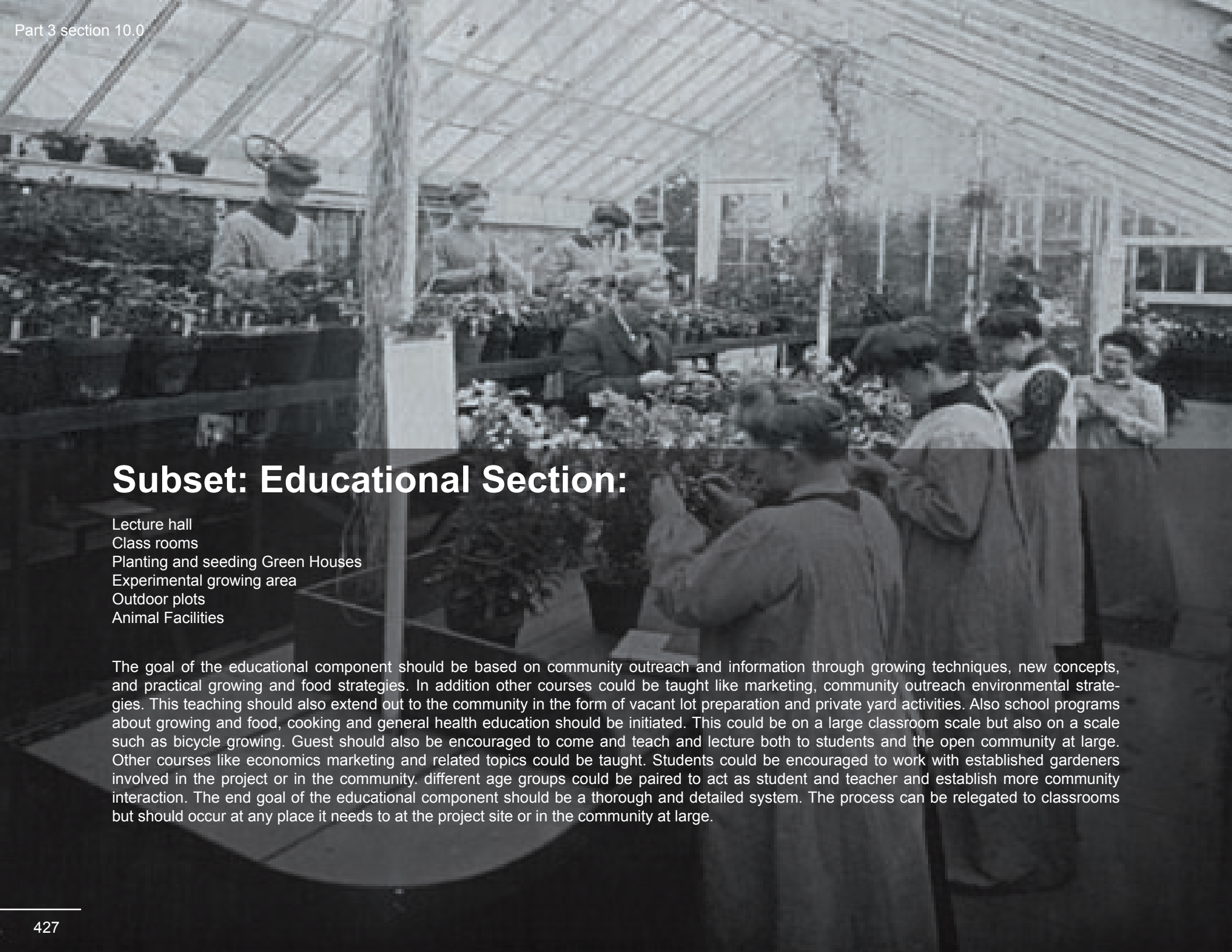


Subset: Market:

Stalls that support both gardeners and community sellers
Support for other growers
Crafts
Prepared foods
Seeds
Composts
Natural Fertilizer
Food prepared on site (cooked)
Educational booths

The market it self should be more considered a weekly or sporadic event. Tables and stalls with local growers and growers and crafts people etc from other areas should be encouraged to set up and sell items to the general public. This could be fresh fruits and vegetables and it could also be crafts, prepared foods and even fresh cooked food onsite like corn on the cob or candy apples. The market should function on many levels both physically economically.

Both of these markets as well as the other facilities devoted to outreach an interaction should be open to the community but also thought of as a destination. The idea is to provide resources for the community that are built around the idea of local growing but also strive to educate and further healthy attitudes toward local growing and eating. The main transportation to the site is the subway and LIRR trains that station at the eastern head of the site.



Subset: Educational Section:

Lecture hall
Class rooms
Planting and seeding Green Houses
Experimental growing area
Outdoor plots
Animal Facilities

The goal of the educational component should be based on community outreach and information through growing techniques, new concepts, and practical growing and food strategies. In addition other courses could be taught like marketing, community outreach environmental strategies. This teaching should also extend out to the community in the form of vacant lot preparation and private yard activities. Also school programs about growing and food, cooking and general health education should be initiated. This could be on a large classroom scale but also on a scale such as bicycle growing. Guest should also be encouraged to come and teach and lecture both to students and the open community at large. Other courses like economics marketing and related topics could be taught. Students could be encouraged to work with established gardeners involved in the project or in the community. different age groups could be paired to act as student and teacher and establish more community interaction. The end goal of the educational component should be a thorough and detailed system. The process can be relegated to classrooms but should occur at any place it needs to at the project site or in the community at large.



Subset: Facilities:

Workshop
Compost treatment storage
Cold storage
Rain water collection storage
Communication

There needs to be a way to maintain and improve the site and facilities as a whole so a workshop and woodshop should be part of the main building complex. There also need to be a service center for general cleaning and maintenance. This may be part of the individual sections and also the responsibility of those sections like the supermarket, restaurant etc. The floor area of both the existing buildings is large enough to warrant a possible large scale cistern for rain water collection from the site, the roof tops, and rain water possibly diverted from the community buildings and filtered through the onsite bio-filter. Additionally there may be room to process and store composting. Cold storage or long range storage of fruits and vegetables through the winter months could also be considered in the basement level (s) of these buildings and they are both probably ideal areas to grow fungus, mushrooms etc.



Subset2: Rain Water Collection

Storage cisterns (buried?)
Water diversion systems
Run-off management
Bio filtration system

Rain water management is also a large part of the project with obvious benefits. Not only can water be diverted off of roof-tops but a system of gutters and eaves can be used to bring water run off back in to a cyclic system. Water from adjacent buildings can also be used to supply the garden supply at about 460,000 litres per month based on surface area of roofs and average rainfalls for the site. Water diverted away from drains will lessen loads on sewage systems and can be used to help the gardens. A reservoir that can also be accessed from the site should be made available and in some cases a long range system of small tanks and bicycles can be used to bring water to places that cannot collect it's own. Rain runoff from the entire study area could top 1,123,000 litres per month based on total site surface area and dismissing the obvious absorption of a portion into existing green spaces and lands. A series of bio-filters could also be set up in a tiered system of tanks that could help process the entire water /run-off collection and produce a reed bed garden. While rain run off alone may not serve the entire water need of the project it can be a decent subsidy to using city provided water and can help lessen the load on municipal sewer systems. .



Subset2 : Compost Area

Storage area
Exchange (compost base material in, fresh compost out)
Bike and cart Storage
Liquid run off for organics concentrates
Separation facilities (manure, grass, leaves, vegetables)
Sorting
Cold Compost (Long term)
Sheet compost (Mid term)
Worm compost (Seeding soils)
Liquids (Hydroponics)

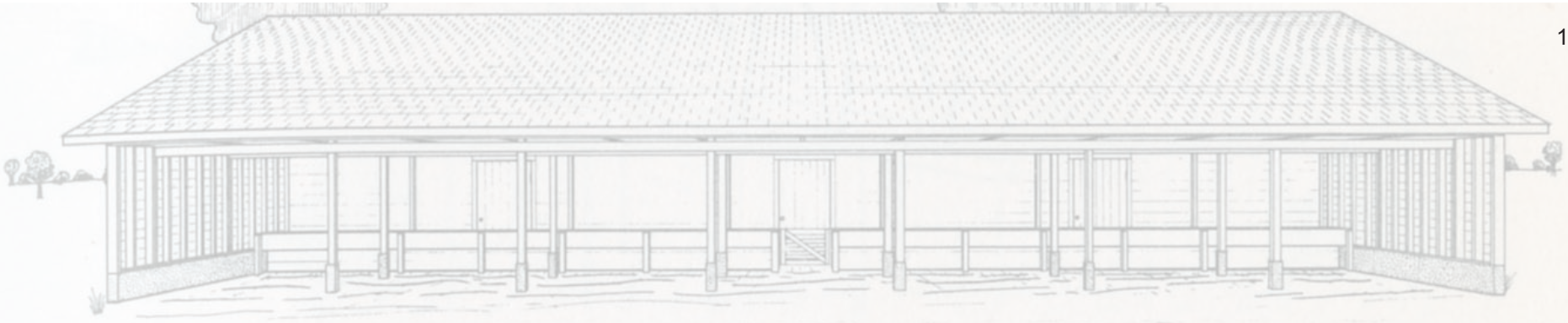
The compost facility will be one of the most important buildings of the project. Individual composting can occur on site but a reservoir of compost and organic nutrient should be provided for the entire project. A system of bicycles with cart trains will do daily, weekly, monthly runs throughout the neighbourhood and pick up organic waste from participants, bins and restaurants etc. In some cases they will exchange processed compost for fresh waste and in others they will just pick up waste. The waste will be brought back to the project center and processed for compost. The carts will be put through processing and wastes separated into the specific bins. Cold compost will be a slower more long term compost almost like storage, shorter term sheet composting will also occur. Worm composting will be actively encouraged to produce soils that can be best used as seeding soils. and any excess can be added to gardens. Liquid run-off and other processes can be used to produce liquid organics used by the hydroponic systems. Run-off from the hydroponic plantings will also be recycled and re-used.



Site Train:

Train supplies
Train deliveries
Train garden
Mobile growing center
Passenger train visual connection
Subway Entry
Subway connection to NYC

The train can (and is) an integral part of the overall project. Not only does it deliver many people too, and through, the site everyday but it has a close relation with the site. The trains currently stored on site could be diverted to another area under one of the adjacent streets. There is already some connection to these areas. In addition a visual connection to the site from a passing train (LIRR, Subway) could be an interesting construction. The change from season to season viewed from a commuter train is an interesting idea. The access to the main system at the end of the site could be used to bring a single train into the site, either as a way of moving produce out into the city, state or country, or to bring products into the site like product needed by the supermarket and restaurant. Another interesting idea is actually using the train as a place for growing that can be moved around the city for sale of produce or as a moving classroom. How will the siding will be used? can a green house be mounted on a train bed? Again the existing infrastructure is meant to be used / re-used for the project.



(Perspective)

The best use of land often requires that it be pastured at least one year in the rotation. Shade and shelter are sometimes needed in these fields away from the farmstead. This plan is often used to fill this need; although it is also used as one of the regular farmstead group. Storage is provided for a small amount of hay and concentrates.

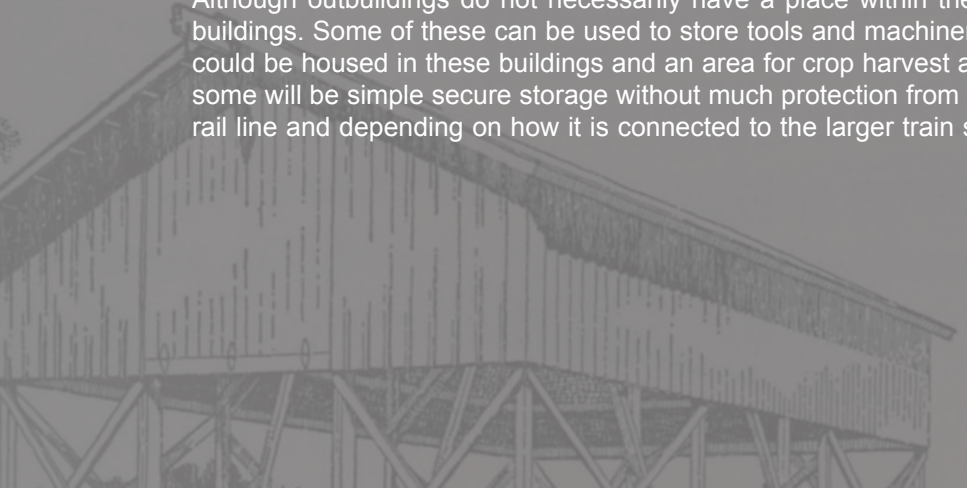
Plan No. 1-731-C1 Hay Storage Barn

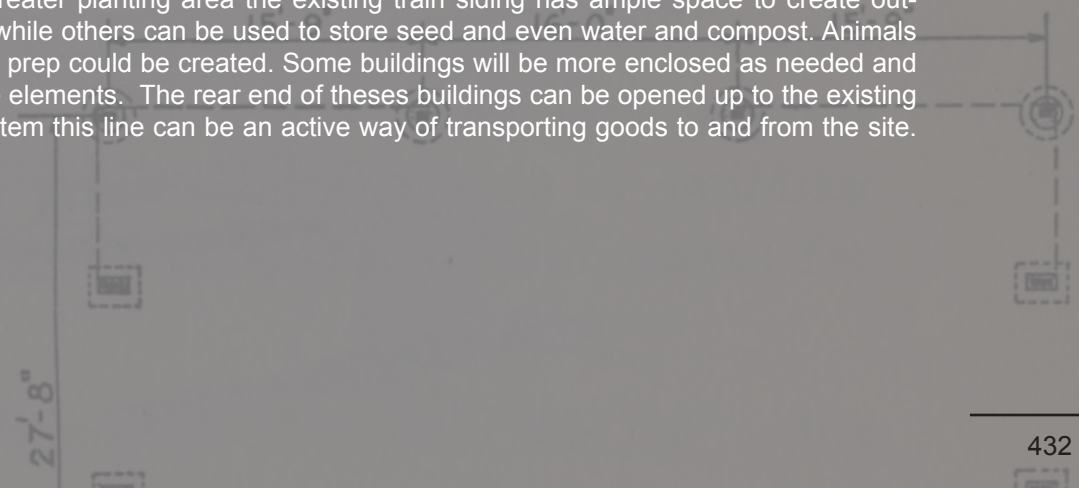
Site Out Buildings:

Chicken Coop
Grain Silage
Seed storage
Feed storage
Tool shed
Water Valve
Security

Simple shelter

Although outbuildings do not necessarily have a place within the greater planting area the existing train siding has ample space to create out-buildings. Some of these can be used to store tools and machinery while others can be used to store seed and even water and compost. Animals could be housed in these buildings and an area for crop harvest and prep could be created. Some buildings will be more enclosed as needed and some will be simple secure storage without much protection from the elements. The rear end of theses buildings can be opened up to the existing rail line and depending on how it is connected to the larger train system this line can be an active way of transporting goods to and from the site.





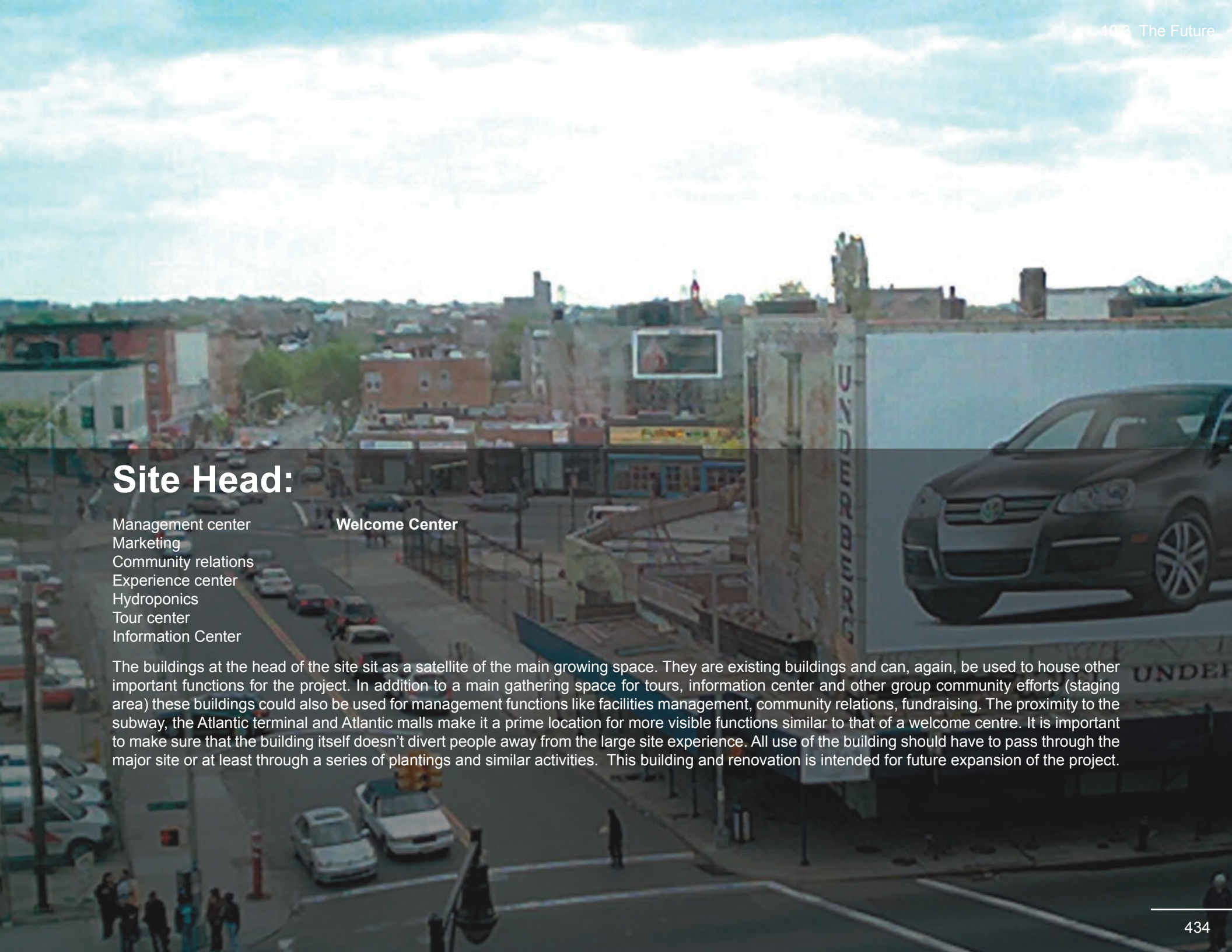


Site Pathways:

Dirt
Gravel
Concrete
Ramps
Stairs
Visual Connections
Movement

Connection

As the main goal of the project is to stimulate local growing in any community the project must have a way to move out of the specific site to other areas around the city, the state, the country, the world. Some of this is handled by the communications and community relations section of the project but a more substantial physical connection can also be made. This may be in the form of pathways and stairs, ramps, visual cues and connections. The site provides many areas for intrigue and enticement be it a wall, the below grade nature of the site. the length of the site stimulating interest through visual objects, and other “Sign Posts” The architectural design of the project should take into account these connections and both make the physically manifest and also theoretically connect.



Site Head:

Management center
Marketing
Community relations
Experience center
Hydroponics
Tour center
Information Center

Welcome Center

The buildings at the head of the site sit as a satellite of the main growing space. They are existing buildings and can, again, be used to house other important functions for the project. In addition to a main gathering space for tours, information center and other group community efforts (staging area) these buildings could also be used for management functions like facilities management, community relations, fundraising. The proximity to the subway, the Atlantic terminal and Atlantic malls make it a prime location for more visible functions similar to that of a welcome centre. It is important to make sure that the building itself doesn't divert people away from the large site experience. All use of the building should have to pass through the major site or at least through a series of plantings and similar activities. This building and renovation is intended for future expansion of the project.

The Main Site:

The main site is a lush growing area with numerous gardens. The effect is that of an oasis in the middle of Brooklyn. The gardens provide a place for group members to work and grow fruits and vegetables, graze small livestock and socialize with group members and the general public. The site provides a place for neighbours to meet and congregate, walk the gardens, site and relax in a cool area of the site or participate in classes and lectures.

The restaurant and supermarket are great places to grab a meal or buy some apples, bread etc. The different cooking areas in the main restaurant are a great place to grab an interesting meal and learn from a guest chef.

In the morning it's possible to walk through the gardens and pick up a couple of pears, or maybe some tomatoes for lunch. Most gardeners will sell a bit of their harvest for a dollar or two.

If one has more time they can grab a coffee and a danish and sit on the steps to the site, watching the comings and goings and the project members work on the site.

The composting area, classrooms and canning and bottling areas are a great place to learn more about the individual processes or even participate in the task at hand. Buy a few bushels of beets, head to the canning and bottling area and for $5 you can use a table space to prepare and pickle. The greenhouses are a great place to also take a class on growing, hear a lecture or just wander. Open to the public for the most part they are lush specialty areas with wondrous plants.

The patio in front of the restaurant always fills up early on the weekends. The breakfast they cook is among the city's best and most of the clients seem to be from the city these days.

After breakfast a wonder through the market allows for the purchase of weekly supplies. Fruits, vegetables, breads, cheeses and specialty spreads are available as well as flowers, crafts and other decorative items. Its good to stock up on spinach and beans for salads through the week.

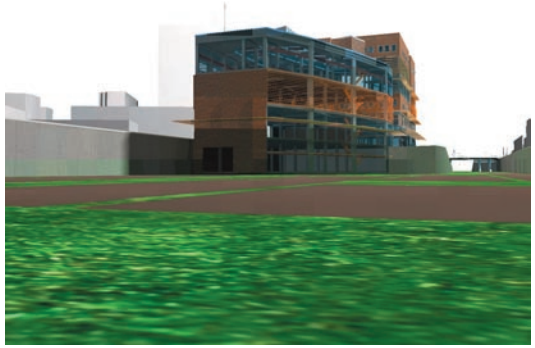
Canned goods and boxed items such as pastas and crackers can be bought in the supermarket and a professional butcher is available. Fish from out on the island is also available and it's said to be the freshest in the city.

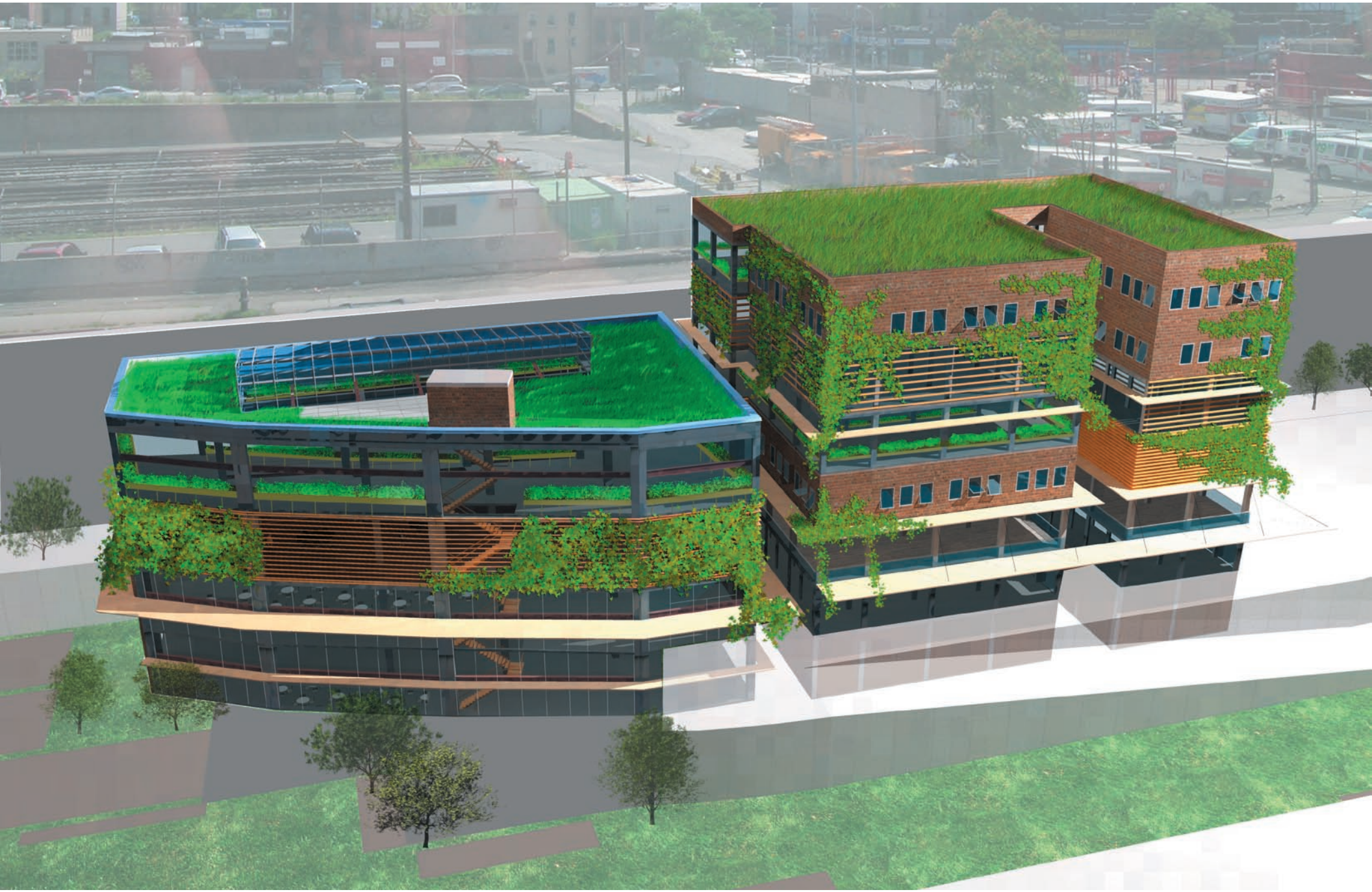
In the afternoon the sun gets quite hot and most visitors grab some bread and some meat and sit in one of the shaded areas amongst the gardens. These areas also have areas for more elaborate meals with tables and chairs and a BBQ pit. For $20 anyone can reserve the space for a fun nightly meal. Lights strung in the trees provide illumination and the food is as fresh as possible; straight from the market. The site officially closes at dusk but the dinner parties always go later. Some locals like to take over a couple of these sites for birthday parties. The kids can play around the gardens and the parents can sit and chat and relax.

Above the restaurant the main administration area for the project is located. Alongside the project offices and conference rooms are rentable spaces for meetings and small theatre for presentations. Some of the business people in the surrounding area find it easier to book one of the conference rooms than to worry about expanding their small offices.

The marketing for the project, administrative duties and online sales division is located in this space. Orders are taken, gardens are monitored and weekly meetings of the group are held here.

The roofs of both buildings are green roofs with built in irrigation system for the green walls. The roofs also held reduce heating and cooling costs through the year.













Design :

Like most of the other design initiatives in this thesis the ideas implemented in the main site follow a methodology of natural and simple materials. Materials such as glass and steel are only suggested where they make sense for building enclosure, weather tightness and security. The rest of the ideas rely on natural woods, simple concrete and natural stone etc. While the needed concrete work might involve elaborate pours and form work the longevity of concrete offsets possible costs.

Like the local produce sold on site it is intended that most materials are also local. This could be through recycling of existing on site materials or through purchase and transportation from companies in or near New York City. The strategy is to strengthen the ecological sensitivities of the project instead of juxtaposing local growing emphasis with rare unique distant materials.

Of major importance is, of course, cost. Local materials also mean reduced transportation costs and re-using materials found on site will help to keep costs down. The wood strapping that makes up a good deal of the vertical growing structures as well as the secure storage structures should either be resilient-cedars or other woods that weather well. If at all possible recycled woods should be used.

Remediation could be handled through bioremediation techniques. The site planted and left to grow for as long as needed and possible. Separations between the street levels and the gardens should be created in order to reduce the amount of city street runoff that can contaminate the site. The runoff can be diverted to city sewers or to a system of biofilters set up on site. Where possible energy needs of the site should be handled through alternative energy. This can be in the form of wind turbine, biodiesel / biofuel,solar panels, and responsible energy practices. While the buildings will most likely need to stay connected to the power grid it is hoped that these techniques can reduce the needed extra energy usage.

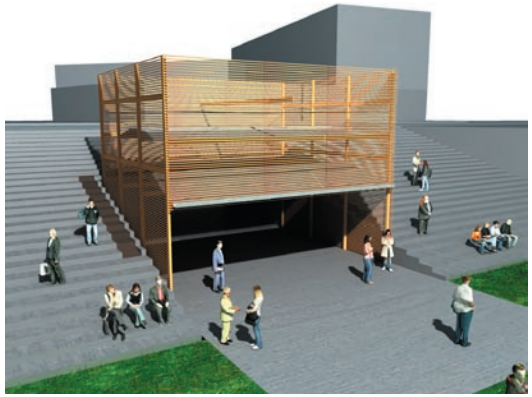
The gardens themselves should be put into a rotation and practice polycutural planting methods. Natural composting and re-use of harvest waste to strengthen soil structure both physically and chemically should be practiced. The rotation could be on a small scale with 1 in 4 being left fallow during a growing season or on a larger scale with rotating larger sections of garden. These rotated sections could be used to grow different crops such as flowers and even weed systems so as not to lay completely dormant during growing season but to also decrease the risk of element stripping.

In all cases natural organic methods should be practiced and it is hoped that certification could be achieved.

Some plots should be used for animal husbandry, chicken grazing, small pigs, goats, rabbits etc. It is possible to substitute grazing for plant growth in a rotation as well.

Beehives and mushroom growth as well as specialty items can be accommodated in the greenhouses, basement and storage areas.

While the design is simple it is meant to support the end goal of growing. The facilities created, while entities unto themselves are essentially create to also support the ideas of urban agriculture and local growing.





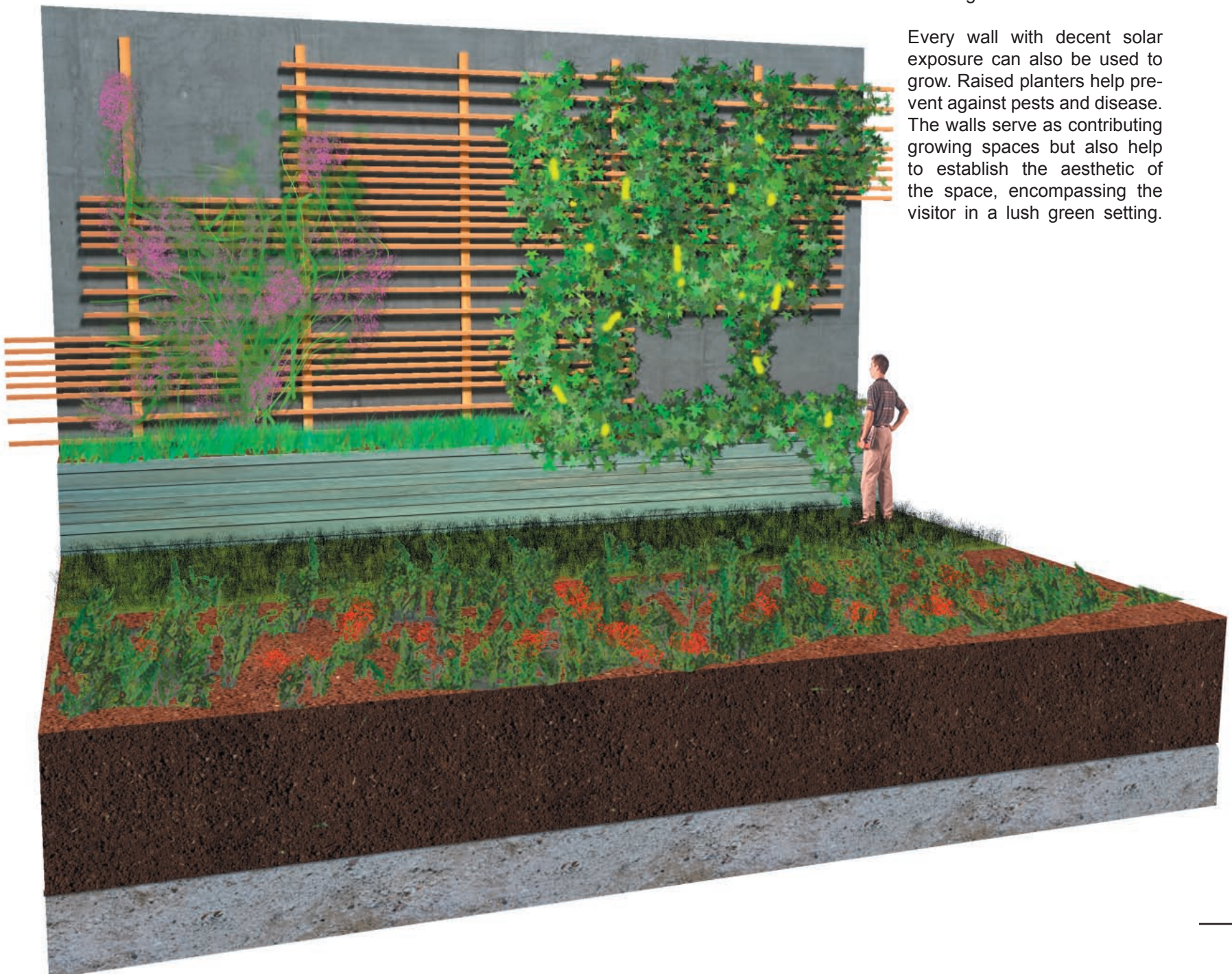
West Entrance:

The stair entrance is intended to provide access to the site but also serve as a place on congregation. The idea of growing is encompassed in the entrance structure which serves to provide access to and from the site to the subway. The West end of the site is the most active situated adjacent to the Atlantic subway terminal, Long Island Rail Road terminal, The Atlantic Mall (both old and new) and the Eastern Edge of Downtown Brooklyn.



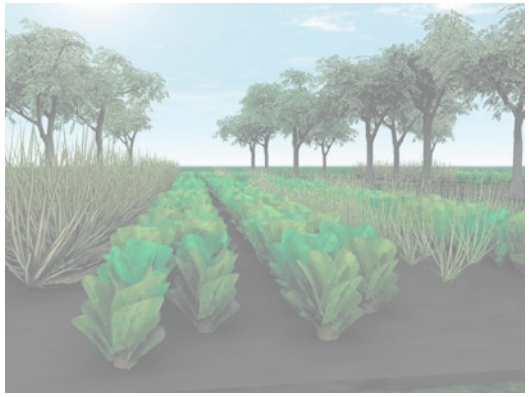
West Entrance:

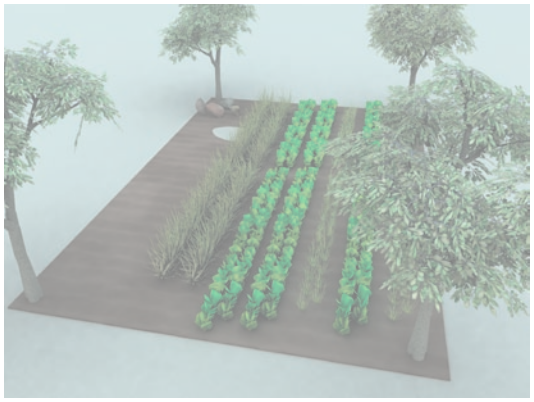
The subterranean tunnel will lead to and from the site to the Subway. Like all of New York the easiest way to get anywhere is by Subway. The linkage not only serves da
ing produce to
even Boston.



Growing Walls:

Every wall with decent solar exposure can also be used to grow. Raised planters help prevent against pests and disease. The walls serve as contributing growing spaces but also help to establish the aesthetic of the space, encompassing the visitor in a lush green setting.

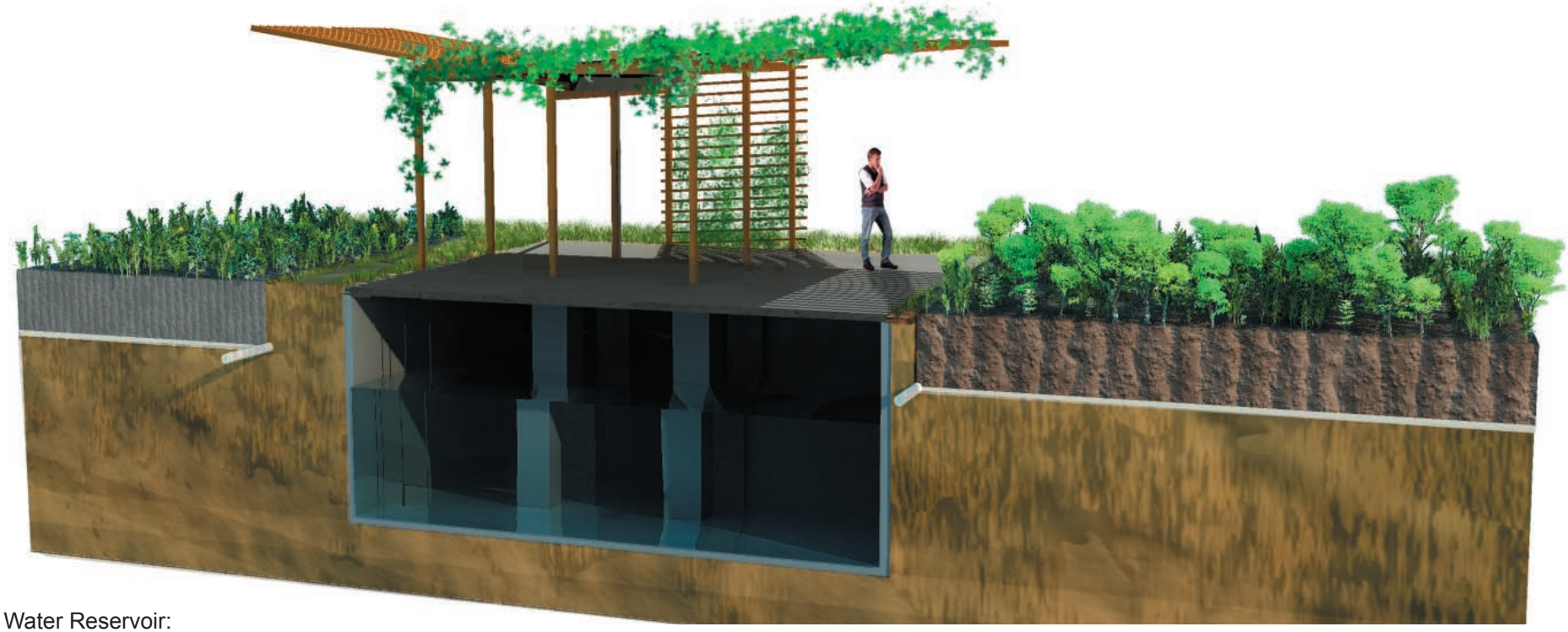






Garden Plots:

The garden plots are large enough to support numerous crops. They are all supplied with water sources and work spaces. Tools needed for gardening are kept
series of water reservoirs on the site . The reservoirs feed back to the garden setting up a system of re-use.



Water Reservoir:

The water drainage from the garden is fed to these water reservoirs that sit beneath canopy structures. Over flow is handled through a sub section of the reservoir. Overflow drains into these areas and is sent to the local sewer. The canopy structure above serves as a place of relaxation or activity such as eating or meeting etc. Access to the reservoir is through a metal hatch in the floor of the canopy slab.



The outdoor Market

Selling local prod
It's directly acce
couraged to sell here and local farmers are also welcome on a first come first serve basis.



Central Stairs:

The old train ramp
taurant and markets
and long enough to allow for easy movement and provide a place for people to stop and site.

-



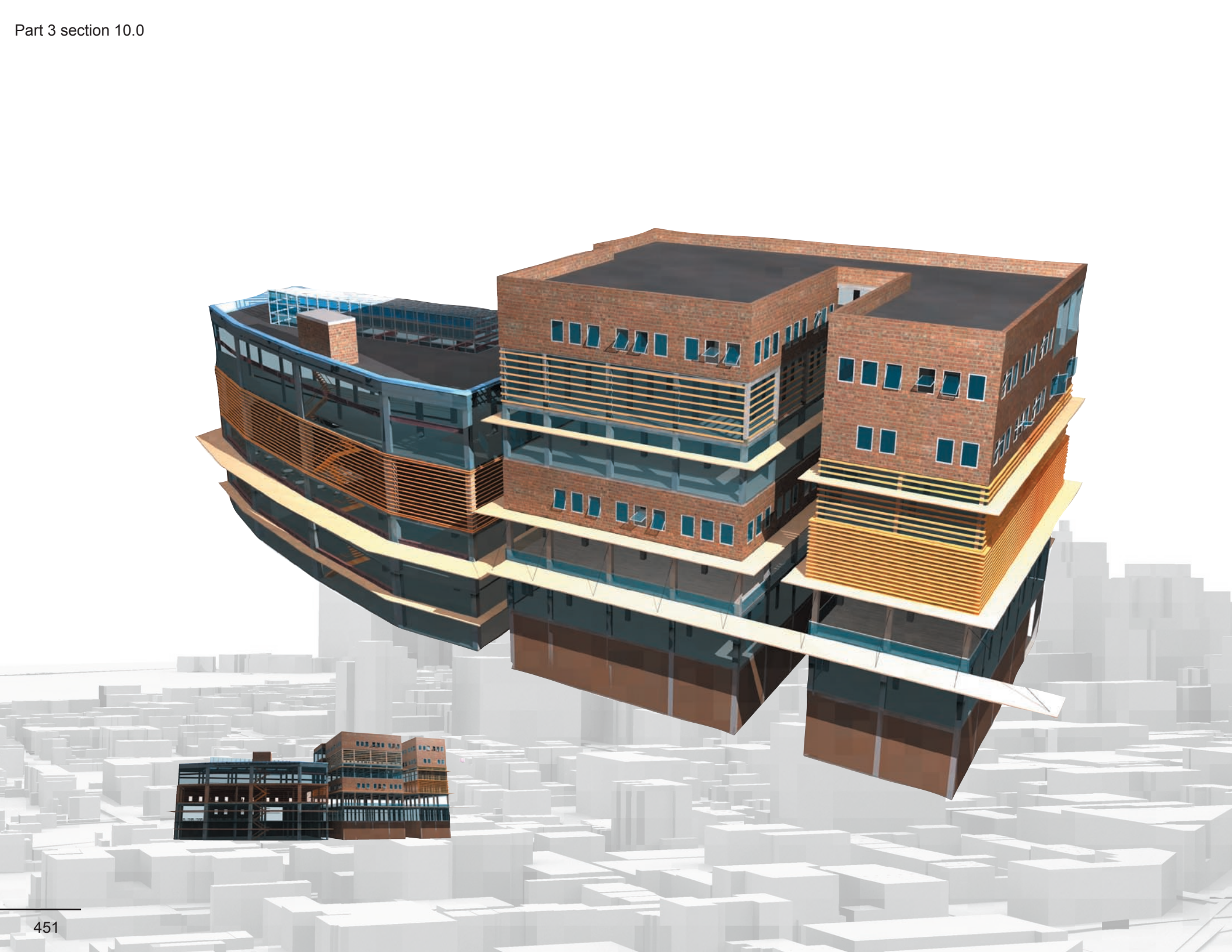
Storage Area Work Space:

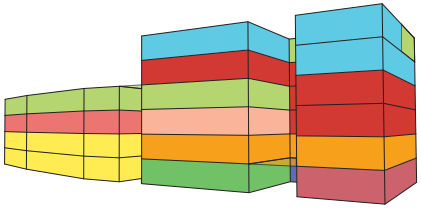
The storage area contains a covered work space in the space that was once the train siding. Tables and water sources are provided to allow the gardeners to harv□
other needed tools for planting.

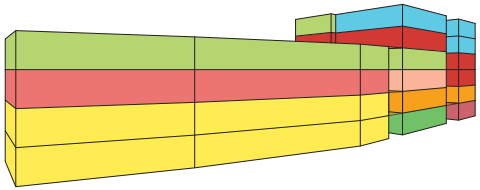


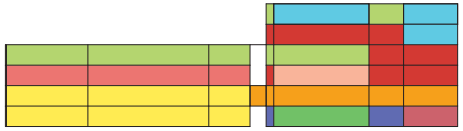
Storage Area:

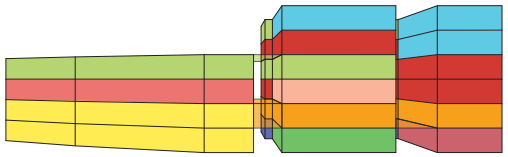
The main sto□
exist side by sid□
area with the compost being transported to individual gardens by wheelbarrow.

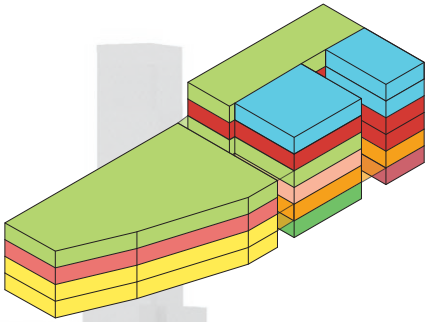


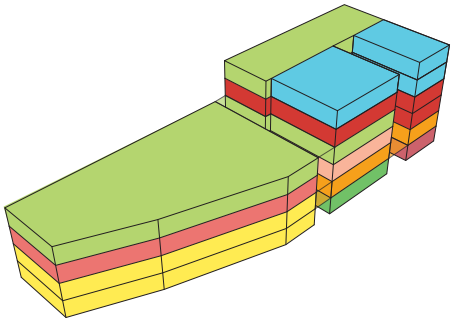






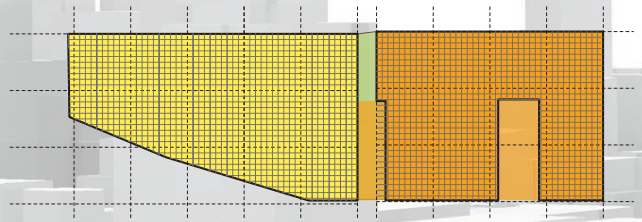


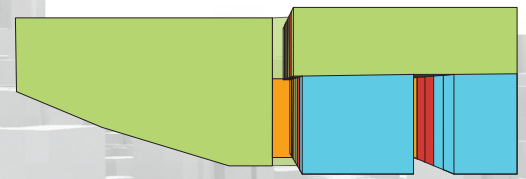


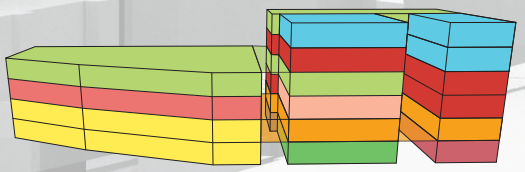


Program Area Existing Buildings 1 & 2

The Multiple uses of the two existing buildings are split among the existing floors. Some are multiple floors and others are only one level. This set of diagrams will show areas and discuss total numbers of staff and uses. The actual design and breakdown of these spaces will be discussed in more detail later in the chapter. All support spaces are intended to be considered as part of the space discussed per function i.e. bathrooms and janitorial rooms are considered integral to the restaurant total area, backroom stock storage is a portion of total footprint of the supermarket. The intent of these diagrams is to show how adjacent spaces are meant to be linked and used. They show the floor area, the usage, the amount of staff needed and the general division of space.







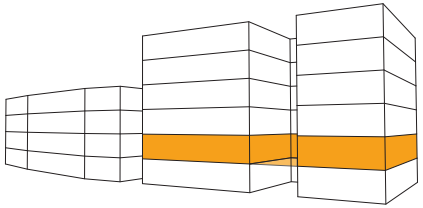
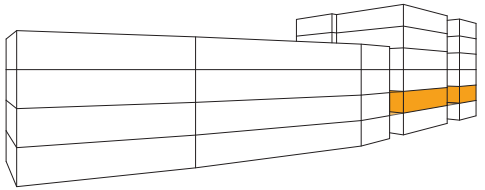
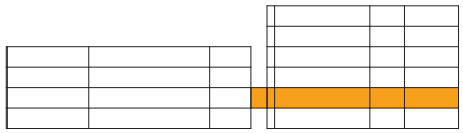
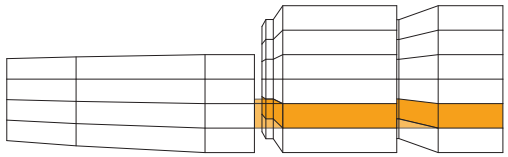
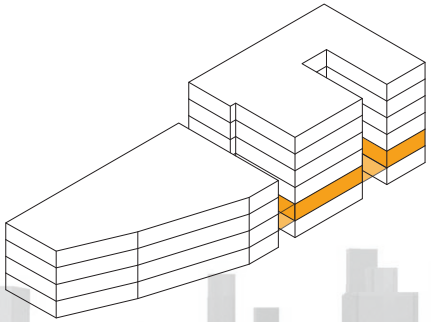
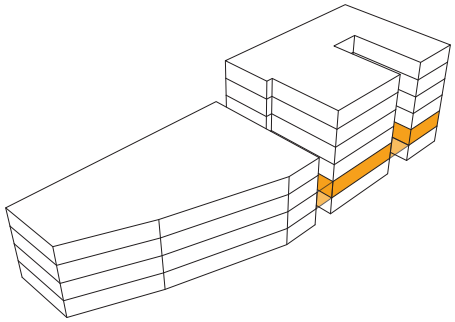
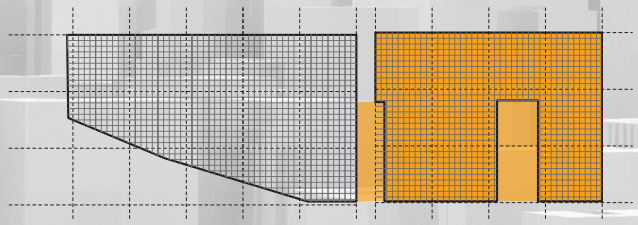
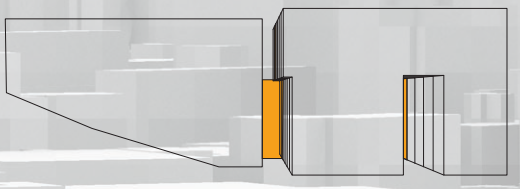
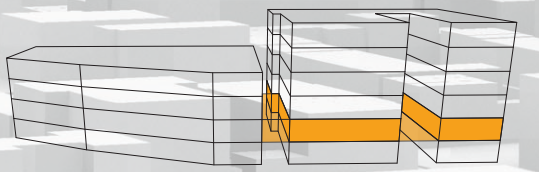
Program Area Supermarket

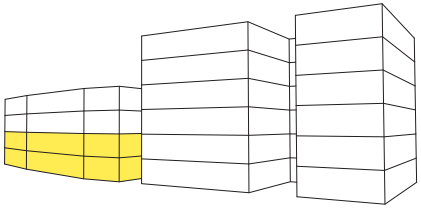
Area: 2099 Square Metres
Coverage: 1 floor

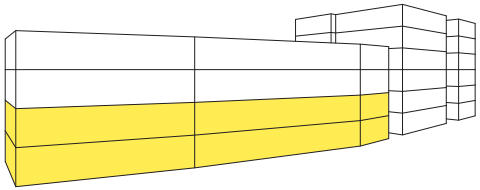
Staff: 25 Cashiers
20 Stock Clerks
5 Produce Clerks
5 Bulk Clerks
5 Butchers
12 Kitchen Counter Clerks
2 Managers
3 Repair staff

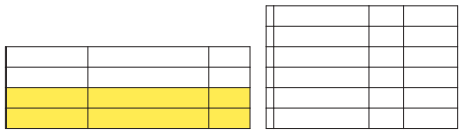
Total Staff: 77

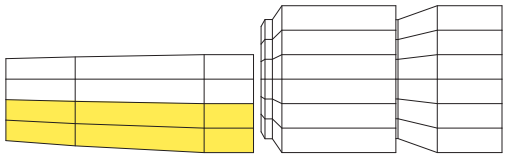
The entire supermarket should sit adjacent to the outdoor market and mediate between the project center and street. At most a total of 40 staff should be working in shifts. The space can be used in conjunction with the restaurant area and with an outdoor market on the weekend. The outdoor access at the south side of the building is at the head of the ramp. This facilitates movement into the site and provides a place to sit outdoors and eat or meet friends. Deliveries are made at the street side at nights in the market area. Numerous local products and products from industries in or near New York are sold at the supermarket and an emphasis is made on local goods.

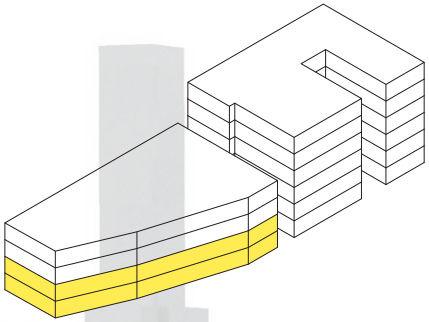










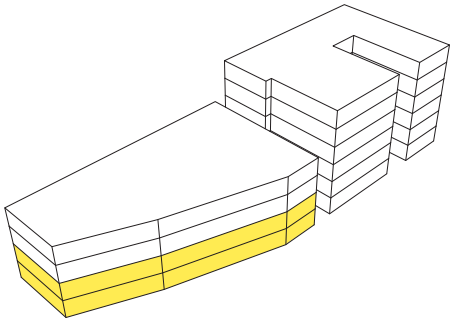


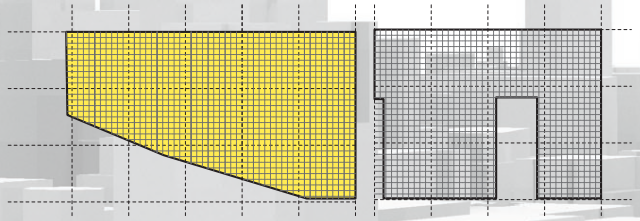


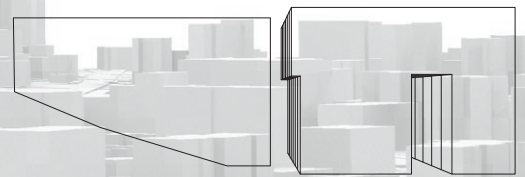


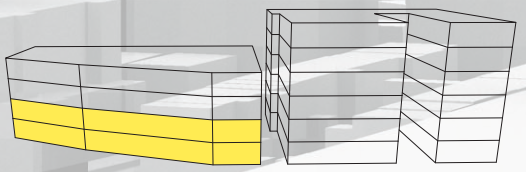












Program Area Restaurant

Area: 3000 Square Metres
Coverage: 2 Floors and exterior space.

Staff: 20 Waiters
5 Bus boys
5 Chefs
10 Misc Counter Staff
2 Maitre D'

Total Staff: 42

The restaurant should be thought of as more of and experimental kitchen than a typical restaurant. Such a large floor plate is intended to be broken up into many different cooking areas serving different types of food. The whole space can be served by 10 -15 waiters but these waiters should be thought of as participants in the experiment. Guest chefs from the city and the country will be asked to come and take part in the project and host their own "Nights" at the restaurant. This will allow the chefs to experience the benefits of the project and also the quality of food produced on the project. In addition this will allow for an increased number of people to come to the project site and also engage with it and learn. Thos who may not have much interest in the gardens may, in typical New York style, be enticed by the prospect of an exclusive event like a celebrity chef. If the chef has a large turn out then they may be asked to stay or return as their schedule permits. The two levels encourage street level and garden level use and a patio at the garden level allow customers to eat outdoors surrounded by the garden.

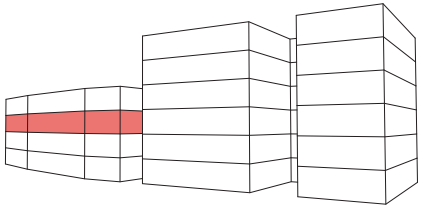
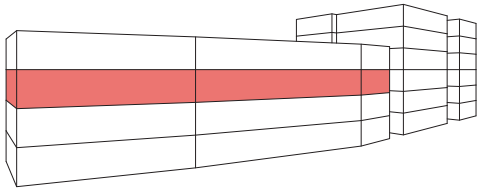
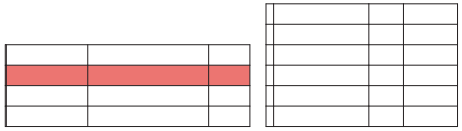
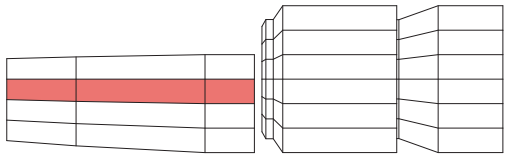
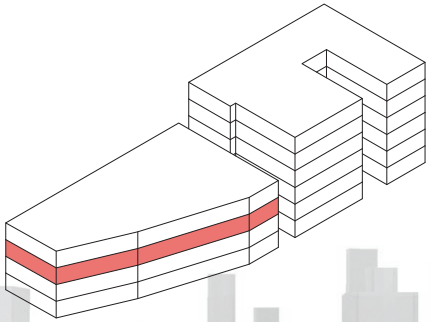
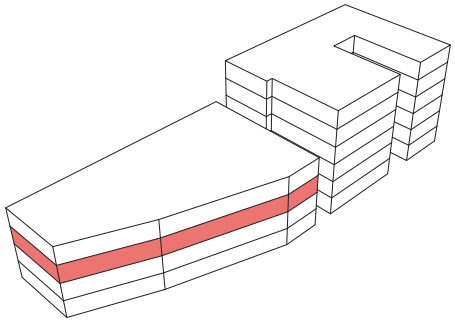
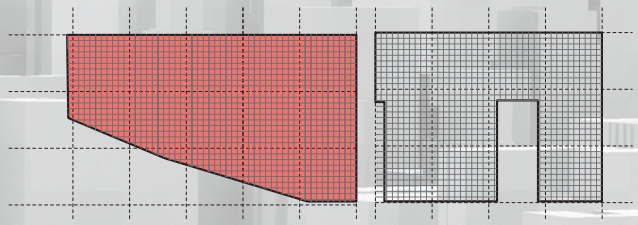
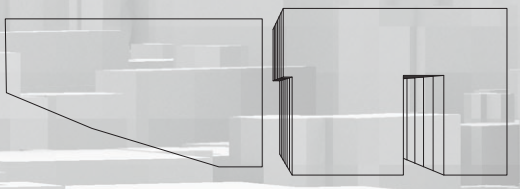
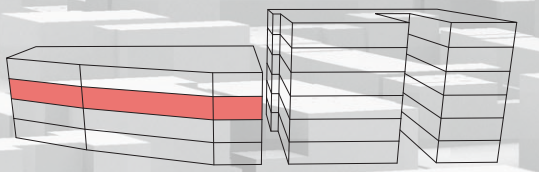
Program Area Management

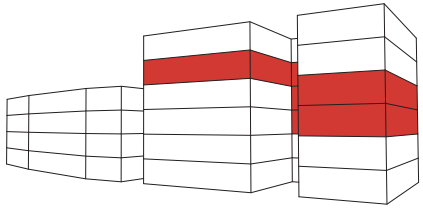
Area: 1209 Square Metres
Coverage: 1 Floor.

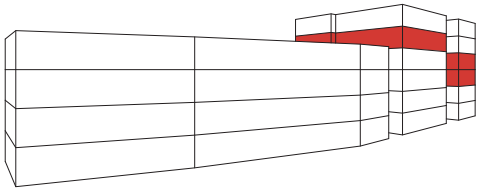
Staff: 10 Managers
10 Buyers / Sellers
5 Support Staff
2 Janitorial staff

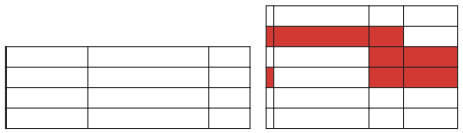
Total Staff: 27

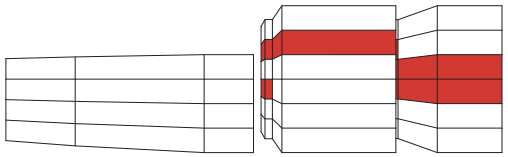
The Management division of the project works to not only manage the site on a production level but to also help those people involved in all facets and levels of the project to manage whatever they need assistance with. In some cases it may be finding buyers or outlets for fruits and vegetables grown on (or off) site, organizing shipments to and from the project site, scheduling classes, hiring etc. The management office will essentially handle all internal workings of the project, those not necessarily with a public relations or promotional face. The adjacency to all other parts of the built project allow this group to work more efficiently for the project. Space is provided for desks and conference rooms. Some of these spaces are rented out to the community as smaller 1 person offices or lecture facilities.

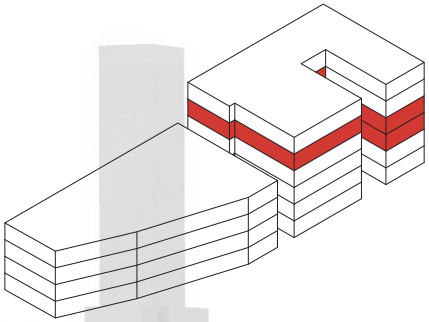










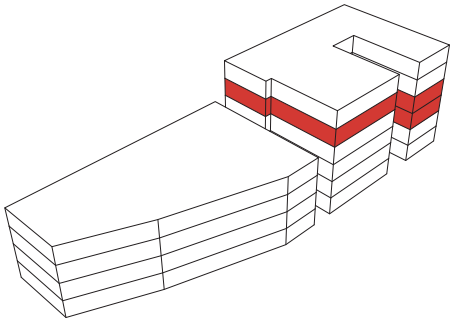


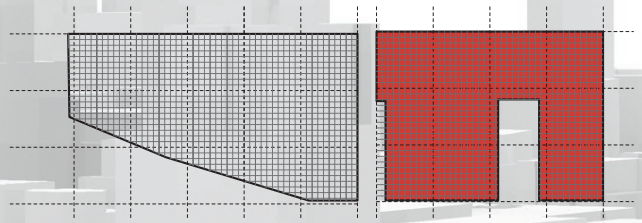


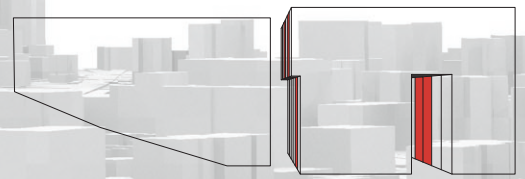


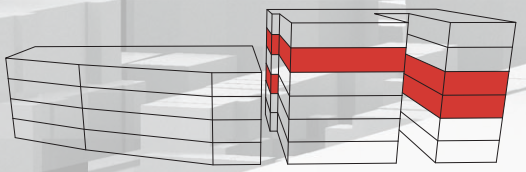












Program Area Educational Floors

Area: 1939 Square Metres
Coverage: Spread over 3 floors at different area usages/

Staff: 10 Full time teachers
100+ student (possible)
? Part time community students.
? Guest teachers and lecturers

Total Staff: 10

One of the most important programs to the entire project; the educational floors of the building are comprised of classrooms, lecture rooms and hands on training areas. The growing floors of the building are interspersed among the educational floors in order to also be used for teaching purposes . The garden site is also used to teach more practical applications and can be thought of as an extension of the educational floors. The courses taught range from classes on growing techniques to hydroponics, economics and marketing to the goals and theories of the greater project. The students will range from those that actively take courses and classes at the project center to members of the greater city who are temporary visitors to the site. Courses and lectures will be open to all and the project aims to accommodate any all persons interested in any educational program at the project center.

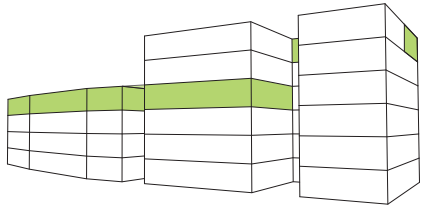
Program Area Growing Floors

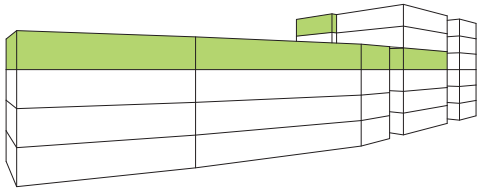
Area: 2041 Square Metres
Coverage: 2 Floors and 2 buildings

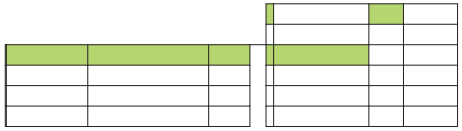
Staff: 30 Growers

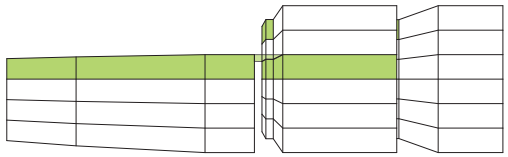
Total Staff: 30

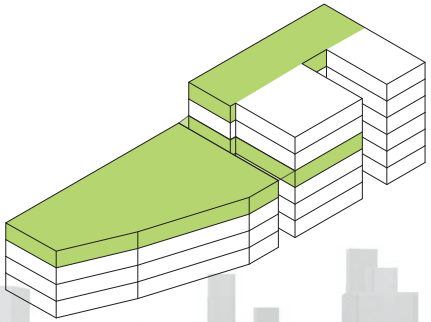
The growing floors work in conjunction with the educational floors but also need to function as an active contributor to the production of the project. The types of growing will be hydroponic, container, square foot container, Vertical surface growth and other experimental forms. The growing spaces are intended to be interior and exterior and should be considered as adjustable to meet specific needs at specific times. The growing spaces can also be used as a place to start seeds in the months between outdoor growing seasons. A dedicated staff of 30 will take control of the growing but this staff will be granted use of these spaces and the job through application similar to the outdoor garden spaces. This means that the staff will therefore cycle based on some criteria.

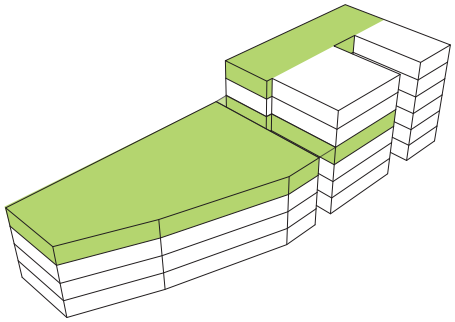




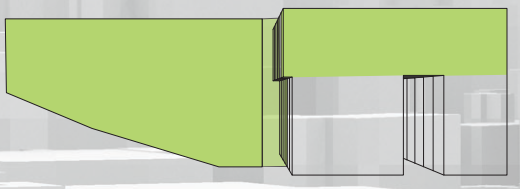


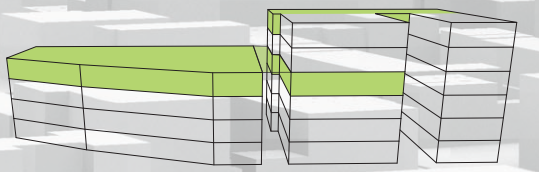


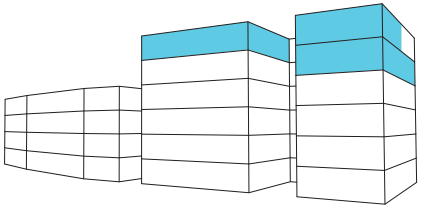


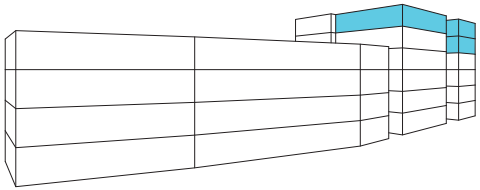


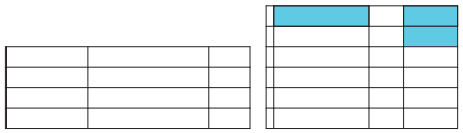


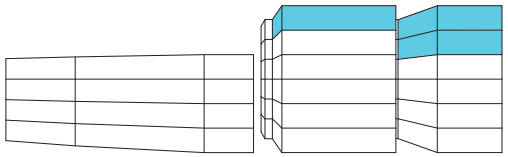


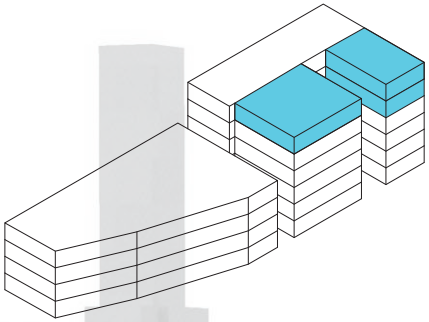


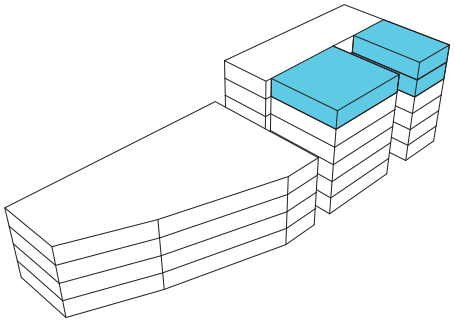


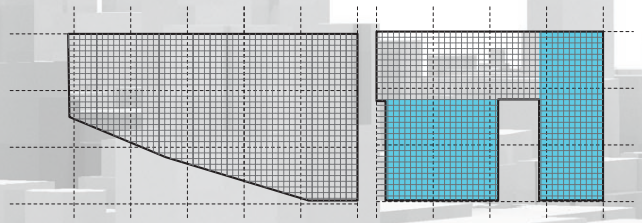


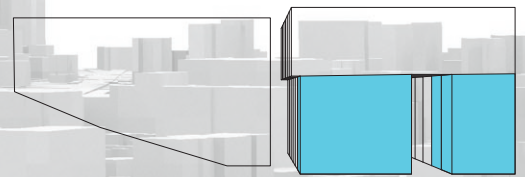


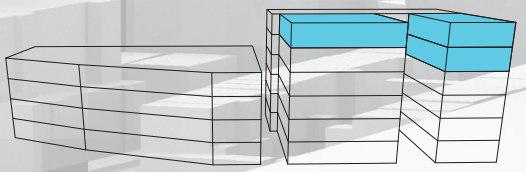












Program Area Guest Rooms

Area: 885 Square Metres
Coverage: 2 floors in two wings

Staff: 5 Janitorial staff

Total Staff: 5

The guest rooms are similar to small self sufficient apartments. Made available to whomever may come as either a guest teacher, lecturer, chef or grower. The spaces would be arranged into a series of apartments with some communal gathering areas used for entertaining and meeting. The guest units are also adjacent to the education spaces and the growing floors. An office per guest will also be provided. Guests are encouraged to stay for whatever duration they wish but will have to provide some service in return for room and board either teaching, working or supporting the project in some way.

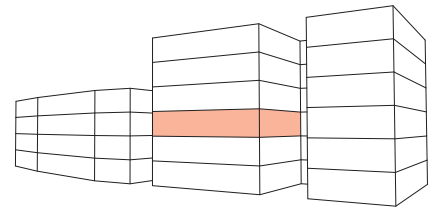
Program Area Canning and Bottling

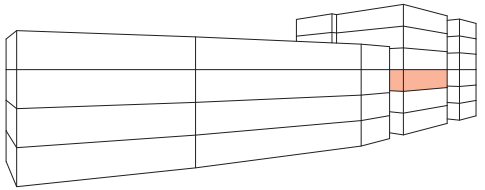
Area: 350 Square Metres
Coverage: 1 floor

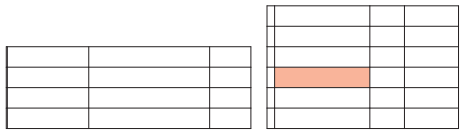
Staff: 5 Support staff

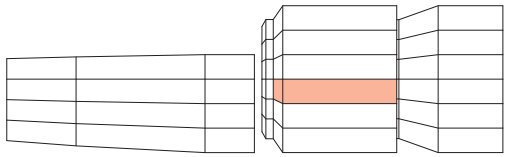
Total Staff: 5

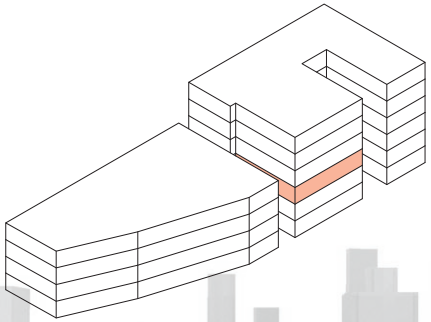
Although called canning and bottling this area should also be considered as part of the educational programming. This is a place to teach many forms of traditional food preservation techniques and also to assist the economic and marketing classes taught on the educational floors. Instead of seeing an ancient room equipped with old stove tops and mason jars it should be seen as a place to explore efficient means of food prep and preservation in order to consider it for marketing as product and prolonging its use past typical growing seasons.

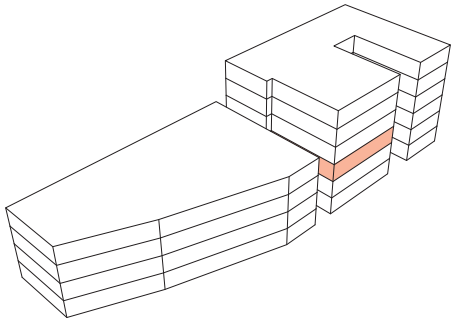


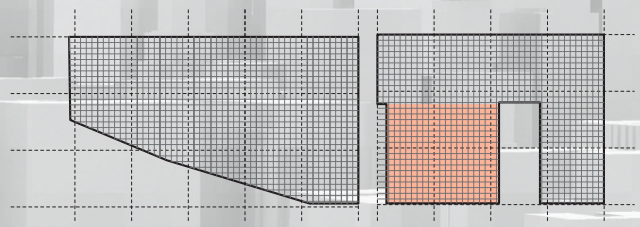


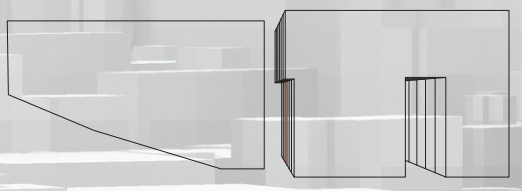


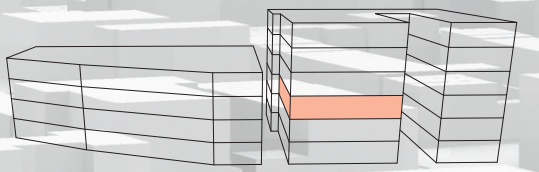


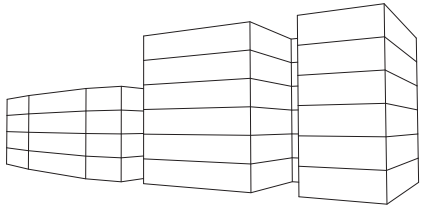


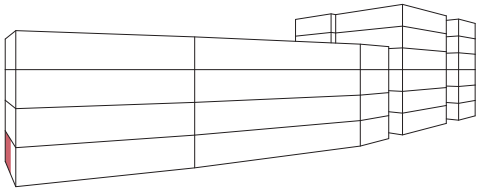


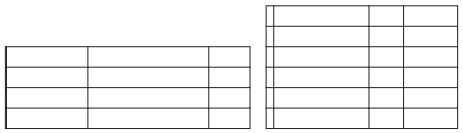


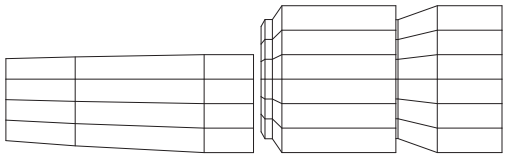


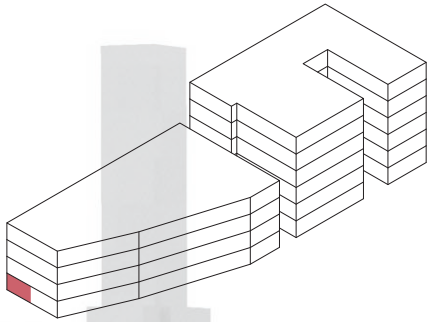


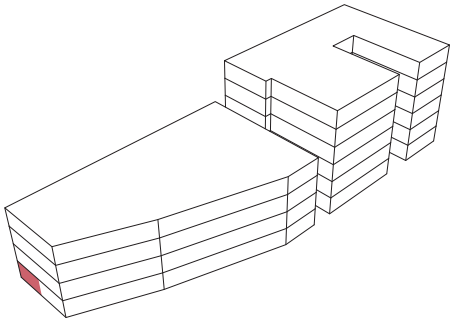


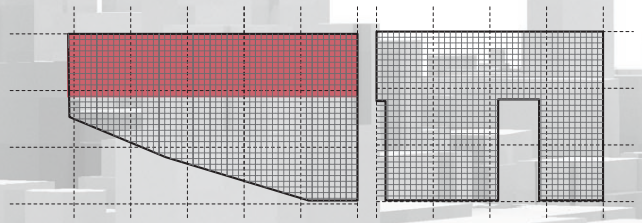


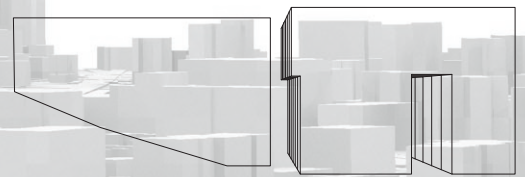


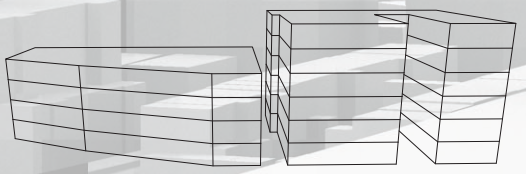












Program Area Workshop

Area: 335 Square Metres
Coverage: 1 floor

Staff: 5 Support staff
5 Floating maintenance

Total Staff: 10

The workshop supports all custodial and janitorial needs of the project and also assists all functions of the project in producing or fixing those tools and miscellaneous items that need fixing. In addition it is open to the larger project community as a place to build and fix and maintain. Gardeners can use it to sharpen and fix tools and community members can use it to do the same of even make gifts and other objects as time will allow and abilities will warrant. The out buildings and other support structures of the project can also be maintained through the tools and staff of the workshop.

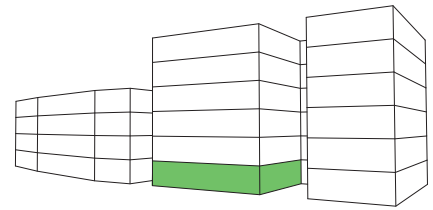
Program Area Cold Storage

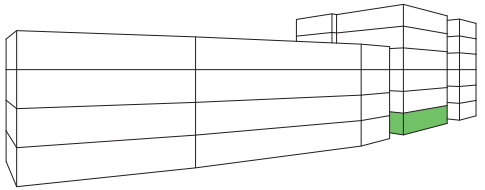
Area: 350 Square Metres
Coverage: 1 floor

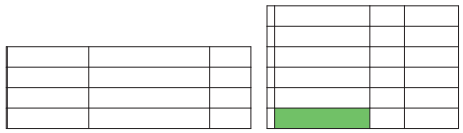
Staff: 10 Support staff

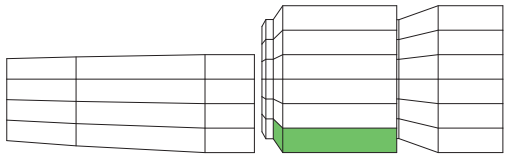
Total Staff: 10

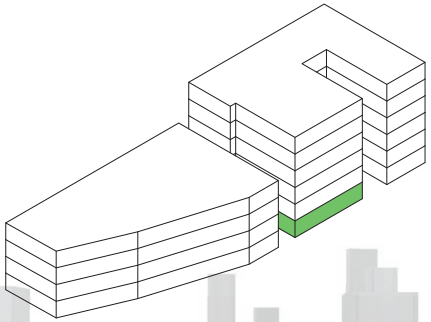
Again although called cold storage this space is used as transitional space and temporary storage for fruits and vegetables as they wait to be transported someplace else; be it to the restaurant upstairs or the train loading dock for shipment to the city. Seed storage and other perishable items can also be accommodated in this space which sits directly adjacent to the loading dock and gardening spaces. A Sub-Basement can be used for more traditional long term storage.

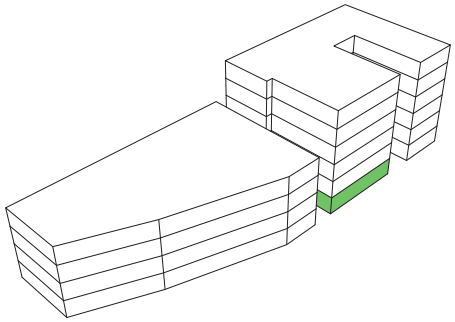


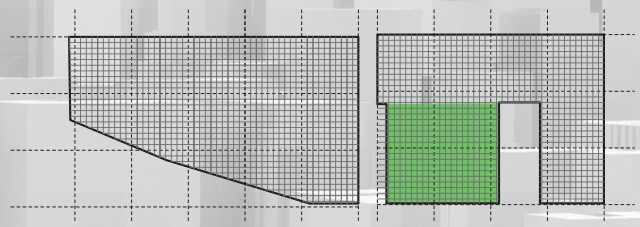


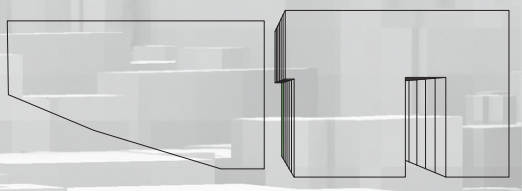


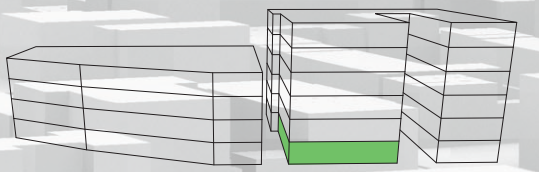


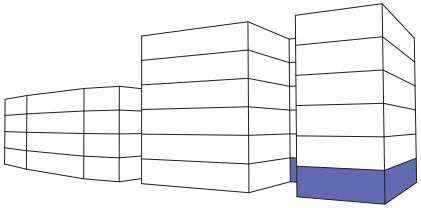


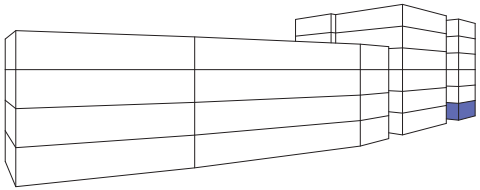


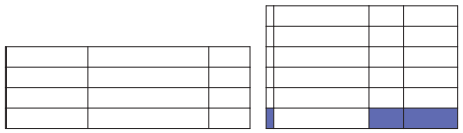


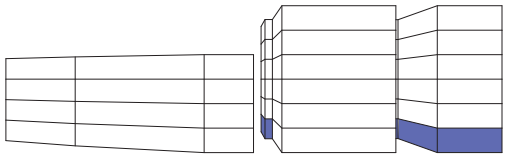


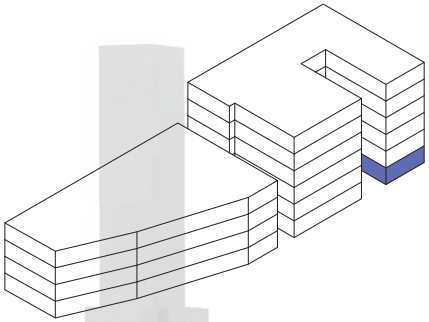


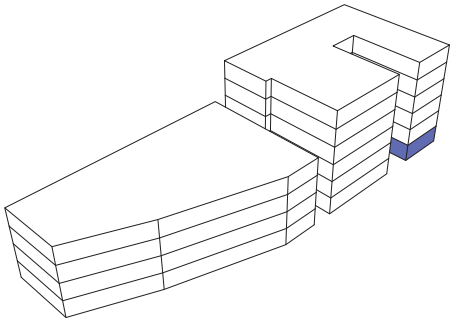


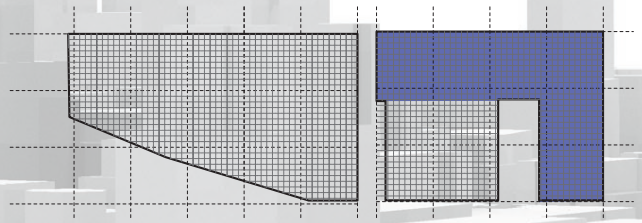


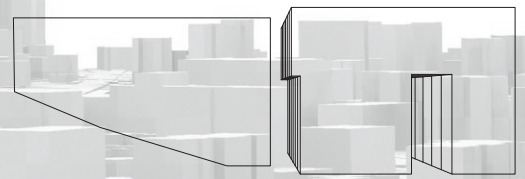


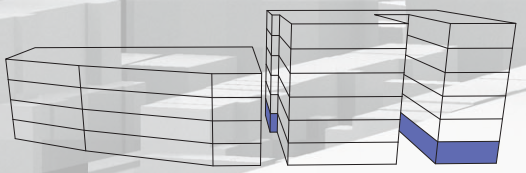












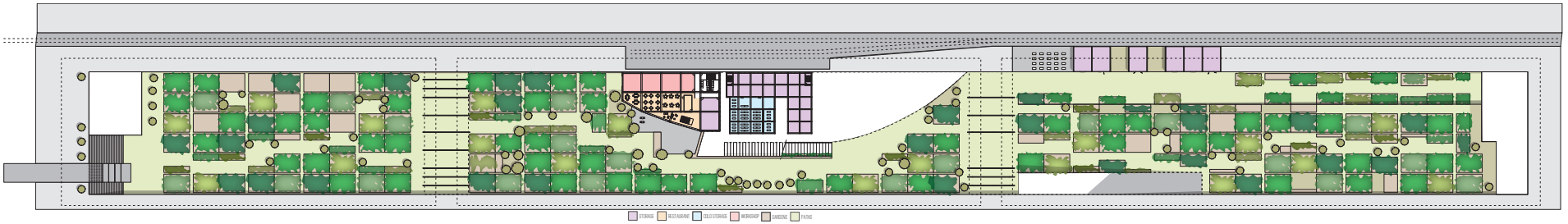
Program Area Storage

Area: 484 Square Metres
Coverage: 1 floor

Staff: 5 Support staff
10 temporary staff

Total Staff: 15

The storage area of the building serves a traditional purpose of general storage but also have some special measures in place to help store seeds and perishable goods. Like many gardening projects a seed bank is setup in this space and managed by a group of people from the project. They determine the best strains of certain seeds, document and store a supply in the seed bank. Organic pest controls and fungicides are kept here to protect the general public. Fertilizer is kept outdoors due to its explosive capabilities.



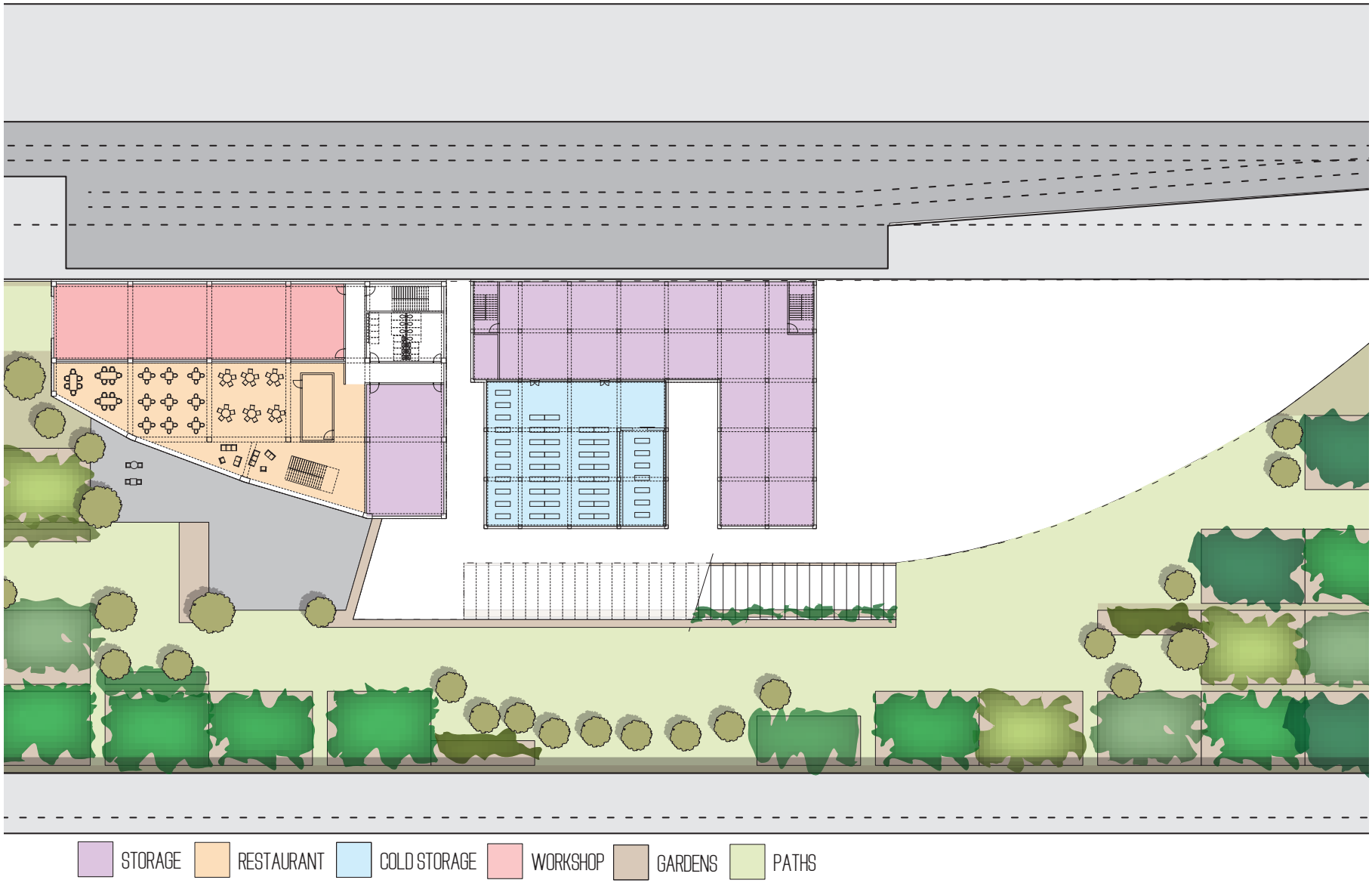
Garden Level:

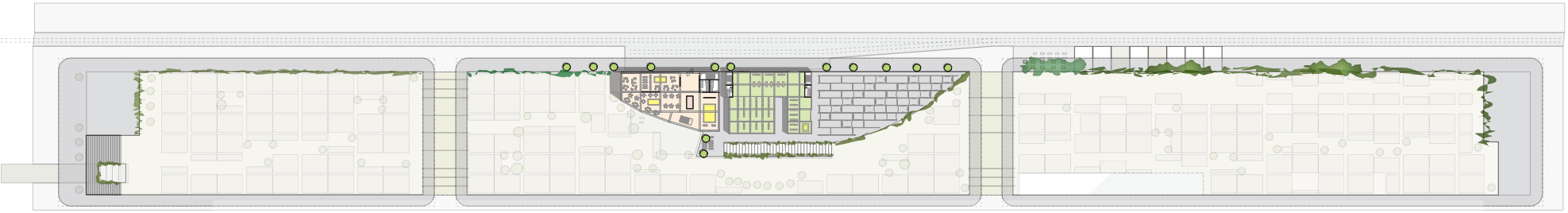
The garden level supports the main growing function of the project. The gardens are located on this level and the primary storage area. Access to the site is provided by steps to the West, a larger vehicle ramp to the South East and the central stairs near the existing buildings. The garden level is approximately twenty feet below street level at the West and reach twenty five to thirty feet below street level at the East. The existing LIRR train tunnel is at the North East corner of the site.

At this level in th
storage in building two. The work shop is also located on this level in building one. A corrugated steel rolling door provides access to the shop .

Possible access to the
access for the site. Produce could be sent via train to the city and products and supplies could be received. The storage areas and cold storage are located directly adjacent to the possible rail access.

The cold storage is accommodated in a walk in cooler but also in an insulated area in the basement. This storage is similar to a traditional cold room in farm house. The other storage area is intended for incoming and outgoing shipments as well as for stock storage for the restaurant and supermarket. Main access is through a set of stairs to the East and West in the building.


STORAGE
RESTAURANT
COLD STORAGE
WORKSHOP
GARDENS
PATHS



Street Level:

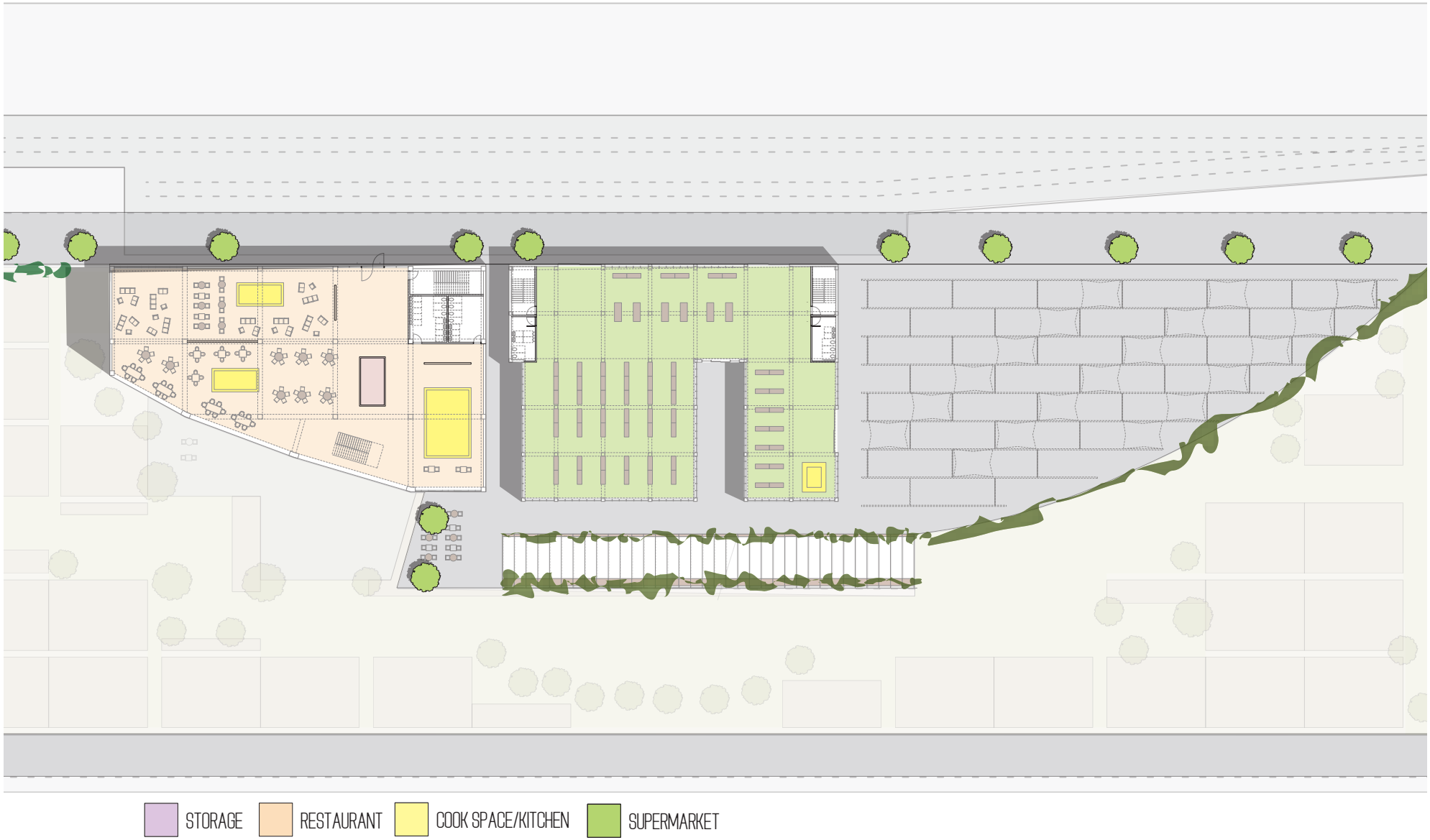
Main Access to the supermarket and restaurant as well as the rest of the building is provided on the street level. A series of entrances serve both the north and south of the building providing access from either street side or garden side of the site. The market level is also at this level and allows for walk on access as well as access from the main garden level by the central stairs.

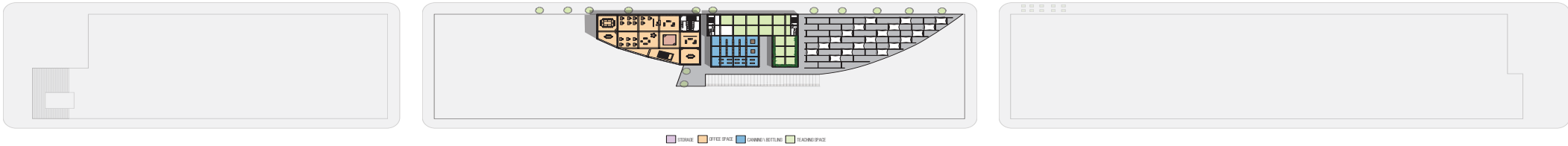
The buildings house the supermarket in building two and the main restaurant level in building 1. A small patio and eating area is situated at the top of the ramp adjacent to building one and deli counter / coffee counter is available in the supermarket directly across from the outdoor market entrance.

The buildings w
part a cladding system of glass was implements with canopy structures to provide shade at peak season.

The restaurant and supermarket both overlook the bulk of the garden level and help create a connection between the production side of the project and the point of purchase. The street face of the building is the north side of the building and while it doesn't receive as much light as the southern side the avenue is large enough , and other buildings far enough from the facade that it still receives a decent amount of diffuse and reflected light.

The restaurant at the street level has a series of cooking spaces. These serve to create spaces where the customers interact with the chefs instead of merely being served by wait staff. On many nights a guest chef will not only cook from these spaces but teach the customers how to cook the meal they are eating.


STORAGE
RESTAURANT
COOK SPACE/KITCHEN
SUPERMARKET

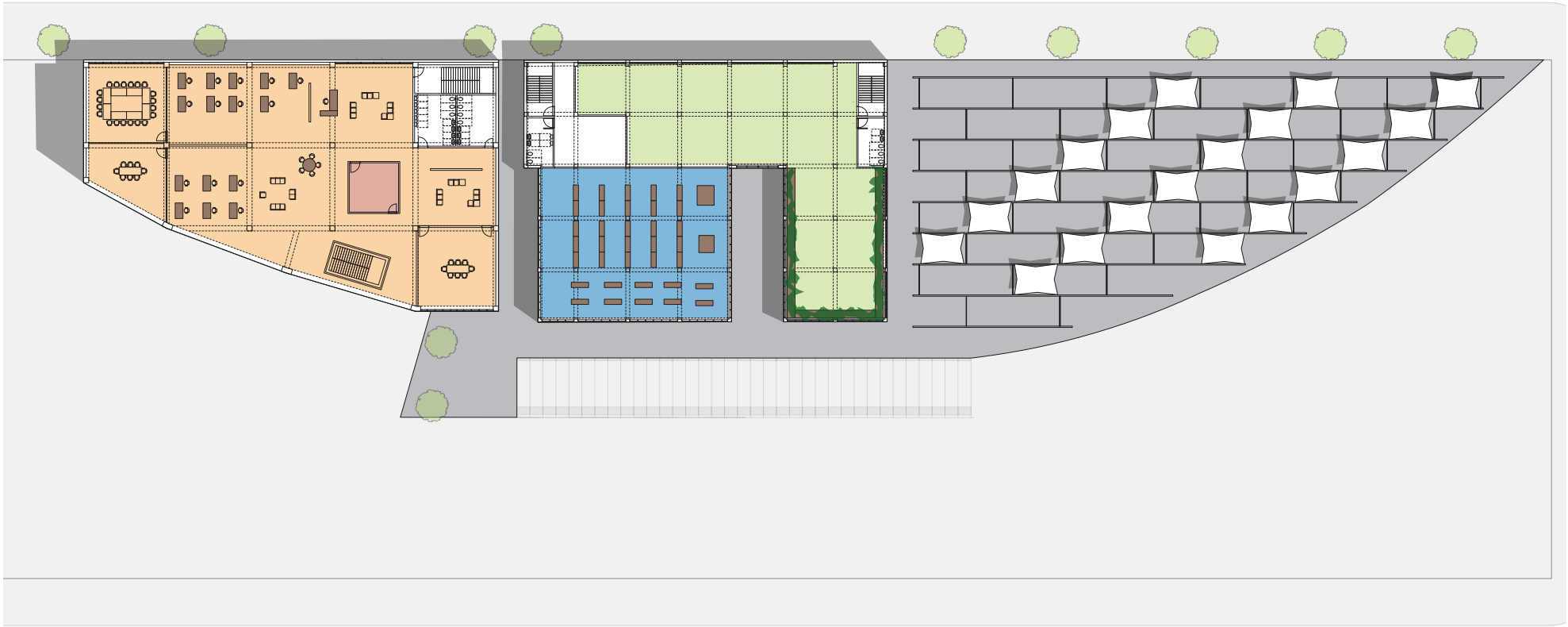


Third Floor:

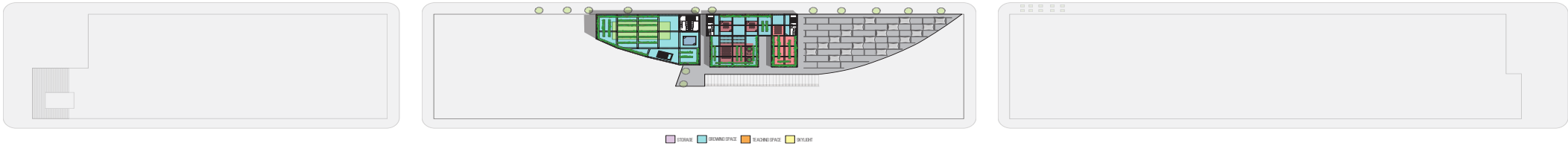
The third floor houses the administrative offices of the project and community conference and theatre spaces in building one and the canning and bottling area and open teaching space in building two. The majority of the administrative functions for the project are handled here. Everything from shipping and receiving to accounts to web site maintenance and internet sales are housed in this space. The canning and bottling area in building two handl
ervation research.

The open t
owing educational courses. The majority of the learning at the project is based in growing, environment and ecology but everything from art classes to dance classes, small engine repair to makeshift daycares are conducted here. The space can be divided up into smaller spaces if needed.

The conference spaces in building one can be rented by community members both professional and private. There is also a small theatre with AV equipment and
maintained by proje
to work in the project environment and not pay an arm and a leg for office space in Brooklyn find this to their liking.



STORAGE OFFICE SPACE CANNING \ BOTTLING TEACHING SPACE



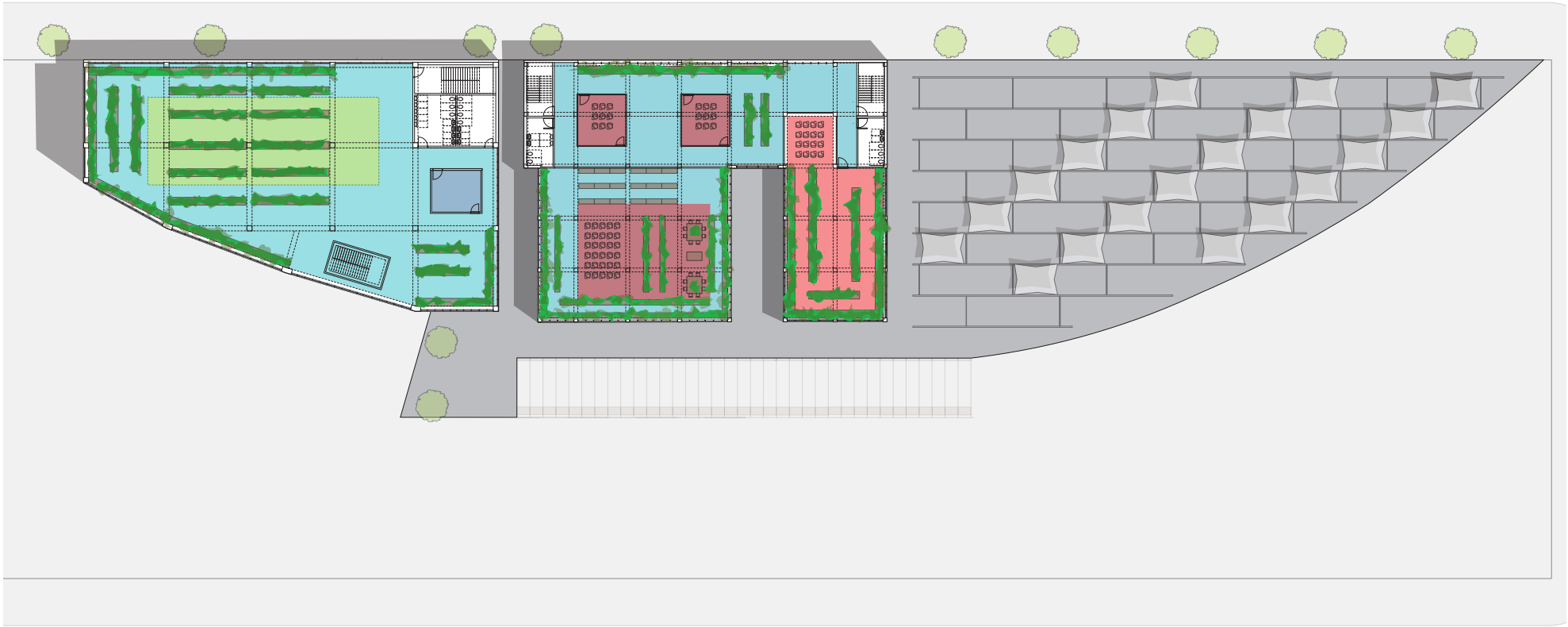
Fourth Floor:

The fourth floor of the □
level of building tw□
the far side of the floor. These spaces are used for seasonal indoor growing, seedling planting and experimental growing. In addition to hydroponics and aeroponics more delicate plants are grown in these spaces.

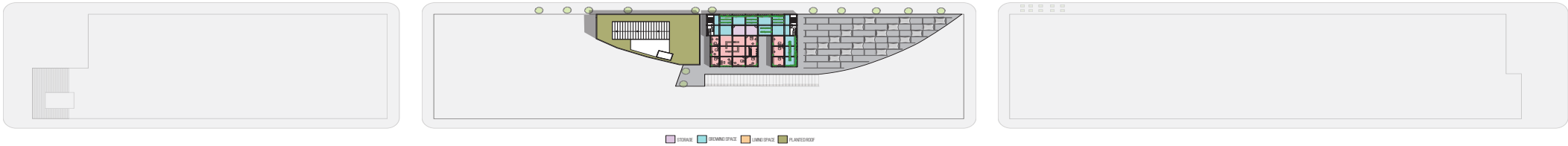
While the so□ -
doors through the alley space between the buildings. This creates a chimney effect and helps pull the hot air out of the building.

Building two also accommodates a larger portion of the educational facilities on this floor. Unlike the open area teaching area this space has very structured teaching □
West corner of the building a classroom is situated that focuses on growing. The students are immersed in growing and must be responsible for many of the plants grown in the space. Work tables and a lecture area are created as well as a place for tool and specimen storage.

Gr□ The group
believes in □
project.



STORAGE GROWING SPACE TEACHING SPACE SKYLIGHT

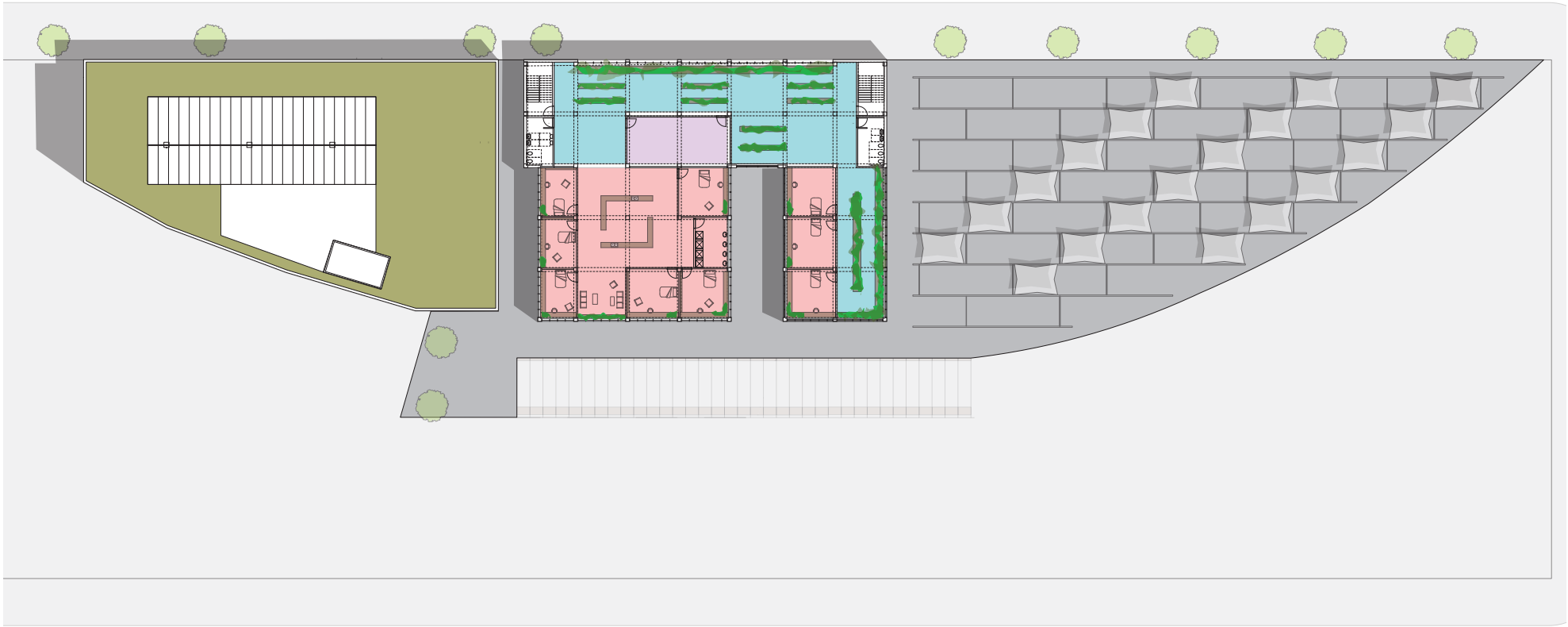


Fifth Floor:

The fifth floor of building one is essentially rooftop. A green roof system has been installed and small patio space is available. Container growing is also placed □
even a few cacti.

The fifth fl□
business people are invited to the project to work, share their knowledge and learn. These apartments are provided free of charge to teachers and workers and can □
feel like maintaining their growing space a project member is tasked with maintain the small growing space.

Communal space in □
including the restaurant but space is provided for those that wish to cook for themselves.
Bathr□ fth floor of
building two. each unit can also accommodate couples and families and extra beds are available.



STORAGE GROWING SPACE LIVING SPACE PLANTED ROOF

Conclusion:

Previous chapters have shown that it's both possible to create a successful urban agriculture practice and to expand it to serve the community. This is achieved without having to sacrifice on pursuit for the other. Typically urban agriculture projects tend to fail when emphasis is on community and profits are neglected. From the section on spin farming it is obvious that profit was be one of the primary goals of the entire project. It is possible to make a living through urban agriculture, and it is possible to grow that business so that it supports more than the individual.

The proposed development at the Atlantic Rail Yards was one of the primary catalysts for this thesis . The shear scale of the project seems to sit in complete opposition to the low scale community nature of Brooklyn.

By proposing an alternate idea for the site it is possible to see that a different concept of development is viable and achievable. Instead of building huge towers of steel and glass why not stay at the scale of the area and create a project that will serve more than just one goal.

Succumbing to large development only moves money out of the neighbourhood. While jobs might be created in a larger development the flow of money isn't to the 100 workers it's to the developer and the big businesses that lease space in the new development.

By creating a business center on a community scale, employing local people and creating a place for the community to grow and expand you move more money back into the neighbourhood. While million dollar apartments might create more profit than the 5 cent apple the majority of that profit isn't given to the community.

Money spent to purchase locally grown produce in a local setting tends to funnel back into the community, I buy your apple you buy my bread.

More than the simple economics and reaction to the proposed Atlantic avenue development it is clear that an urban agriculture project could benefit from a central base. A central location provides a place to grow and support the project, creates a public face for the project and creates a place for people to congregate and socialize.

Backyards are ideal place to grow in an urban center but a business of a certain size will benefit from a central point to store and distribute the fruits and vegetables produced.

The project can be promoted from a central location and greater participation can be encouraged if facilities for learning and sharing are provided to the general public. Access to someone's backyard is not as convenient as a vast open space with support buildings and a connection to the neighbourhood.

The Atlantic railyards are a prime location for this project center. The proximity to a transportation hub, central location, existing physical structure and existing buildings make it an excellent place for future project growth.

Similar project centers in other boroughs and in other parts of the world where people pursue an urban agriculture project of this scale should also be considered. While it is not a necessity to have such a large center, combining growing space and administration space as well as business development space is ideal.

The future of the rail yards should be as a center for the Brooklyn urban agriculture project. It is an ideal location and makes far more sense than a multi million dollar stadium and residential tower.

If Brooklyn is the bedroom of Manhattan then let the Atlantic railyards be the kitchen.



Images, Sources:

Page 409

Atlantic Rail Yard

-Image from: by Author

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Site maps

-Image from: http://www.oasisnyc.net/oasismap.htm

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Brooklyn Aerial

-Image from: Google Earth, edited by Author

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Bike Cart 1

-Image from: http://www.culturechange.org/pedalpowerproduce.html

Bike Cart 2

-Image from: http://frank.itlab.us/worldtrip_2002/transport.html

Dinner Party

-Image from: http://www.gasconygetaway.com/

Compost

-Image from: http://www.forestgarden.co.uk/prodPages/CPT120A.asp

Vermiculture

-Image from: http://www.jeevanherbs.com/vermiculture.html

Kids learning in Garden

-Image from: http://ventana.sierraclub.org/conservation/local/green_acres_garden.shtml

Dinner Party

-Image from: http://www.gasconygetaway.com/

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Brooklyn Aerial

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Atlantic Rail Yard Buildings

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Gardens

-Image from: Unknown Source

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Cafeteria

-Image from: Unknown Source

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Vegetables for Sale

-Image from: Unknown Source

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Farmers Market

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Botany Class

-Image from: http://www.smith.edu/gardens/Academics/canning.html

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Woodshop

-Image from: Unknown Website

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Rain Water Harvesting Tanks

-Image from: http://www.newah.org.np/photogallery.html

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Compost Piles

-Image from: http://www.bae.uky.edu/UK-ARC/composting.htm

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LIRR Trains

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Back ground

-Image from: Scan by Author

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Dirt Path

-Image from: http://www.chaosreigns.com/gallery/img_0738.jpg.html

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Atlantic and Pacific avenues

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4.0 Evaluation and Conclusion

11.0 Evaluation of Design Intent

Basis:

From a young age I remember pawing through papers and magazines, books and guides about growing food and living amongst nature instead of on it. My parents were the quintessential hippies and had a plethora of books about nature, environment and ecology. The "Whole Earth Catalog" and the Canadian based Harrowsmith magazine (http://www.harrowsmithcountrylife.ca/) were regular favourites of mine. The Whole Earth Catalog provided no end of amazement as I stared at numerous pictures of people building gardens in wheel barrows and houses out of old Volkswagon beetles. I was amazed by the fact that something so simple and ugly could be converted into something so beautiful. This taught me that anything was possible given the proper tools and the imagination. The other necessity in all of these projects was need (or maybe want) these people were trying to recycle, and use, materials well before recycling was common place and a household word. They did this out of necessity as much as out of concern for the environment. It was easy to take something you already owned and convert it instead of go out and buy something new.

To a great extent my parents lived a life that was in some way based on the same ideas encouraged by these books and magazines and I remember many projects around the house and the yard that came directly from the same plans and pictures I marveled over. As my parents grew older they moved away from some of these ideas, more out of age and less out of a change in ideologies. Still the tried, when I was 16 years old my father converted the hot water heating system in our house to solar based and my whole family ate, summer long, from our garden. We composted, used natural pest deterrents- such as up turned paper cups at plant stalks and dish soap. We always recycled in some way, even when there wasn't curbside pickup, and we were always taught to respect nature.

These ideas are ingrained in my psyche and I tend toward them all the time. They influence my ideas and my actions, and, to a large degree my design. With any design project there are places to use new and modern techniques, modern materials and technological advances. I am not opposed to this course of action and see the necessity. I do have issue with promoting environmental and ecologically sensitive proposals and utilizing less than ecologically sound methods.

Who would support a grass roots movement of promoting local growing and ecological responsibility but based in strip mining an entire community? Some of my initial impetus for this thesis was a reaction to a proposal for the Atlantic rail yards that proposed a huge arena, multi story residential and business towers and all at the cost of the fabric of the community. There is a time and a place for these types of development and I do believe them to be crucial in our ever expanding environment. They generate jobs and tax revenue and help grow a community. My opposition stems from personal knowledge of the place and how special it really is. Proposing a more sensitive project for this community , and others like it, stems from my upbringing and my experiences with a fledgling environmental movement (even it I didn't know it at the time) A basic sensibility that sees the value in working with the tools available and the knowledge that something great can be created from something simple. The design of this project in this thesis is based on these same ideas and is evident in the choice of materials and program as well as the proposed schedule.

I didn't propose to radically change the nature of the place through extravagant architectural intervention. I proposed a simple solution that satisfied the needs of the project and only grew when those needs changed or the project decided to attempt another goal. All designs were proposed as sensitive to the project, the community and the ecology of the place.

The Role of Designer:

It's difficult to determine the role of the designer in a project such as this. Many of the situations I constructed in this thesis made room for a designer but it is fairly obvious that the project and the project development isn't dependent on the role of the designer. It's possible to establish an urban agriculture project and grow that project without the assistance of a designer.

A designer can assist the project in creating spaces, buildings tools, etc as needed and they can certainly play as active a role as the project will permit. Beyond the role of actually creating amenities for the project the designer can assist with planning and development. Having the ability to forecast and predict needs before they exist can be

a huge benefit to any project. The designer can work to plan and anticipate possible problems with specific layouts, They can provide strategic planning for growth or simply for existing situations. In addition that nature of the job of a designer tends to put them in close communication with city and federal governments and the designer can play a role as ambassador. Knowing the intricacies of the permitting and approval process as well as the specific government bodies that the group will have to deal with makes the designer a very useful member of the project.

The Design (Analysis):

Phase 1:

It's very hard to analyze the proposed design. The ideal situation would involve creating a test project and putting the design to a real world test. This is simply not possible and so a theoretical design was needed. The first step was to satisfy the needs of the project at it's inception. This involved an understanding of simple planting bed design and a decision on what was the best combination of elements. Like a violin the ideal planting bed is up to the user. I tried to illustrate options and propose the planting bed I thought was best and put the emphasis on planting strategies (SPIN)

Simple support structures were developed and were intended to allow the individual growers to work efficiently without having an tremendous impact on land use. In other words I wanted to supply a work surface and preserve plantable square footage. The raised planters that allow for wheelchair access were proposed as options that illustrate the intended inclusiveness of the project. Public support is paramount for the projects success and no one, no matter age, education or physical challenge should be excluded.

The roof top green house was intended to show one possible options for alternate growing space utilization. Each situation will be different and each situation will provide new challenges.

Each and every design option was rooted in economic viability with suggested materials either being readily available and therefore inexpensive or, best case scenario, recycled from other uses. Wood was proposed for many of the design structures because of it's versatility but also because it can be easily recycled and most people can work with it. Wire mesh, nails and vapour barrier are available from the local hardware store. This puts the needs of the project growers, and subsequent design and construction, in the hands of the group members instead of a costly "Specialist" or expert.

While most of this seems very simple I feel anything more would be overkill. Establishing the project and working to satisfy the most basic needs was the goal of the first design section and I feel that these simple interventions helped achieve that.

Phase 2:

The obvious difference between the first and second phase was that the design was more geared toward project wide support structures and community amenity. Here again is the idea of scale and schedule in the design. The spaces used were proposed as vacant lot and had a more public face. While backyards allowed for the bulk of the growing the need for support spaces scattered throughout the project area was obvious. If a grower was to be able to store and preserve harvests until the weekend then there was a need of a central location that housed a walk in cooler; proposing each backyard had it's own was not possible. Places to prepare for market and ship larger quantities of produce were also needed and it made sense to tie all three of these needs together in one structure as they are all closely connected.

A market face was also an obvious choice both in the form of outdoor selling space and indoor space more akin to an actual store. When the group grows most of the produce in the community it makes sense that it is also available to that same community. The markets served a secondary role as a place of congregation and tertiary role as public face. Self promotion is a very important part of the project and establishing physical spaces were people can come, congregate and participate is an ideal way to promote.

Scale and schedule were satisfied by the changing nature of each site. In most cases the individual sites were proposed as growing areas. With growth they transformed into the other functions such as market and storage space. In some cases the growing portion of the site remained but decreased in size and in other cases the growing portion was moved to adjacent spaces; the sug-

gestion is that close proximity to the project encouraged the neighbours to participate.

The animal husbandry portion of the design is intended to suggest alternate uses for smaller parcels of land that might be available but not available for growing do to limits in solar exposure. The design of the individual coops and pens was intended to minimize the needed materials but also meet the housing needs of the animals. The idea of alternate uses showed that all available land in a community can be used to support the project.

Again materials are intended as simple or recycled and only more complex systems like a walk in cooler be counted as expensive and special cost.

Like Phase one it would be ideal if the ideas proposed in the phase two design section could be tested in real world conditions. Also like phase one it is obvious that this is not possible.

Phase 3:

The design of phase three is one of the most important in the project but also one of the furthest from the original ideas of the project. That is not to say that the design does not try to work within the frame work set forth in the other design sections. Like the simplest work surface proposed in phase one the phase three design is rooted in the basics and in simple materials.

However, it is clear that the scale and scope of the phase three design is much more than the other two phases. The existing conditions and obvious cost of the project make it difficult to propose a simple solution without admitting the possible road blocks. Site remediation alone could cost hundreds of thousands of dollars, not to mention the needed renovations to the two existing buildings. Still it is important to look at this phase of the project design as a wish list of ideal situations. It would be great to combine so many closely related activities and spaces in one large site base. Re-using the land in the center of the borough would assist in creating community connections and would, in turn, provide a hub that served as more than a simple place to grow vegetables.

The support structures help to facilitate growing but also become a part of the fabric of the project, a language that is obvious throughout the community. A project centric grocery store and market allow the group to sell their wares but also satisfies the needs of the community for a reliable, responsible, source of food, increasing the food security of the entire borough.

Educational facilities are proposed as a way to engage the public and the project members and are intended to be open to all. These facilities don't need to be only about growing . Other topics and classes can be taught here and the project center starts to act as a community center. This encourages use and also helps to bring people to the center of the project.

Connectivity and openness is encouraged as these concepts are lacking in Brooklyn. Crimes and troubles of the past have led most people to be very untrusting of public spaces. The life of the project is intended to help diminish these problems and this openness is very important. Bringing people through the site from multiple directions creates a sense of community connectivity. The shared space, open to all, includes everyone in the preservation of the project.

While the existing buildings are seemingly stripped bare it is the intention that all the materials are re-used in some way. This might be the re-use of wood to build raised planters or it might be in crushed brick used for planting bed drainage.

Re-use is also supported through the creation of a recycling water system. Collected rain water is used to water the individual plants and some is recycled through the drainage system and re-used to water again and again.

Like the previous two phases it is intended that almost every available surface is used, or assists, in the growing process. Walls are stripped with wood for trellises, steps and walls are left hollow to accommodate soil. Path dimensions are minimized and all south facing windows in the support building are used for plants. Free space on terraces, indoor floors etc should be used for containers and the roofs of both buildings can be used for growing.

Conclusion:

While the specifics of each design might be vague The intent is clear as each object works toward a common goal. While they are simple in nature the designs support the process of growing in a local commu-

nity without being audacious or burdened by unrealistic materials and construction. The intent is to satisfy the needs of the project and fit into the fabric of the community.

The materials are recycled or readily available and the aesthetic fits with the commonly held concept of a garden. The nature of the project is expressed through the spaces and infrastructure created and ultimately through it's produce. The design aids in this by supporting the needs of the growers but stays away from trying to modify the already established ideas of the community aesthetic.

Brooklyn is the scale of houses and bedrooms, backyards and front stoops. The design must be encouraged by this scale and work toward it. The lager project center mitigates between the larger scale of the downtown Brooklyn core and the smaller scale of the house or apartment. It has both small intimate spaces and large open spaces, areas for group activity and areas for individual contemplation.

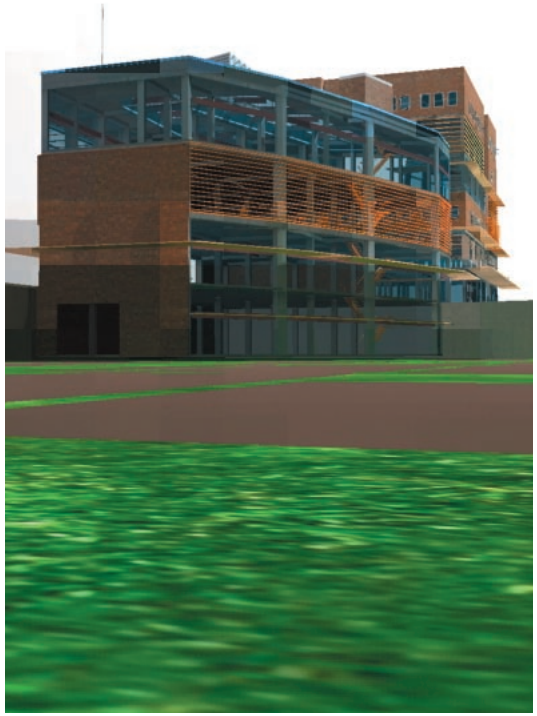
Through these design ideas the project becomes part of the community instead of existing alongside the community. This encourages both acceptance and participation by the community members. The project needs to have a visible public face and promote itself but it can do this without overshadowing the rest of the community.

Simplicity and human scale work to encourage usage. Each object works first at function and second at form although both are informed by their counterpart. The design is intended as a suggestion of possible solutions to the needs of the project and serve to illustrate the many considerations of design and urban agriculture. Each project will be different and an analysis of each unique condition should be conducted before a solution that fits the entire project can be found. The first choice should be simplicity that only moves to a more complex design idea, If, there is a need and financial ability.

All that is truly needed for a successful urban agricultural project, at least from a design standpoint, is land, fertile soil and the hard work of a grower. Certain challenges and opportunities may present themselves and allow for a designer to become involved. Certain wants may also be present and can also be the catalyst for a designer. The decision is ultimately up to the group and the project at larger. The needs and wants of the community should also be considered and attention to scale and schedule should be acknowledged.

Is the design of this project successful? It's hard to say. The decision is up to reader. It is hoped that the design, as put forth for review, meets the basic needs of the project while trying to include considerations of aesthetics, form and function and also strives to meet the ideals of the community.

The end goal of the design is to work to better the community through simple form without overshadowing the needs of the project and the community. This mimics the ideals of the entire project.



4.0 Evaluation and Conclusion

12.0 Evaluation of Cultural Intent

Introduction:

What is the Cultural intent of this thesis? The emphasis is on growing locally and the myriad benefits that it creates. Urban agriculture is a phrase that nicely sums up the basic ideas. Most people would understand the concept simply by reading those two words, but, they are just words and more important is the recognition of the intent.

Culturally this thesis proposes a change in thinking that is quite difficult for most. It suggests re-thinking the way we grow our food, were we grow our food and suggests we take responsibility for the places we live. The concept of a farm in the city seems unique because of what we are familiar with in our North American culture. Food is grown on the periphery, on the outskirts of town away from the cars and hustle and bustle of the city. Huge tracts of land are needed to efficiently grow food and without these huge tracts of land we would go hungry.

Food is trucked into a city because this separation demands it. If the trucks broke down we would all starve. Without the benefit of new technology and modern advancements in seeds and fertilizers, techniques and practices we would all want for food. There is a lack of food in the world and we must all work toward finding new ways to feed ourselves.

The reality is that almost all of these ingrained ideas are simply not true. The reality of the situation is that it can be very easy to grow our food in proximity to where we live, most cultures have practiced urban agriculture for thousands of years and if you look closely enough you will find that our culture has as well.

Huge tracts of land are not necessary for food production and tend to cause more trouble than good. Yes people are hungry but this is a result of unfair trade practices and restrictive farming. People aren't hungry because there isn't enough food, they are hungry because the food they do grow must be sold to another country for a dollar amount that won't allow the grower to even purchase enough food to eat.

Food is transported millions of miles due to numerous reasons but least of which is that we have become accustomed to getting what we want, when we want it. Our grandparents understood the idea of food being in and out of season, this is something that our modern transportation has made moot but at what cost?

Modern farming relies of chemically produced fertilizers and pesticides that are sold at outrageous prices that tend to force the farmer to enter into a vicious cycle of buying more to produce to more.

The rise of organics is a response to industrial agriculture and the question of quality and safety it creates. Working toward healthy eating habits and organic farming practices is a great way to make sure the consumer is healthy and the farmer can survive.

There are many other "new" ways of thinking that must be addressed if an urban agriculture project is to succeed. There will be some inevitable resistance to new ideas simply because they are new. It is important to remember that most of these ideas are not new at all and that we have simply been directed away from them by the advancements of our world.

Conclusion:

What is the cultural intent of this thesis? Simply stated it is to bring people together to work toward a goal of producing locally grown food. It is intended to educate and inspire and prove to all the skeptics that urban agriculture is very possible. The ideas expressed shouldn't seem so drastic when faced with the existing options. The goals of the project are diverse but connected. Building self sufficient communities, encouraging local growth instead of reliance on outside systems, promoting social interaction, healthy eating, economic development, ecologically and environmentally sound practices, physical fitness, healthy eating and healthy lifestyles, awareness and responsibility.

In addition this thesis seeks to promote community involvement and cross community communication. The project works to bring a diverse set of people together to work toward a common goal. The proposal shows that other options, that are economically viable, can be proposed for vacant land and space and that billion dollar investments and developments are not always the answer.

Brooklyn is a living breathing place with a diverse group of people. Transplanting the same ideas and techniques used in development around the world may not be the best answer. Analyzing the existing fabric of the place and responding to it

instead of sweeping it aside will allow for a more realistic and successful development.

Brooklyn is called the bedroom of New York. This thesis strives to understand that definition and work within it to propose an option for urban agriculture. In addition the ideas proposed in this theoretical project can, and should, be promoted in all urban agriculture projects.

The cultural nature of Brooklyn is unique but the simple needs of Brooklynites are not. Like all humans they need shelter, clothing, social interaction Other communities and cities, towns and villages around the world need the very same things and can benefit from urban agriculture.

Many cities already encourage local growing and many cities are making it part of their master plan (Vancouver) Urban agriculture doesn't need to be practiced on a large scale in order to promote many of these same cultural benefits. A small allotment garden can have the same far reaching goals, and successes, that a multi block project such as proposed in this thesis.

Our world is changing and will continue to change. The challenges we will face are unknown but the predictions are dire. Working to create cultural acceptance or ideas such as urban agriculture can help pave the way for smooth transitions instead of abrupt change. Communities like the one in this thesis are ripe for adjustments that will benefit the inhabitants and the greater society in which we live. Certain cultural adjustments will need to be made. When faced with these adjustments it is hoped that people will rise to challenge and see the benefits instead of merely being skeptical and resistant. Like the design of this thesis the cultural impacts are hard to assess without real world tests. The study of similar projects has led the author to believe that there is little wrong that can be the result of practicing urban agriculture. Our society seems to already be turning toward a more conscious and responsible set of ideals and urban agriculture fits nicely.

The cultural benefits are myriad and surpass the simple list put forth in this conclusion. With the pursuit of urban agriculture and local growing even more benefits will be revealed. Specific in some cases to place and growing and changing as new conditions are revealed. There seems no negative possible cultural impact.



4.0 Evaluation and Conclusion

13.0 Conclusion

Conclusion:

Section 1 of this thesis proposed 7 questions.

1.) Provide a case for the necessity of urban agriculture.

2.) Describe the history and realities of urban agriculture

3.) Describe the basic requirements for an urban agriculture project.

4.) create a theoretical framework for the establishment of an urban agriculture project.

5.) Prove that an urban agriculture project can establish a foothold both physically and economically.

6.) That this project can grow and develop, expand and be reproduced.

7.) That similar projects can be established in different urban centers and be just as successful.

The goal of the thesis was to satisfy each of these goals in support of urban agriculture. In conclusion we will revisit each of these goals and determine if the previous sections do indeed meet the criteria they set forth.

Goal 1

1.) Provide a case for the necessity of urban agriculture.

It is hoped that the introductory section and sections 2.1 and 2.2 make a good case for the necessity of urban agriculture.

Section 1 introduces much of the drive behind what this author believes to be a good argument for the need for urban agriculture. In brief it describes the changing world and changing economy that we all participate in on a daily basis. Attempts at prescient speculation will only meet with skepticism but it is clear that changes are in store for society, our lifestyles and the world. No one would argue that each and everything we do on this planet has some secondary effect. Luckily for our civilization we are at crossroads of a brave new world. This world is, on one side, filled with educated decisions and conscious, and conscientious, individuals who are now better educated about the realities of our environment and our ecology. The other side is set with old practices and decisions based in profit and unchanging. As individuals we can make a decision to move toward the more enlightened path or stay with the current situation and hope that it doesn't lead us to ruin. While this is opinion of the author there is a lot of support for this idea of change.

Section 2.1 shares with the reader a basic definition of what is currently accepted as urban agriculture. It differentiates between the social goals of urban agriculture and the economic goals and compares and contrasts the different types. In conclusion section one re-iterates the pros and cons of urban agriculture as perceived by the Lincoln Institute of Land Policy. In short this section tries to define urban agriculture in basic terms. This definition of urban agriculture is expanded on in other sections using specific examples.

Section 2.2 delves into more detail about what is not urban agriculture. This section is rooted in traditional types of agriculture and therefore has more specific case study history and examples. Of note is the discussion of industrial agriculture and current practices that are causing more harm than good. While traditional agriculture should still play a role modern society some of the methods used to produce food in our modern world are anything but healthy, to humans and the planet. This section, above many others, present a very good argument for urban agriculture. It is supported through review of existing urban agriculture projects such as those discussed in section 5 (Cuba) and the discussion of the benefits of urban agriculture in section 2.4.

Urban agriculture and local growing are a necessity in our changing world. Practicing local growing ensures our food security, our health, our communities and projects against the devastating effects of industrial agriculture. The benefits are numerous and the impediments are not insurmountable. Now is the time to put in place the framework for a different food supply system and these sections, and this thesis, illustrates how this is possible.

Goal 2

2.) Describe the history and realities of urban agriculture

Section 2.3 illustrates how the concept of urban agriculture is certainly not new to our world. Ancient civilizations practiced urban agriculture, growing food at a great distance simply made no sense in the ancient world. Only now in our modern world does this separation exist between farm and city. In medieval towns, Castles, and prehistoric cities urban agriculture was a necessity for life. With our modern advances and conveniences we can move our food production out of the city centers. It could be argued that through the course of history urban agriculture was the norm and our present arrangement the oddity.

Section 3.0 shows that even in our modern times there is a want, desire and in some case a need for urban agriculture. Allotments and Community gardens provide for the urban dweller who has no green space, backyard gardens help supplement many families food intake and during times of crisis city based growing provides support. Urban agriculture has been in existence far longer than our modern conception of a farm. It existed long before the barn and the grain silo, the tractor and the harvester. Jane Jacobs argues that without the city the modern farm would not exist, farming being the result of hunting and gathering and trade of seeds and plants in city centers. This author tends to agree. Urban agriculture was the first form of agriculture and one could say it is enjoying a resurgence.

Goal 3

3.) Describe the basic requirements for an urban agriculture project.

Every growing condition is different and has to deal with and overcome different challenges. To propose an ideal requirements and suggestion for how to practice urban agriculture this truth must be overcome. That, of course, is not possible. Section 9 attempts to bring to light many of the considerations for proper agricultural practice. Not being a trained farmer and a fairly novice gardener, the author primarily suggests learning how to grow from experienced experts. This section puts forth a decent checklist for growing in an urban center and other conditions. Section 6 discusses possible yields and also good practices taken from the study of existing agriculture. The ideas expressed in these sections tend to be ideas that, even in traditional agriculture, are unique and emphasize best environmental and ecological practices. Specifics such as SPIN farming and Permaculture techniques are suggested as tried and true methods. Specifically the SPIN method is suggested as it is the most readily quantifiable. With all growing projects yields are difficult to predict and certainly impossible to rely on. With attention to planning and good practices it is possible to lesson the variations in yield and therefore it becomes easier to control the season to season inputs, work and harvests.

The basic requirements for a successful urban agriculture are soil, seed and sun. The encouraged requirements are education, vigilance and determination.

Goal 4

4.) Create a theoretical framework for the establishment of an urban agriculture project.

Sections 4, 6, 7, 8, 9, 10 all contribute to establishing a theoretical framework for an urban agriculture project.

Section 4 Introduces the reader to Brooklyn, shows that there exists a history of growing, how that growing helped create present day Brooklyn, and what the place is like today. Brooklyn could, for the purpose of this thesis, be any dense urban center. It is true that Brooklyn does provide some specifics in geography and infrastructure that the design is geared toward or at least takes advantage of and while other Urban center would provide different challenges and situations the difference would most likely be a 1 : 1 trade off. Something like an established public transportation system may not be available but the issue of land value might be different. This section is intended to give the reader a broader sense of place. My personal experience living in Brooklyn affords me the benefit of an insight that helps to serve my design decisions and confidence in the viability of urban agriculture in Brooklyn.

As mentioned before section 6 goes into specific about yield based in the study area. This type of analysis is essential to any proposed urban agriculture project. Section 6 proves that there is enough vacant space and land to support an urban agriculture project, feed the community and generate surplus produce and / or profits.

Section 7 illustrates to the reader some of the design exercises and steps. While some may question the need for this section the author feels it is important to now only introduce a design idea but show the path to that idea. Many different designs have influenced this thesis in one way or another and it is important to list and describe some of them. These other designs and art projects help establish precedent and in some cases help to illustrate what this author considers the wrong direction. The personal design journey for this thesis help to reach the final design and helped to eliminate flights of fancy, more rooted in architecture than urban agriculture.

Section 8 describes the catalyst for the author's initial interest in the study area and site. While it is likely that the proposed development will go ahead as planned it is important to make a stand against it. This section shows the enormity of the proposal and the absurdity of the ideas juxtaposed with the present day reality and scale.

In addition this section shows a connection between the Atlantic rail yard site and growing in Brooklyn. Once an area heavily involved in food transportation and storage it is interesting to find that it could again be used in this capacity.

Section 9 is a specific detailed analysis of the site and the site conditions. The charts and maps point out the realities of the site and document the actual numbers involved. While a design project based in the theoretical does not necessarily need to address the realities of the situation the argument is strengthened if it does. For the un-initiated Brooklyn as a place can be hard to comprehend. We all have ideas of what New York City is and Brooklyn is typically lumped in to that same set of ideas. Experience is better than speculation and so these site photos help to immerse the reader in the project site, the different conditions and the community. The site photos also help to describe specific sites for possible growing. Although not every site was documented at the level that the sites used in design were their qualities can be thought of as similar.

Finally Section 10 proposes specific design in support of urban agriculture. This section will be discussed in more in the following goal.

Goal 5

5.) Prove that an urban agriculture project can establish a foothold both physically and economically.

Section 10.1 and 10.2 and 10.3 propose the initial design ideas in their steady state. 10.1 establishes the project and shows that it is rooted in plausible conditions. The ability to use spaces such as backyards and roof to grow fruits and vegetables supports the foundation of an urban agriculture project. Through the use of a story line the challenges that a project may be subject to at it's inception are documented. The idea of using backyards at no, or little, cost to the project proves that it is possible to start an urban agriculture project with a limited budget. The design ideas are simple and support the act of growing without requiring a lot of financial investment. The use of simple existing transportation, local markets and what is essentially a captive customer base it is possible to quickly generate a profit. This profit, while not a lot of money, can be divided amongst the participant or re-directed back into the project. The needed commitment from the group members is minimal to support this profit base with most members only working 1 hour a week.

Goal 6

6.) That this project can grow and develop, expand and be reproduced.

Section 10.2 shows that the project itself can grow, maybe more importantly that it must grow. Working in backyards to grow fruits and vegetables is an important part of the project but like any good business the project must have goals for expansion or risk stagnating. With increased exposure, and risk, come the opportunity for growth. In the case of the proposed design this growth is in the form of auxiliary spaces need for the proper management of the project and used as a way to give back to and reach out to the community. While profit is a key factor in this proposal like any good business community relations are almost as important. One of the goals of the project is to help develop the community, make it more secure and help it become more self sufficient. This happens on a micro scale with the group and the macro scale of the city but primarily at the mid scale of the community. Amenities can be provided without much more effort than what is needed for designing, building and maintaining secondary support structures. Allowing the project to grow is of up most importance and this section shows that.

While this expansion is limited to the proposed study area it is hopeful that any urban agriculture project has far reaching effects. Growing food and growing the community will help to set an example for other communities and the intent is that any urban agriculture project spreads through out the city.

Gaol 7

7.) That similar projects can be established in different urban centers and be just as successful.

Greater New York City is a very large place. Although only 7 million people live in the 5 borough proper the expanse of built environment along the eastern seaboard is immense and reaches from the Virginias to Maine. New York City, and Brooklyn, are excellent places to propose and test an urban agriculture project. As stated in the beginning of this conclusion the dense population base and existing infrastructure are elements that help to support the argument for urban agriculture. The reality is that these conditions are not unique to New York City and Brooklyn. Many other communities along the seaboard could easily support and urban agriculture project of the scale proposed or bigger. Places like Philadelphia, Boston, DC are prime locations for urban agriculture.

Section 10.3 is the proposed future state for the proposed urban agriculture project and illustrate many of the qualities needed for expansion of the project and replication of the project. The initial design uses disconnect plots of land in a study are that spans 36+ blocks. The project must rely of these parcels of land for the bulk of its profit production. The central site contributes to this profit and helps expand the profit base by supporting other money making ventures (supermarket, restaurant) The other function of this site, however, is that of public relations and public hub. Publicizing the goals of the project and the successes of the project this site acts as a billboard for urban agriculture. The activities that occur here not only encourage the local community to use the space but also people from the immediate 5 boroughs and beyond. To some extent it should be though of as an urban agriculture based theme park. This exposure will help to stimulate similar project around the city, the country and the world. Lessons learned and expertise developed can be exported to other fledgling projects and like the Cubans this knowledge can be shared with other needy or interested groups. Knowledge is free and establishing similar projects around the world can only make it a better place to live.

End:

While these answers to the 7 goals set forth are not the only answers they do prove that urban agriculture is viable. Urban agriculture in what ever form it may occur benefits people, places and communities. It helps to build food security and self sufficiency in Communities and positive social behaviors and self worth in people. It provides increases in health both physical and mental and builds local economies. In our ever changing world we have come to rely on too many systems that may soon become unavailable to us. By beginning to make a transition to the ideas of local growing and urban agriculture we may avoid catastrophe or in the least help to make our own lives better. Lets not sit idle while the world changes, recycling was always a good idea but took 30 years to gain wide spread acceptance. Urban agriculture doesn't need an infrastructure to be in place to work and is as simple as planting a seed, watering it and watching it grow. Now is the time to start a move to urban agriculture.

Personal Note:

Thank you for taking the time to read this thesis. I hope that it answered many of your questions or at least gave you something to ponder on your next trip to the garden or the grocery store.

Michael G. Ramsay December 9th 2006

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http://www.csrees.usda.gov/nea/food/in_focus/hunger_if_competitive.html

http://digitalgallery.nypl.org/nypldigital/explore/dgexplore.cfm?topic=history&collection_list=PicturingAmerica1497&col_id=190

Internet Links to Research Sites:

http://www.dsni.org/

http://www.ext.vt.edu/pubs/poultry/factsheets/designs.html

http://www.extremelygreen.com/pestcontrolguide.cfm

http://www.fallenfruit.org/

http://www.fairviewgardens.org/

http://www.foodshare.net/garden07.htm

http://www.foodfromthehood.com/2004-2005/food/Home/home.htm

http://www.futurefarmers.com/

http://www.greenguerillas.org/

http://www.greensgrow.org/

http://www.growingpower.org/

http://www.heifer.org/site/c.edJRKQNiFiG/b.734899/

http://www.isles.org/index.html

http://journeytoforever.org/cityfarm.html

http://www.justfood.org/jf/index.html

http://leadershipforchange.org/awardees/awardee.php3?ID=303

http://www.marketgardening.com/secure/library.php

http://memory.loc.gov/ammem/collections/panoramic_photo/index.html

http://www.mobot.org/jwcross/phytoremediation/

http://mse-research.mcgill.ca/envr401_2002/brownfields/analysis.html

http://www.mvrdv.nl/_v2/

http://www.na.fs.fed.us/urban/ucf_status2001_frames/urban_resources_p63_68.htm

http://www.nal.usda.gov/afsic/AFSIC_pubs/urbanag.htm

http://www.nal.usda.gov/afsic/AFSIC_pubs/urbanag.htm#toc7

http://neighbor-space.org/history.htm

http://www.nuestras-raices.org/

http://www.nyrp.org/nygt.htm

http://www.oasisnyc.net/gardens/cenycmapsearch.asp

http://www.pasafarming.org/

http://www.pennsylvaniahorticulturalsociety.org/phlgreen/ui_urbanagri.html

http://www.publicspace.ca/gardeners.htm

http://www.resourcecenterchicago.org/70thfarm.html

http://www.ruaf.org/node/795

http://www.sare.org/reporting/report_viewer.asp?pn=LNE96-077&ry=1996&rf=0

http://www.sarep.ucdavis.edu/Grants/Reports/Temple/temple88-225.htm

http://www.sethkushner.com/brooklynites/images_01.html

http://www.socialexplorer.com/pub/maps/map3.aspx?&g=0

http://soils.usda.gov/sqi/

http://www.somertontanksfarm.org/

http://therealestate.observer.com/atlantic_yards/

http://www.treebranch.com/

http://www.toronto.ca/health/tfpc_index.htm

http://www.tve.org/ho/doc.cfm?aid=997

http://www.usda.gov/wps/portal/usdahome

http://www.verticalfarm.com/

http://www.vpi.org/urban_farm.html

http://web.extension.uiuc.edu/homecompost/methods.html

http://web.ukonline.co.uk/fred.moor/soil/formed/f0108.htm

http://www.wyckoffassociation.org/museum/garden.html

The above links, while not directly qouted from served
to inform the thesis and add data and graphic media.