CONTINUOUS PRODUCTIVE URBAN LANDSCAPES: INTEGRATING AGRICULTURAL URBANISM INTO COMMUNITIES

By

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To the future, hoping you will learn from our mistakes and make things better for everyone.

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LIST OF ABBREVIATIONS

APA	American Planning Association
AU	Agricultural Urbanism
CPUL	Continuous Productive Urban Landscape
DEP	Florida Department of Environmental Protection
EAR	Evaluation and Appraisal Report
FGDL	Florida Geographic Data Library
FOG	Florida Organic Growers and Consumers
GIS	Geographic Information Systems
NIMBY	Not in my Backyard
TND	Traditional Neighborhood Development
TOD	Transit Oriented Development
ULDC	Unified Development Land Code
UF/IFAS	The University of Florida's Institute of Food and Agricultural Sciences
USDA	United States Department of Agriculture

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> As our society becomes technologically more sophisticated it also becomes biologically more ignorant. We longer know what we eat or drink or where our wastes are taken. –Rodney R. White

In a matter of 60 years, people have gone an agrarian lifestyle that persisted for thousands of years to a system where food travels several thousand miles away from another state or even country. Food is produced in bulk and sprayed with pesticides to protect them from insects that are becoming resistant to them. Food is pumped with preservatives to be “at the peak of freshness” when purchased several weeks later. In a generation, society lost its connection to food. Gone are local butchers, bakeries who you knew by name or corner stores with local and fresh food. Instead they were replaced with the “supermarket” with its thousands of varieties of food from all over the world and large parking lots for those driving from the suburbs, which were once prime farmland. The farming practices themselves are unsustainable with the use of pesticides that infiltrate into local water systems and contaminate soils. Is this a sustainable food system? No.

People need access to fresh food no matter where they are but, especially in urban settings. Also entwined with human nature are the social interactions between people, nature and their environment. Agricultural Urbanism (AU) can provide both. The goal of this paper is to research the main goals of agricultural urbanism and the main goals of open space and determine if there is nexus between the two. These pockets of open space within the urban fabric provide sustainable growth for a community, economic opportunities, and community pride. Creation of community gardens, urban farms and other agriculture will help define neighborhoods, create open space and provide jobs and most importantly, local food.

Research will use a case study methodology including policy analysis and geospatial analysis to study Alachua County, Florida. Through this research, the benefits of agricultural urbanism coincide with the elements of urban design, meaning agricultural urbanism potentially plays a role in producing social, cultural, environmental and economic communities, a goal of urban design.

CHAPTER 1
INTRODUCTION

As the world rapidly continues to grow to nine billion people, the Earth's resources are constantly stained above and beyond its capacity. Think about this: The Earth has about 8.8 billion hectares of useable land. With a growing population of nine billion people, that is less than one hectare per person. The average American needs about 1.8 hectares to maintain their lifestyle. If all nine billion people in the world lived like Americans, we would need an additional Earth to do so (Palmer, 1999). This is not possible and therefore unsustainable.

Another interesting statistic is for the first time in human history, more than half of the world's population is living in urban settings than in rural areas (Sonnino, 2009). With the developing world, such as China and India, demanding resources like developed countries, the Earth cannot and will not maintain this level of consumption. One resource that is constantly in the news is food. With a growing world population in mind, the demand for food in urban settings is rising while people who grow food are dwindling due to competition to larger, mechanized companies and the global food system.

Recent reports of food contamination affecting several states causing people to fall ill or die, famine in developing counties, and rising food prices at the supermarket are all cause for concern for everyone. Food is a necessity that should be available to everyone regardless of location, income or background. However, innovative people and communities are bringing back farming to the cities and their communities.

Many cities and communities across the United States and the world are taking the initiative to bring back local and sustainable foods. Local governments are

implementing policies, forming actions plans and engaging their communities to find if a sustainable food system is what the community wants and needs. Citizens are banding together and organizations supporting agricultural urbanism are forming.

This paper will use the case study of Alachua County, Florida to see if this community is willing and able to incorporate agricultural urbanism into their policies and way of life. Also, see what lessons have been learned from this case study.

Definitions

The definitions and terms used here all have varying meanings depending on the literature and by no means are universal. It is necessary to provide definitions that best fit this paper and define how these terms were used.

Community Food System

The American Planning Association (APA) defines a community food system as,

> emphasizes strengthening and making visible the relationships between producers, processors, distributors, and consumers of food. (Raja et al., 2008).

The main difference between this and conventional food system, today's global food system, is a matter of scale. While conventional food systems pulls from all over the world, community food systems pull from a smaller area, like within a city or region. This definition is needed to differentiate the effects of a conventional food system versus a community food system, which this paper will discuss at length.

Urban Agriculture

There are many definitions for urban agriculture from many sources and disciplines. The United Nations Development Programme defines urban agriculture as,

> an industry that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city, or metropolis, on land and water dispersed throughout the urban and peri-

> urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock (UNDP, 1996).

The American Planning Association (APA) defines urban agriculture as,

> the production of food for personal consumption, education or donation, or sale and includes associated physical and organizational infrastructure, policies, and programs within urban, suburban, and rural built environments. (Hodgson et al., 2011)

Bailkey and Nasr define urban agriculture as,

> the growing, processing, and distributing of food and other products through intensive plant cultivation and animal husbandry in and around cities. (Bailkey et al., 2003)

An area of urban agriculture, which is also important to agricultural urbanism that will be mentioned but not explored, is urban husbandry, i.e. livestock such as chickens and goats in an urban context. While important to the local food movement, there is not enough time or paper to go into this broad yet important topic.

The urban agriculture definitions would suffice if the paper was only about focusing on the urban element of community food systems, but as nature involves several species and environments and planning is interdisciplinary, everything is interconnected. As with the case with community food systems, there is more to it than just community gardens.

Agricultural Urbanism

A better term that encapsulates a more comprehensive view of food systems would be "Agricultural Urbanism." Agricultural Urbanism (AU) is,

> a planning, policy and design frameworks for developing a wide range of sustainable food and agriculture system elements into multiple community scales. Agricultural Urbanism refocuses economic, community identity, and urban planning and design in all aspects of food and agriculture systems. (de la Salle and Holland, 2010)

This definition takes urban agriculture a step further, by qualifying food systems as a vital infrastructure, much like water or roads (Hodgson et al., 2011). This definition will be used throughout the paper and will be the basis of the research. While urban agriculture and agricultural urbanism share similar benefits and issues, agricultural urbanism is a better fit for this paper. To have agricultural urbanism in a community, another element is needed to be defined, open space.

Open Space

Another definition is open space. A city or community has many opportunities for open spaces. Whether, preserved agricultural lands, natural landscapes, reclaimed former building sites or infrastructure corridors, open spaces are needed for several reasons. Along these lines, Andre Viljoen defines a continuous landscape as,

> network of planted open spaces in a city which are literally spatially continuous…sometimes referred as ecostructure or green infrastructure. (Viljoen, 2005)

This definition is important since many agricultural urbanism elements can be combined with elements of open space. This paper will explore these connections. This paper will use open space and green space interchangeably.

Productive Urban Landscapes

By combining agricultural urbanism with open spaces would be productive urban landscape. A productive urban landscape is,

> an open space planted and managed in such a way as to be environmentally friendly and economically productive. (Viljoen, 2005)

This definition incorporates the ideals of urban agriculture, open spaces and urban design. This urban design concept of rural to urban transect where food is produced in all types of lands uses from single family to the city center (Hodgson et al., 2011). This

definition also implies several activities and uses will be done on the same piece of land at the same time, in other words, a multi-functional, multi-use space.

Continuous Productive Urban Landscapes (CPULs)

By combing the ideas of Agricultural Urbanism, Continuous Landscapes and Productive Urban Landscapes create the concept of Continuous Productive Urban Landscapes or CPULs (pronounced See Pulls). A CPUL is,

> an open urban landscape, productive in economical, socio-cultural and environmental terms, constructed to incorporate living and natural elements, designed to encourage and allow urban dwellers to observe activities and processes traditionally associated with the countryside, thereby re-establishing a relationship between life and processes required to support it. (Viljoen, 2005)

By tying these terms together gives a complete vision of how growing food should be not be looked as just a means of sustenance but rather a community asset that should be celebrated, discussed and intertwined with other community goals. This paper will also use this definition to determine if CPULs are a viable option for Alachua County, Florida.

Research Objectives and Questions

This thesis will focus on the positives and negatives agricultural urbanism in and around communities. It will explore the economic, environmental, health and social elements of agricultural urbanism. The paper will then move on the positives and negatives of green spaces in and around communities. It is hoped the reader will be left with a better understanding Agricultural Urbanism and Continuous Productive Urban Landscapes and its relation to health, environment, social and economic attributes. Thus, they will be more informed and demand research and action into this topic of growing food in their communities.

The questions that will be asked in the paper are:

- What are the barriers to agricultural urbanism?
- Is Alachua County a candidate for Agricultural Urbanism? CPULs?

Agricultural Urbanism has the potential to help offset or help eliminate other problems that a community faces. As stated before, agricultural urbanism provides healthy, fresh and local food to the people into the community.

A city or region may want to have agricultural urbanism within their boundaries, but if the policies contradict or disallow it, how can agricultural urbanism happen without fear of being shut down. Many cities see this problem are correcting it and promoting agricultural urbanism. Some current research into the policies of Alachua County, Florida will provide insight into this question.

This research is relevant since a goal of planning is to create livable, sustainable communities. One way to achieve this is providing open spaces and places for people to interact. Agricultural Urbanism can help necessitate this goal. This research will hopefully show connections between agricultural urbanism, open space and urban design by looking at how their goals overlap. Planners should look at agricultural urbanism in addition to the traditional open space and park planning to enhance communities and provide an additional social element into their cities or communities.

CHAPTER 2
LITERATURE REVIEW

Why Agricultural Urbanism?

To begin the dialogue, the idea of a self-sufficient city is not new. Many of the issues we have today have been thought out before. Ebenezer Howard's Garden Cities are a great influence to today's urban designers. In his city plan, these compact cities would have workplaces on the perimeter: farms, factories, asylums, etc. The next "ring" would have homes complete with gardens and the occasional group kitchen where people can process their fresh goods. In the center of the city would be community buildings. In between the" rings" would be continuous green belts, areas of open space where people can connect with nature. Other garden cities and the "Central City" could be connected with an inter-municipal railway. This way, people would depend less on personal transportation and more on available transit options (Lyle, 1985).

Another reason is a Green Urbanism principle. This principle states, "The city for local food supply, with high food security and urban agriculture." This includes local food production within the city and regionally, and eating "locally. (Lehmann, 2010)" This "slow food" movement in turn will reduce the need for longer distance fossil fuel food consumption. The reduction in "food miles," discussed in a later section, will help decrease the need for unsustainable food consumption. Community gardens will share the crop yield and everyone participates. Food scraps and clippings are composted and used as fertilizer.

Today's model of global industrialized food system provided a benefit of food from all over the world and competitive prices, however the system is unsustainable in various ways, unsustainable environmentally, socially and economically. Agricultural

Urbanism provides a way for cities and communities to rely less on competitive food market and grow their own food within shorter distances. The current food system does not reflect the true cost of food like soil erosion, air, water and soil pollution, exploitation of cheap labor to threats and adverse consumer health effects. These are subsidies to these corporations and are clearly not in the public interest (Deumling, 2003). Consumers are not aware of these subsidies and those that do know do not care since the price is right.

As traditional land used for agriculture is converted into other more intense land uses like suburban subdivisions, big box retail and office parks, the growing need to feed the masses is ever present. With so many urban centers left vacant and underutilized, is there an alternative use? Agricultural Urbanism may serve that void.

With an increase in food insecurity and the need to feed their families, agricultural urbanism is a way to provide fresh fruits and vegetables to their families and maybe even sell their surplus (Bailkey et al., 2003).The UNDP estimates 800 million people participate in urban agriculture (Dongus, 2001). It is projected one million households in the United States are involved in community gardening (Blair, et al., 1997) and an estimated 10,000 community gardens within US cities (Parham, 2003). Could government help foster local or regional food growing with integrated policies that include food growing and open spaces?

The reasons for participating in agricultural urbanism vary from person to person but mostly are economic related. In a survey done in 2010, six out of the eight reasons for participating in agricultural Urbanism was economic related. These reasons were production for home consumption, income enhancement, economic crisis, high prices of

market food, income or asset diversification and supplementary employment (Nugent, 2010). People are trying to save money in these tough economic times. Agricultural Urbanism is not only a way to do so, but also to help create healthier communities.

Planners and local governments have generally had a limited interest or exposure to community food systems and agricultural urbanism. However, concerned citizens and advocacy groups are collaborating to bring the need for a more sustainable food system. Working with local government and planners, communities are looking at way to incorporate agricultural urbanism like providing infrastructure, working with local food organizations and other policies and regulations (Raja et al., 2008). The amount of involvement from local governments varies from community to community, but the broad awareness is a catalyst for involvement.

Many cities and municipalities are seeing the need for planning healthy communities. This can include but certainly not limited to small to large scale urban farms, community gardens, farmer's markets, and green roofs and walls. All of which should be within walking distance to residences. Increased awareness for more livable communities, especially with a food element is critical for todays and future cities. Along these lines, physical activity is needed for a healthy lifestyle. Cities and communities can provide places for recreation and also food growing. By combining these two elements they can fulfill this goal of healthy communities and providing green and open spaces.

Alachua County also has a goal of encouraging people to live in areas where services and infrastructure is present. By promoting higher densities in these service areas and lower densities outside of service areas will create more compact

communities than current land development. Agricultural Urbanism can help with this goal by leaving low density land as agricultural land and green space while higher density areas have population but also opportunities for growing food in public spaces.

Food Deserts

Much of the land is in the urban core is unused or abandoned. These vacant lots could be used for farming in the urban setting. These farms could help provide fresh and nutritious food to people who do not have means to get fresh food. These urban gardens can also help bridge the gap, the “food desert” effect. This effect is when there is a lack of grocery stores or places that provide fresh food in low and moderate income areas (Raja et al., 2008). The only food options available in these places are fast food restaurants, gas station convenience stores and the like. The current market system fails here since grocery stores business models target people with certain incomes, excluding many areas low income areas. Therefore, fast food chains and other unhealthy options “fill the gap” by providing “food” that is cheap and accessible. Alternatively, these people are forced to take lengthy, limited or disconnected transit or have to take expensive taxi service (Bailkey et al., 2003). If they are able to get fresh food, they face a high spoilage rate due long distance they have to travel. This lack transportation coupled with the lack of places of healthy food options has led to food deserts (Raja et al., 2008).

Finally, agricultural urbanism only needs four basic resources: land, water, nutrients and energy. All but the first one can be found abundant in urban or rural setting. Water and nutrients can be found in the waste water and sewage that is piped off and treated without harnessing its valuable components. Energy can be found in what is regarded as waste, refuse, leaves and tree trimmings (Lyle, 1985). In a way, the

whole communities energy, whether energy is human ingenuity or sweat equity can be put it better use. Agricultural Urbanism is the way communities can think smarter about their resources and surroundings.

Self-Reliance

The ultimate goal of agricultural urbanism and continuous productive urban landscapes is the independence from the global food system. By implementing local food growing policies, communities can be self-reliant instead of being subject to fluctuations in global food markets. Rather the dependence on local and regional foods makes communities more sustainable and a stakeholder in their growth and prosperity (de la Salle and Holland, 2010).

Of course a community cannot change how they get their food in a day, week, month or even years. Changing people's thought of food is incremental. Agricultural Urbanism recognizes this dilemma and allows for local food to supplement their food source at the beginning with the underlying but eventual replacement of the global food system with local and regional food systems.

Ecological Footprint

What is Ecological Footprint?: To define what ecological footprint is, another concept must be understood beforehand. The carrying capacity of an area is "the extent to which an environment can tolerate a given kind of use by a given type of user." In relation to ecology, carrying capacity is defined as "the number of individuals that the resources of a habitat can support without significant deterioration (Steiner, 2008)." In other words, there is a limit to how many people a place can support. In relation to planning, carrying capacity calculates the amount of growth an area can sustain. This method works to

see how long it will take to reach capacity for infrastructure like schools, hospitals or roads.

Current studies show the carrying capacity for the Earth is reaching its limit. These studies in turn have planners using carrying capacity in terms of sustainability goals, to show the limits of open and green space and recreational opportunities in their communities.

To further the concept of carrying capacity is ecological footprint. Defined by William Rees as, “the aggregate area of land required continuously to produce the resource inputs and to assimilate the waste outputs of that population or economy wherever the land may be located (Steiner, 2008).” In simpler terms ecological footprint is Earth’s version of supply and demand. The supply side is Earth’s bioproductive capacity. The demand side is a population’s need of this capacity by consuming goods and resources (Hurley et al., 2007).

Given this definition, many countries have far reaching effects. Since World War II, much of the world expanded out into the agricultural land, placing low density, detached residential housing far from the city and jobs creating a car dependent culture. This ideology in turn led to high consumption of land, fuel and resources (Hurley et al., 2007).

In relating ecological footprint to planning, ecological footprint proved a valuable tool in evaluating the ecological demands versus housing, transportation, and other land uses.

Strengths and Limitations of Ecological Footprint: There are positives and negatives to ecological footprint. While it does point out the ecological need for more

green space and conservation of resources, it is not an all-inclusive measure of sustainability. However, it is an excellent decision making tool that allows its users to set goals and see how the development is having a positive or negative effect on the ecological aspects of the area (Hurley et al., 2007).

Food's Ecological Footprint: The ecological footprint of Earth can be further be broken down. All of Earth's usable space is not agriculturally capable. In 1999, Earth had about 1.3 billion hectares of cropland and 3.4 hectares of pastureland. If all usable farmland was used just for growing, each person on earth would be allotted around 0.4 hectares, if things were equal, but they are not. The average American needs 1.3 hectares to sustain their quality of life (Palmer, 1999). Today there is even less farmable land while world population increases to nine billion. If current trends of increasing population and demand for food, there will be a food shortages and a run on food prices.

Today's food system requires vast amount of energy to produce food. Food is being engineered to be super abundant. However, the cost is these few super productive grains is reducing the variety of the grains and replacing native grains with hybrids. These hybrids while super-efficient are susceptible to disease and pests. This vulnerability led to the use of powerful pesticides to combat them (Deumling et al., 2003). These pesticides can be absorbed into the food and passed onto the consumer, us. In addition to poisoning our bodies, the land is also affected.

Land used in today's monoculture food systems is intensely used. These super foods require immense nutrients for them to be viable, increasing the amount of nutrients needed in the soil. The excess nutrients can leech into the ground water.

Industrialized, large scale farming also exasperates soil erosion, habitat destruction and disease resistance (Deumling et al., 2003).

By reducing the impact of food production and consumption will help communities be more sustainable and live within Earth's means. Reducing communities food footprint will help attain other environmental needs. By moving to more sustainable farming methods will reduce excess nutrients from infiltrating ground and surface water.

Alachua County can benefit from this study since it takes a detailed look into existing infrastructure for agricultural urbanism and what issues they face. This study also investigates the existing and proposed policies Alachua County has constructed. This study will be available for Alachua County planners and local decision makers.

Benefits of Agricultural Urbanism

Agricultural Urbanism has economic, environmental and social benefits. In addition to these sustainable aspects of agricultural urbanism, the programs and people it supports can help citizens attain a better quality of life in their communities. This section will introduce the various benefits of agricultural urbanism.

Economic Benefits of Agricultural Urbanism

In 2009, The U.S. Department of Agriculture Economic Research Service calculated Americans spend more than $600 billion on food prepared at home and $526 billion on food eaten outside of the home (Hodgson et al., 2011). This is fine, but this equation does not value the true cost of food. Now, with the fluctuation in energy costs and instability in countries where America's food comes from, people and communities looking for ways to incorporate agricultural urbanism into their policies. In the process, they are finding the economic benefits.

In the simplest economic terms, agricultural urbanism can help offset food related costs by growing it themselves. Today's global economy is suffering from the lack of jobs and a surplus of workers. This inequality led to people having less money to spend on food. To add to the problem of less money, the cost for food rose significantly. Poor families can spend 60-80% of their income on food (Nugent, 2010). By growing their own food means these families will rely less on high priced food and can grow their own for much less than high priced groceries.

Also agricultural urbanism can help create jobs. People who participate in agricultural urbanism do so to supplement their income and provide employment opportunities to the underemployed or temporary unemployed (Nugent, 2010 and Lehmann, 2010). In this economy, people can use this time to grow food or help process. This can also be an opportunity for people to learn new skills or change occupations.

In addition to the social and physical benefits, the economic benefits far outweigh the negatives. First off, agricultural urbanism provides a proximity to local markets. Cities were formed to have a market for goods, this holds true here. By being close to the source, the idea is costs are kept low and are not passed on to the consumer. Cities producing their own fruits and vegetables within their limits are savings on food expenditures related to transport, preservation and packaging. More energy is needed for food in conventional food systems than what people get out of the food themselves (Duany, 2011).

In a study in Ouagadougou, China, showed the positive economic impacts and increased food security for the growers. In this article, people used agricultural urbanism

to grow their own food and sold the surplus. This concept is especially true when the people did not have a formal education. By not depending on third party distributors, the growers became the producers and the distributors. This significant savings helped them gain more purchasing power and kept the money local as opposed to leaving the area for corporation headquarters (Viljoen, 2005). Thus a multiplier effect comes into play. With the money staying in the local economy, the money is spent at local businesses and the money stays in the realm of the community, reinforcing the local economy. This economic cycle is important to a community since money spent locally helps generate taxes that help support community services.

In addition to growing the food, the processing, marketing and packaging can generate economic opportunities and employment (Nugent, 2010). Planning and government officials can help develop agricultural urbanism by incentivizing common processing facilities used by many producers and increase the value added to their products (Hodgson et al., 2011). Governments can also save money by incorporating agricultural urbanism into their communities. By leasing out their land to citizens, the citizens will maintain the area instead of paying for landscaping services. Also, instead of money being wasted in acquiring more land for landfills, garden and food scraps can be diverted and broken down into compost or methane to be sold off.

To further the economic benefits of agricultural urbanism, the transport costs are reduced. Food on average travels 2000 kilometers (1242.74 miles) from farm to plate (Garnett, 1996). Fossil fuels used for transportation of food goods generate 1/8 of the world's energy use (Goldsmith, 1996). Another statistic is food travels 1,500 to 2,500 more miles than they did in the 1980s (Bailkey et al., 2003). By growing food within their

community, on open space, vacant land, on rooftops and on walls will significantly reduce travel costs therefore cutting overhead costs for the producer and in theory the savings are passed on to the consumer.

Another economic benefit of agricultural urbanism is the use of vacant land when other demands for the land are low. In this current economy where there are vacant properties due to foreclosure and abandonment, agricultural urbanism provides a demand in the interim. Bid rent theory explains this phenomenon. The theory goes that land is finite in the city. As a result, certain land types are willing to pay more than others. They “bid” until one land use prevails. Commercial is willing to pay the most, then industrial and then residential (de la Salle and Holland, 2010).

This forms “rings” just like in cities where there is a central business district with industrial uses surrounding it and residential outside of the bustle, crime and lack of green space of the city, also known as the suburbs.

However, even if land is not available in the city, there are opportunities for growth on almost any surface. Rooftop gardening, vertical gardening and property owned by the government can all be used for growing food (Hodgson et al., 2011).

So why are there not many agricultural uses in or near the city? Agriculture uses are outbid by the other uses. This model can also explain why much of America’s farmland is being converted into suburban sprawl at alarming rate. The demand for housing far outweighs the profit margins of operating a farm. This problem not only exacerbates the growing need for food as populations grow, but also reduces the already limited and scarce open and green space. With policies that promote and encourage open space and agricultural urbanism, cities can ensure the protection of

urban food and create incentives. By creating value for preserving agriculture land around cities, will help safeguard communities from future global food events that might affect the local food system (de la Salle and Holland, 2010).

However, this model may be obsolete due to the current global economy. Over the decades, many cities have lost population to the suburbs and thus have vacant buildings and after time, vacant lots. Some lots have remained vacant for 20 -30 years (Bailkey, 2003). Agricultural Urbanism can also contribute to the positive increase in property values, median home values and rent (Hodgson et al., 2011). Agricultural Urbanism can be a positive to a blighted neighborhood and will be discussed later in the environmental section, the potential to help clean up brownfields and other sites of contamination.

Not only will agricultural urbanism help with job creation, it also relates to technological innovation. Growing crops in an urban setting provides its own set of problems. With research and development companies will come to the area helping solve these problems, thus providing more jobs and collaboration. Clustering of similar agriculture uses and support firms will help further technological advances by knowledge share and attract population. Also by clustering will create stronger local economies (Hodgson et al., 2011).

As stated before, agricultural urbanism can help foster entrepreneurs. Small businesses can flourish in this environment. Education programs can help teach people new skills, especially youth to grow gardens in an urban setting. By showing the connection from seed to plant to plate, people will better understand the need for fresh

food in their community (Bailkey et al., 2003). Opportunities like selling the surplus to others and restaurants are also an added economic benefit.

Another reason is the rising cost of food. Many developed countries have been sheltered from the growing food crisis in developing countries like the food crisis in 2008. The current global market system traditionally has not included the true cost of food. Meaning, the costs of production, transportation, and negative externalities like pollution from pesticides and runoff from feedlots which do not have a cost associated with them are not passed onto the consumer (de la Salle and Holland, 2010). It is hard to ignore the famine going on in Africa and other parts of the world almost cyclically. However, many Americans are taking notice of the plight abroad and now in their own grocery stores. According to the World Bank, 2011 food prices are on average 33% higher than they were in 2010 and almost equal to 2008 prices (World Bank, 2011). It is true the increase of prices could be due to the unrest in the Middle East , weather and weak crop yields, elevated fuel prices, increased biofuel demand and several other factors, but the main condition is evident that developed and developing countries are relying on the same food sources and competing for them (Chappell & LaValle, 2001). This issue can be countered if more food was grown closer to the people, which would help offset the dependence of foreign food.

Social Benefits of Agricultural Urbanism

While never fully quantified, the social benefits of agricultural urbanism are still important and have value. Policy makers and planners have a hard time quantifying the effects of agricultural urbanism and presenting them to get policies approved. There are many studies about agricultural urbanism and its benefits but they are hard to define and compare.

Education is important for agricultural urbanism for prosper and flourish. Food Literacy is defined as, “the understanding of how food is produced, transformed, distributed, marketed, consumed and disposed of (Hodgson et al., 2011). Many people, especially children do not know where their food comes from. Many will answer “the supermarket.” People have lost touch with their growing roots and lack the necessary skills to grow and cook their own food. Over processed foods like fast food and TV dinners while convenient do not give the body the necessary nutrients and give it all the wrong ones. Food literacy will help reclaim the food roots of the past. Governments should use all forms media, including social media, to educate the public on agricultural urbanism. Also by providing hands on classes and displays will also provide benefit (Nordahl, 2009). Being food literate will help people make better and healthier decisions about their food.

Food security is an important factor to consider. Food Security is defined as, “a condition in which all community residents obtain, a safe, culturally acceptable, nutritionally adequate diet through sustainable food system that maximizes community self-reliance and social justice (Community Food Security Coalition, 2010).” Today’s global food system is distributing food unevenly. Food is being exported to the highest bidder rather than to where it is needed most. According to Food and Agriculture Organization of the United Nations, approximately one billion people are malnourished today (Chappell & LaValle, 2001). Despite the United States being the number one food exporter, thirty six million Americans are experiencing hunger or at the risk of hunger (Deumling et al., 2003). This also includes thirteen million children in these homes (Bailkey, et al., 2003). U.S. households spend between 10 and 40% of their income on

food (Sonnino, 2009). The rapid growth of cities and the development of farm land into other land uses have contributed to this phenomenon. Local food growing will help increase food security to individuals, groups and communities. Food security can be described in two ways, one where the individual or household grows food so they can overcome economic barriers or two where a community wants to achieve their food needs in a more sustainable and environmental way (Anderson & Cook, 1999).

The disconnection from the city from its rural roots is served by the ever increasing dependence of a global food market rather than a more local or regional sourced food (Sonnino, 2009). Agricultural Urbanism rather helps increase food security to help urban dwellers get food in places where traditional stores do not supply or exist. With more and more people looking for opportunities, finding ways to feed them are more important than ever.

Beyond food security, the social element that agricultural urbanism provides is invaluable. Many gardeners value the social element of producing food than the actual food security it provides (Kortwright & Wakefield, 2009). The sharing of food grown plays a vital role in creating relationships with neighbors and communities (Ban & Coomes, 2004). This relationship in turn connects people to their neighbors and communities and helps people share their growing techniques and trade the food they have grown. Agricultural Urbanism also provides a sense of place for communities and its citizens can relate easily (Martin & Marsden, 1999). Social interaction can happen among people of different backgrounds, ages and ethnic backgrounds (Hodgson et al., 2011). Also growing food is way to acclimate to a new life in a new country but yet retain their cultural identity and pass on their knowledge to people willing to learn (Kortwright &

Wakefield, 2009). All of these reasons give rise to one common dominator: that all growers find some sort of enjoyment and satisfaction from growing their own food.

People getting to know their neighbors also get to know their growers. Agricultural Urbanism can create relationships between the consumers and producer farmers (Hodgson et al., 2011). Also the sense of empowerment of neighborhoods and organizations is apparent when like-minded people come together for a common goal, a goal of local and community food growing. This can be a beginning of community engagement in other issues related to the neighborhood.

When people come together to for agricultural urbanism, they are care of the place. With ignored land turned into a gathering place and more people in the area, agricultural urbanism can help deter crime. Growing food can be rehabilitative by being an alternate for drug use and crime (Viljoen, 2005)

As stated in the environmental section, today's food system is dependent on traveling long distances to feed people. The dependence on fossil fuels is unsustainable and requires preservatives and pesticides to "maintain freshness". People value what is put in their food. People who grow can control what is used to grow the food and people have control as to what they put into their diet. Agricultural Urbanism can help achieve this by growing what they want and what they need. It can be postulated that people are vested in their community through agricultural urbanism. People value the important of eating and growing locally, and one way to do so is by growing their own food.

Agricultural Urbanism visually to the passerby or neighborhood is better than the former trash filled, weed laden, high crime area. A green space is valued in a dense urban setting. In terms of being neighborly, agriculture urbanism is easier on the

adjacent and surrounding parcels compared to other land uses like industrial or commercial (Bailkey et al., 2003). People will see other people engaged in growing food in their neighborhoods, creating community pride.

In a study of regional impacts of agricultural urbanism stated, “Land owners who rely on local businesses and services for their needs are more likely to have a stake in the well-being of the community and the well-being of its citizens” (Krinke, 2002). The local and regional pride aspect will ensure people will take care of the businesses in their community which may affect their spending habits to trump local over big boxes.

Environmental Benefits of Agricultural Urbanism

To add to the economic benefits, agricultural urbanism has a positive benefit to the environment. The impact on the environment with the reduction is greenhouse gases is a positive externality to city dwellers, suburbanites and the world. By doing so, food will travel less food miles, thus lower consumption of fossil fuels used in cars, trucks, trains, freighters, and airplanes.

Food Miles: Today’s food system allows for food to travel several thousand miles from the farm where it was grown to where it will be ultimately be consumed. This concept is often referred to as “food miles.” It is estimated in the United States, food travels an average distance of 1,500 miles. This is due to developed countries relying more and more on food produced in other countries. This statement holds true in the United States where on average, one meal can be comprised of food from at least five countries (Pirog, 2003).

Transport: This unsustainable consumption means food is traveling farther and farther to reach the American dinner plate. By growing food where people live, Americans will rely less on foreign food and more on “local” food. Purchasing food that is grown locally

decreases the need for energy in the form of fuel and refrigeration (Bailkey, et al., 2003). The transport of food long distances and processes needed to preserve them creates a disproportionate amount of energy consumed.

Biodiversity: Another point is the biodiversity agricultural urbanism can provide. Today's global food production of high input, high yield, yet monoharvesting led to less biodiversity (Chappell & LaValle, 2001). To attain these high crop yields, farming practices dictate that artificial fertilizers and pesticides be used. Not only does affect the soil, air and water, but the animals that rely on these resources are affected. The diversity of crop varieties has decreased due to the specifications by the food manufacturers for their ability to withstand long transport or processing. In addition, the reduction of species can lead to widespread crop failure (Viljoen, 2005). However, by diversifying what is grown and when they are grown can further reduce the need for harmful chemical and pesticides. In addition, the symbiotic relationship between the crops and its natural surroundings furthers the interactions between them (Lyle, 1985).

In 1990, the USDA, United States Department of Agriculture, initiated the Organic Foods Production Act. Standards for organic growing were adopted in 2002. By 2008, 4.8 million acres of farmland were dedicated to organic production (USDA-ERS, 2010). By farmers adopting more sustainable practices, their effect on the environment and the animals that live in it, is minimized. Also gardeners who follow organic practices get the added benefit of compost from food scrapes not having to worry about any chemicals left over from pesticides.

Processing and Packaging: The manufacturing process for food in today's system is intense. The ingredients to make a processed food may come from all over the country

or world. In some cases, it takes more energy to transport and preserve food than the actual energy the food contains (Lehmann, 2010). In addition, the consumer is tricked into thinking the “value added” to these processed foods are better and therefore are willing to pay more. In reality, the ingredients are much cheaper in price and quality (Viljoen, 2005).

Packaging is also designed to withstand long transport and to attract the consumer. In addition to this packaging there is secondary packing in the form of crates, boxes and the like (Viljoen, 2005). This waste can be reduced significantly by communities locally sourcing their food.

Pesticides: Another benefit is the reduction in pesticide use and preservation chemicals. Some pesticides remain of the food and require extensive washing or peeling of the skin (Viljoen, 2005). Food travels less distance and thus do not need the harsh chemicals need to preserve them long distances. With less travel and handling there is less of a risk of contamination and damage associated with traveling. More than 50% of food spoils in transit (Bailkey et al., 2003).

Also by reducing the food miles traveled will also reduce the amount of “handlers.” As more people touch the food, increases the chance of spreading infectious diseases. Food processing centers do not handle one type of crop but several crops, which also allows for cross contamination. This is an important point with the recent outbreaks of Salmonella and E-coli on plants being transported across the country infected thousands instead of an isolated incident. By growing food locally will help create a buffer when another outbreak occurs since the food will not be widely distributed. Local or community grown food is valued since there is a connection to the food since people

know here it came from. This idea is important since today's global system lacks this and many people do not know where it came from or who or what handled it (Kortright & Wakefield, 2009).

Waste Recycling: Agricultural Urbanism also provides for a system of recycling its waste products. Instead of heading for a landfill to turn into methane gas which reduces air quality, instead food scrapes are broken down and used as compost and fertilizer on the land. The nutrient rich compost is incorporated into soil to grow more crops. Though not discussed in length in this paper, waste from livestock is an excellent source of organic fertilizer for crops and is used if available if cities allow it (Nugent, 2010).

Brownfields and other contaminated sites can be cleaned up with the help of agricultural urbanism. The U.S. General Accounting Office identified 130,000 to 425,000 former industrial lots that can be cleaned up (Bailkey et al., 2003). The added benefit is agricultural urbanism provides green spaces in the urban fabric. These green spaces can enhance the livability of cities (Sonnino, 2009).

Obstacles to Agricultural Urbanism

There are obstacles that agricultural urbanism faces. The environmental and health issues, especially in an urban context can be complex and hard to overcome. However, innovation and practical solutions are out there.

Highest and best use?: Will these green spaces be converted back to a higher use like housing or parking lots once demand for those uses pick up? An example of this problem is in New York City, where a part of the city, lower East Manhattan, Loisaida was used to provide space for urban gardens. With an increase demand in housing for the area, the pressure to preserve these gardens or develop became a central theme. The proponents for the preservation of the gardens were the ones who

used them. The developers pressured local government to get development in. In the end there some gardens were converted to development while others were saved by community activism and government support to purchase the land (Schmelzkof, 1995).While agricultural urbanism provides many social and economic opportunities, there are issues with a “higher and best use” of land. By the local government protecting these areas or incorporating them into open spaces, some issues of development can be avoided. Additionally, the down economy decreased demand for other intense uses, making agricultural urbanism a viable alternative. Again, protections need to be granted so when the economy picks up, these spaces will not be demolished and built upon.

Water: Water is a barrier for agricultural urbanism. Water is an essential element for any agricultural operation. Without it, the whole mission is for not. The cost of water is rising and competition between regions for who owns the water is a concern. Much of the reclaimed land in cities where structures were, the plumbing and water meters were removed making watering difficult. This is a costly expense to the grower when watering is required several times a week. Even if there is infrastructure available, the water rates for domestic use rates are significantly higher than agriculture use rates.

Weather: However, there are limitations to growing. As with any agricultural production, there is a variable of weather. There are wet and dry seasons in every part of the world. A study showed the weather played a critical part in the growing of food. Areas with better growing seasons had a better quality crops and thus higher wages than less performing gardens. In addition to this, the type of vegetables grown had an effect on purchase price (Gerstl, et al., 2002). In addition, areas of the world are not suitable for growing or have limited growing seasons due to weather. Weather plays a role of when

people can grow but also what they can grow. Weather can also damage or eliminate whole crops yields. Weather can also hold ramifications for future growing seasons such as a drought or natural disasters.

Tree Canopy: Ironically, one of its own is an issue for growing food. Agricultural Urbanism requires lots of water and sunlight to have a productive growing and harvesting season. A tree canopy can hinder the ability to grow vegetables (Kortright & Wakefield, 2009). Proper consideration and placement of crops can help mitigate and elimination this issue.

Despite this potential setback, agricultural urbanism has a solution. Agricultural Urbanism incorporates another aspect of food production; in addition to growing food, there as an aspect of forging. Areas where this is a dense forest canopy where sunlight does not make to the ground is more than likely largely wooded and uninhabited. These areas are an opportunity for foraging for things provided by nature such as berries, nuts, mushrooms, and fruits (Duany, 2011).

Time: Time is something that is always in short supply. Time can play a crucial role in growing and gardeners need to understand that it takes time for plants to grow and fruit. This issue comes back to education; by knowing when to plant and harvest can help reduce time loss. However, with improved gardening skills, time can be effectively utilized and thus less time is needed to grow.

Pests: Pests in the form of animals and insects can wreak havoc on plants. They can target a specific plant or just eat everything in sight. Such pests can deter people from growing or turn them away. The mess and waste pests leave behind are also negatives that many growers do not want to deal with. (Kortright & Wakefield, 2009) Again

education of what kinds of pests effect the area and natural ways to help deal with them will help retain crops yields.

Another pest that can hurt the viability of agricultural urbanism is people. There are many reports of vandals that steal vegetables and fruit at night when no one is around. With an increase of hungry due to downturn economy, there is an increased demand for food and many will do anything to put food on the table. Again, education can help people learn how to grow so they can participate in the growing or harvesting process, in exchange for their hard work, they can get share of the crop yield. Alternatively, educate them on the viable options like food banks or nonprofits to them with their dietary needs.

Non Market Externalities: Many of the social benefits of agricultural urbanism do not carry a “financial benefit” though their outcomes far outweigh any monetary benefit. For example, implementation of a community garden in a community can help foster neighborhood interaction, making the area safer due to more people on the street, feeding people who might have the means or access to fresh foods and teaching children about where food comes from, giving seniors, children and everyone an activity to do together are all respectable goals but lack any monetary correlation (de la Salle and Holland, 2010).

Despite the advances that agricultural urbanism achieved, the market has yet to realize all the benefits and costs and equate them into monetary values. First, it is hard to quantify the value of food when much of the food is produced for self-consumption and not sold in markets. There is no standard methodology for comparison of food items (Nugent, 2010). Some of the positive externalities (social interaction, food security,

environmental) and negative externalities (illegal use of land and water and stealing of grown food) needs to be discussed in planning policies. Local governments can help bolster the case for agricultural urbanism by documenting their results and partnering up with colleges, universities and other organizations (Hodgson et al., 2011).

Government: Many policies in place make it hard for urban agriculture to succeed. Zoning issues, permits for operations, standards for processing facilities and commercial grade kitchens are often impediments for the people or groups to start growing or processing operations. At the state, national and international level, there are regulations that rank economic competitiveness over local foods (Sonnino, 2009). By providing these facilities that are up to building and health codes will get more traction in agricultural urbanism.

Another reason is the relation of government to the local need. The closer the government is to the people the better result of action or at least being heard. Local leaders are more apt to respond when citizens are knocking at their door as opposed to leaders at the federal level (Winne, 2008). Generally local leaders are more accessible than their federal counterparts. By connecting and activating people and local organizations that care about agricultural urbanism, governments will react faster in the face of adversity. Local governments can be proactive by listening to citizens' concerns before they have a public relations nightmare on their hands.

Another aspect of government is that people in power change and change constantly. This change from administration to administration can shift priorities (and money) to other issues that they deem important (Sonnino, 2009). This means one administration might view agricultural urbanism and food policies not necessary and get

rid of funding or support. Again, citizens and organizations must keep the pressure to fight agricultural urbanism in the forefront. Government employees should look for traditional and nontraditional ways of funding to grow on public lands like Capital Improvement Programs (CIP) (Nordahl, 2009).

Health and Safety: The very soil that is used for agricultural urbanism can be an obstacle to overcome. The site's previous use may have contaminated soil with heavy metals, acids, bases, an overabundance of nutrients and other contaminants.

These containments can pose a health risk to people who come in contact with the soil or eat the food grown in the soil. Also the proximity to industrial uses, proximity to vehicular traffic, and other pollutants are other factors to consider (Hodgson et al., 2011).

From a planning aspect, there can be a land use conflict with agricultural urbanism and the surrounding uses. Nuisances like odor and noise can lead to sense of NIMBYism (Hodgson et al., 2011). Proper regulations and standards can help eliminate or minimize conflicts by placing compatible uses near each other.

Agricultural Urbanism has the potential to revolutionize how communities think about how they get their food. This chapter highlighted the social, economic and environmental benefits and obstacles to agricultural urbanism. There have been many studies explaining this area of sustainable food systems.

Agricultural Urbanism helps create community building, mutual trust, sharing, feelings of safety and comfort, and friendships in turn create stronger and resilient communities (Hodgson et al., 2011). Agricultural Urbanism can also help with other sustainability goals like energy efficiency, waste diversion and water purification among

others. These goals will create communities with sustainable systems (Viljoen, 2005). There are issues that agricultural urbanism can create or exasperate, but with careful planning and being aware of the issues beforehand, many can be mitigated or eliminated.

Benefits of Green Space

Green space has many social, economic and environmental benefits. Open spaces are more than just undeveloped land. This section will explore these benefits to the individual, community and region.

Environmental Benefits of Green Space

Green spaces are a way to help control growth. By placing areas under green spaces, the demand for schools, roads, fire and police are less since no development will be occurring there (DEP, 1998). This will mean less money spent on patrol and infrastructure demands on these areas.

Another benefit is pollution control. Green spaces can help provide an alternative to conservative pollution mitigation. Governments instead of pouring tax dollars into expensive flood and hazard mitigation, localities can use green spaces to naturally clean the water or slow it down (DEP, 1998). Green spaces can help purify the air, water and climate. Air is improved by removing carbon dioxide from the atmosphere. Green spaces can also maintain a comfortable air temperature from the heat island effect that imperious surfaces and buildings create (DEP, 1998).

Green space can be a means for flood mitigation and control. Natural spaces and pervious places in general can help soak up excess water instead of it being channeled and rushed off site. Water is improved by slowing the fast moving waters, steady erosion and infiltrate nutrients that might otherwise make it into rivers, streams and

oceans. These areas help control water naturally. There is also an opportunity to preserve wetlands with green open space.

Along these ideas, green spaces also create biodiversity. Natural spaces are not only for peoples' enjoyment but also for the animals and insects that live there. These habitats provide an opportunity for people to observe and study biodiversity but also create corridors not only for people to use but for migratory animals that use these areas to move for food and companionship that might have otherwise been cut off by development. Green spaces are often designed to link habitats of several native species. As more land is preserved and left in its natural state, green space will preserve animals and plant habitats and there ecosystems. There have studies that show the opposite of not preserving green space which show the loss of habitat and biodiversity (DEP, 1998).

Another benefit of preserving green space is the not only the preservation of native species habitats and ecosystems but also endangered or rare species. By preserving green spaces, there is a potential to preserve several species' habitats native and rare (de la Salle and Holland, 2010). Care should be considered on a plan to preserve their habitats and ecosystems and how to preserve as many species as possible.

One connection to food and green space is pest control and pollination. Green spaces help create natural habitats where biodiversity lives. These green spaces help control pests by providing habitat for their predators. These green spaces which provide habitat for predators also provide habitat for animals that pollinate the world's food (DEP, 1998).

One last environmental benefit is alternative transportation. Greenways and trails can help alleviate congestion on local roads when people get out of their cars and into the trails with their bikes or feet. This reduction in traffic is good for the environment with reduced greenhouse emissions from burning fossil fuels (DEP, 1998).

Social Benefits of Green Space

The social benefits of Green space are well documented from a variety of scholars and professionals. Though not as well quantified, the benefits still have value to its environment and citizens.

Just the aesthetic value of green open space contains means a great deal to the community. However, how measure how appealing a place is subject to scrutiny. Personal preference plays a role in how successful a green space is (DEP, 1998). Perception could be calculated with a visual preference survey.

A survey done on three U.S. trails revealed that out of 1 to 7 scale in increasing importance, trail users rated the trails an average 6.5 (Moore, 1992). People who use the trails valued their importance and will continue to use them for their physical health and fitness.

Another benefit to green space is the opportunities for recreation. People who live close to the green space can use it for walking, running, biking and uses. Green spaces along rivers or bodies of water can also serve as a way to bring people to use it with kayaking, canoeing and other water sports. Even people with disabilities can and should be able to enjoy the outdoors. Green spaces should be accessible to everyone. Active recreation is a great amenity to have, but just as important is passive recreation. Active recreation also goes along with physical activity. With people outdoors and being active,

not only are they working on their fitness but they are also showing that people use this space and this place has value to them.

Passive recreation, areas where people can gather, are also desired places in green space. Concerts, picnics, open spaces to just run around or spread out are all desirable features people want. Another tie with agricultural urbanism is these areas can help facilitate areas for people to sit and eat, people watch set up a farmer's market or food related activities. When people see what other people are doing, gardening, preparing food, cooking food; people will be engaged and could generate conversation. This conversation can lead to education and curiosity. In a study of three U.S. trails, users' perception of education ranked 5.0 out of 7.0 of increasing importance (Moore, 1992). Whether, the education is about growing food, nature or a general inquiry a dialogue is started.

Preservation of green space is a given but there is also opportunity to preserve other places like historical sites or buildings. This also goes along with cultural landscapes such as farms and grazing lands. Preserving these places and using them in combination greenways, people can see what the area was like before development or how people lived years ago. These landscapes and historical places not only tell a story to visitors but also show them this communities cares about its cultural and historical assets and what them to be preserved for future generations (DEP, 1998).

All this benefits come down to an urban design standard, but also an agricultural urbanism standard that green space creates "a sense of space." A sense of place is important to any community. When green space is used in conjunction with historic preservation, residential, commercial and others, the overall benefit adds or strengthens

a community's positive image. The same study of the three U.S. trails discovered trail users perception of community pride was on average 5.8 out of 7 in increasing importance (Moore, 1992). The opportunity for agricultural urbanism to be implemented is a win-win situation for a community and for the individual.

Underutilized public spaces are opportunities for agricultural urbanism. The land is already owned by the government and can complement streetscapes and urban design. An ordinary row of trees along a parking lot can be livened up by a fruit or nut tree; a raised bed along a sidewalk or a community garden in a park are all opportunities for communities to showcase these forgotten spaces (Nordahl, 2009).

Trails connecting green and open spaces can be areas for people to meet their farmers. Trials with benches can be opportunities to talk with the adjacent farmer and his land or purchase something from his trail side produce stand. People can stop and watch him work his land further strengthening the connection between food and people (de la Salle and Holland, 2010).

Economic Benefits of Green Space

The economic benefits green space can provide are impacts that need to be considered with every plan. In this era of transparency, the public wants to know where their tax dollars are going and how these projects are benefiting them. Economic impacts are benefits or costs that affect local businesses, property owners and communities and local treasury (DEP, 1998).

The expenditures for local government is reduced since the property used for greenways are not developed for anything else. Green spaces in turn do not put any pressure on some infrastructure such as schools, sewers and roads. This also goes along with saving tax dollars when infrastructure is needed for a development.

Preserving open space can help reduce infrastructure costs to the locality by clustering development rather than spreading out in conventional developments (DEP, 1998).

Areas where a greenway is present, surveys have shown there is increased economic activity for the businesses and community. Tourists bring in money which is spent in local restaurants, hotels and bike and skate shops. For the property owners, it showed being adjacent or near a greenway can help bolster land prices and increase property values, especially when they are incorporated in a residential neighborhood (DEP, 1998). A National Park Service Survey on three trails found the most trip related expenditures were from travel and food with people staying at least one night spent the most. The most trail related expenditures were from bike and skates rentals/ purchases. This study showed how much people spend depends on how far they have travel to get to the trail, how long they stay, and what lodging they use (Moore, 1992).

A U.S. Forestry Service Survey of 19 trails in Illinois found the kind of trail is important as to how much people are willing spend. People on shorter more urban trails were likely to spend less while people on longer more rural trails were more likely to spend more. Another note from the study is local users were more likely to spend less on the trails but frequented the trail more often (Gobster, 1990).

Increased sales tax is a positive for communities. When people and tourists spend money when they are on the trail there is a benefit for the community as tax dollars are generated when people spend money (DEP, 1998). In addition to increased tourism dollars, the government can experience a reduction in costs, increase in revenues and upgrading to Municipal Bond Rating (DEP, 1998).By adding food themed tours will also increase foot and bike traffic (de la Salle and Holland, 2010).

If greenways increase property values, then more property taxes are collected. They are collected from the properties that are near the green space but also from commercial properties that benefit from the increased revenues from tourists (DEP, 1998).

Another way local governments can benefit economically are easements sold to private companies. These easements would not inhibit the safety, enjoyment or well-being of trail or its users. Some examples would fiber optic cable, telephone or cable under the green space. It would not interfere with greenway, but would generate funds for expansion or maintenance for the green spaces (DEP, 1998).

There are many open spaces that are not utilized. Medians, the strip of land between the sidewalk and curb, parking islands and around public buildings are opportunities for agricultural urbanism. The cost savings from getting citizen volunteers instead of paid landscapers could offset upfront costs (Nordahl, 2009).

Obstacles to Green Space

As with any planning project, there are costs associated with it. There are upfront costs before a green space is constructed and the post construction costs. Costs associated with design/ study of the proposed green space will be the first hurtle. Studies or analysis can identify if there are any possible issues with the area such as environmental. Studies give a basis and can be time consuming and may change as the project progresses. Probably, the most expensive is the leasing or land acquisition. This includes a proper survey of the land, any permits or procedure that other levels of government enforce in addition to the purchase or lease of the land. The construction costs of building the needed infrastructure for the green space needs to be considered.

Finally, costs associated with operation and maintenance of green space or structures like restrooms, trails and parking will always be part of the costs (DEP, 1998).

The post construction costs also play a role in barriers. The “what if” scenario or opportunity cost of forgoing future development for the green space is one major hurtle. Most green space will remain in green space and not be subject to future development. There is a potential of lost tax revenue if say the green space was developed for say office space, residential or more intense use.

Some other issues that people may raise concern are crime to people and property and over use of green space. While these concerns are valid broadly, under closer inspection they fall apart.

People’s perception that trails can lead to crimes. Crimes that happen to people on trails are actually lower than perceived. In 1998, Rails-to-Trails Conservancy conducted a study of 372 trails across the United States. They found out there were only eleven major crimes across the 372 trails. Compared to urban, suburban and rural areas, trails have a lower crime rate (Tammy and Morris, 1996).

Another concern is that trails will lead to vandalism, burglary and other crimes on private property. There have been no studies that show a specific trail increases crime. Of course there are minor crimes such as littering, graffiti and sign damage that can be attributed to trails. More police patrols and presence and people “acting as eyes on the street” can help deter would be crimes.

There are some environmental concerns with green spaces. With trails being brought in to a natural area can pose some issues. There is some concern of introduction of new or invasive species with a trail put in. These non-native species can

take over an area and eventually replace the native species. There is also concern these new plant species can breed with native species causing a hybrid of two species.

Trails can also partition natural areas. Bisecting areas can inhibit plant and animal movement. However, the fragmentation of natural corridors by a trail will have less impact than other forms of development. Trails can also cause destruction of habitat and soil erosion by people leaving the trail and tramping in natural areas meant to be left undisturbed.

There is also a human factor that biodiversity can suffer from. People want to be close to nature; trails help provide that connection, but visitors need to know that feeding and harassing the wildlife has an adverse effect on them by either making them dependent on hand outs or stress (DEP, 1998).

In some ways there is overlap with agricultural urbanism, which can lead to a connection of the two ideas. Just as green spaces are linkages to other green areas, green and open spaces can connect food related areas. Food areas like stores, restaurants, and community gardens. As stated in the economic section, food coupled with trails and other open spaces can provide tourism opportunities and can turn into money spent in the community.

Many communities employ comprehensive plans “to help identify local economic, social and health issues; engage and educate the community; and promote the long-term health of the community (Hodgson et al., 2011).Comprehensive plans are roadmaps for communities to guide future development. By incorporating agricultural urbanism goals into the comprehensive plan will put food systems on the same level as transportation, housing and infrastructure (Raja et al., 2008).Open space goals and

policies can provide a means of incorporating agricultural urbanism into community by encouraging open space to be used as places for growing food.

CHAPTER 3
METHODOLOGY

This paper examines what implementation tools does Alachua County, Florida has to enact agricultural urbanism within its borders. This study is important since many counties all over the nation are going through similar issues about the integrating agricultural urbanism into their communities. Alachua County, Florida can be viewed as a learning experience for other similar localities, planners and decision makers can use as an example.

Study Approach

This paper used a case study approach to assess the impacts on Alachua County, Florida. First, a comprehensive policy analysis was used to look at local policies that pertain to agricultural urbanism and open space. A word search was used to determine if these policies had any agriculture or open space policies. The words searched were “agriculture”, “open space”, and “food.” In addition to the word searching, the policies were carefully read to make sure policies were fully explored and understood. Next, GIS (Geographic Information Systems) was used to identify areas that would be suitable agricultural urbanism. Finally, determine if Alachua County, Florida would be a candidate for Agricultural Urbanism and Continuous Productive Urban Landscapes.

Area Characteristics

Alachua County, Florida is area being studied for this research. Alachua County is located in the Northeast area of Florida bordered by Bradford and Union Counties to the north, Putnam and Marion Counties to the east, and Columbia, Levy and Gilchrist counties to the west. Alachua County encompasses 965 square miles (U.S. Census, 2010).

Demographic information was obtained from the 2010 US Census American Community Survey. There were 247,366 people living in Alachua County in 233,416 households. The population is distributed as 5.3% under 5 years, 4.7% between 5-9 years, 4.7% between 10 -14 years, 9.5% between 15-19 years, 16.8% between 20-24 years, 8.8% between 25-29 years, 6.2% between 30-34 years, 5.3% between 35-39, 5.0% between 40-44 years, 5.8% between 45-49 years, 6.1% between 50-54 years, 6.0% between 55-59 years, 5.0% between 60-64 years, 3.5% between 65-69 years, 2.4% between 70-74 years, 1.0% between 75-79 years, 1.5% between 80-84 years and 1.5% 85 years and older. The median age is 30.1 years (U.S. Census, 2010).

The population is a mix of White at 69.6%, Black or African American at 20.3%, American Indian and Alaska Native at 0.3%, Asian at 5.4%, Hispanic or Latino at 8.4%, Native Hawaiian and Other Pacific Islander 0.1% and other race 1.7% (U.S Census, 2010).

Alachua County, Florida is characterized as moderate climate with average temperature of 70.1 degrees Fahrenheit. Winds from the Gulf of Mexico make summer days warm and nights cool. Winters are usually dry and mild. The growing season is 255 days a year with an average of 2,800 hours of sunshine yearly. Average rainfall is 35 inches a year (City of Gainesville, 2011). There are an estimated 1, 532 farms in Alachua County, however only 38% is used for crop production (Florida Certified Organic Growers and Consumers, 2010).

The area is also home to two institutions of higher learning, the University of Florida, home of the Florida Gators and Santa Fe Community College. Some of the largest employers are the University of Florida, Santa Fe College, Shands Hospital,

Nationwide Insurance, and the Farm Bureau. In addition, to these employers the area has been an incubator for biotechnology and technology industries (Gainesville, FL Economic Development, 2009).

Policy Analysis

The policy analysis was conducted to find what tools were available to Alachua County to pursue agricultural urbanism. Policies at the local level were evaluated to see if there were any policies related to open and green spaces and agricultural urbanism. The documents looked at were the Alachua County Comprehensive Plan, Alachua County Unified Land Development Code (ULDC), Envision Alachua, and Community Vision for Food System Development in Gainesville-Alachua County.

Visions, plans and implementation policies

Planning for agricultural urbanism is crucial element to have communities with local food systems in mind. Planners are in a unique situation since they are at the nexus of several community issues like economic development, neighborhood planning, long range and policy creation and implementation. Planners understand the value of the social, environmental, and economic connections that agricultural urbanism can provide and should craft policies that encourage community food systems. Planners have many tools to which draft these goals, policies and regulations. This section will look at the tools planners have available to bring agricultural urbanism into their communities.

Visions and goals

No plan can be implemented without a series of goals and vision to guide the process. As with any initiative, an initial process of gathering information about agricultural urbanism from varied sources like federal and state agencies and local

experts. Engaging the public, to alert them of what government plans to do and also any suggestions or concerns they might have.

A vision statement or set of principles are usually a precursor to the formal policy guide and implementation. Through community input and research, these visions provide the framework to craft policies and regulations (Hodgson et al., 2011). After the vision is shaped, a list of existing conditions needs to be created to determine a baseline for agricultural urbanism.

Plans

By establishing a baseline of where a community is in relation to agricultural urbanism can help focus where needs to be improvement and where their strong points are. Identify assets like land suitability, stakeholders, socioeconomic statistics, existing resources for processing and distribution, other food sources outside of the community and any governmental and non-governmental policies or programs can help or improve agricultural urbanism (Hodgson et al., 2011). This inventory assists in crafting plans that will further define and guide communities.

Comprehensive plans are one way to identify existing social, economic, and environmental conditions in a community. From these conditions, planners can craft goals that will help communities achieve their long term goals in the future. Up until recently agricultural urbanism is was a way to help achieve broader social or environmental goals rather than its own goal (Hodgson et al., 2011). Comprehensive plans can link agricultural urbanism goals with other element goals like housing, transportation, land use and economic development (Pothukuchi & Kaufman, 1999).

Implementation tools

Zoning has long been used by planners to help regulate the health, safety and welfare of a community. What is not common it use zoning as a police power to help regulate food planning (Raja et al., 2008). As zoning developed, agricultural uses were deemed incompatible with residential, commercial and industrial uses. Today in many communities, agricultural uses are not permitted in most residential, commercial and industrial zones. In more urban areas, agricultural urbanism is nonexistent. Current regulations of agricultural zones are best fit in rural areas, while if applied in the urban context would not be compatible. Some communities do not allow husbandry and sale of goods.

However, there is a growing change to this ideology. Many communities are creating regulations for the allowance of agricultural urbanism. Zoning is one of these tools they are employing. By revamping existing zoning and creating new zoning classifications help incorporate agricultural urbanism. There are even some communities creating food plans that further the purpose of agricultural urbanism.

Even other non-zoning policies promote agricultural urbanism like use of public land for agricultural urbanism, polices for infrastructure needed for growing and allowance of growing on surplus lands (Hodgson et al., 2011).

Geographic Information Systems (GIS) as a tool in site selection

Before the creation if GIS, a more low technique of overlaying data was used. Ian McHarg was credited with suitability analysis that used an “overlay method.” He observed landscape architects use this method when working in a layout of design of an area. He applied these by collecting data, such as soils and topography to create maps (Steiner, 2008). This overlay analysis technique” was widely accepted among

landscape architects and city planners throughout the turn of the 19th and 20th centuries. McHarg's overlay technique was further advanced by incorporating light and dark values into his layers of a study area to find it suitability for a land use (Steiner, 2008). McHarg explained the method this way,

"In essence, the method consists of identifying the area of concern as consisting of certain processes, in land, water and air – which represent values. These can be ranked – the most valuable land and the least, the most valuable water resources and the least, the most and least productive agricultural land, the richest wildlife habitats and those of no value, the areas of great or little scenic value, historic buildings and their absence and so on."

Thus a precursor to GIS was born. The use of geographic information systems has been a mainstay in viewing multiple pieces of information in a graphic form. Basically, information can be broken into "layers." These layers can be laid on top of each other to create a graphical representation of data. Landscape architects have been doing this but in a less technical way by hand-drawing these layers. Planners have been using Geographic Information Systems as a means to compile and graphically relay data. In addition, the analysis tools available in the GIS programs can help analyze the data and generate more insight into data.

Study Limitations

The data collected in the site analysis was based on secondary data based on the FGDL website which may or not be entirely correct, but still relate the message of location of existing infrastructure. With more time, efforts could be done to determine the validity of the data. Data was also created from information gathered from Gainesvillefarmfresh.com website. The data points Farmer's Market, Co-Ops and Food

Markets, Livestock, U-Pick, CSAs and Restaurants-Cafes-Businesses used in existing conditions were based on locations that may have been incorrect or non-specific. Also the information may not have been up to date since the author found one business to be closed but still listed on the website. With more time, more precise data points could have been created and verified if these places still exist.

However comprehensive this study is, the applicability is limited. This study is limited due to the fact other areas of the country may not have the extended growing season as Alachua County, Florida. Therefore, this study may not be transferable to colder climates or areas with shorter growing seasons.

This paper examined the policies and regulations through a case study analysis of Alachua County, Florida. Geographic information Systems was also employed to graphically depict opportunities for agricultural urbanism. Together, policy analysis and GIS helped create a baseline of agricultural urbanism in Alachua County, Florida.

CHAPTER 4
RESULTS

Alachua County, Florida Policies

Community Vision for Food System Development in Gainesville-Alachua County: A Local Food Action Plan

In 2009, the Florida Certified Organic Growers and Consumers (FOG) started a project to help increase food security in Gainesville, Florida. Various stakeholders from food producers, consumers, distributors, local government, schools and nonprofits were all involved. What came from it was a collaborative community vision plan for Gainesville and Alachua County.

The Local Food Action Plan had four key recommendations:

- Increase food security by increasing food production in Gainesville and surrounding areas.
- Increase availability if fresh and health local foods by developing an Electronic Benefits Transfer (EBT) system for farmers markets.
- Increase knowledge and awareness of healthy eating through expanded nutrition education and networking
- Increase opportunities for local farmers by providing more local products to businesses and institutions through an improved food distribution system.

These principles and several others were incorporated into the Evaluation and Appraisal Report (EAR) which led to substantial changes to the 2011 Alachua County's Comprehensive Plan (Florida Certified Organic Growers and Consumers, 2010).

Surveys were distributed to get a baseline of what areas need to be worked on for a local food system. This survey, or community food assessment (CFA), provided valuable insight in what the community wants and needs. Some of the findings were lack of transportation to markets and high food prices led to food insecurity. This food insecurity leads to poor food choices an can bring on a plethora of health issues. The

food plan also went on to talk about the food security at a regional level saying the lack of local and regional food is due to the large export demand to other parts of the country and the world, demand or willingness to pay for local food, lack for food production, processing and distribution facilities. The plan also provided how to address these four recommendations by assigning who would lead it and how to evaluate during and after implementation.

This plan was the first step in identifying the stakeholders and ways to improve local food production. It brought together these stakeholders to get their aspects of local food in Alachua County. The process alone brought together like minded people who had the common goal of community food systems. This collaboration fostered bonds that might have not formed otherwise. This local food plan for Alachua County proofed a valuable resource from local governments. Governments were able to piggy back on community led studies specifically done for their county and used the information to craft policies for the Comprehensive Plan and other documents. This action saved time and money for local governments.

Comprehensive Plan

The comprehensive plan went through an overhaul in 2011 has several references to open spaces and agricultural urbanism. Alachua County's Comprehensive Plan is broken down into "Elements." Each element has its own goals and principles. To achieve these goals, "strategies" are included to help implement these goals. While the comprehensive plan does not explicitly say "Agricultural Urbanism," however it does lay out polices that agricultural urbanism requires.

Previously, the Comprehensive Plan lacked the necessary policies to guide current and future agricultural urbanism. After the comprehensive plan amendments in

2011 additions included policies related to agricultural urbanism. The previous comprehensive plan did have policies and strategies related to open space.

The 2011 Comprehensive Plan Amendment highlighted several elements where open space is incorporated into their policies. These elements include Future Land Use, Transportation Mobility, Potable Water and Sanitary Sewer, Stormwater, Conservation and Open Space, Recreation, Intergovernmental Coordination, Capital Improvements, Economic, School Facilities and Energy. There are many references to the Conservation and Open Space element, showing the needed connection of other Elements goals to the goals of Conservation and Open Space Element. Many of the elements value the need for open space. In the Future Land Use Element, the integration of open space in future development is a major component in the policies by making it a requirement in site design in many of land uses. An interesting policy in the Future Land Use Element relates to utilities corridors and open space corridors. Policy 5.5.1 (c) under Objective 5.5 Public Utility, Communication, or Infrastructure Service states, “The County shall coordinate with public utilities to provide for use of utility corridors as part of open space systems, including public walking trails or linkages to greenways”. This policy is important since it is congruent with a policy in agricultural urbanism. By linking open spaces together by utility corridors can provide an opportunity for agricultural urbanism to occur.

The 2011 Comprehensive Plan also included the addition of agricultural urbanism policies into the elements. Some of highlights of policies included in elements was 6.0 Rural and Agricultural Policies in the Future Land Use Element as shown in Appendix A. This section outlines some of the goals and polices that should be implemented with

agricultural urbanism such as support for local agricultural operations, support developments of markets and programs that promote local agriculture, and most important develop standards and regulations for urban agriculture, which will be discussed in the next section.

Another section, Conservation and Open Space Element highlights education as an important policy. Policy 2.2.2 states among others, creative educational programs for "Agricultural preservation and Sustainable agriculture and forestry." This is an important principle of agricultural urbanism since education is the way to learn new things and expand on existing knowledge for the public. Continuing on the education principle, Policy 2.2.3 states, "The County shall actively pursue interactive public involvement and functional partnerships with the School Board of Alachua County, private schools, the University of Florida and Santa Fe College, the Alachua County Extension Office, and environmental and agricultural organizations, for the purposes of developing and disseminating educational materials and programs." This policy also highlights the need to collaborate with existing institutions. By doing so, they can accomplish common goals within their organizations and also provide additional resources for the public. Cooperation is key to get agricultural urbanism in the minds of the public.

A new Element, Energy also contains a section dedicated to agricultural urbanism, Section 6.0 Local Food Production and Processing (Appendix A). Some of the highlights are maximizing local food production within the County's foodshed, increase local foods in County facilities, Encourage community gardens, green roofs and edible landscapes and again develop standards and regulations that encourage and promote agricultural urbanism.

The Community Heath Element, Objective 1.3: Prevention of obesity & other chronic illnesses looks at the connection between food and land use. These objective states the promotion of local food production, and partnership with local organizations to promote community food systems (Appendix A). While not discussed at length in this paper, the connection is clear; food and health are interrelated and identifying areas for improvement and success is critical in accessing the needs of the public.

Another important aspect, composting is found in Energy Element. Policy 8.1.4 states, “The County shall use a portion of the waste stream, such as food waste and brush cuttings, for composting and work with other local groups to make it available for use by community gardens and local farms”. This critical component of composting furthers goals of sustainability by not contributing to landfills, but rather separating biodegradable scraps and breaking them down into valuable compost which can be given away like mulch or generate revenue by selling it to the public. Not only will composting slow the rate of garbage going to landfills and polluting the air, but also provide needed nutrients to continue agricultural urbanism.

Unified Land Development Code (ULDC)

At the time of this paper, revised development standards have not been adopted relating agricultural urbanism. There are some current standards in Chapter 404, Use Regulations of the ULDC Unified Land Development Code. However, revisions of the ULDC are currently being reviewed. This paper will look at the proposed draft of revised standards and regulations pertaining agricultural urbanism.

At a July 2011 Grow Gainesville and Alachua co-sponsored a workshop. Growth Management Planner, Holly Baker, was in attendance to showcase the proposed changes to the existing ULDC. These changes came from citizen input and focus

groups. From these sessions and background investigation, a draft of agricultural code amendments was suggested (Appendix A). Some of the changes were:

- Reducing the amount of land needed for commercial agriculture (from 5 acres to one)
- Allowing restaurants on agricultural land where primary goods are grown
- Allowing for food processing in Agricultural and industrial districts
- Allowing produce stands in several districts
- Allowing chickens, hogs, goats, cattle, horses and others in single family district as long as they meet minimum acreage
- Creating new uses, “community garden” and “farmer’s market” and establishing standards and regulations

Subsequent revisions were done in August 2011 as shown in Appendix B. The document has an explanation to why the changes were made. This is an insightful look as to why they change. Many of the explanations are citizen based like “increasing popularity with raising chickens”, and “repeated requests for farmer’s market.” While these changes are not permanent, these suggestions came from community activists and citizens engaged in local growing. This is an important aspect of agricultural urbanism. By getting citizen input and including them in discussion, empowers citizens to speak up and say their concerns. Also by empowering citizens, they will feel more confident in government since open dialogue will be established.

Envision Alachua

Envision Alachua is a community planning process to discuss future economic, environmental and community opportunities in Alachua County on lands owned by Plum Creek. Plum Creek is the largest landowner in Alachua County, with 65,000 acres

located in east and northern parts of the county. (Envision Alachua, 2011) While mostly a timber company, they are interested in conservation and other uses for their land.

As stated before, initial goals and vision should be in place before making an endeavor to change in a community. Envision Alachua Task Force developed guiding principles that they will use to help develop Plum Creek responsibility and methodically.

In the document, they outlined their vision, goals and planning principles. Among these goals were economic development, social and cultural development, land use and multi-modal transportation. They also outlined goals for environment conservation and agriculture (Appendix C).

In the environmental and Conservation goals, the task force proposed “a plan built around the objective of connecting people to nature.” This is important since a main goal of open space and agricultural urbanism is to connect people with nature and food.

Another goal in the environmental and conservation is to “complete the emerald necklace around Gainesville.” This goal is important since 1) provides opportunities for agricultural urbanism and 2) will spatially and physiologically provide linkages for people and food.

In the Agriculture section, they highlight three goals. They are:

- Protect and enhance existing agriculture in the County
- Preserve agricultural areas to ensure the availability and affordability
- of locally grown food
- Consider activities that support urban agriculture and agricultural
- related eco-tourism

These goals are significant since all of them directly relate to the goals of agricultural urbanism. These goals along with the others will guide development for the

next fifty years. Of course as time goes on, the community will look back and revise the goals as needed.

There were many community visioning sessions, but also interesting was the “Models of Innovation Series.” In these innovation series, experts from different fields like economic development, land conservation, resource management and community design were asked to come and speak and share their experiences. One series in particular was “Innovations from the university of Florida: Community Design and Agricultural Urbanism,” where landscape student from Department of Design, Construction and Planning were tasked to create a net zero, closed low impact compact agri-urbanism development in Plum Creek. The students looked at the place and studied it to better understand it. Students looked at various issues like water, mobility, water among other things to create a concept for Plum Creek. These groups basically created a master plan for this area. While each group had their own design there was a main idea of bringing food closer to the community. This in turn led to innovations in energy saving and creation, smaller impacts on the environment and increased social interaction. Their projects were shared with the public and Plum Creek.

Alachua County’s Comprehensive Plan addresses several aspects related to agricultural urbanism. The document hits of several points that are needed for a successful implementation of agricultural urbanism. Many of the elements related back to the Conservation and Open Space policies which are essential for 1) providing opportunities for agricultural urbanism to occur and 2) open space provides the linkages to create continuous productive urban landscapes.

Agricultural Urbanism is further strengthened by several policies within the document that provides the groundwork. Many policies including edible landscapes into county owned properties for either the general public for consumption or to feed the facility like jails, schools and libraries. The document also mentions the need to identify and address the infrastructure needed for agricultural urbanism. Also partnering with local institutions is mentioned several times for further discussion and education of agricultural urbanism. The Alachua County Comprehensive Plan lays a solid foundation to build a stable and functional community food system. The next step is to develop standards and regulations to implement and monitor progress of agricultural urbanism. The Code of Ordinances will provide that element.

The ULDC brought the regulatory mechanism to move agricultural urbanism forward. Despite the draft revisions to ULDC not being adopted, there was a need to look at the revisions and get community input. The first meeting was scheduled toward the end of the weekly Union Street Downtown Farmer's Market in Gainesville, Florida. At the time of review, two more public sessions were planned with a vote on the rewrite in early to mid-2012. This slow but methodical pace showed stakeholders and community leaders they wanted to get this right and have as much community input as possible. At the same time, encourage discussion in an open forum about local food production. Also, by having many public meeting might have encouraged people not familiar with agricultural urbanism to learn more and get involved. By having it during the farmer's market was also an excellent use of resources. People who were already interested in agricultural urbanism were in one place. The location and time was convenient also.

One aspect the policies did not address was design standards. One of the main components of agricultural urbanism is design elements. The function is well defined with the policies but form is missing. The policies do not have any recommendations about urban design elements. The policies do not give guidance to the design, types, massing or orientation of buildings. Buildings help shape the look, shape and feel of a community (de la Salle and Holland et al., 2010).

Another aspect that was not discussed in the policies was how these policies relate at the regional scale. An ultimate sustainable goal should be added to address the connection of local food but also regional food issues.

Envision Alachua was an educational experience proved to be a great example of using resources in the community. The University of Florida is a brain power gold mine. By utilizing the university students, they are getting innovative ideas that further agricultural urbanism ideals. This learning session is a win-win situation: Plum Creek got great ideas from students and students got real world experience.

Even though this was for one land owner, this community visioning process is a great example of what the county can do as a whole in the future. This area can be a local example that Alachua and other communities can look to and mimic.

Geographic Information Systems (GIS) Analysis

After a review of the existing and proposed policies, a closer look at areas within Alachua County, Florida that has the capability and suitability of supporting agricultural urbanism. The data was gathered from the Alachua County, Florida Growth Management Website (http://growth-management.alachuacounty.us/gis_services/gis_data/index.php) and Florida Geographic Data Library (FGDL) website

(http://www.fgdl.org/metadataexplorer/explorer.jsp). Data was created from the Gainesville Farm Fresh website (http://www.gainesvillefarmfresh.com). Soils data for Alachua County, Florida was obtained from U.S. Department of Agriculture (USDA) Natural Resources Conservation Service website (http://soils.usda.gov/).

First, the analysis examined the existing conditions of Alachua County, Florida by identifying areas or features that might support agricultural urbanism. Community buildings were identified as potential sites for agricultural urbanism. Some examples are hospitals, jails, schools, libraries, senior living facilities, and places of worship. Some of these places are ideal due to many attract people of every backgrounds and incomes to the site like places of worship and parks. A half mile buffer was added around these areas since a half mile is a reasonable distance a person can travel to a site. A map was generated from this information (Figure 4-1)

After identifying potential areas of agricultural urbanism, accessibility was addressed. Accessibility is defined by bus routes, trails, bike paths, and multiuse trails. Mobility is important to agricultural urbanism for several reasons. First, they provide a physical connection to move goods at various scales i.e. supermarkets near arterial roads and community gardens connected by sidewalks/ trials and bike lanes. Second, streets, roads and other transportation options should have opportunities for food along them. Streets and roads also provide visibility for food whether it be eating, drinking, cooking or growing food (de la Salle and Holland, 2010). Finally, mobility is important aspect of any community. A community that is walkable, but also safe for pedestrians, cyclists and motorists. Shared with a new urbanist principle, agricultural urbanism prefers that daily needs are within a five minute walk to residences, the work place and

other activities (Duany, 2011). A half mile buffer was added around these areas since a half mile is a reasonable distance a person can walk to a site. A map was generated from this information (Figure 4-2).

Land use was also examined. The categories were Agricultural, Industrial, Institutional, Public/Semi-Public, Recreation, Residential, Retail/Office, ROW and Water. Highest rank was put in agricultural, institutional, public/semi-public, and recreation. A map was generated from this information (Figure 4-3).

Soils were also looked at to determine where the best places to grow food. Spread sheets were generated from the soils database to determine prime farmland soils, soils for trails and paths and parks (Appendix D). Also closed topographic depression data was shown on this map. These areas of little or no drainage are good indicators of karst terrain. This data is important since these areas can be susceptible for ground water contamination. A map was generated from this information (Figure 4-4). There was an interesting result with the soils with a low amount of prime farmland soils in Alachua County. There was also a high concentration of karst terrain in the south and western part of the county.

Also identified were open green spaces. Existing parks, conservation areas, utility corridors, greenway corridors and other areas were identified. A map was generated from this information (Figure 4-5).

Finally, existing uses that pertain to agriculture were identified and shown. Agricultural uses like farmers markets, organic farms, and restaurants that use local farms as their main source of food procurement were displayed. A map was generated from this information (Figure 4-6).

By combining the buffers around mobility, existing agricultural uses and opportunities for agricultural urbanism with the open space created a map that showed the potential for agricultural urbanism in Alachua County, Florida (Figure 4-7).

The GIS analysis graphically showed the potential sites for agricultural urbanism to occur in Alachua County, Florida. The existing agricultural sites open to the public is a critical part of integrating agricultural urbanism into the county. Other untapped opportunities are utilities corridors, nursing homes and hospitals. This analysis is important to show at just how many prospects there are in Alachua County, Florida for agricultural urbanism.

One potential issue that might affect the viability of integrating agricultural urbanism in Alachua County was the soils and karst terrain. The areas of poor soils and karst terrain should be avoided and instead left in a natural condition or open space.

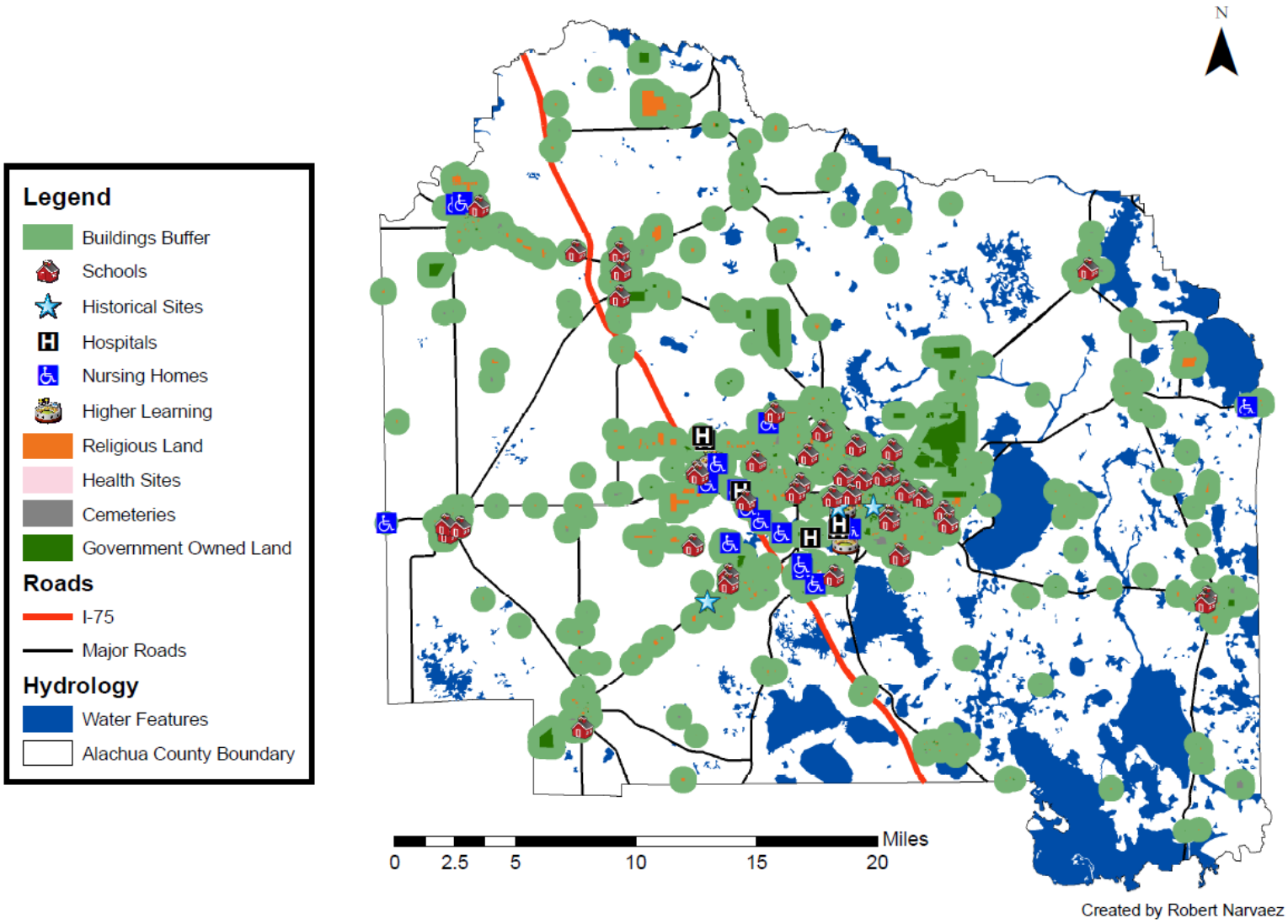

Figure 4-1. Opportunities for Agricultural Urbanism

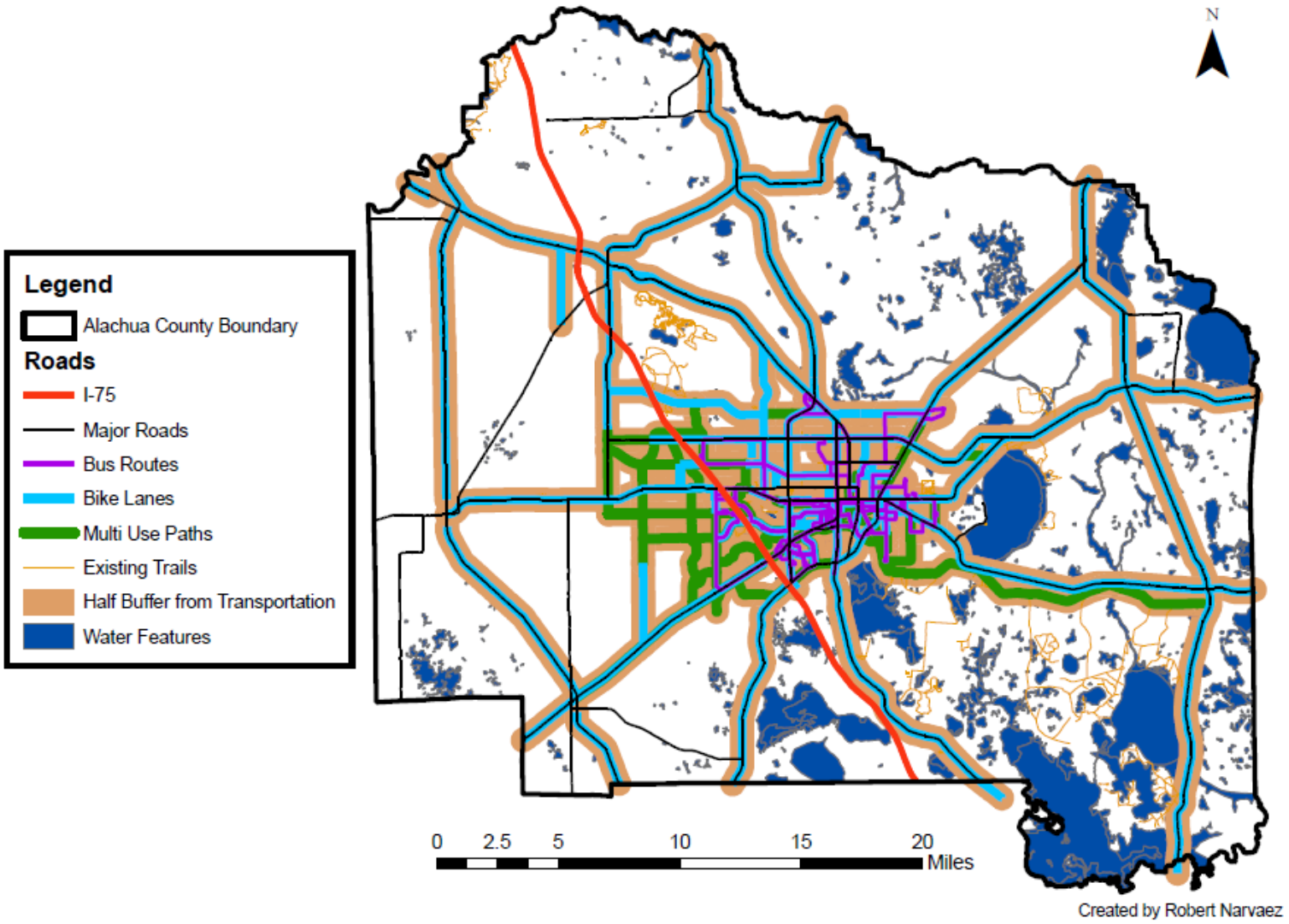

Figure 4-2. Mobility

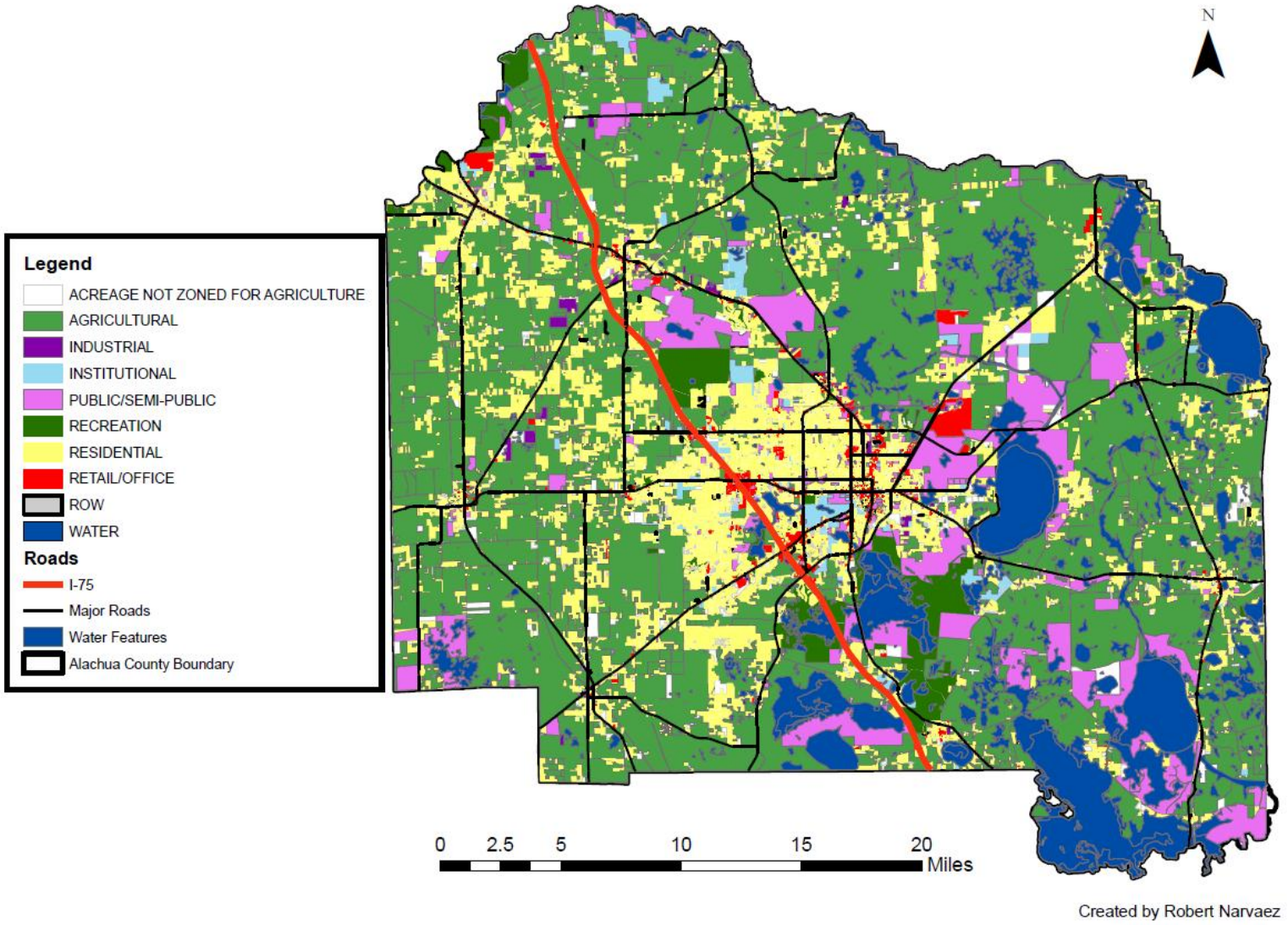

Figure 4-3. Land Use

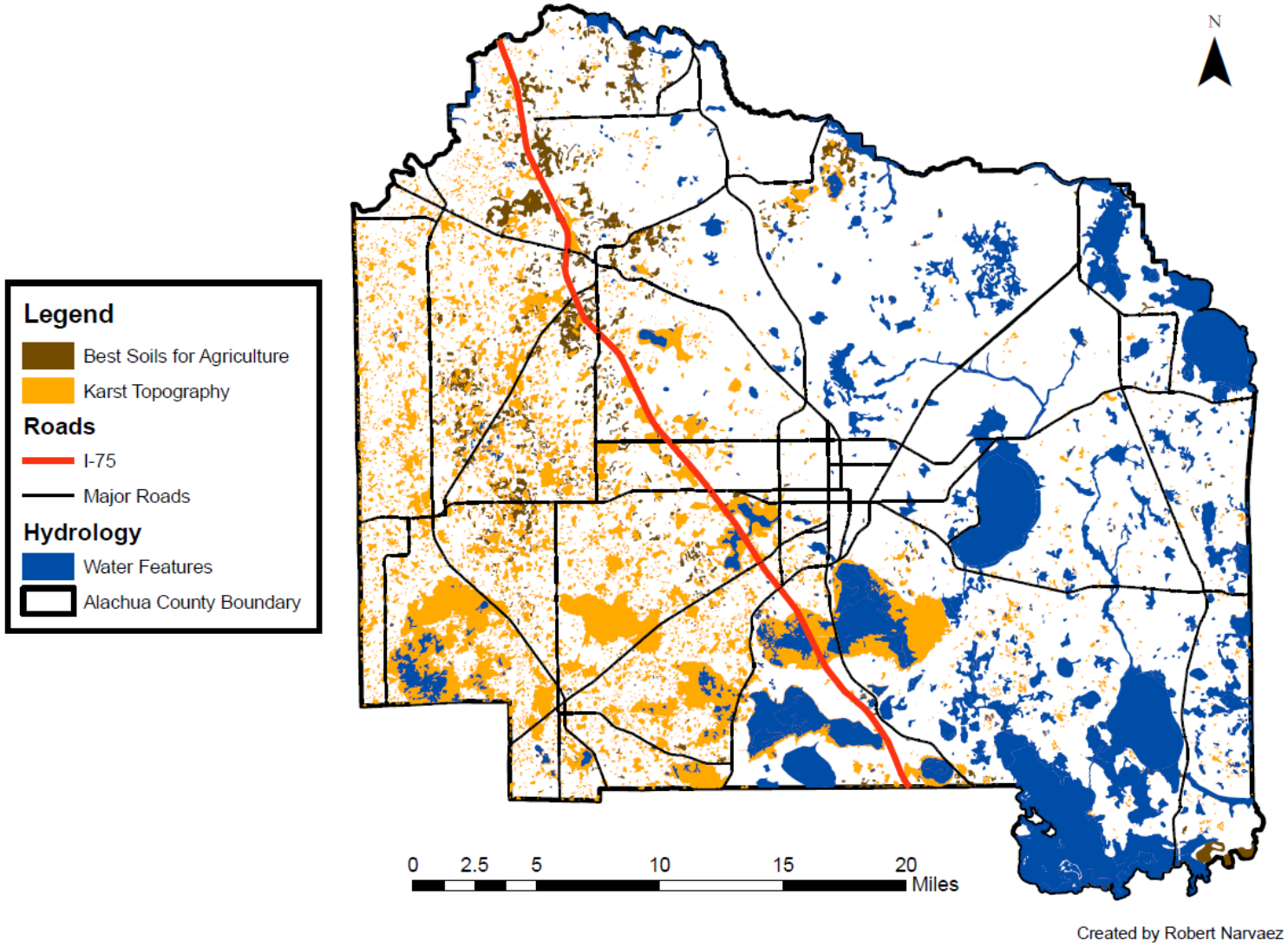

Figure 4-4. Topography

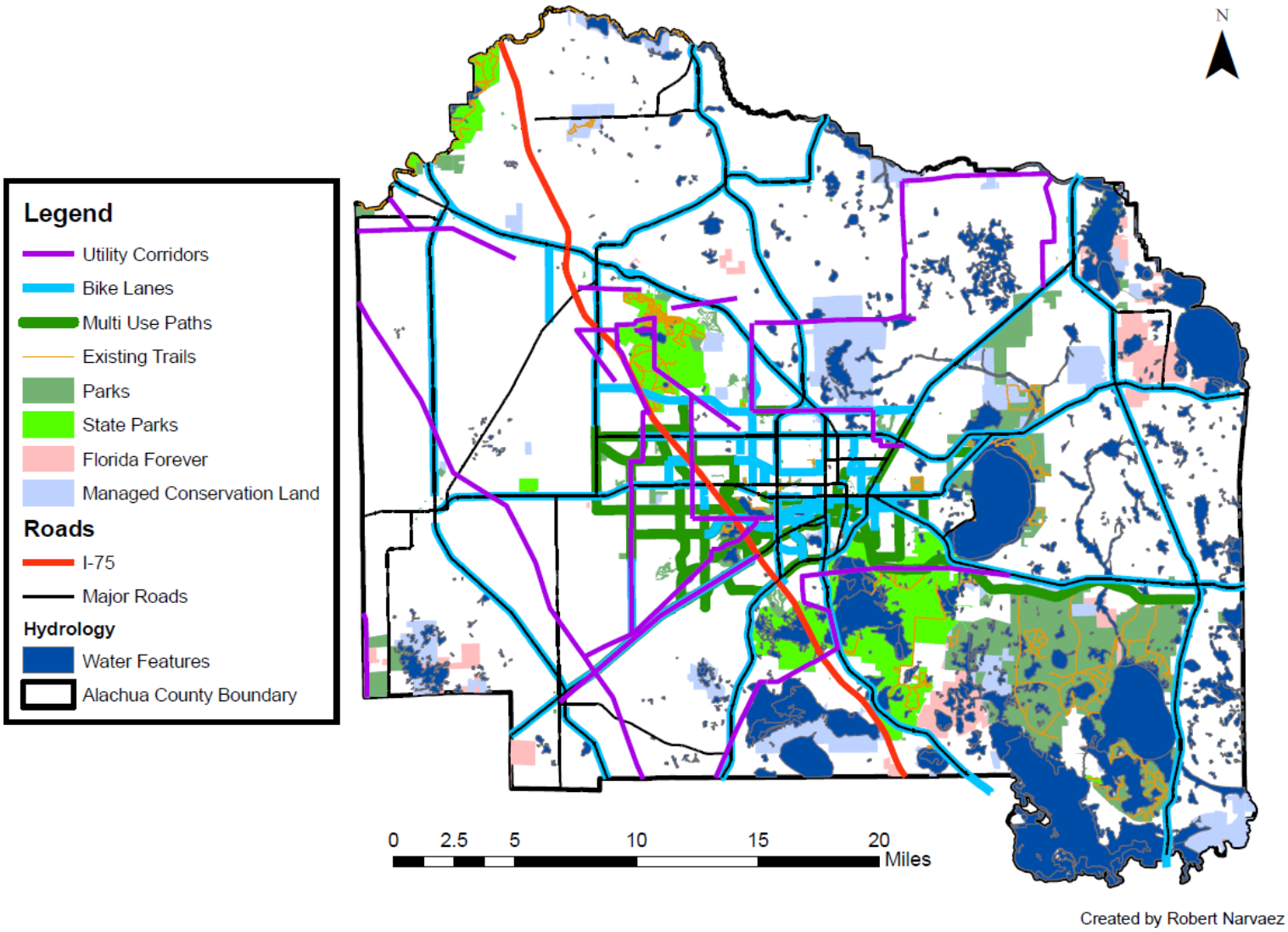

Figure 4-5. Open Space

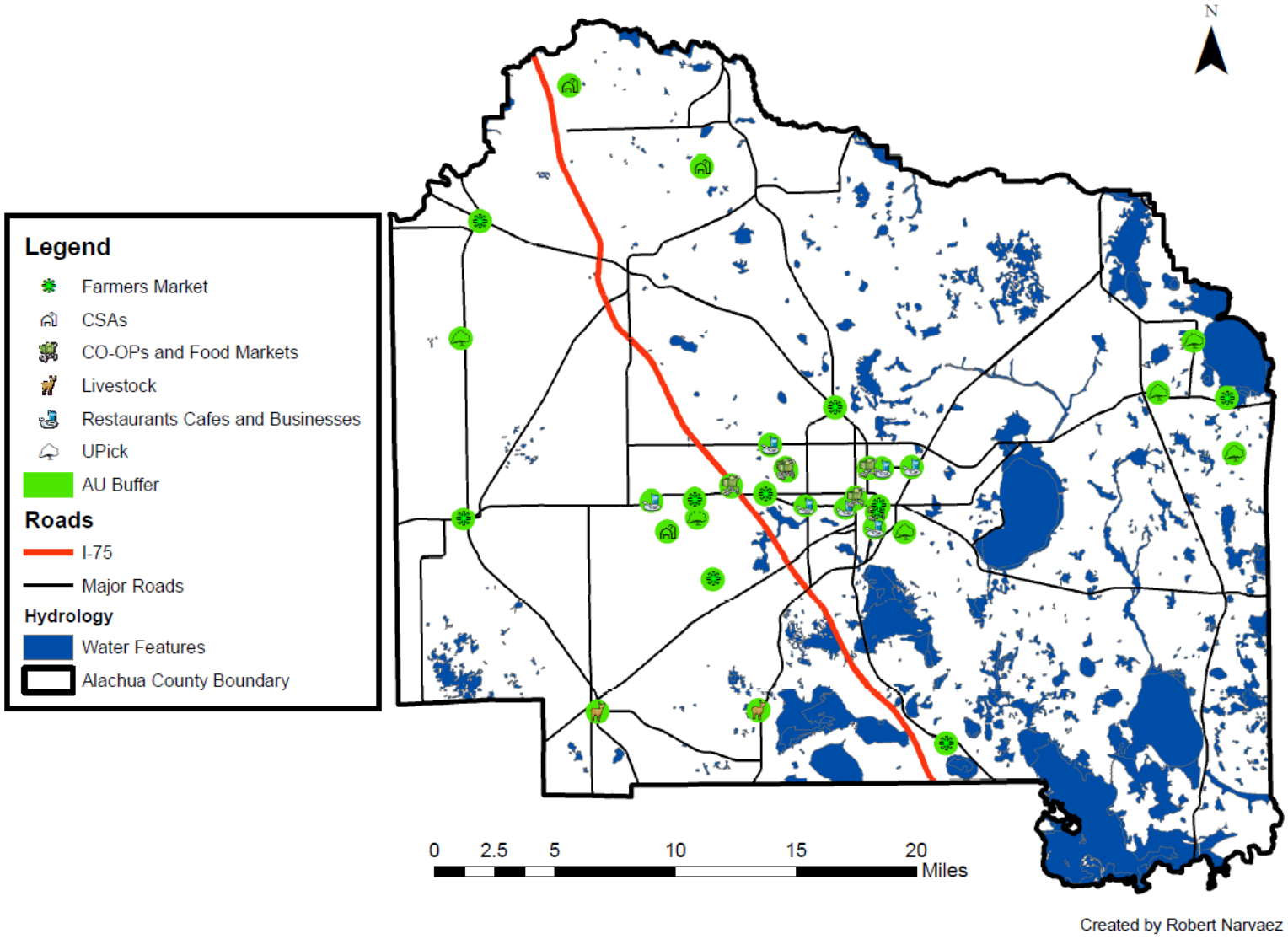

Figure 4-6. Existing Agricultural Infrastructure

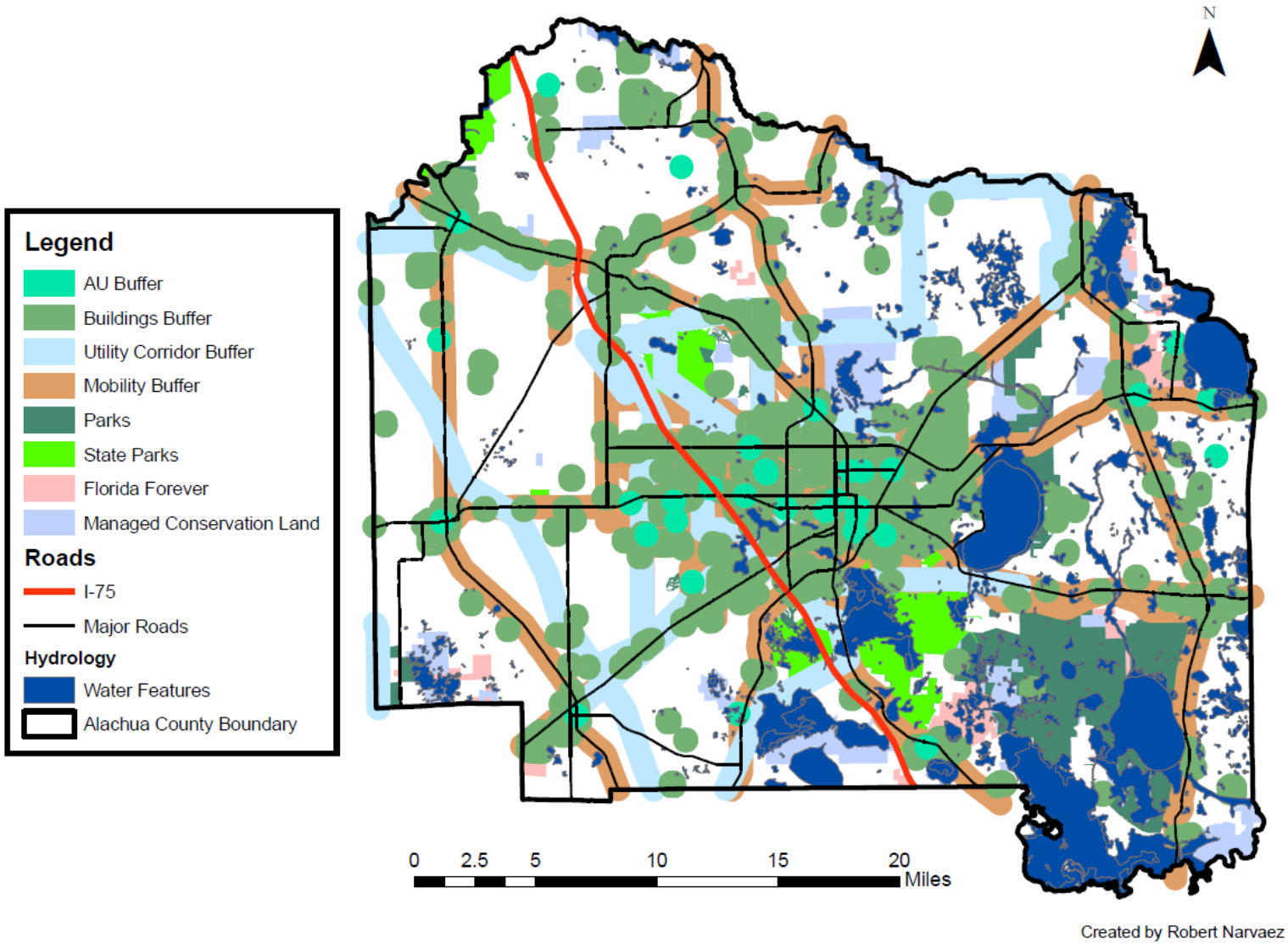

Figure 4-7. Agricultural Urbanism in Alachua County Florida

CHAPTER 5
DISCUSSION

The next section will look at conclusions of the research, the study limitations, recommendations and areas for future research. Conclusions for from the study found there was a strong correlation between agricultural urbanism and the communities it served, stakeholders participation, the need for local government participation and agricultural urbanism infiltrates community at all levels.

Conclusions

Alachua County is an ideal candidate for agricultural urbanism. It has public and government support. The Comprehensive plan also focuses on concentrating growth and higher densities in certain areas while preferring lower densities outside of the areas. These low density areas can be opportunities to increase local food production in Alachua County. Citizens are interested and government is listening by amending their comprehensive plan and reviewing their current zoning regulations. Alachua County also has a large educated population with two higher education institutions. These colleges and universities are breeding grounds for innovation and collaboration. Students can participate in design competitions, join clubs, and learn something in the process. The various colleges at the University of Florida, like the business, agriculture and design, construction and planning colleges have students and brain power to think outside of the box.

The public has also embraced agricultural urbanism. There are several organizations, groups and opportunities for people to get involved. Public interest played a large role incorporating agricultural urbanism into the comprehensive plan and other documents. Many local organizations like Grow Gainesville, Slow Food

Gainesville, Gainesville Farm Fresh, Florida Certified Organic Growers and Consumers (FOG), Sustainable Alachua County, just to name a few organizations that promote sustainable and local food options. Without support from organizations like these, there would be no demand for agricultural urbanism. These groups help mobilize and organize people of all backgrounds, and ages into a cohesive collective voice. These groups along with the local government give the general public information and arenas to voice their concerns. Alachua County, Florida is different than most other places in the country where agricultural urbanism is still thought as a novelty, a hobby or passing planning fad. However, a strong public interest and public-private collaborations to get the word out is a necessary tool for agricultural urbanism to flourish. In addition to community support, Alachua County has the added benefit with an extended growing season that allows for food to be grown almost all year.

Since agricultural urbanism is multi-faceted, as is the players in local government. Agricultural Urbanism benefits several government departments like public health, economic development, parks and recreation, water, solid waste, transportation and of course planning. Collaboration is mandatory and a multi-department coalition should be formed to address any issues or solutions that a department has to offer. Also this will bring departments together to get common goals addressed simultaneously by agricultural urbanism. Individual departments can be assigned specific goals that help attain the broader goals of agricultural urbanism. By having a common goal will also show the public the government is working as one united body.

Agricultural Urbanism can solve many social, environmental and economic issues. There are many examples of agricultural urbanism helping communities. For instance,

community gardens in low income areas where no fresh food is available, productive landscapes instead of manicured lawns with water leeching chemicals, school gardens where children learn where food comes from and their source for lunch, the list goes on. Agricultural Urbanism can help solve or at least help with other community issues.

As for the potential for Alachua County to be a candidate for Continuous Productive Urban Landscapes (CPULs), the answer is yes. Agricultural Urbanism has laid the groundwork for CPULS to be possible. By incorporating agricultural regulations and gaining government and public support, CPULs can be integrated in this environment. The Unified Land Development Code (ULDC) might hold the missing key. Traditional Neighborhood Developments (TNDs) and Transit Oriented Developments (TODs) could incorporate rural-to-urban transect into a form based code (Figure 5.1). A rural-urban transect is,

> a 100- year-old ecological construct…to integrate environmental metrics for habitat managements with socioeconomic metrics for urban design. The Transect can blend these specialized protocols, enabling environmentalists to assets the value of cultural habitats and urbanists to protect natural ones. It can analyze the disparate human and natural interchange of complex place types. (Duany 2011)

This is where CPULs can become a reality and redefine Alachua County.

One last conclusion is agricultural urbanism cannot be a one size fits all solution. AU can fit in many scales from a community garden, along a trail, on a rooftop or a large urban farm. Agricultural Urbanism can fit in a context from educational gardens to full scale commercial farms. Support from government is needed in the form of regulations but also places where the public can get more information about agricultural urbanism. Community leaders need to look at their opportunities and constraints and draft a food policy that fits their community.

Alachua County, Florida has done many of the steps needed for food policy implementation of agricultural urbanism in their community. The food vision plan helped craft the ideals and wants of the community and laid the framework for developing policy implementation. The Alachua County Comprehensive Plan created broad agricultural urbanism policies to guide the county. Policies in land use, transportation, energy, economic development and community health and others all related to agricultural urbanism. The Unified Land Development Code (ULDC) identified more specific regulations and standards needed to implement the broader comprehensive plan policies.

Recommendations for Cities and Communities to Promote Agricultural Urbanism

Be a leader: As stated before, planners and local governments have the opportunity to foster agricultural urbanism. Planners are collaborators by trade. They have the necessary skills to coordinate and collaborate with other departments to bring together common goals and to settle differences. Planners can be also advocates for agricultural urbanism (Raja et al., 2008).

Growing food locally and eating locally is a principle for grower. What if the local, state and federal governments participated in procuring or growing local food for institutions like hospitals, schools, jails and other public infrastructure? While mostly occurring at the local level, there are examples of where cities and communities are sourcing their food locally or regionally. One example is Rome, where they took incremental approach where they slowly introduced local and quality food to their school children. Today, more than 67% of the food served to Roman children is organic, 44% is

“bio-dedicated” food (food that is completely organic from growing to process to transport), 26% is local, 14% is “Fair Trade” (Sonnino, 2009).

Many of the public spaces today are ornamental have to be properly manicured. Imagine where food is available in the park, the sidewalk and by playgrounds. We have this already, it called food vendors. These public places already attract people. Agricultural Urbanism can be a way to attract more people to an area. As Nordahl states, “Food attracts people who attracts more people.”

By enacting guiding principles and policies, funding local food initiatives and making the promise for a better community and citizens, agricultural urbanism is a way to accomplish that.

Work with leaders in the community: Cities and communities have neighborhoods already have bonds between their residents. Agricultural Urbanism and CPULs can help strengthen these relationships but getting their leaders behind the idea. These leaders know who and what the community needs and often are good and expressing trust and conflict resolution (Bailkey et al., 2003).

Planners can also work with community leaders. Planners already have experience working with the public and they can be the coordinators to connect stakeholders. By linking producers, processors, distributors and consumers can make the transition to a more sustainable food system possible (Raja et al., 2008).

Along these lines is to utilize existing social programs to help get people who would usually be left out of the conversation involved. Programs that help the homeless, children, poor and disadvantaged, disabled can all be opportunities for the community if they can just be heard (Lyle, 1985).

At the regional scale, agricultural urbanism is necessary to have a prosperous region. Collaboration with other leaders in adjoining communities, well help coordinate goals and dialogue. This dialogue can help create partnerships to help get a regional food system in place (Hodgson et al., 2011).

Adequate infrastructure: Cities and communities should actively participate to promote agricultural urbanism. For example, local governments should procure local food for their departments and institutions such as schools, jails and hospitals. Not only will this encourage businesses to sell to government but will also show the citizens that the government is looking at reducing their impact on the environment and taking a vested interest and stake in their community. Alternatively, growing their own food to supplement or replace their food needs. Inmates grow the food and any excess can be given to local schools, hospitals or food banks.

Furthermore, the land owned by the government can be an asset for agricultural urbanism. School, hospital land could be converted to grow their own food. Parks, right of ways and utilities can be used for productive landscapes (Bailkey et al., 2003).

For example, schools hold an excellent opportunity for growing food and learning. Children can learn about where their food comes from and what it takes to grow their food. In addition, instead of manicured lawns or wasteful grass, native species of trees, grasses and flowers or vegetables can also be an outdoor classroom experience without the need of a field trip. Children will about the environment, biology, and healthy eating habits. Food literacy is most effective when taught at a young age and food choices and dietary decisions can follow them into adulthood (Nordahl, 2009).

Another example would be hospitals and universities, where students work for their food and patients get rehabilitation by working their body.

Another opportunity for agricultural urbanism to work is to rethink how open space is used. Imagine a park like setting complete with a water feature with fish that can be harvested a couple times of the year when there if there is festival where the demand will increase. Shade trees can also function as a fruit orchard or quick growing trees used for harvest every few years. This is already done in China, why not in United States? (Lyle, 1985)

Education: Before growing can begin, there needs to be a basis of understanding for starting and growing food. Transfer of knowledge from person to person or programs provided by the communities can help people and groups learn about agricultural urbanism. Communities should encourage agricultural urbanism by starting education programs that teach people about the benefits of agricultural urbanism. T further knowledge, communities should use the resources available to them such as universities, for example The University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) and the Innovation Hub at the former Shands at ADH site in Gainesville, Florida. Another example was a kickoff Farm to Table breakfast sponsored by the Office of Sustainability at the University of Florida. It showcased locally raised food and it "aimed to educate students, staff, faculty, and the Gainesville community about sustainable food systems and how easy it is to make more environmentally and socially-conscious decisions right in our own backyards." (Sustainable UF, N.D.)

There also might be some resources available at the state and federal level. Some communities already have a small business startup programs. Here, communities can

create programs that help urban farms get started and link them with resources. Again this sharing of knowledge and collaboration benefits the city, university and citizens by everyone gaining knowledge and on a social note providing ways for different people with different backgrounds to collaborate and think and create innovative ways to solve problems.

Communities can also promote agricultural urbanism by providing incentives for businesses. Some economic tools communities can employ are tax abatements on properties for a set amount of years, subsidize some of the startup costs or reduced sale price of city owned land used for agricultural urbanism (Hodgson et al., 2011). All these are tools already in practice with other types of businesses and need little adaptation to make it work with agricultural urbanism. Private-public partnerships can also generate interest and establish valuable infrastructure the government or private investment that cannot attain by themselves.

Communities need to actively pursue agricultural urbanism as a means of business and participate in it. Not saying they should wholly invest in it. Diversity is key in any city. Agricultural Urbanism will bring that factor in. This all comes back to education and awareness. Programs that teach people how to grow or help start urban gardens will benefit people by learning leadership and skills but the city is investing in its people's education. Educated people are money makers.

Education of stakeholders is also something to look into. Many stakeholders may not see the full benefits of agricultural urbanism and since the benefits are not always quantifiable communities focus on bringing in supermarkets into food deserts (Hodgson

et al., 2011). By bringing in groups and individuals familiar with agricultural urbanism and pairing them with groups that are not will help create dialogue and collaboration.

Communities should provide places to grow, process and sell urban food. With proper siting for these farms and farmer's markets will not only make it easy access to the ones who need to most but have alleviate food deserts in the inner city. Agricultural Urbanism provides economic benefits but also fulfills the needs of open and green space, community interaction with each other and government and redefines the cityscape.

Food in public places: Many cities and communities are recognizing the need to get fresh and local food to its citizens. One example is the New York City where in 2008 initiated the "Green Cart Programme" where one thousand permits were given to street vendors that sold exclusively fruits and vegetables in area classified as "food deserts"". In addition, FRESH (Food Retail Expansion to Support Health) program allowed zoning changes and financial incentives to food retailers that developed supermarkets in areas of the city that had the least access to fresh foods (New York City Government, 2011).

Integration with other community goals: Agricultural Urbanism and Continuous Productive Urban Landscapes can help achieve or complement current and future goals for a community. By reviewing their current goals in the communities comprehensive plan, where they can find areas where agricultural urbanism can help achieve these goals.

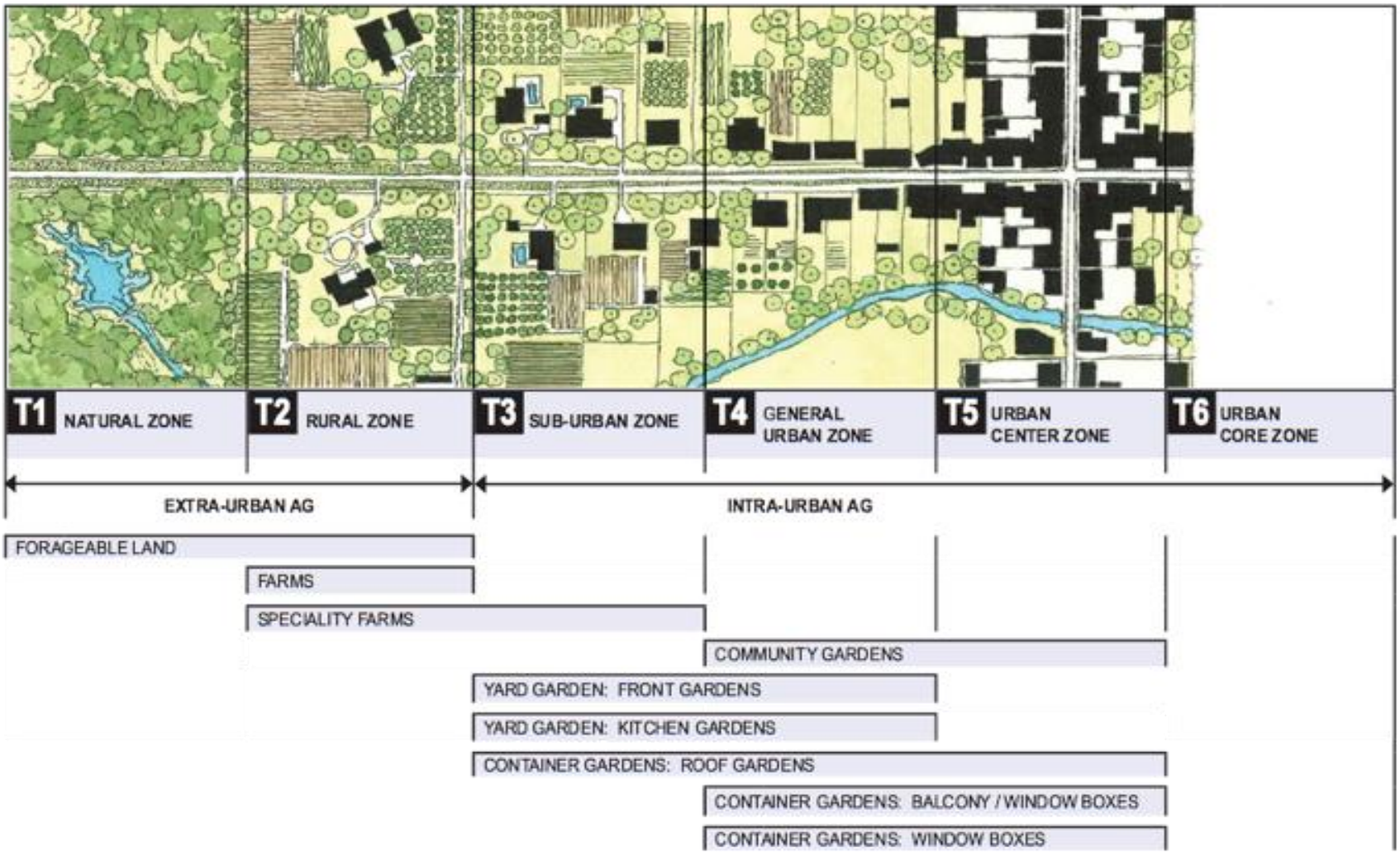

Figure 5-1. Agricultural Urbanism Transect (Source: Duany, 2011)

CHAPTER 6
CONCLUSIONS

Agricultural Urbanism is a fast growing phenomenon throughout the world. In developed and in developing countries, agricultural urbanism (AU) has several meanings from country to country, county to county and person to person. Despite these differences there is an underlying connection of providing interaction between people, people and nature and people and their physical environment.

The main benefit of agricultural urbanism is to provide fresh and nutritious fruits and vegetables to the people of every background, income or stage in life. With more interest from the young and old in artesian food and niche products, combined with the increasing interest in reconnecting people with food, agricultural urbanism combined with continuous productive urban landscapes can be a solution to provide food and also recreation opportunities for everyone. Whatever the case increased food security provides economic opportunities and even generate income for the growers (Nugent, 2010).

In addition these benefits, the social and cultural elements of agricultural urbanism can help bring together communities. Communities should provide opportunities and reduce barriers to growing food in an urban setting. This can be achieved at the national, state, local individual levels. Communities should also protect agricultural urbanism since many of these gardens are not considered part of the long term open space plans. Agricultural urbanism should be adequately funded and training provided.

Agricultural Urbanism should play a role in the urban fabric to create places and spaces in conjunction with complete streets, parks, plazas and sidewalks. More studies

into public participation, their meaning to the individual, the community and the city should be considered.

However, relying only on growing food only in the city is foolish and impossible. Cities and communities depend on their surrounding agricultural lands to help support the dense urban population. Planning alone cannot solve the world's problems of obesity, malnutrition, and food security. It can also be said by implementing agricultural urbanism not everyone will want to participate or even care. However, by planning and incorporating agricultural urbanism into communities at least people will be aware of it and have the option to participate or not.

Societal Priorities

Growing food in urban areas is just not only about food, but rather a symbol of society's shifting position. Agricultural Urbanism is a different way of thinking about growing food and thus a different and new way to think about society, the environment, economy and the urban environment. Agricultural Urbanism is a new way of thinking about the social, economic and environmental relationships between the consumer, producer and retailer. Hopefully in the near future, food growing in and around communities will be as common place as cell phones and Facebook. The appearance of agricultural urbanism in comprehensive plans, food policies, community visions, zoning regulations shows there is a growing interest in growing food in their communities. By codifying and identifying agricultural urbanism in their policies and visions shows communities care about the long term vitality of food and want to make sure they can provide for everyone.

Planner's Opportunity

Planners are in a unique situation. They are people who know a little about a lot. On one end, they want to preserve open and green spaces, but on the other hand they see the need for development in their communities. Yet on another hand, they have to equitable to all parties. They are pulled in several directions all at once and a balance is always hard to accomplish. Planners should find their middle stance and stick to it. Education to all parties to reach a compromise is a key that all planners should achieve. Striking a balance is hard, but is needed. Planners have the knowledge to put the pieces together and can see how the seeming disconnected is actually interrelated. They have knowledge of how land use effects economic and ecologies and they should use this knowledge.

The balance of human demands and Earth's supply can be stained for so long. Something will have to give. By promoting and implementing agricultural urbanism will not only change what and how we eat, but also how we think about food. It will take time and getting used to, but if we do nothing the world we leave for the future will not be good one.

Discussion for Further Research

Agricultural Urbanism coupled with CPULs has the potential to change how food is thought of in the future. Due to the limited resources and time constraints, there were a few areas that could be expanded upon this research.

Technology plays a major role in food production, the specifics were not discussed in length in this paper, but the central role of collaboration and innovation are still key elements of agricultural urbanism. Technology can help further the reach and goals of community food systems

Health was mentioned but not address in its fullest extent. In the current global market, the fruits and vegetables sold in stores are selected due to their resilience and ability to withstand the long transportation and harsh industrial machinery, thus food is selected for its durability and not for variety or nutritional values (Bailkey et al., 2003).There are proven health benefits that agricultural urbanism provides. Some of these benefits are improved flexibility, increased outdoor activities, and beneficial nutritional values to locally grown food.

Another aspect that was lightly touched upon was husbandry or raising livestock in addition to growing food. Some areas for exploration are the environmental, social and economic benefits and barriers to husbandry. Chickens, goats and pigs are excellent urban dwellers if cared for properly.

Aquaculture or raising fish in an enclosed environment, especially in places where bodies of water are available like in a city was not included but could be certainly accommodated in future research. Finally, one other animal that is widely disputed but does entertain discussion is bee and the hives they occupy and how their relationship to plants, humans and food production.

Another area that was not filly discussed but is worth investigation is how a sustainable food system can be achieved with the incorporation of regional foods. During the geographical information systems analysis, there was other existing farm uses in adjoining countries. The trail system connected to other trail system throughout the region and ultimately the whole state of Florida. A great expansion on this topic would be to look at the regional scale and see what opportunities and issues there are at the regional level.

One final aspect that was not dealt with was the legal aspect of public produce grown on government land. It was assumed that there was no conflict, but this is not a perfect world and the legal issues of who maintains the trees or plants, is everything free or there a fee?, etc. are all things to consider.

APPENDIX A
PROPOSED CHANGES TO ALACHUA COUNTY, FLORIDA COMPREHESIVE PLAN

AGRICULTURAL USES IN ALACHUA COUNTY

A Summary of how agricultural uses are addressed within Alachua County's Comprehensive Plan and Unified Land Development Code

Note: The Alachua County Comprehensive Plan and Unified Land Development Code (ULDC) apply only in the unincorporated area of the County – the area not within the limits of any of the nine municipalities.

Summary of Comprehensive Plan Policies

Future Land Use Element – Section 6.0: Rural and Agricultural Policies

Protect and support local agriculture operations
Require compliance with applicable state-adopted Best Management Practices (BMPs) Encourage sustainable and conservation-oriented practices
Support development of markets and programs that promote local agriculture (farmers markets, community gardens, farm to institution, agritourism)
Partner with local groups to seek funding for development of sustainable local food system Agricultural pursuits allowed in all land use classifications
Land development regulations (i.e. the ULDC) are to:

- Provide standards for urban uses such as farmers markets, community gardens, laying hens, and other appropriate small scale agricultural uses in the urban area
- Address various scales of packaging and processing uses and level of approval required with higher intensity uses to be approved by the Board of County Commissioners

Energy Element (new) – Section 6.0: Local Food Production and Processing

Maximize local food production within the County's foodshed area, to be defined working in partnership with local community groups and organizations

- Determine processing and infrastructure needs
- Encourage dispersed, small-scale production with direct sales
- Increase support for farmers markets

Increase use of local foods in County facilities (i.e. the Jail) County to help facilitate farm to school partnerships
Encourage community gardens, green roofs and edible landscapes

- Identify potential community garden sites on County-owned land, including library sites

- Conduct public spaces audit to find appropriate locations at County facilities for green roofs, edible landscapes and garden areas

Land development regulations are to:

- Encourage edible plants in required landscape areas
- Allow community gardens and portions of green roofs to count toward required open space areas in new developments

Encourage sustainable agricultural practices, including organic farming

- Work with landowners to meet or exceed best management practices
- Reduce use of fossil-fuel based synthetic fertilizers
- Work with IFAS and local groups to encourage sustainable agriculture practices

Community Health Element – Objective 1.3: Prevention of obesity & other chronic illnesses

Promote access to healthful, affordable, nutritious food

- Encourage local food production, distribution and choice
- Consider programs to encourage use of vacant properties as community gardens
- Continued support for gardening through USDA and County Extension programs targeting low-income and high risk populations

Partner with local organizations to promote community food systems

- Develop standards for community agriculture and related uses
- Utilize economic development tools to promote location of grocery stores and farmers markets in proximity to underserved areas
- Implement 2009 Hunger Abatement Plan and provide technical assistance for community food access studies
- Encourage use of edible landscaping in landscaped areas through the ULDC

Proposed Amendments to Unified Land Development Code

The ULDC is where the implementing language is provided for application of the more general policies identified above in the Comprehensive Plan. All of the changes proposed are located within Chapter 404, Use Regulations, of the ULDC.

Commercial agriculture allowed on any parcel one acre or greater (currently five acres)
Added statement that growing and processing ag products onsite for personal use is allowed anywhere Agritourism and Ecotourism activities now expressly allowed
Restaurants allowed as a limited use accessory to a working farm for agritourism purposes if using primarily products grown on site
Ag processing now allowed as a limited use requiring development plan approval in Ag district and industrial districts (currently requires a special exception from the County Commission in Ag district)

- Limited sales area (20% of floor area) now allowed for products processed on

site

- Seasonal sales of offsite products allowed subject to approval of a Temporary Use Permit (administrative permit for up to 45 days - $70 fee)
- Deleted requirement that all processing activities be within enclosed buildings

Produce stands in Ag district now allowed limited sales of related value added goods and incidental sales of products grown offsite (Ag district currently limits sales to only products grown onsite)

- Additional seasonal sale of products grown offsite allowed if approved by Temporary Use Permit Produce stands in commercial districts now allowed limited sales of value added goods in addition to produce (can be entirely products grown offsite in these districts)

Ag warehousing and distribution as a separate use was deleted and combined with general warehousing and distribution with standards moved to that section of the ULDC (generally limited to agriculture related products in the Ag and Ag-Rural Business districts)

Changes to livestock raising on less than five acres:

Now allowed in all single family residential districts, subject to requirements for minimum lot size provided in the table:

- Hogs, goats, sheep (and similar animals) – one acre
- Cattle (and similar animals) – 1.5 acres per cow/calf unit
- Horses and other Equine – 2 acres

Commercial raising of livestock is prohibited on less than five acres (existing standard)
Noxious nuisances to be controlled for (existing standard)

Changes to poultry raising on less than five acres:

Commercial raising of chickens and other poultry allowed in Ag (A) and Ag-Rural Business (A-RB) districts on one acre or greater at density of 40 per acre
Up to six chickens allowed per single family residence for personal use

- Any slaughtering on site must comply with state and federal rules
- Roosters prohibited
- No sale of poultry or byproducts permitted on site except in A or A-RB districts as as part of a commercial use
- Must be housed in enclosed structures, movable or stationary, but may roam free within fenced areas during daylight hours
- No enclosures allowed within required property setbacks (varies depending on zoning district) Noxious nuisances to be controlled for (existing standard)

Community Gardens (new use identified)

Allowed anywhere subject to administrative approval by the Growth Management department (will most likely be similar to our other administrative permits - $70 or so)
Established operating rules and garden coordinator contact information to be provided

as part of permit to ensure compliance with standards
Site must be designed so water doesn't drain onto adjacent properties
Must comply with any requirements of an approved development plan if one exists (would include things like parking, landscaping, stormwater management, etc.)
Any fences added can be no more than six feet high
Limited accessory buildings allowed – greenhouses, sheds, seasonal farm stands
Sustainable gardening practices encouraged

Farmers Markets (new use identified)

Allowed in Ag and commercial districts or in any traditional neighborhood or transit-oriented development subject to development plan approval
Markets and vendors to comply with all federal, state and local laws and regulations pertaining to operation and use of the market
Copies of any required health or operation permits must be kept onsite during hours of operation All new markets will have to submit a development plan, either new or revised (if on an already developed site), for approval by the Development Review Committee
Plans for sanitation and public health provisions – temporary bathrooms, drainage, garbage and litter control - will need to be approved by the Health Department and Public Works Department

APPENDIX B
HIGHLIGHTS OF CHANGES IN CHAPTER 400 – 404 OF THE UNIFIED LAND DEVELOPMENT CODE

Chapter 404 Use Regulations

Article 2 Use Table

New uses added to table:	Uses Deleted:
Community Gardens	Spray Irrigation
Farmers Markets	
Resource-based Recreation	
Residential Recreational Camp	
College or University	
Article 3 Agriculture	

Page 404-15
Section 404.09 Agriculture Uses (a) Agritourism and Ecotourism Activities
Standards for Agritourism and Ecotourism have been added.

Explanation: These uses are encouraged by the Comprehensive Plan but were not specifically allowed in our Code

Section 404.10 Agriculture Products Processing, Packaging, and Sale, Offsite
Expanded this use to the industrial districts and revised to allow limited accessory retail sales.
Page 404-16
Section 404.11 Roadside Produce Stands

Expanded products that may be sold to a limited amount of items grown off-site and related value-added goods.

Page 404-17
Section 404.12 Poultry or Livestock Raising on Parcels Less Than Five Acres
(b) Poultry Raising on Parcels Less Than Five Acres

Added standards to allow chickens in residential districts. The standards include number of chickens allowed (6), prohibitions and types of enclosures and setbacks for the enclosures.

Explanation: backyard chickens have become increasingly popular with rising food costs and the eat-local movement. The City of Gainesville already allows residents to have chickens.

Page 404-19
Section 404.13 Community Garden
Added this to allow community gardens as a principal use of a lot in all zoning districts. Created standards to ensure that the lots were maintained.

Explanation: Community gardens were not specifically allowed as a principal use in the Code. They can supply fresh, cheap and healthy food to the neighborhood, reduce transportation costs and are a good use of vacant lots.

Section 404.13.5 Farmers' Market
Added Farmers' Markets as a use in the Agriculture and Commercial Districts and included standards for their location and operation.

Explanation: We have had repeated requests for farmers' markets and did not have them as a use in our Code.

APPENDIX C
ENVISION ALACHUA: INITIAL VISION, GOALS AND PLANNING PRINCIPLES

Envision Alachua Task Force Initial Vision, Goals and Planning Principles

Based on the Task Force discussion during Meeting #1 on June 27, 2011

prepared by

MIG, Inc.

July 2011

in support of the Envision Alachua process convened by Plum Creek

Introduction

At the first meeting of the Envision Alachua Task held on June 27, 2011, members were asked to share their desires and expectations for the Envision Alachua Planning process. The Task Force member comments, expressed verbally during the meeting or provided via written comment cards, were reviewed and analyzed to create this initial vision statement, draft goals and planning principles for the Envision Alachua planning process. This draft text is provided as a basis for discussion at Task Force Meeting #2. This text will continue to be revised and updated based on Task Force member feedback throughout the planning process.

Based on this discussion, the following document was created. In creating this document, the following definitions were applied:

> *Vision statement – a description of a preferred future*
>
> *Goals - desired end state, condition or outcome expressed*
>
> *Planning Principles- key concepts or ideas to guide future planning and implementation*

Initial Vision Statement for Plum Creek Lands in Alachua County

Plum Creek lands in Alachua County will:

- Provide economic development opportunities that support and grow the innovation economy, provide job opportunities for all economic levels, and ensure a robust and sustainable economy
- Support the development of communities that have a balanced and compatible mix of land uses and environmentally sustainable development practices while conserving environmentally sensitive areas and protecting agriculture
- Stimulate community engagement and participation in planning for a future that provides a high quality of life for current and future residents

Draft Goals and Planning Principles

A. Economic Development

Encourage development that provides for a sustainable economic future for residents at all wage and skill levels while being compatible with community goals for land conservation and natural resource protection

A1. Ensure that jobs are created that enable East County residents to live and work in East County

A2. Create and stimulate economic development opportunities that are sustainable and that create well-paying, long-lasting jobs

A3. Encourage manufacturing and industrial uses (for example, those related to solar energy) that provide blue collar jobs

A4. Encourage economic activities that help the community grow, leading to a better distribution of basic services in East County

A5. Identify a potential draw or anchor that would attract development and new residents to East County (e.g. retail development, manufacturing companies, University of Florida, etc.)

A6. Provide economic activities and related employment activities that retain graduates from the University of Florida, Santa Fe College and other educational institutions

A7. Explore potential markets for new products and industries that respond to regional and global needs (e.g. biomass, furniture, goat meat, phosphates, etc.)

A8. Create job opportunities that support the natural environment rather than displacing it

A9. Link this visioning process to economic development activities in Gainesville, such as Innovation Gainesville, in order to complement rather than compete with these initiatives

A10. Create a plan that anticipates or accommodates the resources available to support economic development; for example, consider working with agencies to restructure enterprise zones

A11. Identify development sites with the potential to attract Fortune 500 or 1000 companies to the area

B. Environmental Conservation

Protect and retain lands for conservation, habitat protection and wildlife connectivity

B1. Develop an ecologically-based plan that is built-around the objective of connecting people to nature

B2. Support local and state conservation activities that enhance wildlife connectivity

B3. Protect and retain lands for conservation and recreation

B4. Protect habitat for sensitive species, wetlands and wildlife corridors

B5. Create buffers between development and natural areas

B6. Help complete the "emerald necklace" around Gainesville

B7. Demonstrate the compatibility of conservation with economic development

B8. Use a science-based approach for defining sensitive areas, habitat, water resources and other related factors

B9. Use conservation easements to protect significant portions of any proposed project area

B10. Ensure long-term watershed protection

C. Transportation

Create communities that are walkable, provide for multiple modes of transportation, and build on policies expressed in city and county transportation plans

C1. Understand how future transportation trends (such as increased telecommuting) affect the assumptions used for long-term transportation planning

C2. Increase availability of public transit

C3. Use transportation plans to create economic development corridors

C4. Complete the bike trail between Gainesville Hawthorne Trail and Waldo Road Trail

C5. Build on policies expressed in the County's transportation plan and Bus Rapid Transit Plan

D. Energy and Utilities

Work closely with utility providers to develop partnerships for planning and delivering required infrastructure

D1. Work closely with utility providers to harness capabilities and develop partnerships with cities to meet the utility needs of outlying communities

D2. Consider constructing needed utility infrastructure in advance to reduce developer risks and stimulate implementation of proposed economic development

E. Water

Address long-term needs for water supply, water quality and water conservation

E1. Consider current and future water supply needs

F. Land Use

Create family-friendly, transit-supported, mixed-use communities that meet the needs of all residents

F1. Use planning and development approaches that help the area develop in a new way to avoid repeating mistakes of the past that have yielded sprawl and traffic congestion

F2. Work collaboratively with the County to build on results of previous successful planning processes

F3. Be consistent with current land use planning policies, including those that emphasize higher densities, mixed use and transit-oriented development

F4. Support activities that will encourage the movement of families with children to East County to help boost enrollment in East County schools

F5. Support activities that encourage tourism and agriculture, two important drivers of the local economy

F6. Consider preparing "development templates" that provide direction on ecologically appropriate areas for development and conservation, regardless of which type of economic development occurs

F7. Conduct meaningful and strategic conversions of lands for development

G. Agriculture

Maintain agriculture and silviculture as viable and sustainable economic activities

G1. Protect and enhance existing agriculture in the County

G2. Preserve agricultural areas to ensure the availability and affordability of locally grown food

G3. Consider activities that support urban agriculture and agricultural related eco-tourism

H. Social and Cultural Development

Provide a high quality of life for all residents

H1. Address the historic and social constraints that have limited access to opportunities for many residents in the community

H2. Involve faith-based leaders and related organizations to ensure broad community participation and representation

H3. Ensure Envision Alachua process fully acknowledges the influence of all communities on the history and ongoing and sustained land use development patterns of the area

H4. Increase arts and cultural opportunities for the community

H5. Include community amenities that are family friendly, contributing to high quality of life for all residents

I. Envision Alachua Planning Process

Ensure that the Envision Alachua process remains open, transparent, inclusive and representative of all community members

I1. Consider a long-term view for this process (50+ years)

I2. Ensure that Envision Alachua has tangible, short-term results (over 1-3 years) to help build momentum and community support

I3. Ensure that the planning process remains open and inclusive of all community members

I4. Address short and long-term planning horizons – 1-3, 3-5, 10+ year planning horizons so that foundational activities can be implemented

I5. Create a new economic, environmental and social engine for the region

I6. Develop partnerships with area institutions, educational providers and organizations to develop and implement the vision; consider potential partners such as the water district and Plan East Gainesville, among others

I7. Develop a buy-in and broad base of community support for vision and process

I8. Ensure process results in activities that are scalable and economically sustainable

I9. Explore availability of federal funds to support regional economic and community development processes

I10. Align the plan with the Six Pillars For Florida's Future planning framework developed by the Florida Chamber Foundation so it can inform state-wide planning processes and qualify Alachua County as a "six pillars community"

I11. Create a statewide model for future ecologically-planned communities

I12. Plan for growth that is sustainable and ecologically friendly

I13. Build community pride through public involvement in the community development process

I14. Ensure broad-based participation from the community to ensure that all residents are represented in the ongoing planning process

APPENDIX D
SOILS REPORT FOR ALACHUA COUNTY, FLORIDA

Prime and Other Important Farmlands

Alachua County, Florida

Map symbol	Map unit name	Farmland classification
33	Norfolk loamy fine sand, 2 to 5 percent slopes	All areas are prime farmland
78	Norfolk loamy fine sand, 5 to 8 percent slopes	All areas are prime farmland
57	Micanopy loamy fine sand, 2 to 5 percent slopes	Prime farmland if drained

Prime and Other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

"Prime farmland" is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

"Unique farmland" is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be "farmland of statewide importance" for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be "farmland of local importance" for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

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[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Candler	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
3:							
Arredondo	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.34
4:							
Arredondo	63	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.34
Urban land	32	Not rated		Not rated		Not rated	
5:							
Fort Meade	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.03
6:							
Apopka	82	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
						Too sandy	0.50
7:							
Kanapaha	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Droughty	0.63
						Too sandy	0.50
8:							
Millhopper	80	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.34
9:							
Millhopper	60	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.34
Urban land	25	Not rated		Not rated		Not rated	

Paths, Trails, and Golf Fairways

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Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
11:							
Riviera	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.35
13:							
Pelham	70	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50
						Droughty	0.49
14:							
Pomona	70	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50
						Droughty	0.03
15:							
Pompano	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
						Too sandy	0.50
16:							
Surrency	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Too sandy	0.50
						Droughty	0.34
17:							
Wauchula, non-hydric	70	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.94
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Too sandy	0.50
Wauchula, hydric	15	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50

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Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
18:							
Wauchula, non-hydric	50	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.94
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Too sandy	0.50
Urban land	35	Not rated		Not rated		Not rated	
Wauchula, hydric	10	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
19:							
Monteocha	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Too sandy	0.40	Too sandy	0.40		
20:							
Tavares	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
						Too sandy	0.50
21:							
Newnan	80	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Depth to saturated zone	0.19
						Droughty	0.13
22:							
Floridana	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Too sandy	0.50
23:							
Mulat, non-hydric	70	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50

Paths, Trails, and Golf Fairways

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Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
23:							
Mulat, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
25:							
Pomona	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Too sandy	0.50
						Droughty	0.22
26:							
Samsula	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Organic matter content	1.00	Organic matter content	1.00	Organic matter content	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
27:							
Urban land	85	Not rated		Not rated		Not rated	
28:							
Chipley	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.80
						Too sandy	0.50
29:							
Lochloosa	85	Very limited		Very limited		Not limited	
		Too sandy	1.00	Too sandy	1.00		
30:							
Kendrick	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.09
31:							
Blichton, non-hydric	75	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50
						Droughty	0.01

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
31:							
Blichton, hydric	10	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.01
32:							
Bivans	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50
33:							
Norfolk	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.87	Too sandy	0.87		
34:							
Placid	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Too sandy	0.50
35:							
Gainesville	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.81	Too sandy	0.81	Droughty	0.34
36:							
Arents	100	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.99
						Too sandy	0.50
37:							
Zolfo	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.28
38:							
Pits	50	Not rated		Not rated		Not rated	
Dumps	40	Not rated		Not rated		Not rated	
39:							
Bonneau	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.40

Paths, Trails, and Golf Fairways

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Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
41:							
Pedro	75	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
						Depth to bedrock	1.00
42:							
Pedro	45	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
						Depth to bedrock	1.00
Jonesville	40	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.99
						Depth to bedrock	0.20
44:							
Blichton, non-hydric	50	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50
						Droughty	0.03
Urban land	30	Not rated		Not rated		Not rated	
Blichton, hydric	10	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.03
45:							
Urban land	60	Not rated		Not rated		Not rated	
Millhopper	35	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.34
46:							
Jonesville	40	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.99
						Depth to bedrock	0.20
Cadillac	30	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.86
Bonneau	20	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.40

Paths, Trails, and Golf Fairways

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
47:							
Candler	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
Apopka	40	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
						Too sandy	0.50
48:							
Myakka, non-hydric	60	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50
						Droughty	0.20
Myakka, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.20
49:							
Lochloosa	80	Very limited		Very limited		Not limited	
		Too sandy	1.00	Too sandy	1.00		
50:							
Sparr	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.48
51:							
Plummer, non-hydric	65	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Droughty	0.92
Plummer, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Droughty	0.92
52:							
Ledwith	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00

Paths, Trails, and Golf Fairways

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
53:							
Shenks	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Organic matter content	1.00	Organic matter content	1.00	Organic matter content	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
54:							
Emeralda	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
55:							
Lake	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.92
						Too sandy	0.50
56:							
Wauberg	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.12
57:							
Micanopy	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.87	Too sandy	0.87	Depth to saturated zone	0.19
58:							
Lake	80	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.92
59:							
Pottsburg, non-hydric	60	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50
						Droughty	0.48
Pottsburg, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.48

Paths, Trails, and Golf Fairways

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60:							
Udorthents	85	Not rated		Not rated		Not rated	
61:							
Oleno	90	Very limited		Very limited		Very limited	
		Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
						Flooding	0.60
62:							
Boardman, non-hydric	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
		Too sandy	0.33	Too sandy	0.33		
Boardman, hydric	20	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
		Too sandy	0.33	Too sandy	0.33		
63:							
Terra Ceia	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Organic matter content	1.00	Organic matter content	1.00	Organic matter content	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
64:							
Okeechobee	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Organic matter content	1.00	Organic matter content	1.00	Organic matter content	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
65:							
Martel	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00

Paths, Trails, and Golf Fairways

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
67:							
Wacahoota, non-hydric	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
		Too sandy	0.33	Too sandy	0.33	Droughty	0.30
Wacahoota, hydric	15	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
		Too sandy	0.33	Too sandy	0.33	Droughty	0.30
68:							
Candler	90	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
69:							
Arredondo	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.34
70:							
Apopka	90	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	1.00
						Too sandy	0.50
71:							
Millhopper	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.34
72:							
Lochloosa	80	Very limited		Very limited		Not limited	
		Too sandy	1.00	Too sandy	1.00		
73:							
Kendrick	80	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.03
74:							
Blichton, non-hydric	70	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50
						Droughty	0.03

Paths, Trails, and Golf Fairways

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
74:							
Blichton, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.03
75:							
Blichton, non-hydric	70	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Too sandy	0.50
						Droughty	0.08
Blichton, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.08
76:							
Bivans, non-hydric	70	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.94
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Too sandy	0.50
Bivans, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
77:							
Bivans, non-hydric	70	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	0.94
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Too sandy	0.50
						Slope	0.16
Bivans, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Slope	0.16
78:							
Norfolk	80	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.87	Too sandy	0.87		

Paths, Trails, and Golf Fairways

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
79:							
Gainesville	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.81	Too sandy	0.81	Droughty	0.34
80:							
Mascotte	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Flooding	0.60
Wesconnett	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Flooding	0.60
						Too sandy	0.50
Surrency	15	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	0.40	Flooding	0.40	Too sandy	0.50
						Droughty	0.34
81:							
Starke	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	0.40	Flooding	0.40	Too sandy	0.50
						Droughty	0.05
82:							
Pelham	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Flooding	0.60
						Too sandy	0.50
						Droughty	0.33
Plummer	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Droughty	0.92
						Flooding	0.60

Paths, Trails, and Golf Fairways

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
82:							
Mascotte	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Flooding	0.60
83:							
Pickney	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Too sandy	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	0.40	Flooding	0.40	Droughty	0.90
						Too sandy	0.50
84:							
Ocilla	50	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Flooding	0.60
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Droughty	0.54
						Too sandy	0.50
						Depth to saturated zone	0.48
Alapaha	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Too sandy	1.00	Flooding	0.60
						Too sandy	0.50
						Droughty	0.41
Mandarin	25	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.67
						Flooding	0.60
						Too sandy	0.50
85:							
Pamlico	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Organic matter content	1.00	Organic matter content	1.00	Organic matter content	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
99:							
Water	100	Not rated		Not rated		Not rated	

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2:							
Candler	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
3:							
Arredondo	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
4:							
Arredondo	63	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
Urban land	32	Not rated		Not rated		Not rated	
5:							
Fort Meade	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
6:							
Apopka	82	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
7:							
Kanapaha	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
						Slope	0.13
8:							
Millhopper	80	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9:							
Millhopper	60	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
Urban land	25	Not rated		Not rated		Not rated	
11:							
Riviera	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	0.99	Slow water movement	0.99	Slow water movement	0.99
13:							
Pelham	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
14:							
Pomona	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
15:							
Pompano	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
16:							
Surrency	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Too sandy	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Ponding	1.00
17:							
Wauchula, non-hydric	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.94	Too sandy	1.00
		Slow water movement	0.49	Slow water movement	0.49	Slow water movement	0.49

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
17:							
Wauchula, hydric	15	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	0.49	Slow water movement	0.49	Slow water movement	0.49
18:							
Wauchula, non-hydric	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.94	Too sandy	1.00
		Slow water movement	0.49	Slow water movement	0.49	Slow water movement	0.49
Urban land	35	Not rated		Not rated		Not rated	
Wauchula, hydric	10	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	0.49	Slow water movement	0.49	Slow water movement	0.49
19:							
Monteocha	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Too sandy	0.40	Too sandy	0.40	Too sandy	0.40
20:							
Tavares	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
21:							
Newnan	80	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
22:							
Floridana	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Too sandy	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Slow water movement	0.99	Slow water movement	0.99	Slow water movement	0.99

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
23:							
Mulat, non-hydric	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slow water movement	0.43
Mulat, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slow water movement	0.43
25:							
Pomona	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Too sandy	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Ponding	1.00
26:							
Samsula	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Organic matter content	1.00
		Organic matter content	1.00	Organic matter content	1.00	Ponding	1.00
27:							
Urban land	85	Not rated		Not rated		Not rated	
28:							
Chipley	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
29:							
Lochloosa	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Slow water movement	0.21	Slow water movement	0.21	Slope	0.50
						Slow water movement	0.21
30:							
Kendrick	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.50

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
31:							
Blichton, non-hydric	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slow water movement	0.43
Blichton, hydric	10	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slow water movement	0.43
32:							
Bivans	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
		Slow water movement	0.99	Slow water movement	0.99	Slow water movement	0.99
						Slope	0.50
33:							
Norfolk	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.87	Too sandy	0.87	Too sandy	0.87
						Slope	0.50
34:							
Placid	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Too sandy	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Ponding	1.00
35:							
Gainesville	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.81	Too sandy	0.81	Too sandy	0.81
						Slope	0.13
36:							
Arents	100	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
37:							
Zolfo	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
38:							
Pits	50	Not rated		Not rated		Not rated	
Dumps	40	Not rated		Not rated		Not rated	
39:							
Bonneau	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Slope	0.50
41:							
Pedro	75	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.13
42:							
Pedro	45	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.13
Jonesville	40	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Depth to bedrock	0.20
						Slope	0.13
44:							
Blichton, non-hydric	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slow water movement	0.43
						Slope	0.13
Urban land	30	Not rated		Not rated		Not rated	
Blichton, hydric	10	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slow water movement	0.43
						Slope	0.13

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
45:							
Urban land	60	Not rated		Not rated		Not rated	
Millhopper	35	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
46:							
Jonesville	40	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Depth to bedrock	0.20
						Slope	0.13
Cadillac	30	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
Bonneau	20	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Slope	0.13
47:							
Candler	50	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
Apopka	40	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
48:							
Myakka, non-hydric	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
Myakka, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
49:							
Lochloosa	80	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50:							
Sparr	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
51:							
Plummer, non-hydric	65	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
Plummer, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
52:							
Ledwith	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Slow water movement	0.99	Slow water movement	0.99	Slow water movement	0.99
53:							
Shenks	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Organic matter content	1.00
		Organic matter content	1.00	Organic matter content	1.00	Ponding	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
54:							
Emeralda	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.99	Slow water movement	0.99	Slow water movement	0.99
55:							
Lake	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
56:							
Wauberg	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
57:							
Micanopy	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
		Too sandy	0.87	Too sandy	0.87	Too sandy	0.87
		Depth to saturated zone	0.39	Depth to saturated zone	0.19	Slope	0.50
						Depth to saturated zone	0.39
58:							
Lake	80	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.13
59:							
Pottsburg, non-hydric	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
Pottsburg, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
60:							
Udorthents	85	Not rated		Not rated		Not rated	
61:							
Oleno	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too clayey	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	0.99	Too clayey	1.00
		Too clayey	1.00	Slow water movement	0.96	Slow water movement	0.96
		Slow water movement	0.96			Flooding	0.60

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
62:							
Boardman, non-hydric	70	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.98	Slow water movement	0.96	Slope	1.00
		Slow water movement	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.98
		Too sandy	0.33	Too sandy	0.33	Slow water movement	0.96
						Gravel	0.78
						Too sandy	0.33
Boardman, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slope	1.00
		Too sandy	0.33	Too sandy	0.33	Slow water movement	0.96
						Gravel	0.78
						Too sandy	0.33
63:							
Terra Ceia	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Organic matter content	1.00
		Organic matter content	1.00	Organic matter content	1.00	Ponding	1.00
64:							
Okeechobee	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Organic matter content	1.00
		Organic matter content	1.00	Organic matter content	1.00	Ponding	1.00
65:							
Martel	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
67:							
Wacahoota, non-hydric	70	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.98	Depth to saturated zone	0.75	Slope	1.00
		Too sandy	0.33	Too sandy	0.33	Depth to saturated zone	0.98
						Gravel	0.72
						Too sandy	0.33

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
67:							
Wacahoota, hydric	15	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Too sandy	0.33	Too sandy	0.33	Slope	1.00
						Gravel	0.72
						Too sandy	0.33
68:							
Candler	90	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	1.00
69:							
Arredondo	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	1.00
70:							
Apopka	90	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	1.00
71:							
Millhopper	85	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	1.00
72:							
Lochloosa	80	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
		Slow water movement	0.21	Slow water movement	0.21	Slope	1.00
						Slow water movement	0.21
73:							
Kendrick	80	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	1.00
74:							
Blichton, non-hydric	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slope	0.50
						Slow water movement	0.43

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
74:							
Blichton, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slope	0.50
						Slow water movement	0.43
75:							
Blichton, non-hydric	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	0.99	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slope	1.00
						Slow water movement	0.43
Blichton, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	0.43	Slow water movement	0.43	Slope	1.00
						Slow water movement	0.43
76:							
Bivans, non-hydric	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Slow water movement	0.99	Too sandy	1.00
		Slow water movement	0.99	Depth to saturated zone	0.94	Slope	1.00
						Slow water movement	0.99
Bivans, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Slow water movement	0.99	Slow water movement	0.99	Slope	1.00
						Slow water movement	0.99
77:							
Bivans, non-hydric	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Slow water movement	0.99	Slope	1.00
		Slow water movement	0.99	Depth to saturated zone	0.94	Too sandy	1.00
		Slope	0.16	Slope	0.16	Slow water movement	0.99

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
77:							
Bivans, hydric	20	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Too sandy	1.00	Depth to saturated zone	1.00	Slope	1.00
		Slow water movement	0.99	Slow water movement	0.99	Too sandy	1.00
		Slope	0.16	Slope	0.16	Slow water movement	0.99
78:							
Norfolk	80	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.87	Too sandy	0.87	Slope	1.00
						Too sandy	0.87
79:							
Gainesville	85	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.81	Too sandy	0.81	Slope	1.00
						Too sandy	0.81
80:							
Mascotte	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00	Slow water movement	0.21	Flooding	0.60
		Slow water movement	0.21			Slow water movement	0.21
Wesconnett	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00			Flooding	0.60
Surrency	15	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00	Flooding	0.40	Flooding	1.00
81:							
Starke	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00	Flooding	0.40	Flooding	1.00

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
82:							
Pelham	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00			Flooding	0.60
Plummer	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00			Flooding	0.60
Mascotte	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00	Slow water movement	0.21	Flooding	0.60
		Slow water movement	0.21			Slow water movement	0.21
83:							
Pickney	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00	Flooding	0.40	Flooding	1.00
84:							
Ocilla	50	Very limited		Very limited		Very limited	
		Flooding	1.00	Too sandy	1.00	Too sandy	1.00
		Too sandy	1.00	Depth to saturated zone	0.48	Depth to saturated zone	0.81
		Depth to saturated zone	0.81			Flooding	0.60
						Slope	0.50
Alapaha	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Too sandy	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00			Flooding	0.60
Mandarin	25	Very limited		Very limited		Very limited	
		Flooding	1.00	Too sandy	1.00	Too sandy	1.00
		Too sandy	1.00			Flooding	0.60

Camp Areas, Picnic Areas, and Playgrounds

Alachua County, Florida

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
85:							
Pamlico	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Organic matter content	1.00	Organic matter content	1.00
		Organic matter content	1.00	Flooding	0.40	Flooding	1.00
99:							
Water	100	Not rated		Not rated		Not rated	

Camp Areas, Picnic Areas, and Playgrounds

The soils of the survey area are rated in this table according to limitations that affect their suitability for camp areas, picnic areas, and playgrounds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in this table can be supplemented by other information, for example, interpretations for dwellings without basements, for local roads and streets, and for septic tank absorption fields.

"Camp areas" require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, saturated hydraulic conductivity (Ksat), and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, Ksat, and toxic substances in the soil.

"Picnic areas" are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, Ksat, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, Ksat, and toxic substances in the soil.

"Playgrounds" require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, Ksat, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, Ksat, and toxic substances in the soil.

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BIOGRAPHICAL SKETCH

Born and raised in Richmond, Virginia, Robert Christopher Narvaez earned his Bachelor of Arts in public and urban affairs with a minor in real estate and a concentration in political science from Virginia Polytechnic Institute and State University in Blacksburg, Virginia. As an undergraduate student, he earned the 2008 Jim Segedy Award for Outstanding Student Project for a Small Town or Rural Area while on scholarship.

Robert worked in Texas as a planner before deciding to pursue a master's degree at the University of Florida. Robert will graduate with a Master of Arts in Urban and Regional Planning specializing in urban design and a minor in historic preservation in May 2012. As a graduate student, he was a Florida Delegate at the 2011 American Planning Association (APA) National Conference in Boston, MA, 2010 Florida APA Minority Scholarship Recipient, and student member of the College Park/ University Heights Redevelopment Advisory Board and Certified Energy Auditor.

Currently, Robert works as a Development Review Planner for a Virginia county south of Washington, D.C. Robert's planning interests are urban design, sustainability, food systems and agricultural urbanism. Robert has been a member of the American Planning Association since 2008.