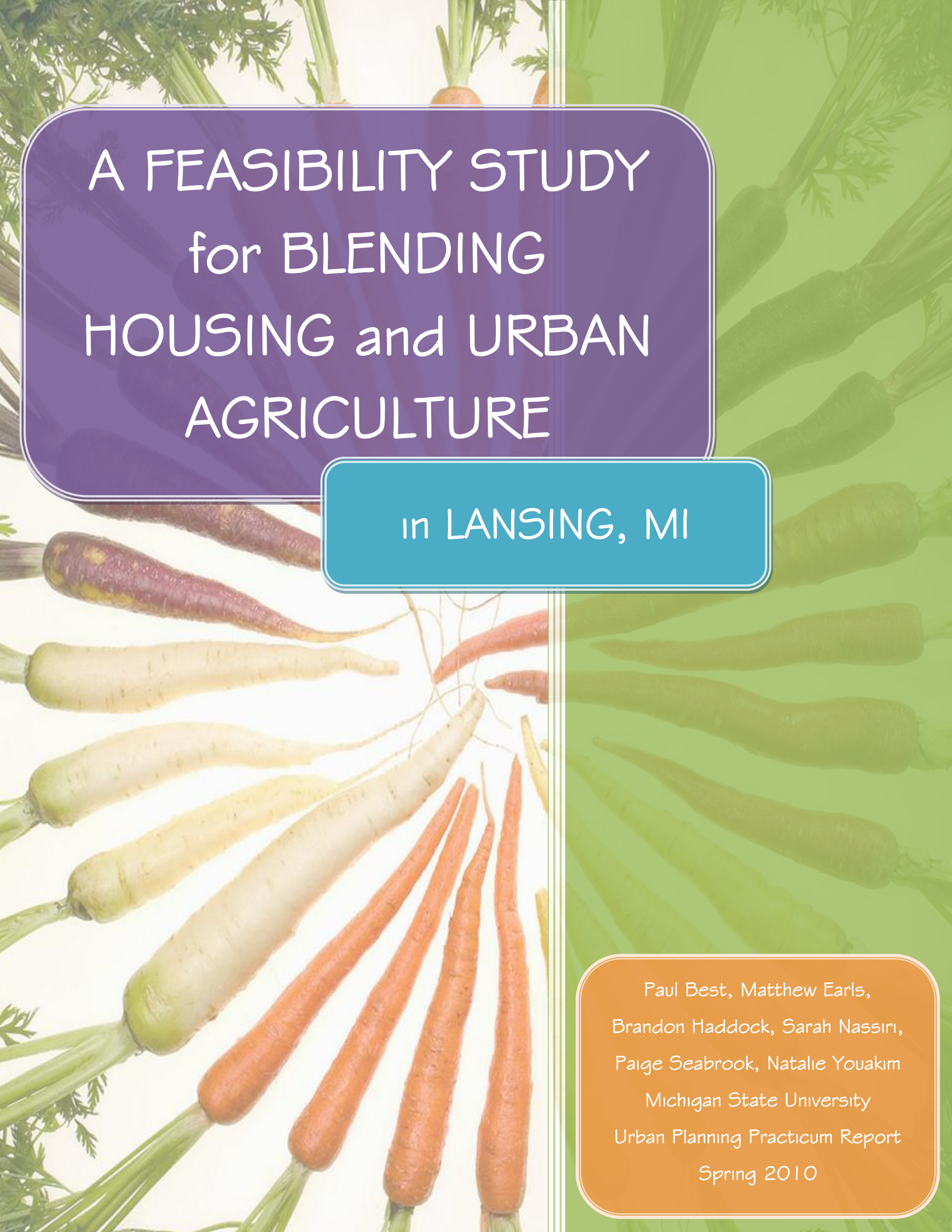

# A FEASIBILITY STUDY for BLENDING HOUSING and URBAN AGRICULTURE

## in LANSING, MI

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Urban Planning Practicum Report
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# EXECUTIVE SUMMARY

The project site is located along Aurelius Road on the City of Lansing's south side. It lies in a largely residential neighborhood consisting single-family and multi-family housing. The primary client and property owner, Cohousing Development Company, in partnership with the Greater Lansing Food Bank, has enlisted the help of the Michigan State University Urban and Regional Planning Practicum Team to develop use alternatives for the project site. The clients sought a development option that included both housing and agricultural elements.

In developing options and recommendations, the Practicum Team first evaluates the physical characteristics of the project site. It is near several natural amenities such as the Lansing River Trail and the Fenner Nature Center. It is also in close proximity to Michigan State University and Lansing Community College. The Practicum Team also evaluated the site's accessibility and found that in addition to being in close proximity to several state roads and freeways, the project site is also located along a city bus route.

Next, the Practicum Team examines neighborhood characteristics around the project site. Demographic trends in population growth, age distribution, and household income within one and three miles of the project site were established. Overall, the area has a stable, steadily aging population. Employment patterns are also evaluated, and key job growth sectors are identified; unemployment numbers were found to be high. Additionally, the quality of public schools within one and three miles of the site is examined. The Practicum Team found the quality of Lansing schools might pose a threat to the marketability of the property, especially to families or those looking to raise children. This section provides a basis on which to build a proper housing market analysis.

In the Practicum Team's housing market analysis, challenges and opportunities in relation to the creation of housing on site are assessed. The market analysis begins with an evaluation of current housing stock in the surrounding neighborhoods. Then vacancy, home ownership rates, foreclosure rates, and new construction patterns within one and three miles of the project site are examined to determine if demand still exists for different types of housing. Lastly, the feasibility of housing for target markets such as senior, low income, and student populations is explored. The Practicum Group found the high levels of foreclosed properties within several miles of the site may impact potential home sales as well home sale prices. It was also found that new home construction has declined substantially in recent years, a reflection of economic insecurity in the housing and employment markets. Additionally, target populations were shown to be either stable or growing.

After the housing market analysis, the Practicum Team assessed the appropriateness of various housing types on the project site. To do this, housing designs such as cottage communities and cohousing were evaluated in terms of their appeal to the potential target populations identified earlier. Universal design principles and their applicability to a variety of populations and housing types were also explored, as well as construction methods like prefabrication and green building. This section concludes with a review of two case studies: Newberry Place in Grand Rapids, Michigan and Troy Gardens in Madison, Wisconsin. The Practicum Team recommends incorporating universal design to increase site marketability. Prefabrication should also be explored to control costs. Furthermore, Troy Gardens, a successful example of blending housing and urban agriculture, should be well-noted.

Following this, the Practicum Team conducts an agricultural feasibility analysis for the project site. This analysis includes an overview of soil limitations and potential soil-related issues. Health and food security in the City of Lansing and in the State of Michigan are evaluated, and the need for locally grown, fresh food is established. It was found that the soils, barring ground and soil analysis tests should be conducive to agricultural production.

The agricultural feasibility analysis is followed by an evaluation of different agriculture and vegetation options. The site's suitability for public open space, urban gardening, community supported agriculture, and production agriculture is assessed. Educational opportunities involving agriculture on the project site are also explored, with case studies from Project Grow in Ann Arbor, Michigan, Troy Gardens in Madison, Wisconsin, and Growing Power in Milwaukee, Wisconsin providing context for this project. These case studies show that agriculture can be successful in urban settings similar to the project site.

The Practicum Team next evaluates the strengths and limitations of various housing and agricultural options. This analysis is a crucial component to the formation of development possibilities and recommendations. In addition to this, the Practicum Team explores several financing opportunities for various housing and agricultural developments and their applicability to the project site.

Three development options, which provide conceptual representations of possibilities, are created and evaluated in terms of their suitability for the site and surrounding neighborhood. A final recommendation, incorporating elements from all three original development options, is made. This recommendation and phasing plan represent the culmination of the Practicum Team's research and evaluations.

This project uses cutting edge planning practices emerging in the twenty-first century that focus on building green, walkable, and self-sustaining communities. Blending housing with

agriculture is an innovative way to make this movement practical; and the development recommendation for this site presents an opportunity to lead the application of these new principles into common planning practice.

## URBAN AND REGIONAL PLANNING PRACTICUM

This project was completed as part of an Urban and Regional Planning Practicum course at Michigan State University. Practicum is the capstone course for undergraduate and graduate students in the Urban and Regional Planning Program. It allows students to apply knowledge acquired in previous planning courses to real world situations. Under the direction of Practicum faculty advisors, students work with clients to identify solutions to planning-related issues.

## THE CLIENTS

The practicum team's client for this project is the Cohousing Development Company (CDC) based in Ann Arbor, Michigan. An additional partner in this project is the Greater Lansing Food Bank (GLFB). CDC has already developed three cohousing communities on adjoining properties in Scio Township near Ann Arbor: Sunward Cohousing (1998), Great Oak Cohousing (2003), and Touchstone Cohousing (in progress). In 2002, the client acquired the former Delaney property in the Forest View neighborhood on Lansing's south side with the expectation of developing another cohousing community. The plans for this project were not successful in part due to the region's weakening housing market.

# SITE DESCRIPTION

## Location

The project site is located in the City of Lansing, Ingham County, Michigan. Its address is 3721 Aurelius Road in South Lansing. The site lies along the east side of Aurelius Road and is south of East Mt. Hope Avenue and north of East Jolly Road (see Figure 1). With the exception of several commercial businesses across Aurelius, the area immediately surrounding the project site is largely composed of single-family residential homes. Newer homes can be found east of the property. Some multi-family residential units can be found to the north and west, along with a former nursing home which may be reopened in the near future. A number of natural areas can be found nearby including Hawk Island County Park, Scott Woods Park, and Fenner Nature Center. The project site is in approximately 3 miles west of Michigan State University and approximately 3.5 miles southeast of Lansing Community College.

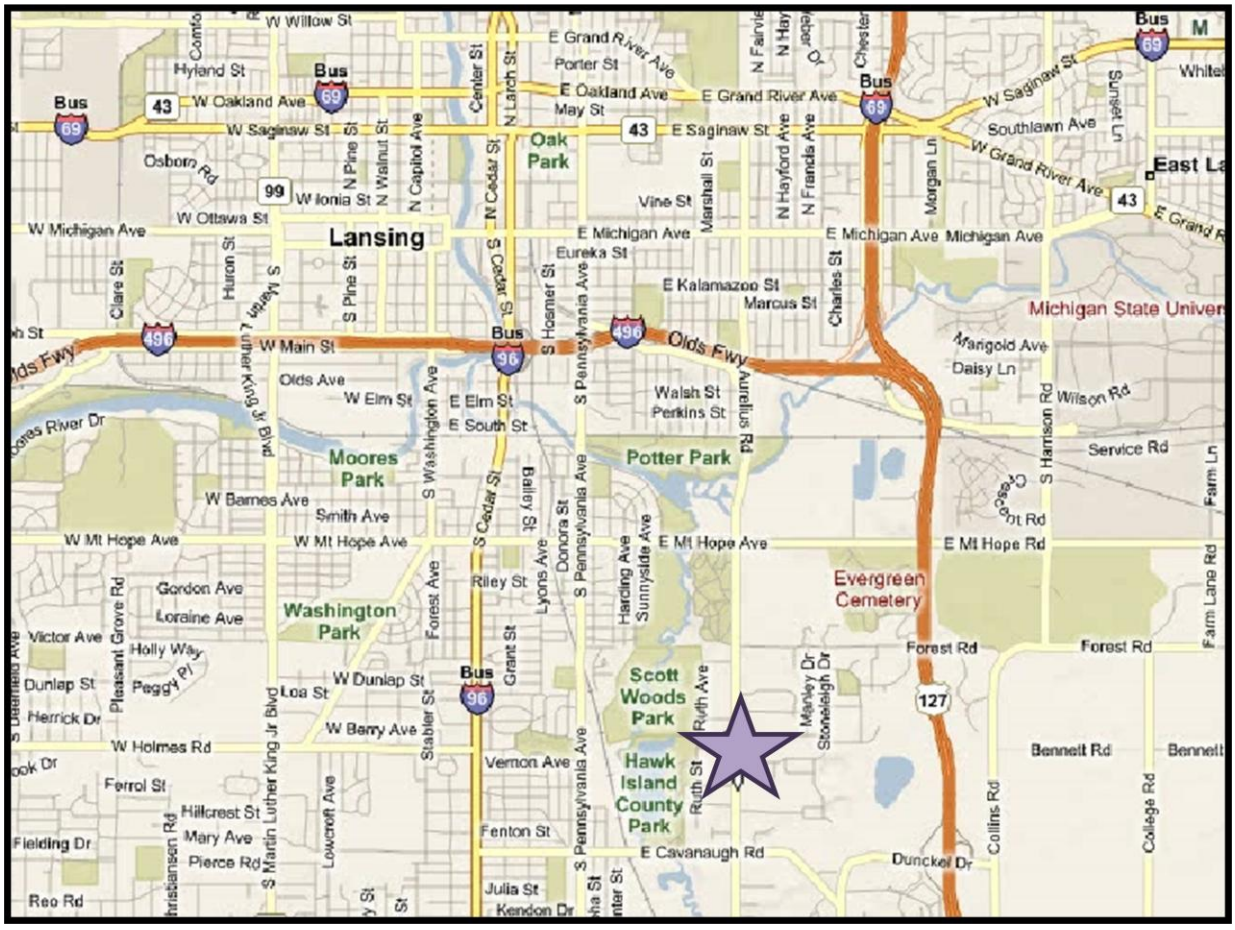



Figure 1: Project site location within Lansing Source: Bing Maps, 2010

## Site Specifics

The project site is approximately 22.84 acres in area and fronts on Aurelius Road (about 450 ft.) (see Figure 2). In the past, parts of the site have been used as farmland including an orchard. For the past 30 years, the land has lain fallow, with scrub trees, tall grasses, and aging orchard trees now dominating the current landscape. The site is not in a floodplain, but occasionally standing can be found in low spots on the site's northeast and northwest corners (Vertalka & Vertalka, 2009). The low spot in the northeast corner has been identified as a wetland by the U.S. Fish & Wildlife Service's National Wetland Inventory (2009). A small two-car garage is the only structure on the project site, as the farmhouse located there burnt down in recent years (see Figure 3).

Figure 3: Garage on site Source: Site visit

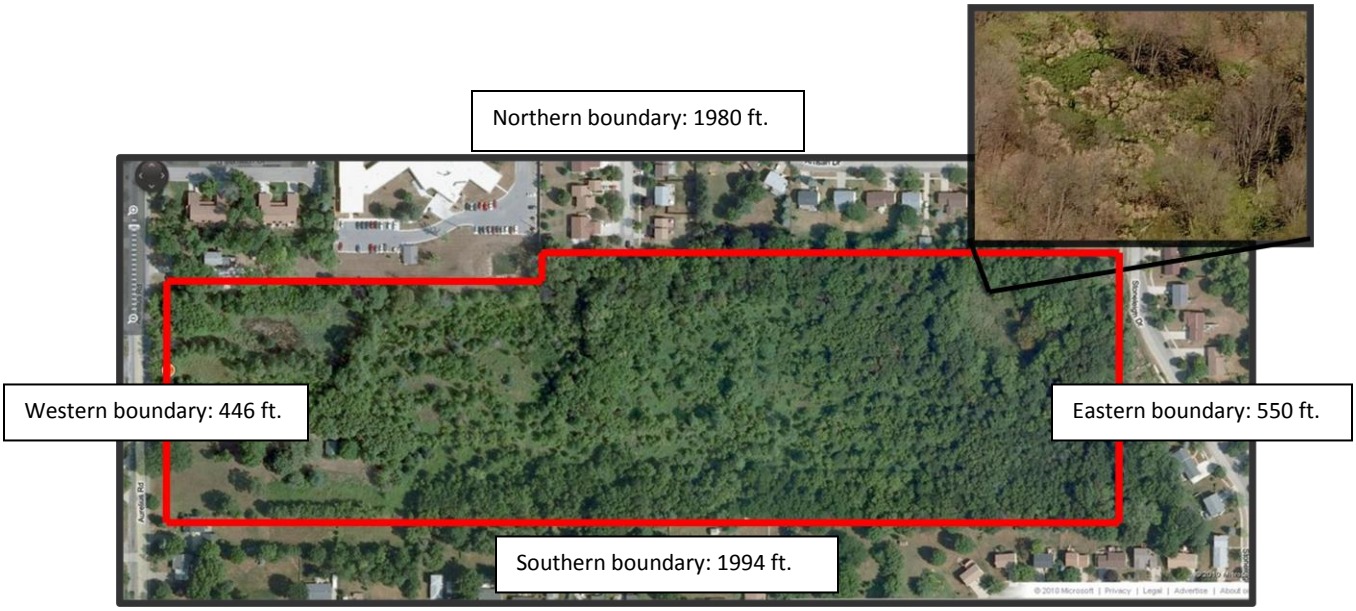



Figure 2: Aerial view of site
Inset: Occasionally flooded northeast corner of site
Source: Bing Maps, 2010

According to the 2006 Lansing zoning map (see Figure 4), the site is zoned as A Residential-Single. This designation permits "single-family detached dwellings with minimum lot size of 6,000 square feet." Group day cares, schools, and golf courses are allowed by special condition, and churches, cemeteries, nurseries, and child care facilities are allowed by special land use permits (City of Lansing, 2008). The site was previously zoned as a Planned Residential Development (PRD), and was approved for 86 condominiums (Vertalka & Vertalka, 2009). As seen in Figure 4, parcels surrounding the project site are zoned C Residential (two-family), DM-1 Residential (low-density multiple family), D-1 Professional Office, G-2 Wholesale (warehouses), F Commercial (general retail), E-2 Local Shopping, and J Parking.

Elevation does not vary greatly, and most of the site is level with the exception of the two low spots on its northeast and northwest corners. The project site has access to utilities such as electric, natural gas, and telephone lines. Water and sanitary sewer services are available (Vertalka & Vertalka, 2009). Overall, the site lends itself to the development of a variety of uses.

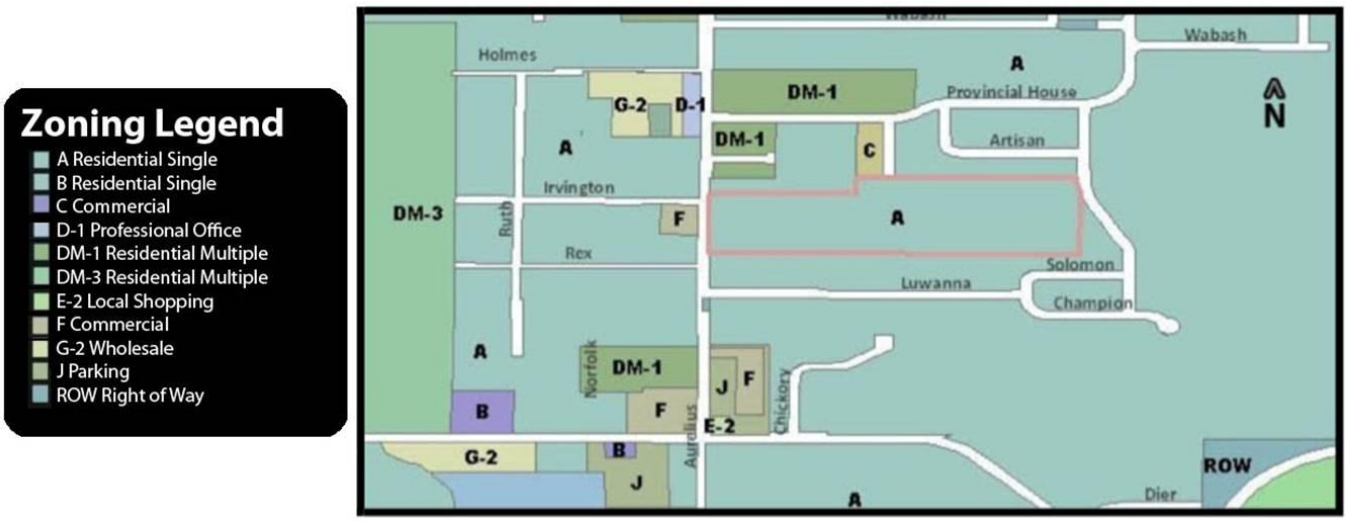


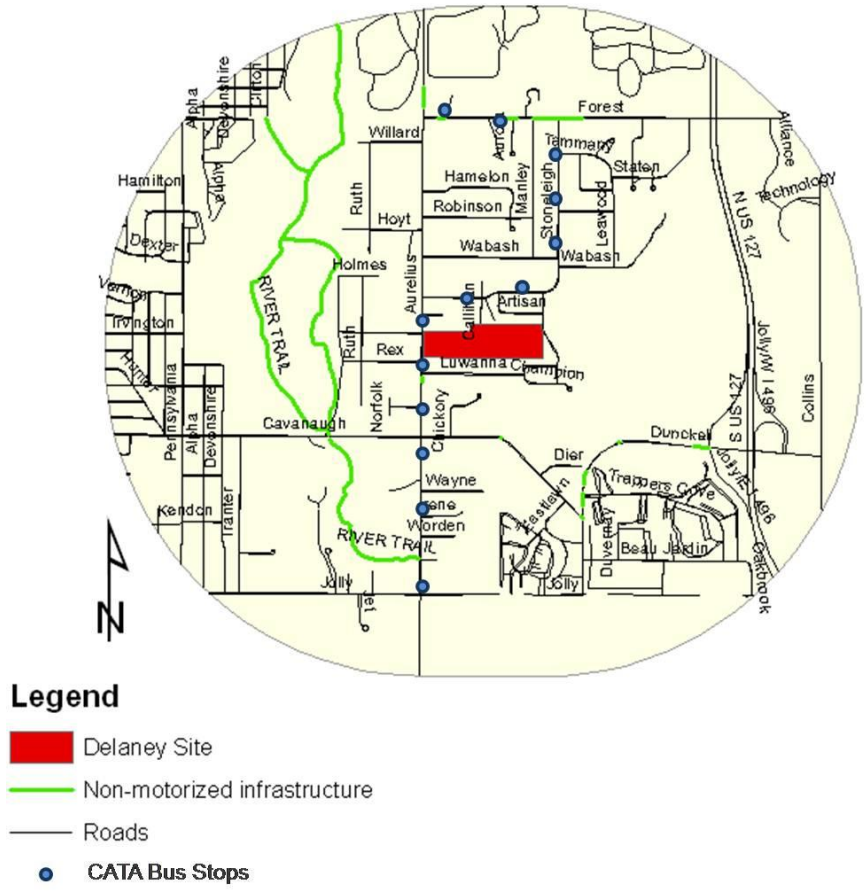

Figure 4: Area zoning map, 2006 Data source: City of Lansing

## Accessibility

Main roads near the site include Mt. Hope Avenue and Jolly Road. It is also a short driving distance from Martin Luther King, Jr. Boulevard, Pennsylvania Avenue, and Cedar Street, easily accessible to I-496. The Capital Area Transportation Authority's (CATA) route #7 passes the site, and the nearest bus stop is a short walk away (see Figure 5). The site has three main access points: Aurelius Road to the east, Stoneleigh Drive to the west, and Callihan Court to the north. Both Aurelius Road and Callihan Court are accessible by automobile, and Stoneleigh Drive could provide pedestrian access for any development on the site.

The property is located within close proximity to the Lansing River Trail network. This non-motorized pedestrian and bicycle pathway connects the south of Lansing with Downtown, the Old Town neighborhood, and the campus of Michigan State University. Well maintained, well used, and within a short distance from the project site, the trail may be an attractive feature to specific populations seeking housing.

Figure 5: Site Accessibility (1 mile radius)



## Site Description Summary

Site Location

- Site located in South Lansing, Ingham County MI
- Located off Aurelius in between E. Mt. Hope and E. Jolly
- Surrounding area largely single family residential
- Proximity to MSU, LCC

Site Specifics

- 22.84 acres, only current built structure is abandoned two car garage
- Fallow 30 yrs, site dominated by overgrown landscape
- Wet spots located in both Northeast and Northwest corner
- Zoned residential A
- Existing access to utilities
- Site is level with generally buildable soils
- Lends itself to development

Accessibility

- Located near Lansing River Trail network- connects with downtown Lansing, Old Town, and MSU
- Major roads = Mt Hope, Jolly rd. Easy access to I-496
- Site has three major access points: Aurelius, Stoneleigh Drive, Callihan Court

# NEIGHBORHOOD DESCRIPTION

Before a housing market analysis can be completed, establishing a thorough understanding of the demographic and employment trends of the surrounding community is necessary. Demand for new housing units in is based on several factors including population trends in the market area, neighborhood structure and demographics, and regional economic trends.

Population, age distribution, household information, employment, and quality of schools were evaluated within 1- and 3-mile radii of the project site, thus providing two distinct snapshots of the population. This information is useful in identifying trends at different distances from the project site. When radial data was unavailable or not applicable, figures from the City of Lansing were substituted. These steps will help the practicum team produce development recommendations that are aligned with the community's needs and have the greatest opportunity for financial success.

## Population

Generally, estimates of future housing needs are based upon projected population growth. Such growth indicates that an area is attracting new residents and that new housing developments may be necessary to accommodate this influx (Myers et al, 2002). While there is no clear level of growth that determines need, demographic trends such as age and employment can also help identify if the current housing stock is sufficient or if demand for alternative housing options exists. Demand for new housing is clear during times of rapid population growth, but demand can also exist during times of little or no growth. For example, a community that is not growing in overall population but is aging may demand new units that are smaller and more manageable. If the current housing stock is sufficient, however, new development may over-saturate the market and leave units vacant (Schmitz & Brett, 2001).

Table 1: Population 2000-2008

| | 2000 | 2008* | Percent Change | Annual Average % Change |
|---|---|---|---|---|
| **1 mile radius from project site** | 8,338 | 8,357 | 0.23% | 0.03% |
| **3 mile radius from project site** | 71,956 | 71, 136 | -1.15% | -0.76% |
| **Lansing** | 119,128 | 110,587 | -7.17% | -0.90% |

*Source: 2000 US Census and 2008, American Community Survey estimates*

As seen in Table 1, the City of Lansing's population is projected to have declined 7.17 percent from 2000 to 2008. Population within a 3-mile radius of the site also declined but to a lesser degree and the area within a mile of the site actually increased in population very slightly. Over the last decade, the area within 1 mile of the project site has had stable low growth rate of .03% a year.

While there are many other factors that can affect demand, stagnant population growth around the project site does not necessarily indicate a lack of demand for new housing units. Even in markets with little or negative growth, new units are still being created. Units that appeal to niche markets or other demographic trends can meet a demand that is not represented in population growth statistics. Analysis of age cohorts and household demographics can identify a potentially untapped market.

## Age Distribution

When demand is not obvious, a more detailed analysis of population trends becomes necessary. Evaluating age trends in cohorts, or statistical groupings based on similar age ranges, is a useful method of evaluating the types of need that may exist. For example, growth amongst younger families may represent demand for larger single-family homes, whereas growth among those aged 40 and over would indicate a sharp drop-off in demand for this type of unit (Myers & Vidaurri, 1996). Identifying such trends can also prevent the excessive resales and vacancies that would result from the development of units that are not demanded. Ultimately, trends in age may help suggest the type of units that would be most successful.

Table 2: Population by age (%)

| | 1 mile radius | | | 3 mile radius | | | City of Lansing | | |
|---|---|---|---|---|---|---|---|---|---|
| *Age* | *2000* | *2008* | *Difference* | *2000* | *2008* | *Difference* | *2000* | *2008* | *Difference* |
| **0-4** | 6.60 | 6.40 | **-0.20** | 7.10 | 6.90 | **-0.20** | 8.20 | 7.80 | **-0.40** |
| **5-9** | 4.80 | 4.40 | **-0.40** | 6.40 | 6.00 | **-0.40** | 7.80 | 6.20 | **-1.60** |
| **10-14** | 3.80 | 4.20 | **0.40** | 5.60 | 5.70 | **0.10** | 6.90 | 6.50 | **-0.40** |
| **15-19** | 5.40 | 5.70 | **0.30** | 10.90 | 11.30 | **0.40** | 6.60 | 6.00 | **-0.60** |
| **20-24** | 18.80 | 19.20 | **0.40** | 12.50 | 12.30 | **-0.20** | 8.80 | 10.30 | **1.50** |
| **25-34** | 23.60 | 22.10 | **-1.50** | 18.20 | 16.20 | **-2.00** | 17.60 | 16.60 | **-1.00** |
| **35-44** | 12.50 | 11.80 | **-0.70** | 14.10 | 13.20 | **-0.90** | 15.20 | 13.70 | **-1.50** |
| **45-54** | 10.30 | 10.40 | **0.10** | 10.80 | 12.20 | **1.40** | 12.40 | 13.60 | **1.20** |
| **55-64** | 5.50 | 7.60 | **2.10** | 5.70 | 8.10 | **2.40** | 6.90 | 9.90 | **3.00** |
| **65-74** | 4.50 | 3.90% | **-0.60** | 4.50 | 4.00 | **-0.50** | 5.20 | 4.90 | **-0.30** |
| **75-84** | 3.30 | 3.20% | **-0.10** | 3.10% | 2.80 | **-0.30** | 3.50 | 3.50 | **0.00** |
| **85+** | 1.10 | 1.40% | **0.30** | 1.00% | 1.20 | **0.20** | 1.10 | 1.20 | **0.10** |

*1.7 1.8 2.8 Source: US Census and ESRI Forecasts*

Although more than half of the population in both the 1- and 3-mile radii is 34 or younger, the cohort that has shown the most growth over the past decade is the 55 to 64 group with 2.1%. Given the lack of population growth over the same period, as described in the previous section, cohort trends show the population is aging. This limits the potential for traditional single-family housing as the 20 to 44 age range of typical first time homebuyers has declined across the board. Without age-based demand for larger single-family units, a further evaluation of what units people age 55 to 64 want is necessary. This age group is most represented by "after-family" individuals, or empty nesters. Empty nesters tend to prefer a smaller high-quality unit typically with one level and in a more urban context (Taylor, 2008).

## Household Information

Table 3 shows annual growth trends in household demographics from 2008 to 2013. While households are predicted to grow in both 1 and 3-mile radii (though at half the rate of Michigan), the percentage of families is predicted to decrease in both radii as well. Since households are categorized as either family or nonfamily, household growth will occur only in nonfamily households. Nonfamily households are defined as a household containing a single person and other unrelated adults, i.e. roommates. Additionally, the projected nonfamily growth is more likely to prefer rentals as owner-occupied households will decrease by a quarter percent with a mile of the project site and three tenths of a percent annually within 3 miles. Additionally, there is already a clear preference for rental around the project site as 59.9% of households within a 1-mile radius are rental occupied while just 47.3% of households are rental occupied within 3 miles.

Table 3: Growth predictions 2008-2013 annual rates

| | 1 mile radius | 3 mile radius | Michigan |
|---|---|---|---|
| **Households** | .26% | .1% | .52% |
| **Families** | -.29% | -.35% | .26% |
| **Owner Occupied HH** | -.25% | -.35% | .34% |
| **Median Household income** | 2.41% | 2.67% | 2.47% |

*Source: ESRI Census Forecasts*

## Employment

Understanding the trends in employment in project site's neighboring communities is essential for the practicum team to make a well-informed recommendation. A focus in this section is placed on comparing trends in the project site's surrounding community with Lansing. High unemployment rates can create downward pressure on housing values. Additionally, there is significant evidence suggesting that increased joblessness can contribute to mortgage default and increase foreclosures (Desmond, 2009). Employment data is also significant because if the community is employed in cyclical or unstable industries like construction and manufacturing then people may be reluctant to purchase homes without a stable income stream.

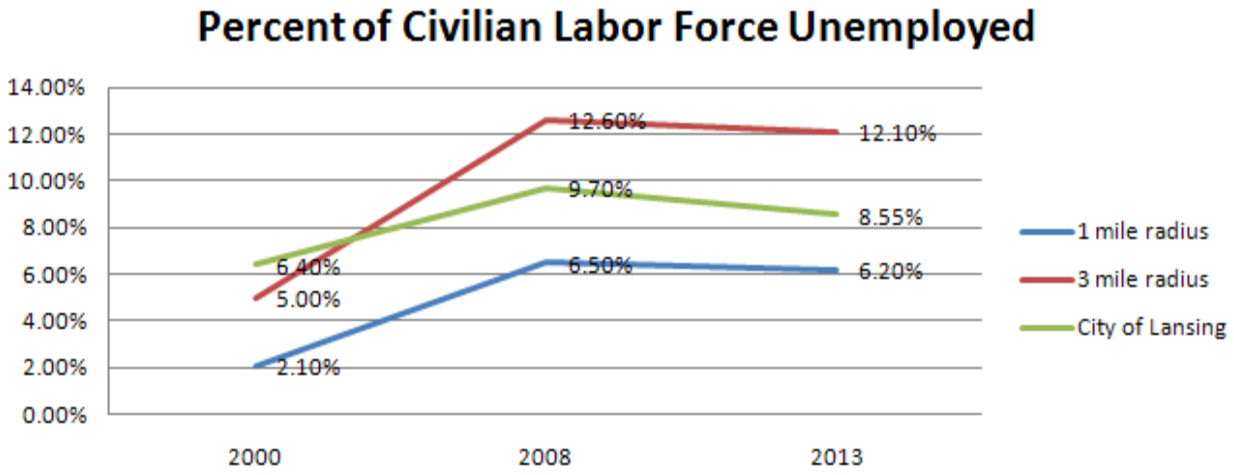



Figure 6: Unemployment trends

As seen in Figure 6, unemployment trends within 1 mile of the project site are approximately half of what the 3-mile radius and City of Lansing are experiencing. This minimizes the concern of downward spiraling property values and foreclosures that can accompany rampant unemployment.

Table 4: Employment by sector, 2008

| | 1 mile radius | 3 mile radius | City of Lansing |
|---|---|---|---|
| **Total** | 4,659 | 33,027 | 51,826 |
| **Agriculture/Mining** | .03% | .06% | .4% |
| **Construction** | 3.5% | 4.9% | 3.6% |
| **Manufacturing** | 5.2% | 7.0% | 12.0% |
| **Wholesale Trade** | 2.8% | 2.4% | 2.3% |
| **Retail Trade** | 9.5% | 10.8% | 11.3% |
| **Transportation/Utilities** | 3.4% | 3.1% | 3.3% |
| **Information** | 3.3% | 2.6% | 2.0% |
| **Financial/Insur/Real Estate** | 7.4% | 7.5% | 6.9% |
| **Services** | 54.7% | 52.3% | 49.6% |
| **Public Administration** | 10.0% | 8.9% | 8.7% |

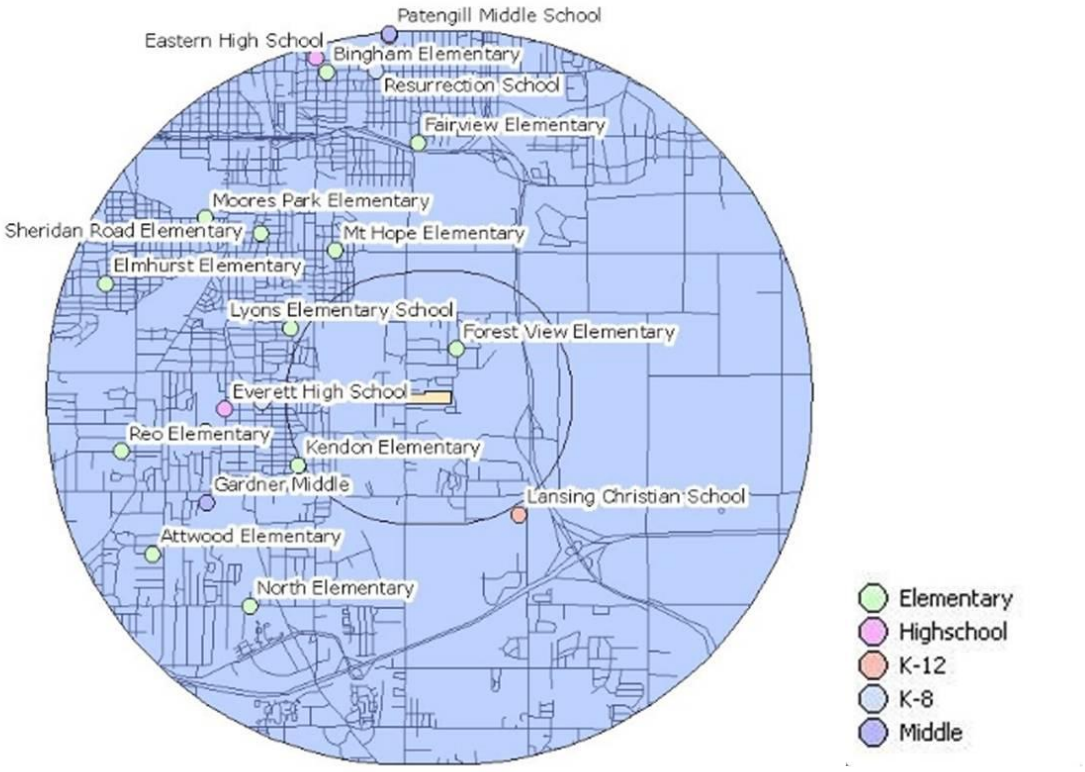
*Source: US Census and ESRI Forecasts*

Table 4 depicts the industries in which the surrounding community is employed. Services are the most dominant industry, which includes scientific, educational, health care, and entertainment services. The Lansing Economic Area Partnership (LEAP) has identified financial services, health care, life sciences, and information technology as key areas of growth for Mid-Michigan. This is attractive for the community surrounding the project site because employees of new industries are likely to live in communities employing individuals in the same industry (Greater Lansing Next, 2009).

## Schools

Research has shown that school quality can have a major impact on housing prices and where prospective homebuyers choose to live. Homes near well performing schools are in greater demand than ones near poorly performing ones, and this is often reflected in their higher prices. Homebuyers who do not have children may also be concerned with nearby schools, as they may affect their property's resale value.

Figure 7: Lansing schools within a 3 mile radius of the site




In addition to the Lansing School District schools, a number of neighboring school districts also participate in the Schools of Choice program. This program allows students living outside of district boundaries to attend schools within district boundaries when space is available. East Lansing, Okemos, Waverly, and Holt school districts participate in this program. Lansing has also been designated as one of Michigan's 10 Promise Zones. This means that in the near future, all Lansing School District graduates may have the opportunity to receive a Lansing Promise Scholarship to attend college tuition-free. A similar program in Kalamazoo has been effective attracting families with children to move to the city (Lansing School District).

There are 24 public elementary schools in the Lansing School District. Of these 24 schools, 12 are located within 3 miles of the site and 1 school, Forest View Elementary is located within 1 mile of the site. There are 2 middle schools located within 3 miles of the site (Pattengill and Gardner Middle School). There are 2 high schools located with 3 miles of the site (Eastern and Everett).

The Michigan State Board of Education, through the Education YES! Program, determines a letter grade for each school based on its most recent Michigan Educational Assessment Program (MEAP)/Michigan Merit Examination (MME) scores and the building's self-assessment. Lansing elementary, middle, and high schools average EdYES! ratings of B, C, and D, respectively. The average letter grade for the twelve schools within a 3-mile radius of the site was a B. The average letter grade for the middle schools within this area was a C and the average for High Schools was a D. If the grading system is a good indicator, elementary education in Lansing is average compared with the state, but middle school and high school education are below state averages. See Appendix for additional data on neighborhood schools.

## Neighborhood Description Summary

- Although there has been a population decline in the city of Lansing, over the last decade, the area within 1 mile of the project site has had stable, growing at an estimated rate of .03% a year.
- Although more than half of the population in both the 1- and 3-mile radii is 34 or younger, the cohort that has shown the most growth over the past decade is the 55 to 64 group with 2.1%.
- Households are predicted to grow in both 1 and 3-mile radii (though at half the rate of Michigan), the percentage of families is predicted to decrease in both radii as well.
- There is already a clear preference for rental around the project site as 59.9% of households within a 1-mile radius are rental occupied while just 47.3% of households are rental occupied within 3 miles.
- Unemployment trends within 1 mile of the project site are approximately half of what the 3-mile radius and City of Lansing are experiencing. This minimizes the concern of downward spiraling property values and foreclosures that can accompany rampant unemployment.
- The average letter grade for the twelve schools within a 3-mile radius of the site was a B. The average letter grade for the middle schools within this area was a C and the average for High Schools was a D. If the grading system is a good indicator, elementary education in Lansing is good but Middle School and High School education are worse.

# HOUSING MARKET ANALYSIS

In the following section we will analyze the area's housing stock, tenure of occupancy, the amount and effect of distressed housing, and the feasibility of market rate units, senior housing, low income housing, and student rentals. As in the neighborhood description, the areas of analysis are defined by 1- and 3-mile radii from the project site when available. Opportunities for development and housing preference become evident when trends in both the immediate area around the site (1-mile radius) and the surrounding community (3-mile radius) are compared. The potential for success in new housing on the project site will be evaluated in terms of the performance of existing housing in the area. This evaluation of market trends will help inform decision-making and is essential in determining the viability of new housing projects.

## Housing Stock Characteristics

Development on the project site will be affected by the area's existing housing stock. To improve the potential for full occupancy, the proposed development should respond to identifiable and anticipated demands in the housing market. Currently the occupancy of the area consists of both owners and renters. According to the United States Census Bureau, the project site lies within Ingham County Census Tract 29.01, Block Group 1 (see Figure 8). The rate of ownership in occupied units is 64.8%, and the rate of renters is 35.2%. Home styles generally consist of ranch, bungalow, farmhouse-inspired, colonial, split- level, and Cape Cod.

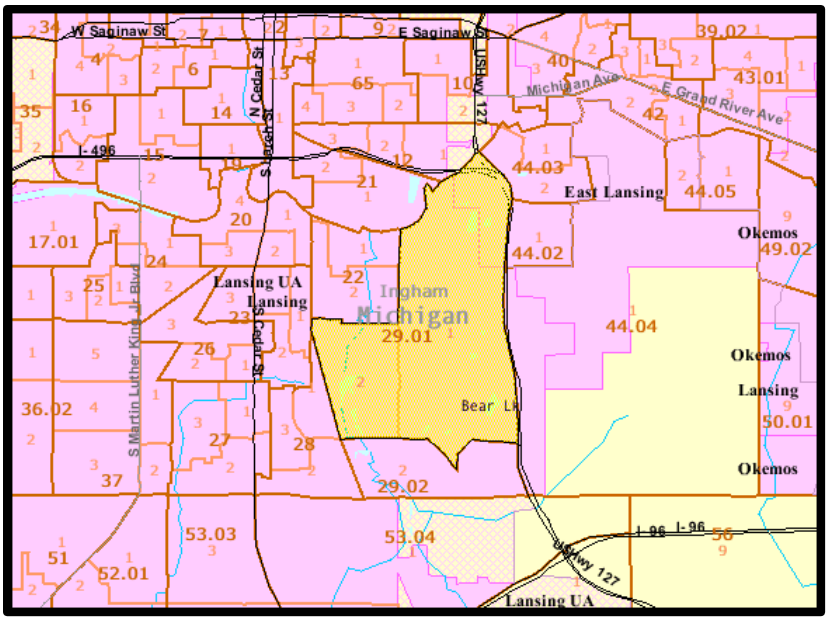



Figure 8: Census tract 29.01

The immediate area around the project site can be divided into three different, city-identified neighborhoods (see Figure 9): Forest View, Battenfield, and East Battenfield. The project site lies within the Forest View neighborhood. The Battenfield neighborhood lies to the southwest of the site, and the East Battenfield neighborhood lies even further to the southwest. The structures in these three neighborhoods were built at distinctly different times.

Land use in these neighborhoods consists of residential and commercial uses. Residential uses include single-family, multi-family, attached condominiums, and special use facilities such as child day cares and places of worship. Multi-family structures include apartments, townhomes, and duplexes. Special uses near the project site include: Kehillat Israel Congregation (synagogue), Happy Elephant Day Care, and a building that previously housed a senior assisted-living facility. Commercial uses in the area include a liquor store, Kelly Coins, JD Wisner Electric, CP Signs, and a vacant gas station.

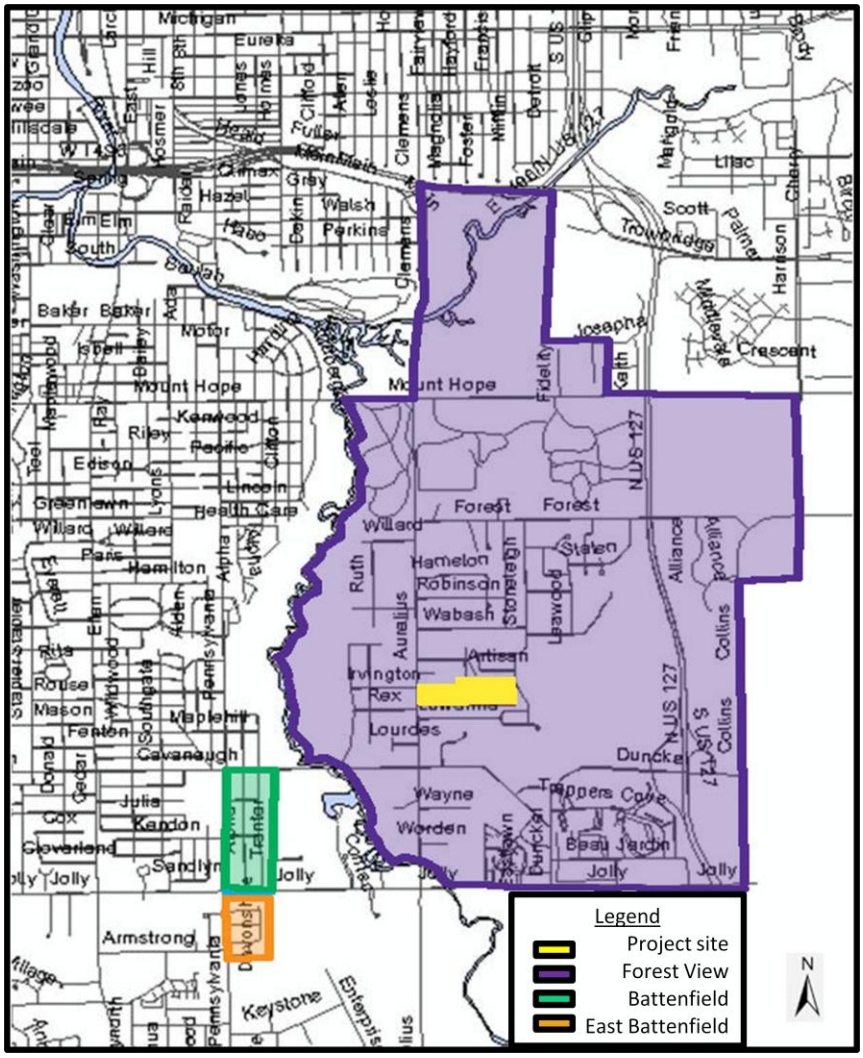



Figure 9: Project site and nearby neighborhoods

## *Forest View*

We see from Table 5 that approximately 69% of homes in the Forest View neighborhood were built between 1970 and 1989 (City data, 2010). Of the three neighborhoods, Forest View has the youngest housing stock.

Figure 10: Forest View neighborhood

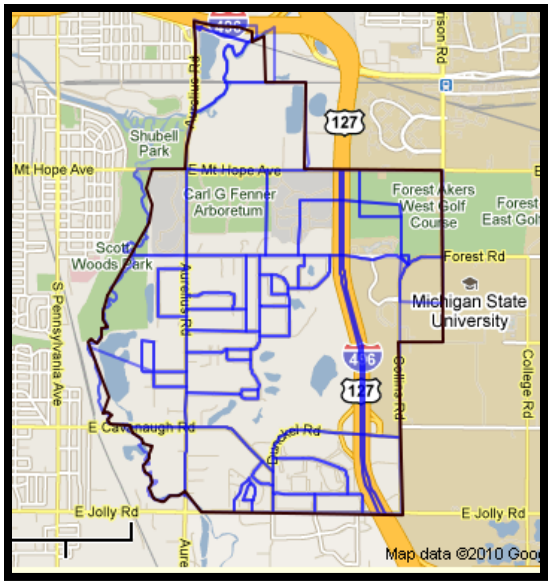



Table 5: Year of construction, Forest View

| Years Homes Built | Percentage of Homes |
|---|---|
| 1999-2000 | 1% |
| 1995-1998 | 2% |
| 1990-1994 | 6% |
| 1980-1989 | 35% |
| 1970-1979 | 34% |
| 1960-1969 | 8% |
| 1950-1959 | 6% |
| 1940-1949 | 5% |
| 1939 or earlier | 3% |

*(City data, 2010)*

Figure 11: Homes in Forest View

## *Battenfield*

From Table 6, we see that approximately 79% of the homes in the Battenfield area were built between 1950 and 1969 (City data, 2010). Battenfield has the oldest overall housing stock of the three neighborhoods.

Figure 12: Battenfield neighborhood

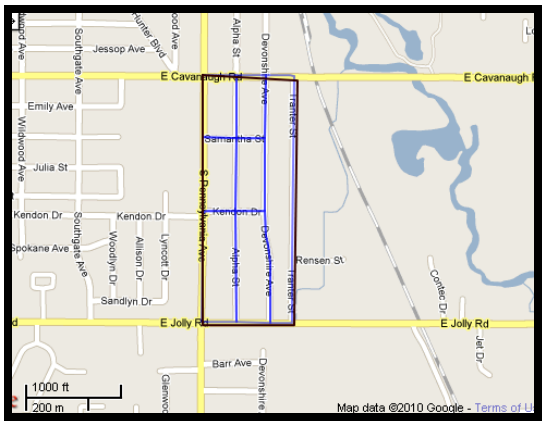



Table 6: Year of construction, Battenfield

| Years Homes Built | Percentage of Homes |
|---|---|
| **1980-1989** | 3% |
| **1970-1979** | 8% |
| **1960-1969** | 25% |
| **1950-1959** | 54% |
| **1940-1949** | 8% |
| **1939 or earlier** | 2% |
| | *(City data, 2010)* |

Figure 13: Homes in Battenfield

## *East Battenfield*

From Table 7, we see that 61% of homes in East Battenfield neighborhood were built between 1960 and 1979 (City data, 2010).

Figure 2: East Battenfield neighborhood

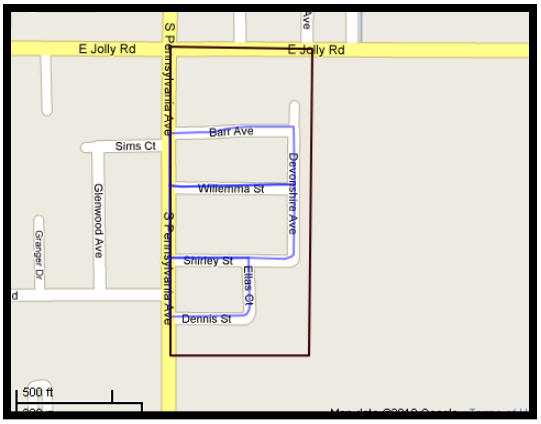



Table 7: Year of construction, East Battenfield

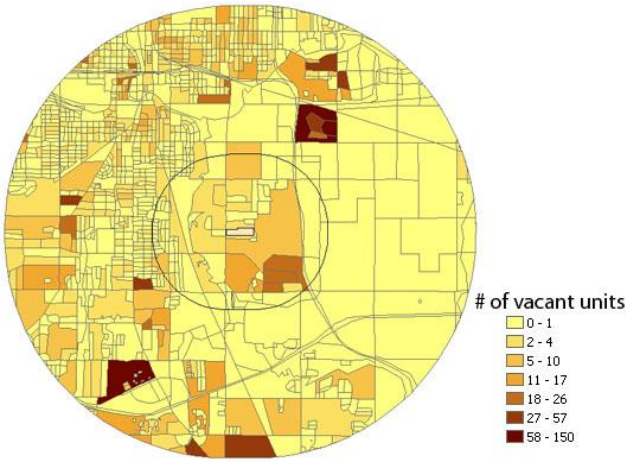
| Years Homes Built | Percentage of Homes |
|---|---|
| **1995-1998** | 1% |
| **1990-1994** | 4% |
| **1980-1989** | 18% |
| **1970-1979** | 27% |
| **1960-1969** | 34% |
| **1950-1959** | 11% |
| **1940-1949** | 2% |
| **1939 or earlier** | 3% |
| | *(City data, 2010)* |

Figure 3: Homes in East Battenfield

## Occupancy and Tenure

Evaluating vacancy rates and housing terms can reveal potential demand or saturation of housing capacity. A trend towards increased vacancy in and around the project site would indicate a lack of growth and a similar lack of demand for new units.

Figure 16: Vacant units within 3 miles of project site




While the amount of renter-occupied homes in the 1-mile radius is expected to remain steady at 57% through 2013, the amount of owner-occupied homes is projected to decrease from 38.5% in 2000 to 36.7% in 2013. The trend away from homeownership suggests a preference for rental units whether by choice or economic necessity. This change accompanies an increase in vacancy rates by 1.6% within the 1-mile radius, from 4% in 2000 to 5.6% in 2013. At the same time, vacancy is expected to increase by 3.9% within 3 miles of the project site. As can be seen in Figure 16, the area within 1 mile of the project site had only 5-10 vacant units, and the highest number of vacancies appear in units outside of this radius. Vacanct properties can negatively affect home values and may also prove aestheticly unpleasing to potential residents. Given that the issue of increasing vacancy in less acute near the project site, the negative implications of vacancy may be less pronounced. However, foreclosure and distressed housing units are becoming a major problem throughout Michigan and the United States in general.

Table 8: Housing tenure

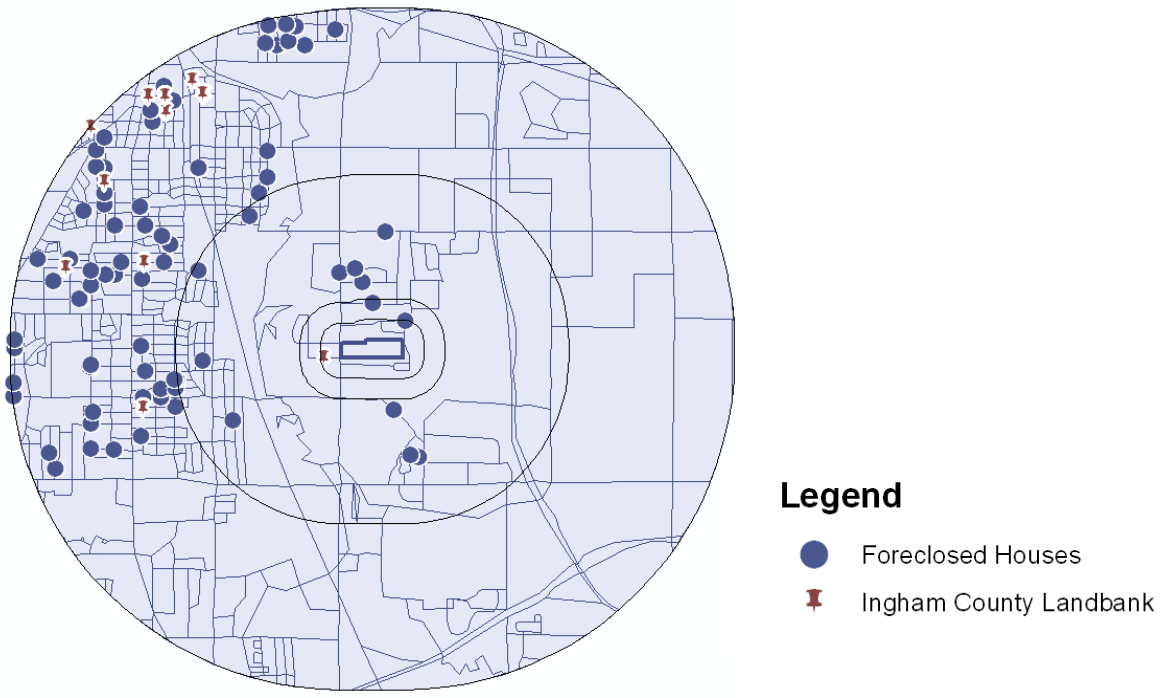
| | **2000** | | **2008** (est.) | | **2013** (est.) | |
|---|---|---|---|---|---|---|
| | 1 mile | 3 mile | 1 mile | 3 mile | 1 mile | 3 mile |
| **Housing Units** | 4,111 | 31,419 | 4,293 | 32,447 | 4,380 | 33,083 |
| **Owner Occupied** | 38.50% | 48.80% | 37.90% | 47.80% | 36.70% | 46.15% |
| **Renter Occupied** | 57.50% | 43.90% | 57.20% | 42.30% | 57.60% | 42.70% |
| **Vacant** | 4.00% | 7.30% | 4.90% | 9.90% | 5.60% | 11.20% |

*Source: US Census 2000, ESRI Forecasts for 2008, 2013*

## Foreclosed Housing

Home foreclosures have been in the public spotlight over the last several years. An economic recession compounded by unregulated and predatory lending practices has lead to a large increase in the number of home foreclosures nationwide. In Michigan alone, foreclosures rose by 11.5% from 2008 to 2009 and 35.6% from 2007 to 2008 (Detroit Free Press). In Ingham County, the foreclosure rate has researched record levels in recent years with the City of Lansing absorbing a large percentage of these foreclosures. Foreclosure is the process whereby an owner's right to a property is terminated, often as a result of payment default on mortgage or taxes (Dictionary.com, 2010). Foreclosures are the most traumatic on the individual property owners who have often lost not only their homes but accrued equity and resources spent gaining the property. They also have an enormous impact on their surrounding neighborhoods, the broader community, and future development. They have the ability to negatively affect both surrounding property values as well as home sale prices. If left to sit long enough they may fall into deterioration and become sites for unwanted and illegal activity.

Figure 4: Foreclosures within 2 miles of site, Feb. 2010
Data source: City of Lansing Assessor




A 2005 study from the Woodstock Institute in Chicago looked at foreclosures from 1997-1998 within that city and estimated that within an eighth of a mile of a single-family home resulted in declines in property value from 0.9 percent to 1.136 percent in value. The effects lessen with

distance but still had a measurable effect even at a quarter mile away. For homes in low-moderate-income census tracts property devaluation was even greater.

This analysis looks at home foreclosures within 3-mile radius of the project site from February 20-25th 2010. Foreclosure data was determined based on property ownership records from the Lansing Tax Assessors office. Within an 1/8 mile of the property there was 1 home in foreclosure. Within a ¼ mile the site there were 2 homes in foreclosure. Beyond the quarter mile, the numbers of foreclosures increases dramatically with a bulk of foreclosures in a 3-mile radius located to the west and north of the project site (see Figure 17).

Owners of rental properties although usually less likely to enter into foreclosure do sometimes default on mortgage and property tax payments. Renters can be placed in a difficult position when their landlords allow their properties to fall into foreclosure.

For those who have defaulted on mortgage payments and/or can no longer afford mortgage payments, rental properties as an alternative to home ownership. This has resulted in rental prices in some situations to rise as demand for these living spaces grows.

New construction may also be affected by home foreclosure. Construction of new building comes with greater risks in times of economic challenges and in markets heavy with home foreclosures. Developers of new construction during economic declines may have plan on above average vacancy rates on properties until the market improves or offer the homes at reduced rates.

## New Construction

Although Lansing is an established city, new construction still occurs within its municipal borders. Infill construction on vacant lots within existing neighborhoods as well as development of full-scale neighborhoods on remaining large parcels of vacant land within the city limits have occurred. One example of new construction within the city can be found just north of the project site on Arbor Forest Drive. The development consists of 15 single-family homes of similar architecture and design detailing. Two-car garages dominate the homes' frontage. In 2005, these homes sold for prices between $180,000 and $228,000. In 2009, one home on Arbor Forest sold for $160,000.

Figure 18: New construction

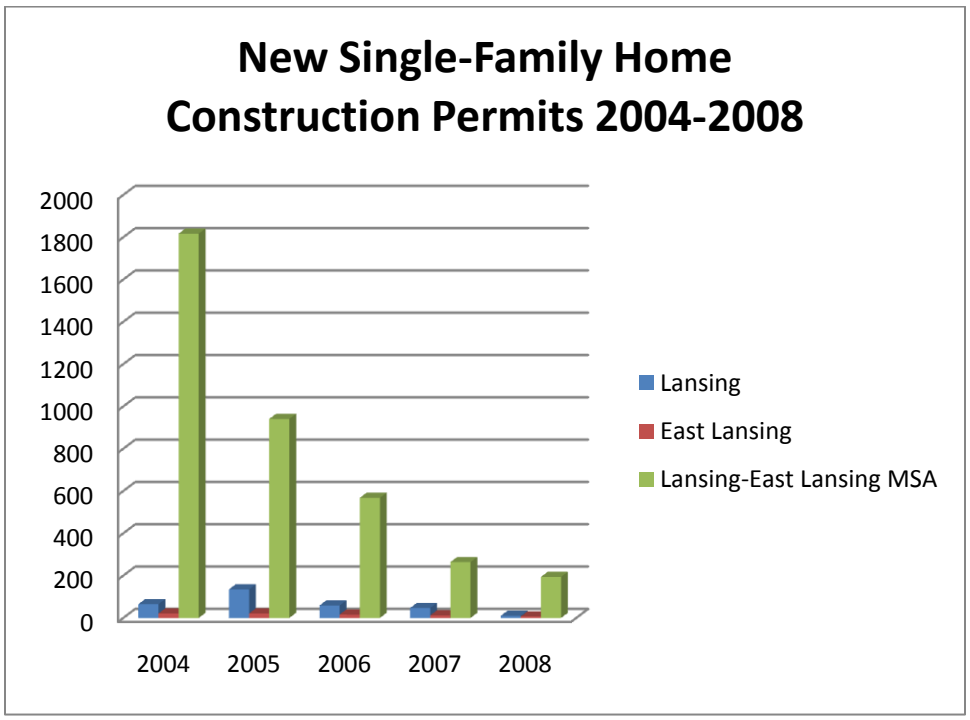



Table 9

| New Single-Family Building Permits Issued 2004-2008 | | | | | | |
|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | Total |
| Lansing | 65 | 135 | 59 | 47 | 10 | 316 |
| East Lansing | 21 | 21 | 16 | 12 | 7 | 77 |
| Lansing-East Lansing MSA | 1817 | 941 | 568 | 264 | 194 | 3784 |

Figure 18 and Table 9 depict the number of new single-family building permits issued in Lansing-East Lansing Metropolitan Statistical Area (MSA) for the years 2004 through 2008. A metropolitan area is defined by the US Office of Management and Budget as a geographical region with a relatively high population density at its core and close economic ties throughout the area. Eaton, Ingham, and Clinton Counties comprise the Lansing-East Lansing MSA.

According to the US Census Bureau, between 2004 and 2008, 316 permits were issued for new single-family homes in the city of Lansing. The city of East Lansing over the same period issued 77 permits. In the Lansing-East Lansing MSA 3,784 were issued by various units of government outside of Lansing and East Lansing. Lansing and East Lansing although comprising 35% of the population of the Lansing-East Lansing MSA accounted for a mere 10% of all permits issued within this 5 year period with the tri-county region. The greatest numbers of permits were issued (see Appendix) for Delphi Township which issued 696 permits during this period. Delta Township issued 449 permits and Meridian Township issued 375.

This information suggests that new home construction although still occurring within established urban areas of the MSA is overwhelmingly being done on the urban fringe. One possible explanation for this trend is the availability of cheap vacant land, free of existing structures for development. Also this may reflects consumer preferences for spacious homes on large lots which may not be available with the city. Schools in these areas, such as Okemos or Williamston are in many cases newer and on average often demonstrate stronger academic performance than Lansing schools which makes these areas attractive for families. In addition areas on the urban periphery often have lower property taxes as well (Michigan Department of Treasury, 2007).

The new construction permit data also shows that the number of permits across the board has decreased substantially within this 5 year period. Permits for the Lansing-East Lansing MSA in 2008 were a mere 10% of what they were in 2004. This decline is reflective of effects of the recent economic recession, during which credit has been more difficult to secure, unemployment has risen, and the demand for new construction has decreased.

## Market Rate Housing

Real estate sales are analyzed by comparing Lansing as a whole with its southeast quadrant (Lansing SE), where the project site lies. This is because the Coldwell Banker Lansing Real Estate Market Report, which breaks city data into quadrants, supplies data (see Table 10).

Table 10: Market rate housing

| | 2008 | | 2009 | | Difference | |
|---|---|---|---|---|---|---|
| | *Lansing* | *Lansing SE* | *Lansing* | *Lansing SE* | *Lansing* | *Lansing SE* |
| **Average List Price of Sold Listings** | $57,591 | $57,978 | $50,843 | $46,678 | -12% | -19% |
| **# of Sales** | 1,549 | 349 | 1,730 | 419 | 12% | 20% |
| **Average Sold Price** | $53,738 | $54,336 | $47,275 | $43,104 | -12% | -21% |
| **Median Sold Price** | $39,063 | $47,000 | $32,625 | $34,000 | -16% | -28% |
| **Average Market Time** | 75 | 77 | 71 | 71 | Less 4 Days | Less 6 Days |

*Source: Coldwell Banker Hubbell Briarwood Lansing Real Estate Market Report*

The overall housing sales market in the Lansing area is weak due to decreased demand. This is a result of the distressed economy and higher credit standards. However, the probability of selling residential real estate in Lansing SE is more promising than Lansing as a whole because of a higher turnover and velocity of sales. According to the 2009 Real Estate Market Report published by Coldwell Banker Hubbell Briarwood, residential housing unit sales in Lansing SE have increased 20% from 349 units sold in 2008 to 419 units sold in 2009. At the same time, Lansing saw an increase in sales of 12%. These trends are matched by a decrease in market time from 77 to 71 days for Lansing SE and 75 to 71 days for Lansing. While the number of units sold in Lansing SE has increased, the values of its properties have decreased over the last year. The average sales price has decreased 21% from $54,336 to $43,104. During the same period, Lansing as a whole saw its sales price decrease 12% from $53,738 to $47,275.

## American Housing Survey

The American Housing Survey is a biennial survey of American households done by the Census Bureau to obtain up-to-date housing statistics for the US Department of Housing and Urban Development. This survey provides useful information on households and occupants over time, which is helpful when looking for home buying trends.

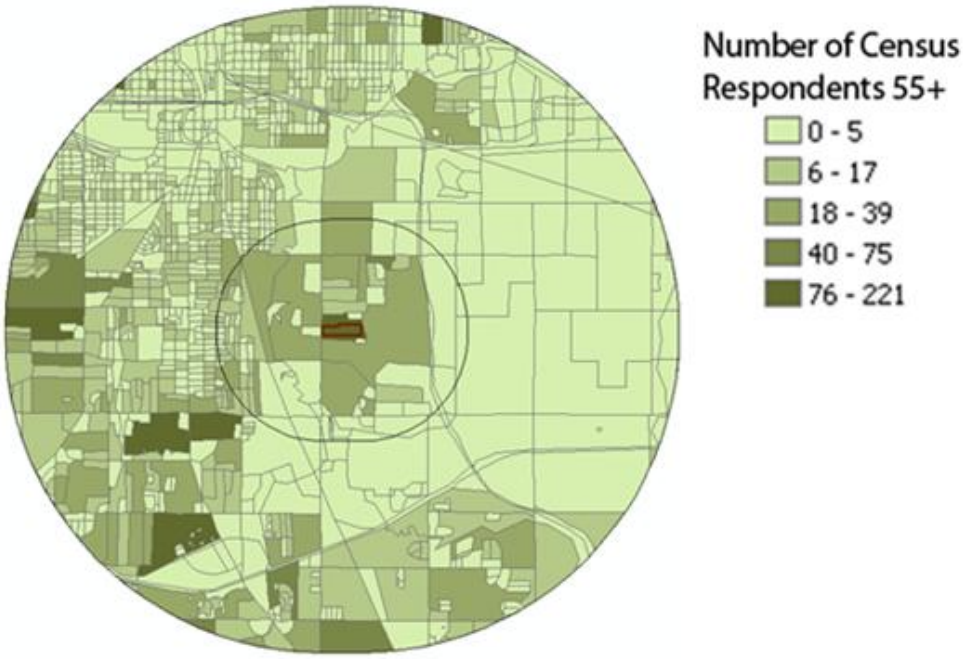
According to the 2005 AHS the average first-time homebuyer in the US in 2005 was 33 years old, had a household income of almost $64,000, and bought a house with a median price of $150,000. In terms of all national home sales the median purchase price was $240,900 (U.S. Census). First time home buyers make up a significant portion of the home buying population as they account for 43% of all national home sales (Eisenberg, 2008). First time home buyers overwhelmingly preferred existing homes over new home purchases. 79% of first-time buyers purchased single-family detached houses, slightly less than 11% of these buyers purchased townhouses and 11% purchased condominiums. For repeat buyers 88% purchased a detached single-family house, while almost 7% bought townhouses and almost six percent a condominium. Almost 86% of first-time buyers purchased an existing house, as existing homes generally are less expensive than a newly built home, while the remaining buyers either bought a speculatively built home or a custom house. 73% of repeat buyers purchased an existing home, while the remaining 27% bought a new home. Nearly twice as many move-up buyers bought a new house compared to first-time buyers.

Given these statistics, housing development on our project site could target move-up homebuyers as this group is much more likely to purchase newly constructed homes than first-time homebuyers. According to the National Association of Realtors the median purchase price for existing single family homes for the Lansing-East Lansing metropolitan area was $83,900, compared to the national median purchase price of $173,500. Because the median price for single family homes in Lansing-East Lansing ($83,900) is significantly lower than the median price of all first-time home buyer homes ($150,000) housing development geared to younger first-time home buyers could also be a viable option to explore.

## Senior Housing Feasibility

Senior housing development is more intricate than traditional residential housing development. Nationally, the 55 to74 age brackets are expected to grow, and housing for these residents is expected to grow as well. The main reason senior developments provide a unique challenge is because of the specialized operating expertise required. Unlike the basic tenant services of apartments and offices, senior developments operate within someone's home by providing a highly personalized tenant care service (McNulty, 1998).

Figure 59: Number of residents age 55+ within 1 and 3 mile radii of site (source: ESRI Tigerline)




An increase in demand is projected for most communities, including Lansing, and the 1- and 3-mile radii mirror these trends. As described in Table 2 in the neighborhood description, the percent of Lansing's population aged 55 and over grew 2.8% between 2000 and 2008. At the same time, the population aged55 and over grew 1.7% within 1 mile of the project site and 1.8% within 3 miles. However, according to Figure 19, there are pockets with high amounts of residents age 55 and over in both 1 and 3 mile radii. Additionally, the project site lies within a Census block with a high concentration of senior citizens, is located near a hospice care center, and is adjacent to a currently vacant assisted living center. This suggests that one development option should be a development that links senior housing to assisted living opportunities. As residents age and their attendant needs increase, they may transition to housing environments that provide more support. One example of this is the Burcham Hills development in East Lansing which provides comprehensive senior care.

## Low Income Feasibility

Low-income housing is significant to analyze for three main reasons. First, low income development provides affordable housing options to those who wouldn't otherwise be able to afford it. Second, developing low-income housing could potentially allow developers to access HUD's Low Income Housing Tax Credits (LIHTC). Third, the low-income market provides a targeted population that allows occupancy to remain more stable that market rate housing, which is follows the volatility of real estate markets more closely. Additionally, low-income housing can be combined with market-rate housing to create a mixed income community.

Table 11: Employment and income, 2008

| | Lansing | Percent | National | Percent |
|---|---|---|---|---|
| EMPLOYMENT STATUS | | | | |
| **Civilian labor force** | 57,423 | | | |
| **Percent Unemployed*** | 11.7% | | 13.2% | |
| | | | | |
| **With Supplemental Security Income** | 2,039 | 4.3% | 4,305,421 | 3.8% |
| **Mean Supplemental Security Income (dollars)** | 7,119 | | 7,920 | |
| **With cash public assistance income** | 1,997 | 4.2% | 2,552,704 | 2.3% |
| **Mean cash public assistance income (dollars)** | 3,234 | | 3,330 | |
| **With Food Stamp benefits in the past 12 months** | 8,240 | 17.4% | 9,139,593 | 8.1% |

*Source: US Census Projections 2006-2008 and *Bureau of Labor Statistics 2010*

As of January 2010, Lansing unemployment was 11.7% as shown in Table 11, and the national unemployment level was 9.7%. In Lansing, 24% of residents live below the poverty level (see Table 12) nearly doubling the national average of 13.2% (Census Projections, 2008). These trends combined with the high number of residents seeking state benefits imply an increasing need for affordable housing in Lansing.

Table 12

| %OF FAMILIES AND PEOPLE BELOW THE POVERTY LEVEL | | |
|---|---|---|
| **All people** | 24.0% | 13.2% |
| **All families** | 18.3% | 9.6% |
| **People in families** | 20.3% | 10.7% |
| **Unrelated individuals 15 years and over** | 33.7% | 24% |
| | *Source: US Census Projections 2006-2008 and* | **Bureau of Labor Statistics 2010* |

In terms of access to housing, the National Low Income Housing Coalition considers a unit affordable if it costs no more than 30% of the occupant's income. In the greater Lansing area, a household must earn at least $2,500 monthly or $30,000 annually to have access to affordable housing. In addition to the demographic trends mentioned above, the Census 2008 predictions estimate that 46.1% of Lansing households earn below $35,000 per year. A need for affordable housing is revealed when income is analyzed around the project site. Within 1 mile of the site, 50.3% of households earn below $35,000. Although Census cohort structure prohibits us from analyzing how many households are below $30,000 per year, this still indicates a strong need for affordable housing.

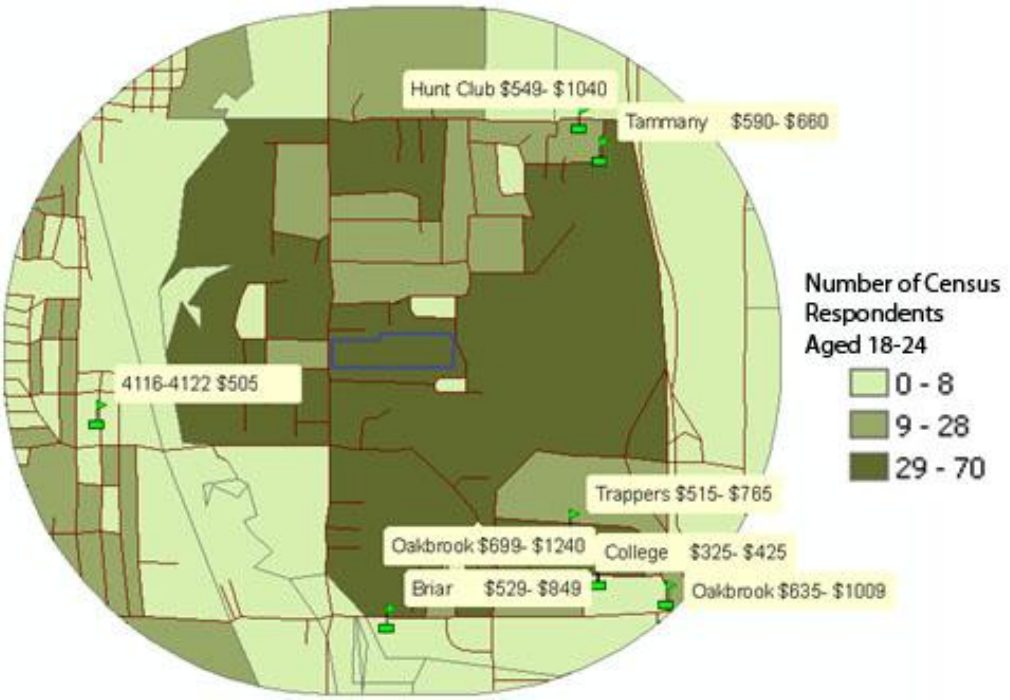
Table 13: Household income, 2000 and 2008

| | **1 mile radius** | | **3 mile radius** | |
|---|---|---|---|---|
| | *2000* | *2008* | *2000* | *2008* |
| **HH earn < $35,000 year** | 50.3% | 37.9% | 53% | 41.4% |
| | | | *Source: US Census and ESRI Forecasts* | |

## Student Rental Feasibility

Market analysis for student-targeted rentals is based mainly on the area's concentration of residents aged 18 to 22, amount of population that is enrolled in college, and the project site's proximity to other student-targeted properties. Based on 2008 U.S. Census predictions, Lansing has 13,913 undergraduate aged residents, some of which may attend Michigan State University or Lansing Community College. In addition to those residents, 20.8% of residents within 1-mile radius and 20.5% of residents within a 3-mile radius were enrolled in university at the time of the 2000 Census (see Table 14).

Figure 20: Student rental properties and price range of rents




Some of these students have already found residences in the area immediately surrounding the project site as shown in Figure 20. Based on student Rental Company DTN located in East Lansing, there are 8 student targeted rentals within a 1 mile radius with entry-point rent ranging from $325 per unit in College Manor to $699 in Oakbrook. The high-end prince points, with larger units or more amenities, range from $425 for College Manor to$1240 in Oakbrook. Units topping $1000 in rent had high-end amenities including swimming pools, Jacuzzis, volleyball courts, and other features that would most likely not be available in the diverse tenant mix we are seeking for the project site. A variety of student options are available at multiple price points for student rent rates in the 3 miles surrounding the project site. Renting

to students also provides a reasonably reliable tenant base, as student rentals appear to be less cyclical than other segments of the housing market at this time.

The opportunity for further marketing toward students can arise from the use of urban agriculture on the project site. Students studying agriculture, food sciences, or other related disciplines might view this site as a live-work opportunity where they can gain experience while providing service to the community.

Table 14: College enrollment near project site

| | 1 mile radius | 3 mile radius |
|---|---|---|
| **Enrolled in College** | 14.1% | 16% |
| **Enrolled in Grad/Prof School** | 6.7% | 4.5% |

*Source: US Census 2000*

## Housing Market Analysis Summary

Housing Stock Characteristics

- Housing occupancy of immediate area consists of both owners (64.8%) and renters (35.2%)
- Surrounding area consists of three neighborhoods: Forest View, Battenfield and East Battenfield. Land use in these neighborhoods consists of residential and commercial uses.

Occupancy and Tenure

- Current trends points towards preference for rental units over home ownership and vacancy rates increasing in both the 1-mile and 3-mile radii.

Foreclosed Housing

- Foreclosed housing has increased largely nationwide as well as in the state of Michigan, and Ingham County.
- Foreclosure can affect rental price rates and can hinder new construction

New Construction

- New construction although down substantially within the last 5 years is still occurring in areas near the project site but is mainly being done on the urban fringe.
- Trend in new construction on urban fringe points toward consumer preference towards spacious homes on larger lots, better educational opportunities and lower taxes.

Market Rate Housing

- Overall housing market in Lansing is weak due to decreased demand, while market in Lansing SE is more promising. Despite overall weak market residential housing unit sales in Lansing SE had increased in 2009 (419 units) when compared to 2008 (349 units).

American Housing Survey

- Given that first time buyers don't prefer newly constructed homes, our target market will be move-up buyers, although opportunity to build cheaper homes geared towards new homebuyers should not be ignored.

Senior Housing Feasibility

- Increased demand for senior housing coupled with the sites proximity to existing senior housing facilities points towards limiting possible senior housing on site towards assisted living opportunities.

Low Income Feasibility

- Employment trends, income levels and number of residents seeking state benefits in Lansing suggest that there is an increased demand for low income housing in Lansing.

Student Rental Feasibility

- Proximity to multiple institutions of higher learning (MSU, LCC), and amount of nearby residents enrolled in universities, which can be seen as a semi-reliable tenant base, suggest possible opportunities for student housing development.

# HOUSING

In order to assess what types of housing could be successfully incorporated into the overall development of the site the practicum group needed to explore potential occupants, potential design options as well as construction methods for housing. In this section we explore the potential for both senior housing and low income housing development on-site to better understand the demand for newly constructed housing. Possible housing designs such as cottage communities, cohousing, and universally designed houses are elaborated on in this section to identify what types of housing designs would be attractive to potential homebuyers. Finally, possible construction methods are detailed with the intention of providing the client with several options when it comes to the actual construction of housing on-site.

## Potential Occupants

Although the 55 to 74 year old age bracket does not have the highest projected growth, it is expected to increase substantially, and housing for seniors is likely to grow in demand (Vertalka & Vertalka, 2009). As discussed in the market analysis, the immediate surrounding area already has some senior specific housing including a hospice care center and the possible reopening of a senior assisted living facility. Because of these nearby amenities for the aging population, the project site may be a good location for senior housing. Assistance for seniors can range from none or very minimal (help with home maintenance or preparing meals) to more demanding care (physical therapy, personal hygiene assistance, etc); there is also likely to be a need for transportation, security, and social activities (Assisted Living Federation of America). Senior housing can be single- or multi-family and in either case should consider accessibility (Assisted Living Federation of America).

Another potential occupant population considered was low income. Within a 3-mile radius of the site in 2008 average per capita income was estimated to be around $21,000 (ESRI forecast, U.S. Census Bureau). This suggests that low income housing may be appropriate for the area. There would likely be a need for nearby child care and access to public transportation; the project site is on CATA bus route #7 with a stop nearby. Government assistance for tenants may be necessary for low income residents. Programs like Section 8 can also be beneficial to the landlord as (s)he will have reassurance that rent will be paid on time.

One type of low income housing that may be successful on the site is rental. As discussed in the market analysis most of the housing within a mile of the site is rental, so clearly more rental housing would be a good fit for the area. Another advantage of building rental housing is that it could also appeal to the student population, and with Michigan State University and Lansing Community College near the site, there is a potential student market in the area.

# Housing Design

## *Cottage Communities*

The concept of the cottage community was created by Ross Chapin, an architect who specializes in custom residential design. At 1 to 1 ½ stories and total area around 1,000 square feet (Ross Chapin Architects, 2010), these compact, comfortable and highly customized homes have the density of a multifamily unit while maintaining the feel of privacy and independence that comes with single-family homes. The cottage community design option is versatile and has the potential to house people who live a variety of lifestyles – it may be appealing to seniors and grad students who was a compact living space that still feels like a home or even young singles or couples who want a starter home. Because cottage homes tend to be expensive, this may not be the best option for low income housing. Prefabrication is a building method that could cut down on the cost of cottage home construction, which will be discussed later in this section.

**Figure 21: Greenwood Avenue Cottages, Shoreline, WA**
**Source: Ross Chapin Architects website**

## *Cohousing*

Cohousing is a Danish planning and architectural movement that emphasizes community living within the framework of private autonomy and ownership. These communities are planned, owned, and managed by their residents. Common facilities play a key role in cohousing developments. While each unit is essentially a private home, common houses typically contain kitchens, recreational areas, daycare facilities, entertainment/media rooms, as well as rentable space. Decisions regarding common facilities and schedules are made through a consensus decision-making model, which requires the agreement of all participants, through the resolution or mitigation of minority objections. Peripheral parking and pedestrian networks connect individual units and encourage people to become familiar and friendly with their neighbors. Care is taken in designing transitional space, which "helps support community life and relationships among people" (McCamant & Durrett, 1994). When combined with a social structure emphasizing community involvement and consensus-building, cohousing offers a new and refreshing way to build our communities and is becoming increasingly relevant to our modern society.


Figure 22: Great Oak Cohousing Site Plan, Ann Arbor, MI
Source: Cohousing Development Company website

### *Universal Design*

Universal Design (UD) is a progressive design concept that addresses the needs of people of varying ages, sizes, and modes of mobility (Charles Schwab Architects). Because this design is accessible to virtually everyone, it is versatile and does not exclude any potential homebuyers. With the weak state of the housing market, using UD features in any housing that may be built on the project site would be wise. Some of these features include non-slip floors, varying heights of counters in kitchens and bathrooms, lowered windows, strategic spacing, and minimal use of stairs and other potentially obstructive features (Charles Schwab Architects).

The cost disparity between building UD and non-UD homes is minimal, at about a 1% to 5% increase in cost of building a UD home (Charles Schwab Architects). This cost is offset by the fact that UD homes can occupied as residents age, meaning that they can 'age in place' and are less likely to need to move to a nursing home or other aging care facility. This feature will likely make UD homes more attractive to buyers and therefore more valuable in the housing market.

UD also can incorporate green building elements like Energy Star appliances, sustainable building materials like bamboo flooring, energy efficient insulation, and use of natural light to heat (passively and through photovoltaic cells) and illuminate homes (Charles Schwab Architects). Use of green elements in homes can also reduce utility bills by making use of insulation and alternative energy sources; this benefit is another benefit that can add value to a home.

The National Association of Home Builders (NAHB) offers a 3 day course to become a Certified Aging-in-Place Specialist (CAPS) (NAHB). Classes are offered through local and state home building associations and at national trade shows including NAHB's International Builders' Show and the Remodeler's Show. Details for course times and descriptions are available NAHB website (http://www.nahb.org/generic.aspx?genericContentID=9334).

# Construction Methods

## *Prefabrication*

Figure 23: Prefabricated home

Prefabrication is a building method in which parts of a building are made off-site and then assembled on-site. The major advantage of using prefabrication instead of traditional construction methods is reduced cost. In fact, homes built using prefabrication cost about half as much to construct (CNN). While reduced construction cost is a major benefit of prefabrication, other incentives to use this method include style, durability, and low environmental impact. Prefabricated homes are often thought of as unattractive but that does not have to be the case. As seen in Figures 23 and 24, prefabricated homes can have a modern and aesthetically pleasing look. Another advantage of building prefabricated homes is that they are durable (Wendt, 2009). "Between 1908 and 1940, Sears sold about 100,000 home kits for $650 to $2,500. Almost a century later, these houses are not only still standing, but their mail-order status is a selling point. (CNN)"

Figure 24: Prefabricated home

Low environmental impact is another benefit of using prefabrication. Because most of the construction is off-site, scrap materials can be more easily recycled. Some firms report a waste reduction of 70% or more (Wendt, 2009).

### *Green Building*

Green building can apply to all housing design options discussed. In times where climate change and energy security have become serious issues, new developments must consider building materials and methods that will have minimal negative impact on the environment while retaining maximum energy efficiency in structures they built. Many design elements can be incorporated into buildings to make them green including Energy Star status, green roofs, cool roofs, and sustainable building materials.

Energy Star is a government program that aims to make new and existing buildings energy efficient. To qualify as an Energy Star building, a home must be "at least 15% more energy efficient than homes built to the 2004 International Residential Code (IRC), and include additional energy-saving features that typically make them 20–30% more efficient than standard homes" (Energy Star).


Figure 25 Source: Energy Star website

Six features that boost energy efficiency and qualify a building as Energy Star certified are:

1. effective insulation (floors, walls, attics)
2. high-performance windows
3. tight construction ducts
4. efficient heating and cooling equipment
5. efficient products (light bulbs, appliances, etc)
6. third-party verification (testing and inspections)

Another place to consider when making a home energy efficient is the roof. There are three ways to utilize a roof in energy efficiency: adding vegetation (green roof), adding reflective roofing (cool roof), and/or adding solar panels.

A green roof is a roof that has a vegetative layer on top (EPA). This layer absorbs heat in the summer and acts as an insulator (EPA), making it beneficial in terms of energy efficiency all year round. While green roofs are more expensive to install initially, the energy savings over time ends up making a green roof less expensive overall (EPA). A study conducted by the University of Michigan showed that to install a 21,000 square foot green roof would cost

$464,000 while a conventional roof of the same size would cost $335,000; however, the green roof would save $200,000 over its life time with about $133,220 of that in energy savings (Clark, Adriaens, & Talbot, 2008). While such large scale building may not translate directly to housing, the principle of energy savings could transfer.

Figure 26: Home with green roof

Cool roofs use reflective materials on the top of the roof to increase solar reflection. This process reduces the amount of heat that enters the building (EPA). While this is a good option to keep heat out in the summer, there are no special benefits in the winter. Another roofing option can utilize solar energy rather than deflecting it. Solar panels are another roofing option that utilizes the sun's energy rather than deflecting it. While solar panels are currently not cost competitive with electricity, once the initial investment is made they can supply free solar power continuously with minimal operating and maintenance costs (USDE). Another potential benefit is selling energy back to the grid if the solar panel array produces more energy than what is used by the occupants. Lynn Shafer, a resident of Sedalia, Missouri, expects to enjoy this benefit after he installs 22 solar panels that should generate an average of 750 kilowatt hours (kWh) per month (Steingraber, 2010). This energy generation comes very close to the average monthly household energy consumption in the U.S. (936 kWh) as of 2007 (EIA, 2009).

Figure 6: Cool roof

Another way to stay green in the building process is to use recycled and sustainable building materials. The Building Materials Reuse Association is a great resource for finding materials that were gathered from homes that were disassembled rather than demolished. Going with this option can help save resources and prevent quality material from being thrown out. It is also important to consider durability and

longevity of materials used. Using hardy materials reduces the amount of waste generated by the home over time; and if materials are also recyclable when they do have to be replaced they will still have a use (CalRecycle).

Green building is a versatile tool because it gives the developer or resident the power to choose from a variety of options and scales. For example, a home could have a green roof but not use energy star appliances; or a green roof could be placed on one section of a roof and solar panels could be placed on another. With so many options available, there is room for economic and temporal flexibility if needed. The following links provide information on resources for energy efficiency and recycled building materials:

- Six Energy Star Features:

  http://www.energystar.gov/index.cfm?c=new_homes.nh_features

- Recycled Building Materials:
  - http://www.bmra.org/resources/whydeconstruction

- EPA resource page on components of green building:

  http://www.epa.gov/greenbuilding/pubs/components.htm#sustain

## Case Studies

After examining housing types, prospective occupants, potential housing designs and possible construction methods, we conducted two housing case studies to further aid our understanding of which housing developments/designs may work on the project site. The first case study selected was Troy Gardens in Madison, Wisconsin. This development was chosen because not only is it a cohousing community, a concept familiar to our client, but also because Troy Gardens incorporates urban agriculture into its design. This is a practical example of what our project site could resemble someday.

We also examined another cohousing community in Grand Rapids, Michigan called Newberry Place. The site was chosen because like the project site, Newberry Place is located in an existing urban area. It is an example of a successful cohousing development located in Michigan. Examination of these two case studies offers real-life context for the potential development of the project site.

### *Troy Gardens -Madison, Wisconsin*

Troy Gardens is a "conservation-based affordable and accessible" residential community in Madison, Wisconsin (Rosenberg, 2009). This development features elements of cohousing such as a common house and walkable design layout. It is also a self-proclaimed "ecovillage." Troy Gardens offers affordable, accessible housing and urban agriculture activities such as a 5 acre Community Supported Agriculture farm and hundreds of family garden plots.

Construction at Troy Gardens began in September 2006 and was completed in January 2007. Housing units are 2 and 3 bedroom townhouses ranging in size from 1,150 sq. ft for a 2-bedroom townhouse to 1,650 sq. ft for a 3-bedroom townhouse. Listing prices for the 2-bedroom townhouses ranged from $109,500 to $154,500, and 3-bedroom townhouses ranged in price from $139,500 to $194,500. With the exception of one unit, all homes were purchased immediately upon entering the housing market (TroyGardens.net, 2009).

Housing at Troy Gardens utilizes the concept of universal design. Every home in Troy Gardens is completely handicap-accessible on the ground floor. Each residence has a barrier-free entrance and a full bedroom and bathroom located on the first floor. Given the projected growth of the senior population in Lansing in the coming years, incorporating universal design features could increase our project site's appeal to a multi-generational market.

Figure 7: Troy Farms Source: Troy Farms Website

### *Newberry Place-Grand Rapids, Michigan*

Newberry Place is a cohousing development in Grand Rapids, Michigan. It is located within close proximity to numerous schools, parks, and businesses, including a rapidly expanding medical corridor. Newberry Place cost $3.4 million to build and consists of 20 private homes along with a common house for shared meals and community activities.

Newberry Place blends well with the historic homes of the surrounding neighborhood but incorporates a more dense organization; this allows for greater open space. Design features include front and rear porches and roof decks. Newberry Place is meant to be pedestrian-friendly with parking relegated to the periphery Residents of Newberry Place include families, singles, married couples, older adults, and non-traditional households.

Homes range in price from $125,000 for a 900 sq ft apartment to $200,000 for a 2-3 bedroom townhouse. The development falls within a Neighborhood Enterprise Zone (NEZ). Residents receive a 50% reduction in state property taxes for 12 years.

In terms of access to employment, cultural and entertainment venues the location of Newberry Place cohousing development is much more desirable than the project site's. The surrounding neighborhood also has a diverse housing stock with greater architectural variety and character. Nonetheless, much can be taken from Newberry for the project site. Dense, compact, pedestrian-focused design can help foster community, reduce carbon footprints, and appeal to a wide range of the population.

Figure 29: Newberry Place, Grand Rapids, MI
Source: Newberry Place website

## Housing Summary

Possible Occupants

- Senior populations as well as the low income population are two main target markets as Lansing is seeing an increase in both of these possible occupant groups.
- Rental housing geared to these groups might prove successful as most of nearby housing is rental and this expands possible occupants to students as well

Housing Design

- Cottage communities, cohousing and universally designed homes are all possible housing designs that each offer a unique set of advantages and disadvantages.

Construction Methods

- Prefabrication is a cost reducing way of housing construction that offers a low environmental impact while providing an increased sense of style and durability.
- Green building is an important construction method as it offers a wide variety of options and scales to choose from when considering green building techniques. In a time where 'going green' is valued, it is important to take this construction method into consideration as it is becoming ever more attractive to potential homebuyers.

Case Studies

- Troy Gardens- Madison, Wisconsin: An affordable, accessible community that embraces urban agriculture, this case study provides an example of how to make our development more attractive to a multi-generational market.
- Newberry Place- Grand Rapids, Michigan: This cohousing development in Grand Rapids provides an example of how a compact and pedestrian friendly can foster community building that is attractive to a wide variety of the population.

# AGRICULTURE FEASIBILITY

## Definition of Farmland

Farmland and land that is classified for agricultural use technically are classified as two different types of land use. According to the Michigan Department of Agriculture "Farmland" means one or more of the following; land of at least 5 acres in single ownership, with 51% or more of the land area devoted to agricultural use. To be classified as a farm, the land needs to produce a gross annual income from agricultural activities of $200.00 per year or more per acre of workable, cleared land. The Michigan Department of Agriculture also recognizes specialty farms that don't fit the typical farming model as farms. Specialty farms include greenhouses, breeding and grazing animals, bees and bee products, aquaculture as well as other similar uses and activities. A farm designated as a specialty farm has to be in single ownership and must also produce a gross annual income from an agricultural use of $2,000.00 or more (Michigan Department of Agriculture, 2010).

Agricultural use defined by the Michigan Department of Agriculture refers to the production of plants and animals that are useful to humans. This includes "forages and sod crops; grains, feed crops, and field crops; dairy and dairy products; poultry and poultry products; livestock, including breeding and grazing of cattle, swine, captive deer, and similar animals; berries; herbs; flowers; seeds; grasses; nursery stock; fruits; vegetables; Christmas trees; and other similar uses and activities except the harvesting and management of a woodlot, which is not recognized as an agricultural activity (Michigan Department of Agriculture, 2010)." Agricultural use can also include land used in a federal conservation reserve program or a federal acreage set-aside program.

# Soils

Soils play a key role in determining a site's suitability for agriculture. Soils dictate what type of crops will grow best and or not at all. Four soil types can be found on the project site: Marlette complex, Capac-Colwood complex, Houghton muck, and Marlette fine sandy loam. Figure 30 shows soil types and the distribution of soils throughout the project site.

All soils present on the site have different advantages and disadvantages pertaining to agricultural production. The ideal soil for most plants is a rich, sandy loam (Oregon Extension Service, 2006). Unfortunately, only a small area of Marlette fine sandy loam can be found on-site at the far eastern edge of the property abutting residences on Stoneleigh Drive. However, barring the results of detailed soil analysis, all soils on-site are suited for agriculture. The GLFB had expressed interest in bringing additional soils to the site. This action may be suitable for plants with shallow root systems such as lettuce but for crops with deeper root systems such as corn, adding soils may be ill-advised (Oregon Extension Service, 2006).

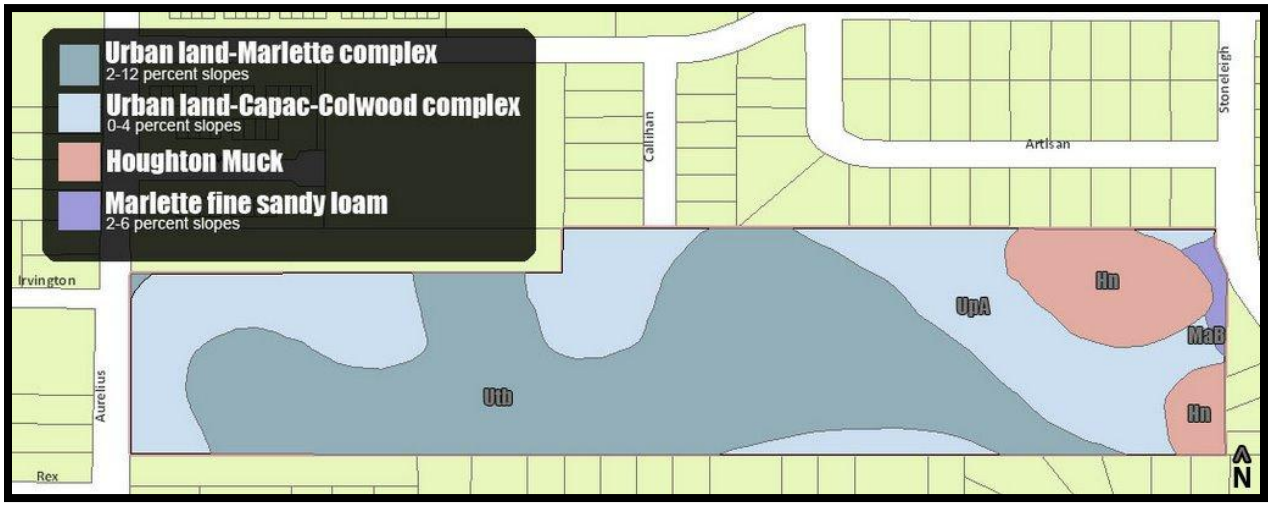



Figure 30: Site soil map

Data Source: Soil Data Mart

## Pesticides and Fertilizers in Farming

Agricultural production in urban areas can pose potentially serious risks to public health and the environment when not done properly. For instance, inappropriate or excessive use of agricultural inputs such as pesticides, nitrogen, and raw organic matter containing heavy metal residues may leach or runoff into drinking water sources, may cause microbial contamination of soil and water, and may increase air pollution. Leafy vegetables, such as lettuce or cabbage in particular can be contaminated through the overuse of chemical sprays (Food and Agriculture Organization of the United Nations).

# Health

Obesity is a condition that is prevalent in adults and youth in Michigan (MDCH). As of 2008 Michigan had the 8th highest prevalence rate of obesity in the United States with an overweight or obese rate of 63% of adults; further, 78.3% of adults were found to consume an inadequate amount of fruits and vegetables (MDCH). The Lansing area in particular is struggling with obesity. This map of Michigan (Figure 31) shows that from 2005 to 2007, Ingham County had an overweight/obese rate of between about 62% and 64%.

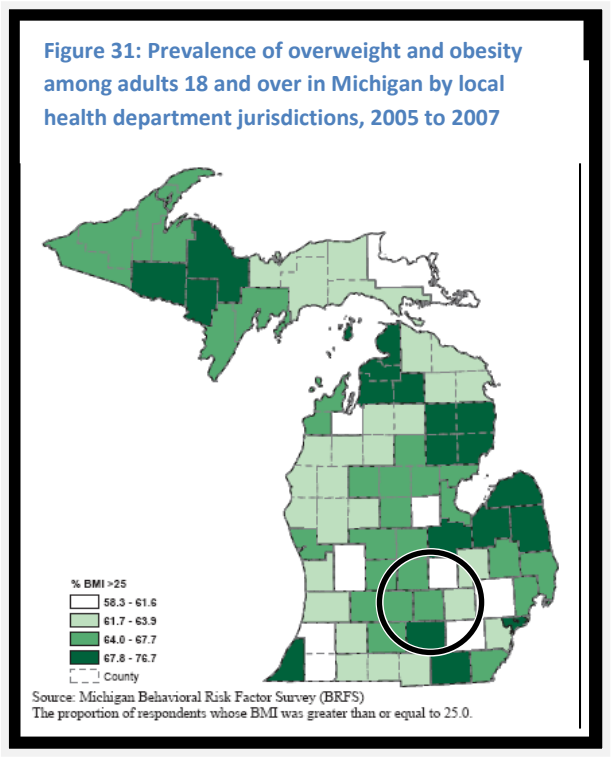



Figure 31: Prevalence of overweight and obesity among adults 18 and over in Michigan by local health department jurisdictions, 2005 to 2007

Obesity in Michigan also disproportionately affects Black people (39.8%) as compared to White people (28.8%) (MDCH). As 21.9% of Lansing's population is Black compared to a national average of 12.8% (American Towns), this suggests that not only are all residents of Lansing more likely to be overweight/obese than residents of the 42 states that have lower overweight/obesity rates than Michigan, but also that a considerable number of Black residents are at an even higher risk.

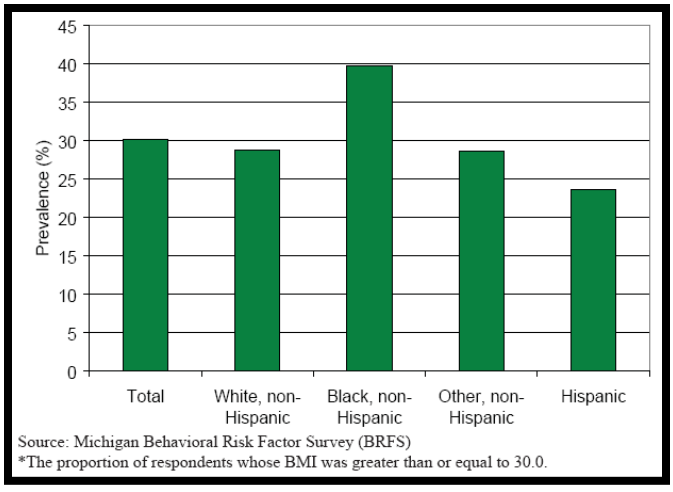



Figure 32: Prevalence of obesity by race, 2007

Youth statistics for obesity in Michigan are also troubling. In 2007, 28.9% of youth (grades 9-12) in Michigan were either overweight or obese and 83% consumed an inadequate amount of fruits and vegetables (MDCH). Youth statistics also show that again, the Black population is disproportionately affected with 18.5% of Black youth shown to be overweight or obese as compared to 11.2% of White youth (MDCH).

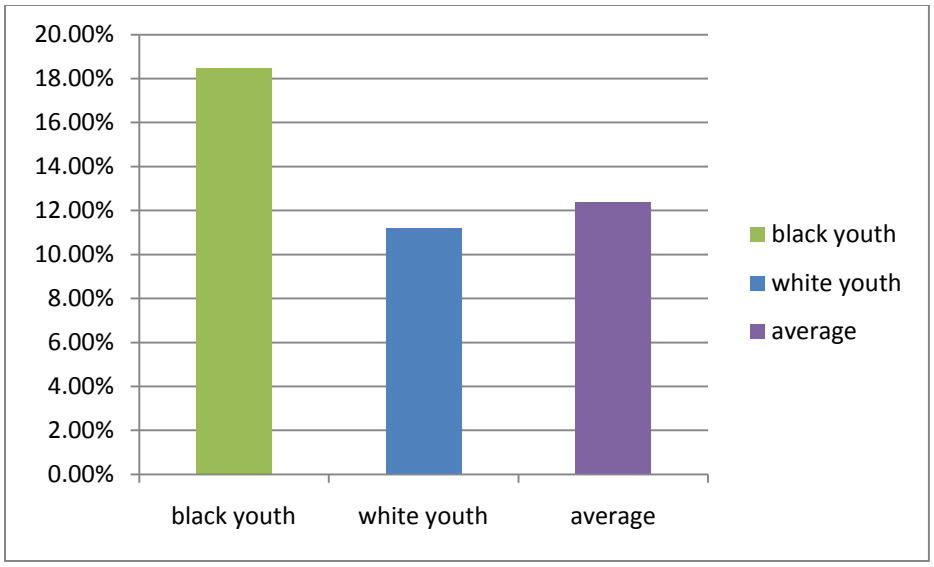



**Figure 33: Prevalence of obesity among youth in Michigan**
**Source: Michigan Department of Community Health, 2007**

Urban agriculture (UA) activities have been shown to have a positive impact on dietary habits (HBUA). There are three reasons given for this: first, because engaging in labor needed for UA is a form of exercise (UBUA); second, because in the practice of gardening, people become more educated about and more connected to their food (HBUA); and third, because the result of UA is fresh, nutritious produce (Armstron, 2000; Lackey & Associates, 1998; Patel, 1996). All three of these benefits are shown to reduce the risk of obesity in both children and adults (Hanna & Oh, 2000; Waliczek et al, 1996). It has been shown that children in particular can be affected by the benefit of exercise practiced through gardening; one study showed that energy expenditure of children twelve years of age who were involved in after school activities involving UA increased by 60% (Kien & Chiodo, 2003). In a 1991 study, it was shown that all gardeners are more affected by the third benefit and "ate more vegetables more frequently and they consumed less sweet foods and soft drinks as compared to a non-gardener control group. (Blair et al. 1991. Cf. Lineberger and Zajicek, 2000; Pothukuchi and Bickes, 2001)" Both of these studies show that UA has the potential to increase the health of children and adults, and all three benefits are shown to reduce the risk of obesity.

## Food Security

Food security is an issue that is becoming more crucial as the American population grows and becomes more dependent on food grown and produced out of the state or even the country in which it is consumed. In these globally turbulent times, it becomes important for Americans to consider how much of the food they eat is secure – that is, how much of their food comes from a known, local source that can be depended on to continue to produce and supply food at an affordable cost (Wilkins 2004; USDA 2003). The issue of food security is explored in the report "The Rising Cost of Food – What is our food future?" through three approaches (education, interaction, and increased production) to address the problem of food security as it relates to rising food costs in the United States and Michigan (The Rising Cost of Food).

Americans tend to be disconnected from their food and its origins. This disconnect leads to a lack of empowerment of the consumer because he/she does not know where the food came from, who grew and processed it, and who is getting paid for it. The education of American consumers may assist them in making informed decisions about the food that they buy. Such education could advocate purchasing locally grown foods that are in season to reduce harmful ecologic effects of transporting food and also to support the local economy. The use of coupons, not wasting food, and making food rather than eating out to save money could also be encouraged (The Rising Cost of Food). The focus on interaction is very similar to the desire to educate citizens as it also advocates buying food from a local source. In addition to the positive effects that can result from public education, this approach adds that health and community bonding through interaction with food is an essential social change that Americans need to make (The Rising Cost of Food).

Both approaches described above encourage buying food from a local source, and there is evidence that this encouragement had influenced consumers. The desire for fresh produced was identified by consumers as an important reason for buying produce directly from farmers (Armstrong-A 2000; Lackey & Associates 1998; Patel 1991; Patel 1996). In fact, in many large and small towns farmers are so in demand that these towns compete for farmers to participate in their farmer's markets (Knox and Feenstra 2004; Gradwell, et al. [no date]). This leads to the observation that buying locally grown food is likely to be appealing to consumers as the fresh, readily available food grown by local farmers often cannot be obtained through other sources like grocery stores; or if it can, it is often at a higher price with less variety to choose from (Salvidar-Tanaka 2002; Hanna 1999; Hynes 1996; Feenstra et al. 1999; Ramirez 1995).

With a rising national and global population comes the need for more food production on a greater scale. A focus on increasing local production examines the problem of national and world hunger and the need to produce more crops to combat food shortages (The Rising Cost of Food). The main idea of local production, producing higher crop yields to feed people in need, is important to consider as our population grows. One way to do this is to encourage numerous small scale production sites: "In a 130-day temperate growing season, a 10x10 meter plot can provide most of a household's total yearly vegetable needs" (Patel 1996; Sommers and Smit 1994). If every household had its own small scale garden space, the cost of fresh produce could go down while food security could increase.

While it would be ideal for every person to be able to produce his/her own food, the reality of our society confronts us with situations in which needy people do not have skills or time to invest in a personal garden; or who perhaps do not own property on which to place a garden. In response to these limitations, organizations like the Greater Lansing Food Bank provide some food security to people who seek assistance. According to Terry Link of the Greater Lansing Food Bank, one way an individual may assist a food bank is to participate in the Plant-a-Row project. This type of project asks people who have a personal garden or farm to plant an extra row of crops to donate to the food bank (personal interview). Programs like this provide fresh food that is rarely donated by retailers, restaurants, and processors (Wilson, 2001). Other issues involving the time and skills necessary to maintain UA and ways to resolve these issues will be discussed later in the development options section.

## Agriculture Feasibility Summary

- Because previous build out on the project site was limited to a farmhouse and detached garage, the soils on-site are assumed to be free of contaminants and conducive to agricultural production.
- Soil and groundwater analysis should be conducted to confirm the site's suitability for agriculture. This will also be useful in determining which crops are best suited for cultivation.
- In terms of agricultural production on-site careful attention must be paid to the type/amount of fertilizer and pesticides used in order to avoid environmental and/or health issues.
- Given that Michigan has problems with obesity, urban agricultural activities on site could increase the amount of available fresh produce for the surrounding population as well as increasing food security for residents.

## URBAN AGRICULTURE AND GREEN SPACE

Urban Agriculture (UA) and/or open space is an option for the project site. UA can take many forms, including community supported agriculture (CSA), production farming, rental garden plots, and personal gardens. Given the sizable amount of land on the site, incorporating open space as well as food production into the site design is something that the practicum team as well as the clients identified as important. The Greater Lansing Food Bank (GLFB) in particular could benefit from UA on the site, as crops produced could be sold to them at bulk rates. Small or large scale food production could also be beneficial to the client because it can provide revenue in lieu of any housing development; it also has the potential to benefit residents of Lansing by creating agricultural jobs.

## Public Open Space

One vegetation option explored was public open space which can come in a variety of forms including the property as is, parks, gardens, and playgrounds. Public open space that is open to the public may not be a good option if there is also a housing component on the property. However, given the size of the project site, incorporating an area of public open space would allow for preservation of some of the existing natural are on the site and may also be an attractive amenity to home buyers/renters. Open space provides residents with a recreational area which can help build a sense of community in an environment that would be safe for children, those with special needs, and seniors.

Demands of public open space may include:

1. public access
2. responsibility for users of the space
3. rare wildlife

## Urban Gardening

Urban gardening with a possible public use component is another option to be considered for the Delaney property. Public gardening could potentially bring in a source of revenue and encourage neighbors to interact with the community on the Delaney property. Private use for residents of the property only could still potentially bring in more revenue beyond rental/sale of homes and would also provide residents with a gardening experience and fresh produce.

The demands of urban gardening may include (visit to project grow in Ann Arbor, MI):

1. divide land into small plots
2. allow for public access w/o disturbing community
3. secure plots to avoid theft and disruption
4. access to plots
5. security for gardens

## Community Supported Agriculture

Community Supported Agriculture (CSA) is another vegetation option for the site. This would be an appropriate option if neighboring communities have a desire to purchase local produce and are supportive of the development of the Delaney property for this purpose. Based on a reported positive reaction by neighboring communities to the first development plan, it is likely that support will also be given for the new development.

Demands of CSA may include (LocalHarvest, 2009; USDA, 2009):

1. community interest
2. all-year growing
3. shared risk
4. equipment
5. rezoning

## Urban Farming

Urban farming is similar to rural production agriculture, but it often occurs on a much smaller scale. Because the project site is relatively large, it would be feasible to have a small farm or farms on site.

Demands of urban farming may include: (meeting with Terry Link, GLFB)

1. area (1-3 acres)
2. water
3. farming knowledge and equipment
4. market for goods produced
5. agreement with the Greater Lansing Food Bank
6. rezoning or a new city zoning ordinance
7. greenhouse infrastructure

## Educational Opportunities

Bearing in mind the close proximity of Forestview Elementary and other schools, incorporating an agricultural component on the site could present a host of educational opportunities for area students. Children will have the chance to learn about plants from germination to maturation. They may also acquire a greater level of appreciation for the amount of work that goes into food cultivation and production. For those spatially separated from their food sources growing up in cities, this represents an opportunity to reconnect students with food production, which in turn may inspire a greater sense of environmental stewardship. When children learn about water and energy cycles, the food chain, and the particular needs of individual species, they have a reason to care about all the forces that impact that plant's future. Furthermore, it may help implant the seed of interest in a host of career opportunities in agriculture and horticulture. In addition besides getting children outside into the fresh air, research has shown too that students are more likely to try eating vegetables they have grown themselves and to ask for them at home (Morris & Zidenberg-Cherr, 2002).

The Beekman Center located a short distance to the east of the property caters to the needs of people with disabilities and special needs. The term "Special needs" can encompass a variety of individuals including those with physical, mental, social, and emotional challenges including mental retardation, autism, sensory impairment, learning disabilities, or physical or mental developmental delays. The physical nature of gardening especially engages students who have trouble sitting still and concentrating in a traditional classroom setting. Garden work also helps to build gross and fine motor skill as well as provides opportunities for sensory exploration and creative expression.

## Urban Agriculture Case Studies

### *Project Grow-Ann Arbor, Michigan*

Project Grow is a private, non-profit organization with a network of 14 community gardens in Ann Arbor, Michigan. It has been in existence since 1972 and relies heavily on the support of volunteers. Its programs utilize sustainable farming methods and enrich the land through soil improvement, landscaping, and plantings. Project Grow provides customized programs for children, seniors, and gardeners with disabilities (Project Grow, 2008). One program in particular offers individual garden plots to Ann Arbor residents for an average of $72 for an half a plot and an average of $111 for a whole plot, along with a yearly membership fee of $20 (Project Grow, 2008).

Figure 34: Project Grow Source: Project Grow Website

Project Grow programs develop vacant urban land and create spaces where people can grow their own nutritious food. This provides residents with educational and physical connections to where their food comes from. Project Grow's focus on education, food security, and community building could be emulated on the project site.

### *Troy Gardens Community Supported Agriculture-Madison, Wisconsin*

The Troy Gardens development project, mentioned earlier in this report, has a Community Supported Agriculture (CSA) farm on site that is managed and cared for by both residents and non-residents. This Troy Gardens case study is very relevant to our project, as Troy Gardens has already achieved what we hope to implement on the project site in terms of mixing urban agriculture with housing. The Troy Gardens CSA was established in 2001 on 5 acres of land adjacent to the Troy Gardens housing development. It distributes fresh organic produce to CSA members for about 20 weeks each year (Troy Gardens, 2009).

Once a week, CSA bylaws require that members must pick out the fresh produce they want to receive. This gives farmers and consumers a chance to interact and builds a strong connection between supplier and consumer. The CSA structure also provides farmers from the surrounding region with a marketplace to sell their crops. It provides members with educational tools as they "learn to enjoy - and appreciate the quirks of - Wisconsin seasonal food production" (Troy Gardens, 2009). In addition to the community farm, the development also features 330 family garden plots in its community gardens.

Troy Gardens is located on roughly 31 acres of land. The project site is slightly smaller in area than Troy Gardens, but it is large enough to consider several of the multi-use development options found at Troy Gardens. A CSA located on the project site may be an appealing option to community members, community gardeners, and local farmers. The establishment of a CSA is a viable option for part of the project site.

### *Growing Power Community Food Center-Milwaukee, Wisconsin*

Growing Power is a national non-profit organization that strives to produce high quality locally grown organic food for those in need. This organization was founded in 1993 to bring the concept of urban farming to mainstream culture. Growing Power operates multiple urban farms throughout the country, and their main urban farm, the 'Community Food Center' is located in Milwaukee, Wisconsin. Something like this might be applicable to our project site in Lansing. This main farm features six greenhouses, multiple hoop houses, worm depositories, composting areas, and "in a space no larger than a small supermarket live some 20,000 plants and vegetables" (Growing Power, 2009). This project not only gives people an arena to learn about urban farming but also helps bring the importance of growing fresh local produce into focus. Given the amount of space that we have to work with an urban farm or community food center is something that could definitely work on site.

## Urban Agriculture and Green Space Summary

Open Space

- Open space that is open to the public may not be a good option if there is also a housing component on the property.
- Incorporating an area of private open space would allow for preservation of some of the existing natural are on the site and may also be an attractive amenity to home buyers/renters.

Urban Gardening

- Public gardening could potentially bring in a source of revenue and encourage neighbors to interact with the community on the Delaney property.
- Private use for residents of the property only could still potentially bring in more revenue beyond rental/sale of homes

CSA

- This would be an appropriate option if neighboring communities have a desire to purchase local produce and are supportive of the development of the Delaney property for this purpose.

Urban Farming

- Because the project site is large, it would be feasible to have a small farm or farms on site

Educational Opportunities

- Incorporating an agricultural component on the site could present a host of educational opportunities for area students; students from Forestview & Beekman

Case Study: Project Grow, Ann Arbor, Michigan

- Its programs utilize sustainable farming methods and enrich the land through soil improvement, landscaping, and plantings.
- Project Grow provides customized programs for children, seniors, and gardeners with disabilities.

Case Study: Troy Gardens, Madison, Wisconsin

- The CSA also provides members with educational tools
- CSAs also provide a place where community members can interact while learning about food production.
- Appealing option for community members

Case Study: Growing Power, Milwaukee, Wisconsin

- Provides an arena to lean about urban farming, but also helps bring the importance of growing fresh local produce into focus

# DEVELOPMENT OPTIONS

The following section analyzes the various housing and agricultural types and concepts introduced in previous sections. In this analysis, we evaluated the Strengths, Weaknesses, Opportunities, and Threats involved in this project. This method, often referred to as SWOT analysis, is a strategic planning tool available for decision-making when little research exists in a specific topic area. Strengths are positive tangible and intangible attributes helpful in achieving the objective. Weaknesses are factors that detract or are harmful in attain the desired objective. Opportunities are external conditions that may be helpful in attaining the objective, and threats are external factors that could place the objective at risk (Chartered Institute of Personnel and Development, 2010).

The objective of our analysis was to determine the most compatible housing and agricultural options for the project site. First, an analysis of housing options was performed for cohousing communities, cottage communities, and attached housing. This was followed by an analysis of agriculture and green space options which examined community supported agriculture, production agriculture, rental garden plots, and open space. A final analysis was completed for combinations of housing and agriculture options. The following section is the result of our analysis.

## Housing Analysis

### *Cottages*

Cottage housing is a residential design concept that would be unique to the City of Lansing. Cottages can be configured in a variety of ways and densities. Their small size in comparison to traditional homes may be more manageable for smaller families, senior citizens, and individual property owners. Depending on the amount of detailing, a potential weakness of cottage housing is it they can often be expensive. Their size may also not be ideal for large households. One opportunity present in constructing these types of units is the possibility of prefabrication. Prefabrication can help decrease costs and construction time, but may affect design choices. Cottages also have smaller ecological footprints and offer the significant privacy typically associated with detached units.

### *Cohousing*

A proposed cohousing development at the site was originally introduced to the community years earlier and was received positively. This type of housing is adaptable for both multigenerational and individuals with special needs and happens to also be environmentally friendly. One weaknesses of the cohousing is that certain aspects may not appealing to everyone, especially consensus decision making processes and limited attached parking.

One of the most compelling opportunities for cohousing is that it offers a strong sense of community. For this reason cohousing units may also not be compatible with renting. This type of housing is focused on community building and involvement which may be stunted by high rental turn over. The process of consensus decision-making and the fear of reenacting the "Tragedy of the Commons" are both potential threats to the cohousing option.

### *Attached Housing*

Attached housing offers an array of building options. A strength of attached housing is its ability to accommodate both rental and owner occupied units. Attached housing can be particularly marketable to college students who comprise a significant percentage of the area's rental market. Since there is already a precedent for similar housing in the area the addition of attached housing on the project site would fit with the existing character of the neighborhood. However, these types of housing units may conflict with agricultural opportunities.

Relative to owner occupied units, the quick turnover of rental units also weakens community building efforts. An opportunity for attached housing is that it offers the best advantages for MSU/LCC students who would virtually be involved with agriculture. Depending on the amount and scale of these housing units, it may negatively impact the surrounding environment; which can be seen as a threat.

Table 15: Housing analysis

| | Strengths | Weaknesses | Opportunities | Threats |
|---|---|---|---|---|
| **Cottages** | Prefab decreases cost; cottages have small footprints; offers privacy | residential plots may take up valuable ag land | Can utilize universal design, design is unique for Lansing; incorporates green design elements | Construction can be expensive; small size may not appeal to all homebuyers |
| **Cohousing** | Adaptable for multigenerational/ special needs; sense of community; an alternative to aging care facilities | Consensus decision-making may not appeal to most homebuyers; tragedy of the commons | k-12 education; surrounding community was receptive; incorporates green design elements | Not compatible with rental; may seem like an exclusive or gated community to neighbors |
| **Attached housing** | Available for rental or ownership; versatile building structure; fits student market; compliments existing neighborhood | Conflicts the most with agricultural opportunities; quick turnover compromises community building | Best opportunity for MSU/LCC students to be involved with ag | Depending on its scale may negatively impact environment |

# Agriculture Analysis

### *Community Supported Agriculture*

CSA has a potential to be a good fit for the property because of the dearth of fresh produce currently available in the immediate neighborhood. This particular option would also allow for the cooperation from the Greater Lansing Food Bank. One weakness of a CSA option is there may have to be buy-in from the surrounding community in order to be successful. This is not always guaranteed.

Operating as a CSA would offer a number of opportunities including shared-risk amongst investors, greater neighborhood involvement, as well as educational opportunities. There also exists the possibility for a small revenue stream through added-value production. Decentralized management could also be a threat to this option. Competent and constant managements are requirements for this choice.

### *Production Agriculture*

Strengths of the production agriculture include: greater crop yields, higher revenue potential, an option more fitting to the needs of the Greater Lansing Food Bank, a considerable amount of space for multiple crops, and job creation. Possible weaknesses of production agriculture are its demands for large acreage, the expense of irrigating large areas, and concerns over runoff from the fertilizers and pesticides used on-site.

Should housing market remain weak in the future, the site could be used more for production agriculture. If the housing market does rebound, agriculture acreage could be reduced to allow for possible housing developments. Threats of this option include the necessity to have skilled laborers, the possibility for nuisances, the possibility of bad growing seasons, and limited accessibility to nearby residential developments.

### *Rental Garden Plots*

The option of rental garden plots can bring publicity and awareness of the project site to the community. It also allows for increased access to produce for area residents, offers individual ownership with individual maintenance and responsibility, and is easily integrated into housing development units. Anticipated weaknesses for this option include limited production capabilities of small plots as well as potentially high costs in servicing individual gardens.

One opportunity presented through incorporation of rental garden plots on the project site would be the potential to foster greater community by inviting neighbors from outside the development to participate. Some threats of the rental plot option include the potential that this system may not bring in enough money to support itself, that the rental plot option could

possibly compromise the privacy of onsite residents, and that security for the food/produce will be needed. Another weakness of this option is the idea to combine these rental plots with residential units; which could be wasteful if residents don't take full advantage of it.

### *Open Space*

The creation of onsite recreational spaces, the maintenance of natural groundcover and mature trees, the connectivity with nearby park space/trails, and the appealing effect of the area to pet owners are all strengths that outline the open space choice. Yet, this option could have the potential to attract fewer people as there are many nearby parks. Some opportunities of this option include it serving as a barrier to keep the property quiet for potential residents and it can be beneficial for small children and individuals with special needs. When concerning open space, acreage can be reduced for potential development, which is also a proposed opportunity. Loitering around properties and the fact that this option offers no extra revenue stream are both threats of this option.

Table 16: Agriculture/green space analysis

| | Strengths | Weaknesses | Opportunities | Threats |
|---|---|---|---|---|
| **CSA** | Shared risk; added-value production possible | Decentralized management (needs competent and constant management) | Gives options for fresh produce in neighborhood; GLFB cooperation; neighborhood involvement; education | Surrounding community may not be interested in buying into the CSA |
| **Production** | High yields; high revenue potential; space for multiple crops; revenue-sharing | Skilled labor necessary, possible nuisances; bad growing seasons; limits accessibility for nearby residential development | If housing market picks up ag acreage can be reduced for development; more support from GLFB; job creation | Less revenue than can be earned from residential build-out. Large acreage necessary; runoff from fertilizer use; expense of irrigation |
| **Rental plots** | Individual ownership easily integrated into housing development units; gives site a sense of value within the community | System may not bring in enough money to support itself; may compromise privacy of residents on site; needs regulation | Brings neighborhood/ city awareness of site; increased food security in surrounding area | People may avoid these if cost is too high; small scale food production not as beneficial to GLFB; only provides produce to those who grow it |
| **Open space** | Keeps the property quiet for residents; private open space beneficial to small children and special needs; open space acreage can be reduced for development | If residential near open space, may invade privacy; no agricultural revenue stream | Creates recreational space on site; maintains natural areas and mature trees; connectivity with nearby park space/trails; appealing to pet owners | May not attract as many people as there are nearby parks |

## Combined Development Analysis

When considering what housing and agricultural components would fit together the best, the practicum group examined the above analysis for housing and agriculture. The group matched housing and agriculture/green space options that would either compensate for weaknesses in each other or that were a natural marriage of uses. Factors considered were circulation, ability for versatility in occupants and site design, and unity with surrounding neighborhoods.

### *Cohousing and CSA*

This option would cater most to community interaction and strength. With cohousing as the housing component, residents on the property would develop a strong sense of community. The CSA adds to this community by bringing in other residents in the area. Because cohousing is self-contained and unique to the area, nearby residents may feel excluded from the new development. However, with the addition of a CSA component that brings other members of the surrounding community in, this potential weakness could be resolved.

### *Attached Housing and Rental Plots*

Combining attached housing with rental plots could make good use of space on the site because rental plots could easily be configured around housing units. It is also possible that residents will want to rent plots for themselves; this addition could easily be incorporated into a lease. However, short term residents are less likely to appreciate this feature as gardening does not have immediate results. Regardless, the addition of rental plots around the property would serve a dual purpose and green outdoor space which would be visually appealing to residents whether or not they rent plots.

### *Attached Housing and Open Space*

This pairing is good for people who do not need large indoor living spaces but who instead enjoy being outdoors. Because open space would be shared, it would be a good place for residents to interact and in turn create a greater sense of community. Open space also generally raises property values, so this addition could be beneficial to the client.

### *Cottages and Open Space*

Combining cottages with open space would give a feel of a rural environment while maintaining the amenities of a city; this option will likely appeal to families who want privacy but also a strong community in which to raise their children. And because cottage designs are versatile, they can easily be built using universal design principles that would accommodate the

senior and special needs populations. Having plenty of green space is great for pets and provides a third space for residents to gather.

### *Cottages and Production Agriculture*

This option could provide jobs for agricultural workers as well as an opportunity for low cost housing on site. Students may also appreciate this combination because the living space is manageable and the site is not far from either local university. An additional opportunity is to partner with universities to expand agricultural programs beyond the confines of the university. Cottages take up minimal area and can be configured in any pattern making them ideal for arranging around a production area.

Table 17: Combined development analysis

| | Strengths | Weaknesses | Opportunities | Threats |
|---|---|---|---|---|
| **Cohousing and CSA** | Increases strength of residential community | Niche market may be hard to sell | Bring surrounding community to the site | Does not fit with character of surrounding neighborhoods |
| **Cottages and Production Ag** | Cottages demand little space and therefore allow more ag area | Ag is not as profitable as housing | Potentially low cost housing for Ag workers | |
| **Cottages and Open Space** | Allows for private space without compromising a strong sense of community, has wide appeal | Lower density may be less profitable, maintaining open space may be costly | Third space supplements private property | Does not fit with character of surrounding neighborhoods |
| **Attached Housing and Rental Plots** | Gardens can easily be configured around housing | Rental plots may be less appealing and practical for short term leasers | Allows residents an opportunity to grow their own food by leasing outdoor space | Increased foot traffic may make the site less secure |
| **Attached Housing and Open Space** | Allows dense residential without compromising green space | There is already park space in the area | Open space acts as a backyard | If too large, a park may attract unwanted visitors |

## Financing Options

Federal and State financing programs offer several opportunities for new development projects. In addition to reducing the cost of initial construction, the use of these programs may help developers acquire loans, receive tax incentives, and ensure payment of rent by certain tenants. When considering financing options, we evaluated programs that would be relevant to the project site, the client's intentions, and target populations. We explored construction and building programs, rental programs, and designated zones for land use. See Appendix for more detailed descriptions of the financing options explored.

## Development Options Summary

Housing Analysis

- Cottages
  - Design unique to City of Lansing
  - Can be pricey, but prefabrication can reduce cost but limits diversity
  - Small footprint
- Cohousing
  - Adaptable to multigenerational and special needs individuals
  - Lacks broad appeal
  - Can suffer from "Tragedy of the Commons"
- Attached Housing
  - Can be both rental and owner occupied
  - Fits in better with surrounding neighborhood

Agriculture Analysis

- CSA
  - Offers shared risk between stakeholders and provides potential for educational opportunities
  - Decentralized management could reduce effectiveness and efficiency
- Production Agriculture
  - High yields and high revenue but must be cultivated by knowledgeable workers
  - High cost of irrigation and potential environmental damage from run-off
  - Could be public nuisance through smells and excessive noise
- Rental Plots
  - Offers individual ownership – provides for either recreation or food cultivation
  - Potential to bring in off-site residents and open up to the community
  - Security of plots can be a concern
- Open Space
  - Recreational space that maintains natural ground cover and mature trees
  - Loitering and opportunity cost could be potential downsides

Combined Development SWOT

- Cohousing and CSA
  - Cohousing can provide base of people who would become part of CSA

    - Symbiotic relationship between housing and agriculture in terms of community building

- Attached Housing and Rental Plots
    - Rental plots can be easily tailored to housing units
    - Housing residents provide obvious market of purchasers
    - Potential rental occupancy has too high of a turnover for serious investment in gardening

- Attached Housing and Open Space
    - Open space provides a "living room" for residents
    - Open space can increase property value

- Cottages and Open Space
    - Combining feel of small town or rural with city
    - Green space could be great for pets and therapeutic for those who require universal design

- Cottages and Production Agriculture
    - Could provide housing options for agriculture workers
    - Could be ideal for students in agriculture programs
    - Small footprint and configurable around agriculture plots

Financing

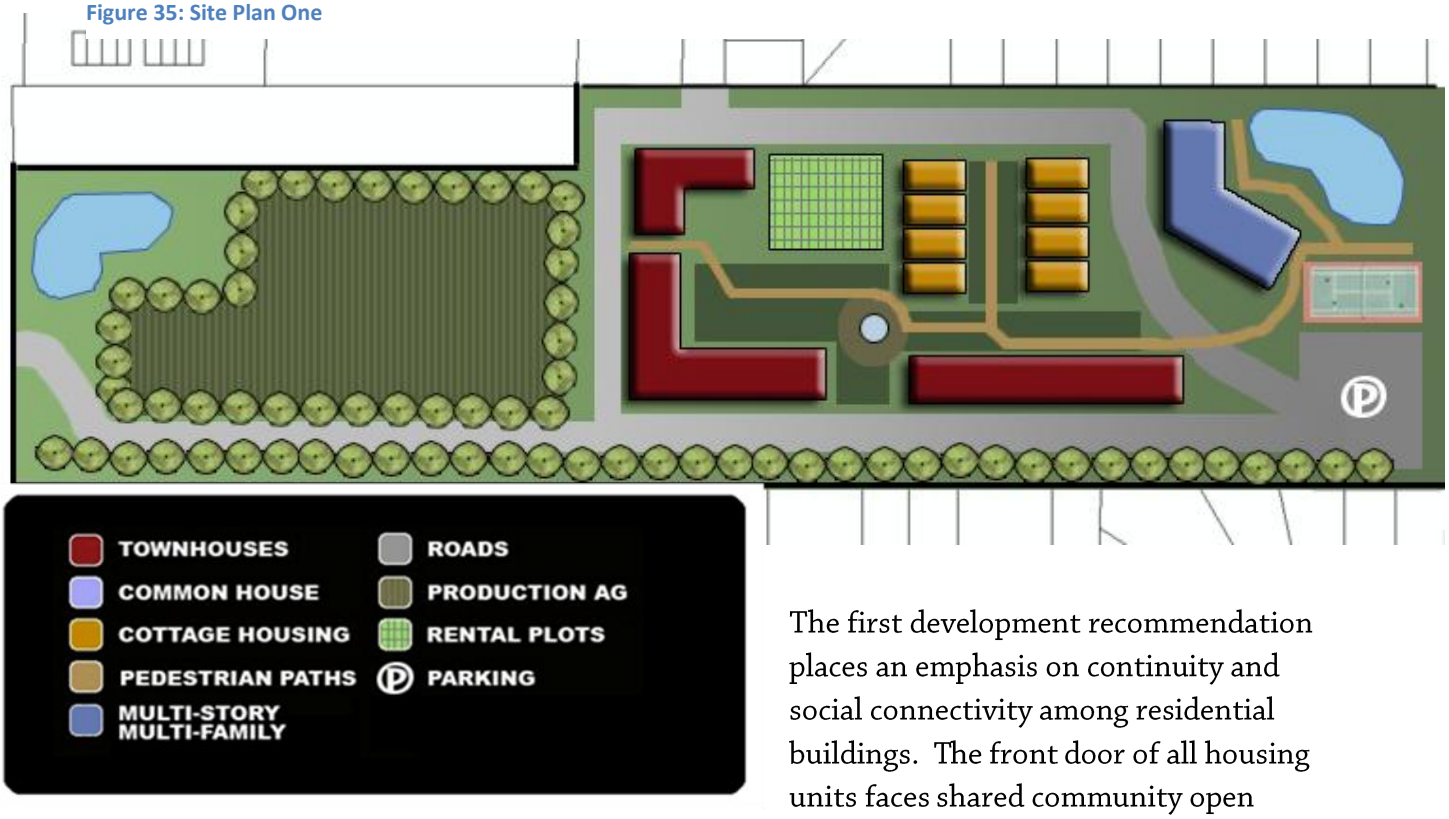
- Several financing options for new developments and for agriculture exist at the federal and state levels

# DEVELOPMENT RECOMMENDATIONS

The Practicum group went through the following process to produce the final recommendation. First, each member spent time developing a visual plan that considered the relationship between agriculture, housing, and circulation on the project site. A group meeting followed where each group member presented his/her individual development option. After all individual options were presented, there was a group discussion followed by the creation of four group options that utilized elements of the individual options. These four group options were sent to the client for review. Using client feedback, the four group designs were refined. Then, the group reviewed the market analysis and financing options to narrow design options down to three and to determine which population groups should occupy the site. These three options were reviewed by the client. Taking client feedback, market analysis, site circulation, and feasibility of site design into consideration, the Practicum group chose the final recommendation.

# Alternative 1

Figure 35: Site Plan One

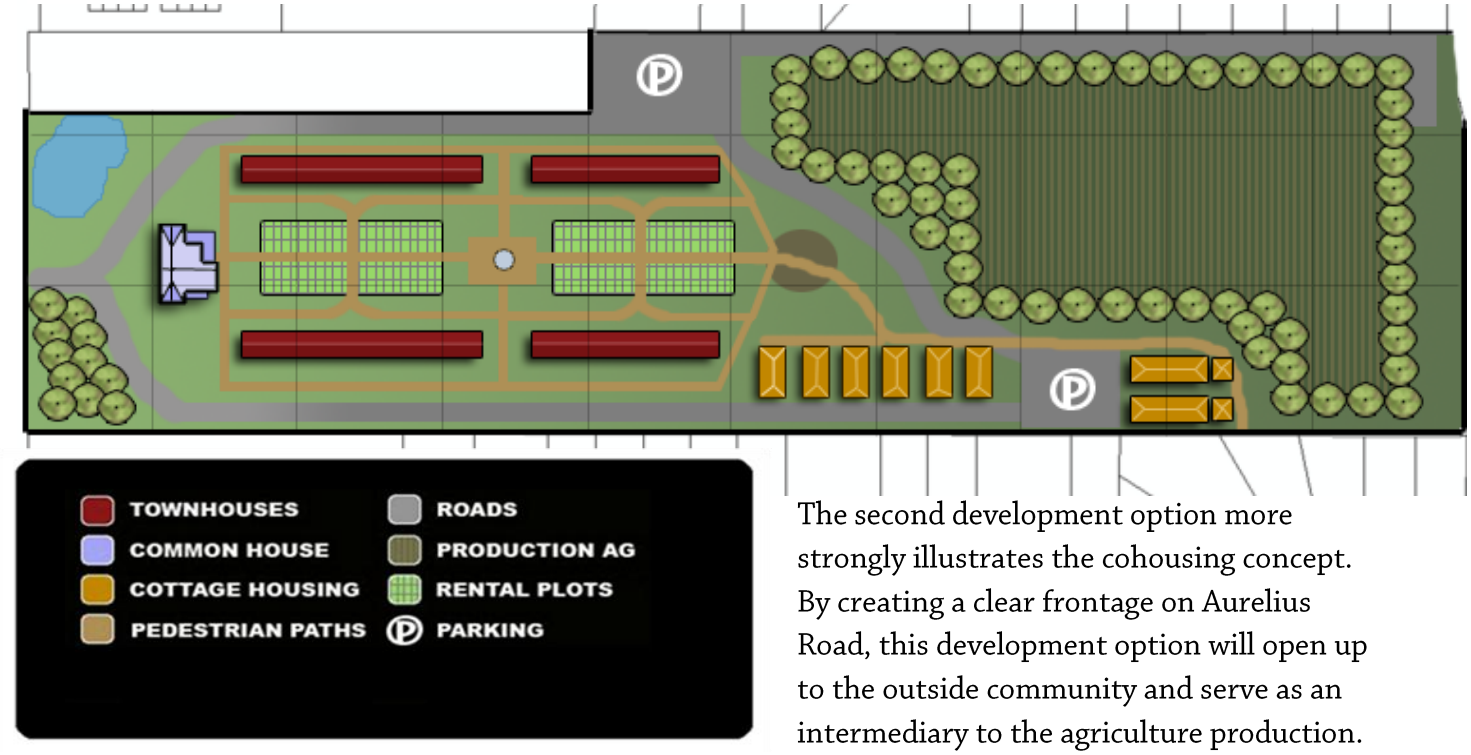



The first development recommendation places an emphasis on continuity and social connectivity among residential buildings. The front door of all housing units faces shared community open space, which functions as a third space where the community can gather. This idea is borrowed from the concept of cohousing. This development also includes two retention ponds which are located in the areas least conducive to development. Phase 1 on this development is to use the whole site for urban agriculture. This allows for the site to be productive as the real estate market gets back on track. The site could be administered as a 501(c)3 non-profit with logistical support from the Greater Lansing Food Bank. Without the formulated social structure of a cooperative, there is a need for an entity that has the appropriate knowledge and is responsible for cultivating and distributing food to people in need. Phase 2 is the development of townhouses and cottages. This development should utilize green building techniques and prefabrication where feasible as per the construction method recommendations discussed earlier in this report. Phase 3 is to construct the multi-purpose building. This building will be three stories tall and may serve a variety of functions depending on market demands at the time of construction. Some use recommendations include senior apartments, mixed income rentals or condos, or a facility to carry out value-added processes for crops grown on site.

Figure 36: Facade option

# Alternative 2

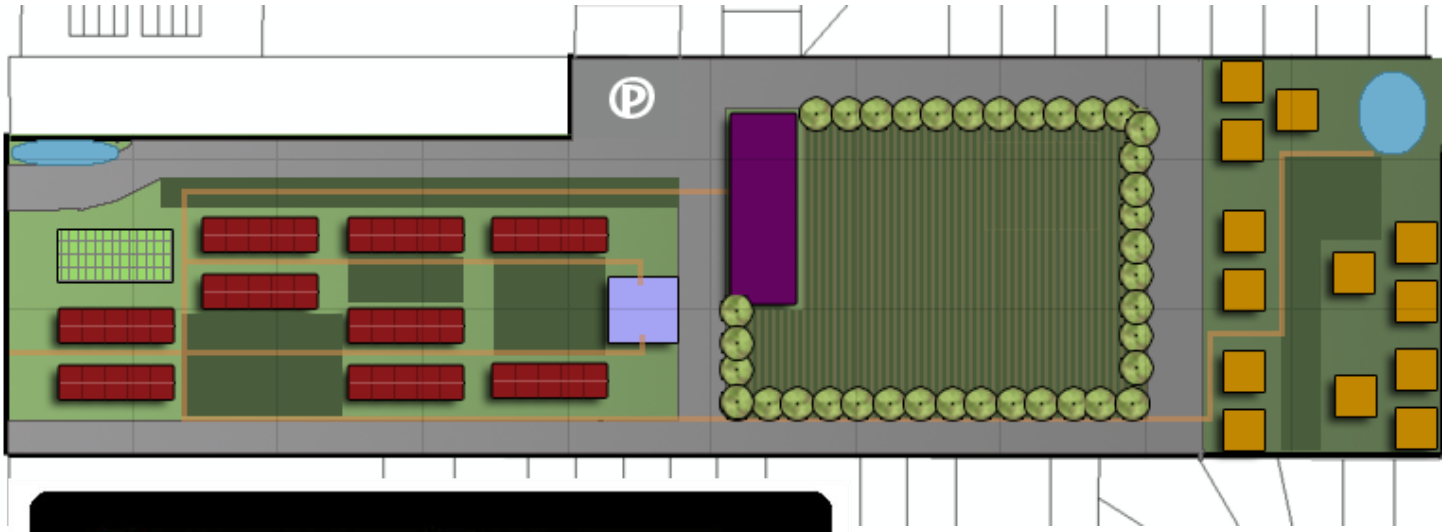
Figure 37: Site Plan Two




The second development option more strongly illustrates the cohousing concept. By creating a clear frontage on Aurelius Road, this development option will open up to the outside community and serve as an intermediary to the agriculture production. This option is the least dense of the three and provides the most agriculture production, at just less than 6 acres. Agriculture production will be managed by a 501(c)3 non-profit with cultivation and distribution aided by a community supported agriculture structure. This development, like Alternative One, should utilize green building and prefabrication techniques where appropriate. With the strong community ties of cohousing, there will be a group of people willing to aid in the production of healthy produce, as well as to serve as ambassadors to the outside community. This option is also advantageous because the entire development can be built in one phase. Another advantage of this alternative is that, compared with the other alternatives, it has the fewest units. Due to the small number of housing units and cohousing's potential appeal to a niche market, there would be less of a need to wait for the housing market to regain its full strength to pursue this option. The clients can continue their commitment to community building and cohousing while, at the same time, realizing the property's potential in a shorter amount of time.

# Alternative 3

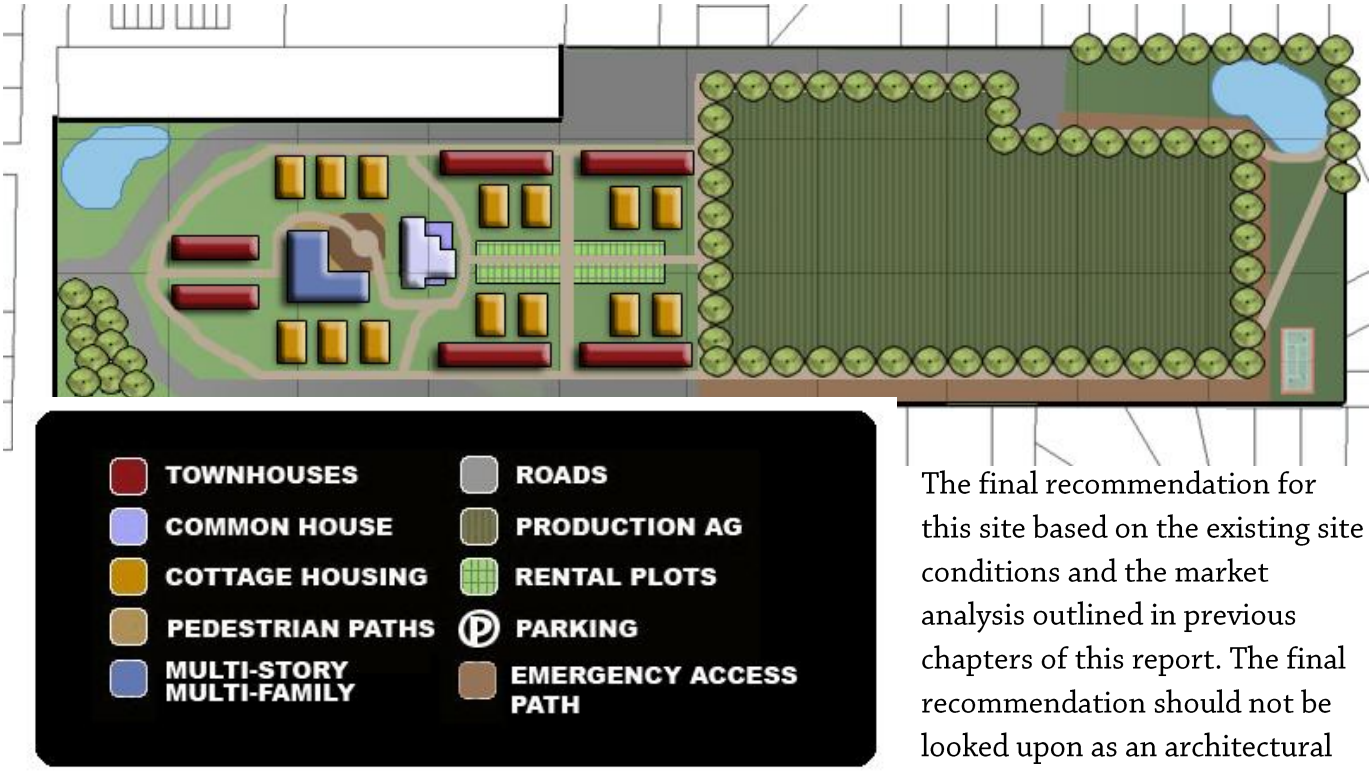
Figure 38: Site Plan Three




The third and final development option is a neighborhood that cultivates social interaction while maintaining private autonomy. Townhomes face Aurelius Road and have shared open space surrounding them. With cottage homes facing Stoneleigh Drive, this alternative opens up to the community on two fronts. Unlike the first alternative, some units are contained within this green space. This may be a selling point for people who are attracted to the idea of living in a green oasis within the city. This option also features a common house that could also serve as a leasing office for rental properties on the site. Additionally, it could potentially provide office space for the management of the production agriculture. As with Alternative One, this plan will be phased with production agriculture first and residential housing second. Again, housing should be built using green building and prefabrication methods where appropriate. An agriculture storage facility also provides storage for machinery and tools, as well as refrigeration units. While such a facility may require a larger upfront investment, it may provide significant financial savings throughout the useful life of that equipment.

# FINAL RECOMMENDATION

Figure 39: Final Site Plan




The final recommendation for this site based on the existing site conditions and the market analysis outlined in previous chapters of this report. The final recommendation should not be looked upon as an architectural blueprint, but rather as a suggestion for land use, the locating of structures for future development, and the accessibility and flow of the project site.

It is our recommendation that frontage along Aurelius Road be residential rather than agricultural. This will allow the most visible part of development by passersby to blend with the surrounding areas which are largely residential in character. Locating housing near Aurelius also allows for better connectivity of residents to bus routes and nearby amenities such as Hawk Island Park.

Instead of separating housing types (i.e. townhouses from cottages) we recommend the mixing of housing types and varying lot sizes. Such variety may increase the site's appeal to homebuyers. Blending housing types may also spark social interaction among residents of the development. One issue that may affect the site plan is the position of the multifamily housing based on its occupants. The layout of this building largely depends on the targeted audience for rental units. For example, if the target population is senior citizens, universal design may be a necessity because residents will have more mobility issues. Additionally, families may seek larger units, or students may look for units with more bedrooms as they tend to live with

roommates. These concerns should be re-evaluated during future project planning as will be discussed in the phasing.

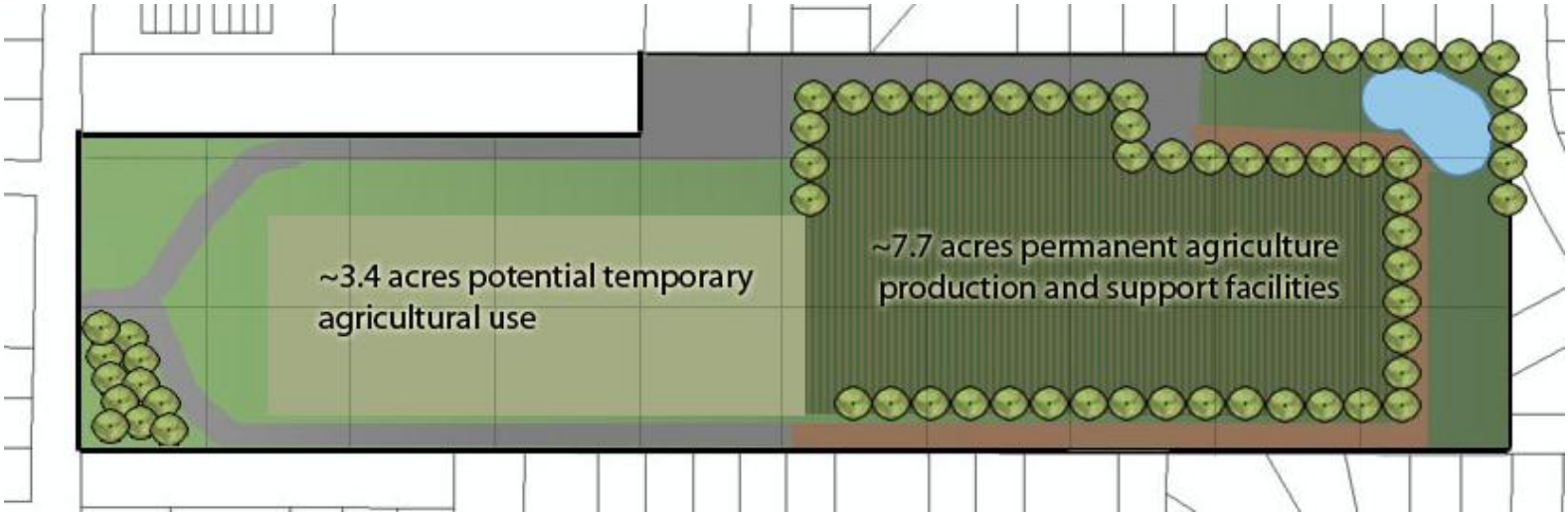
Circulation on the site emphasizes a pedestrian mode of transit, and a network of interior walking paths and peripheral roadways has been provided. Walkways converge on the common house while roadways skirt the edges of the property. If each residence does not face the street, the likelihood of accidents between pedestrians and motorists will decrease as interaction is minimized. This design layout also allows for more functional open space on the property as well as a safer environment for children and disabled persons. Additionally, the two access roads are connected behind the agriculture section with an emergency access path covered with brick pavers. The pavers de-emphasize this path as an auto access point while offering an aesthetically pleasing path that provides full circulation for emergency vehicles.

This plan includes a common house that is centrally located within the housing section of the development, similar to the housing placement in Alternative Three. This placement will increase the likelihood that the space will be used by community members. Another use for this facility is to serve as an information center and leasing office for the development as well as management offices for the agricultural uses.

This recommendation requires a phased approach to development on the site. Although the Greater Lansing Food Bank expressed interest in the creation of an urban farm of approximately 3-5 acres, depending on market conditions and the availability of project financing, a majority of the site may be used for agriculture as an interim use. When market demands for on-site housing increase, agricultural uses may be scaled back. This will be discussed further in the next section of this report.

# Phase 1

Figure 40: Phase One

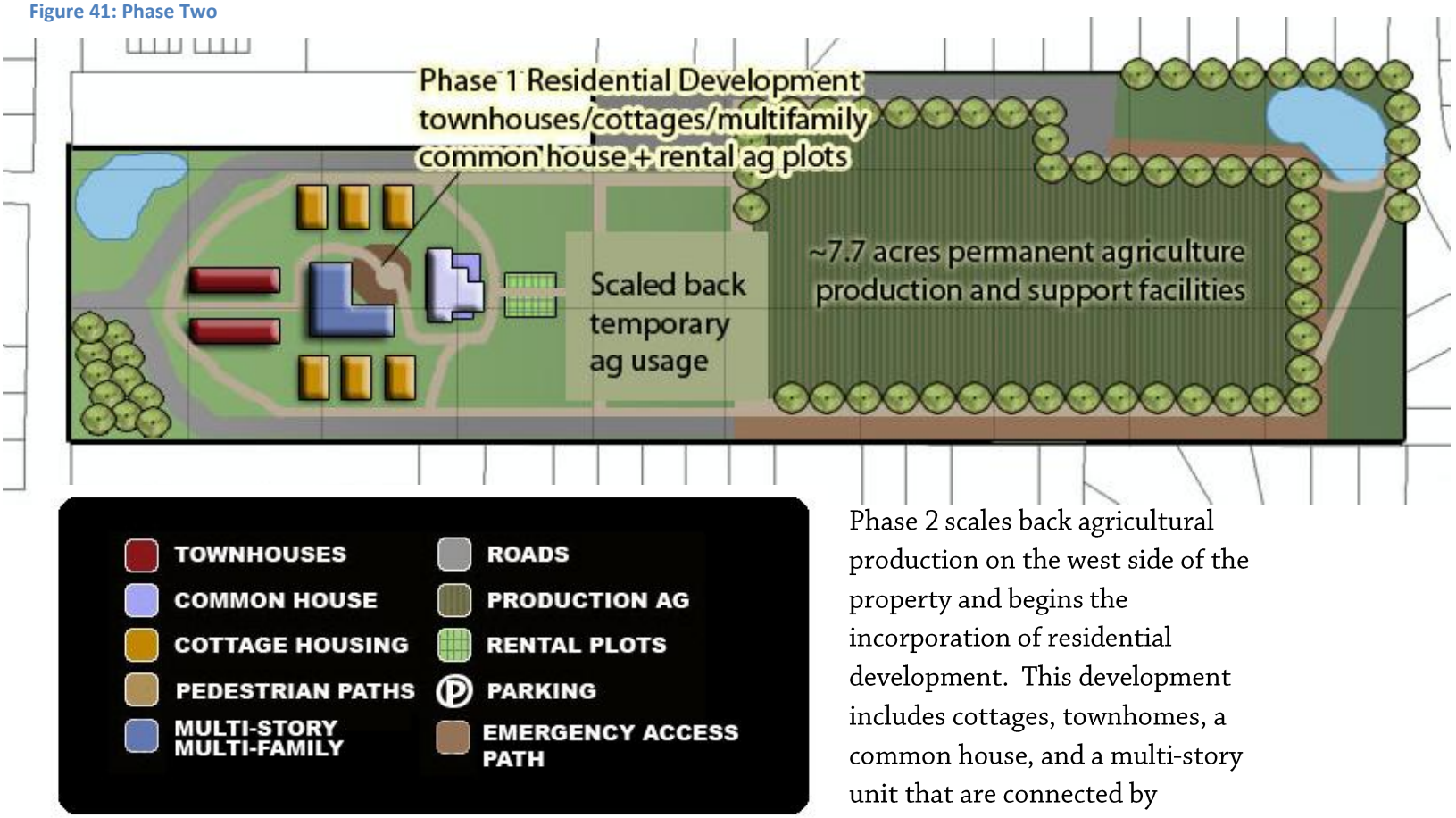



Phase 1 of development is to use the majority of the site for agriculture, with road infrastructure as well as a pond in the Houghton muck area in the northeast corner. These recommendations are based on two considerations. First, the Greater Lansing Food Bank expressed interest in cultivating food production within the next growing season. In order to accomplish this, land clearing must occur. Given its high cost at around $5,000/acre (Martin), the client should further evaluate its acreage needs and strategically limit clearing based on desired agriculture production and access. According to the aerial image provided in the site description, the most heavily concentrated tree coverage exists on the east side of the site where agriculture production will occur. This means that the most expensive clearing costs will occur upfront. Significant trees should be identified and preserved with the final concept in mind to both create the most mature tree buffer possible and preserve the aesthetic beauty mature trees provide.

The second consideration in this phase is that the housing market analysis indicates that there is currently no clear demand for housing around the project site. With the forecasted increase in residential vacancy, plummeting sales values in the project site's quadrant, and little to no projected population growth, we have concluded that a housing development is not feasible at this time. However, urban agriculture provides a functional use for the property while the housing market rebounds.

## Phase 2

Figure 41: Phase Two

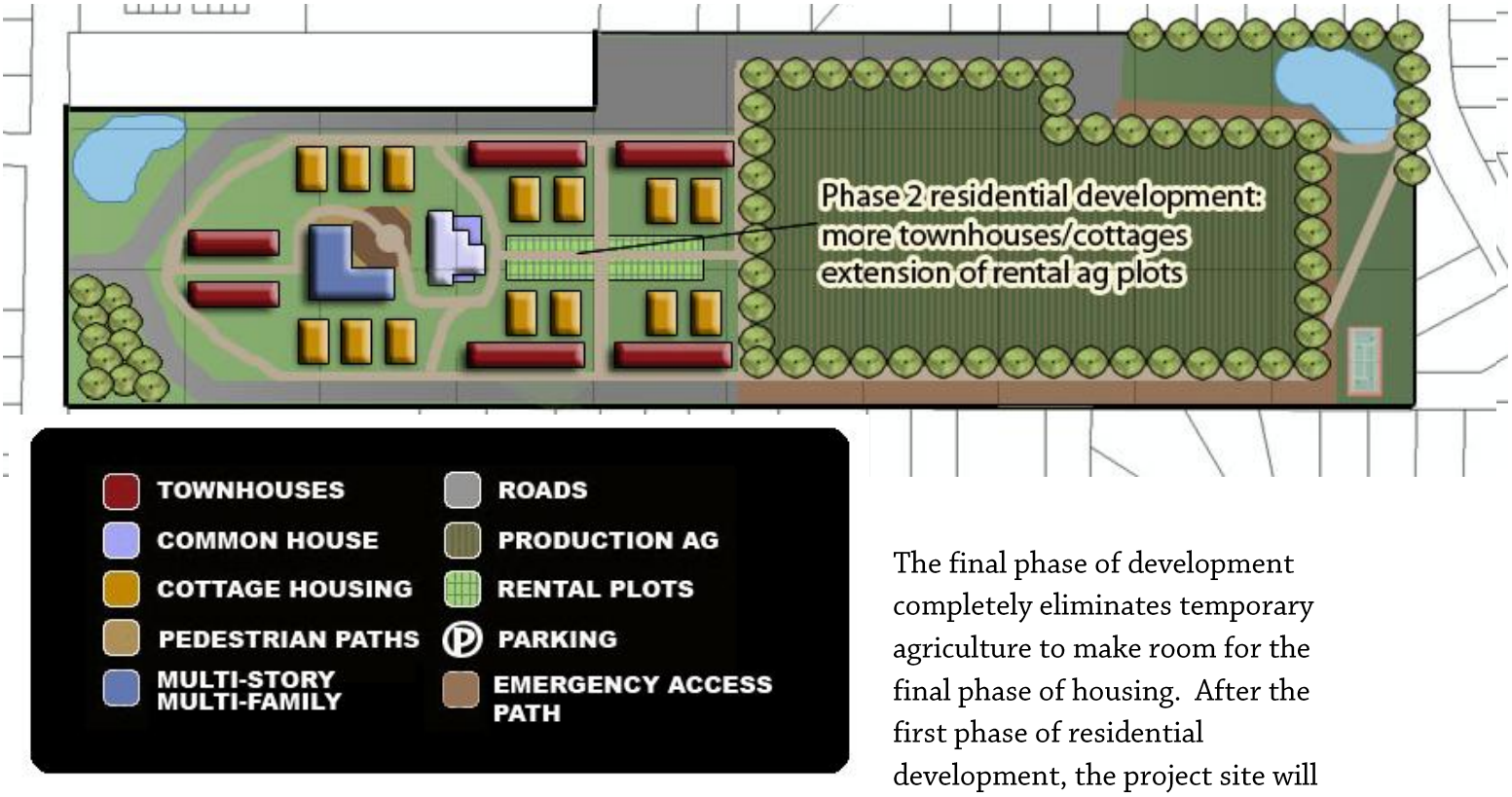



Phase 2 scales back agricultural production on the west side of the property and begins the incorporation of residential development. This development includes cottages, townhomes, a common house, and a multi-story unit that are connected by pedestrian paths. Note that the multi-story building should be no taller than three stories; this provides some diversity of size while maintaining a human-scaled environment. The use of this building should be based upon a re-evaluation of market needs during project planning. If the building is residential, we recommend potential targeted groups to be seniors, students, or mixed-income. The common house and multi-unit building are ideal hosts of green roofs because they have the largest footprint and offer the greatest opportunity to collect run-off and offset cooling expenses. Housing, both owned and rental, may incorporate solar paneling on roofs and any cooling units should be housed in a structure that has a cool roof.

The site's low points will be a home to retention ponds which can collect run-off as well as offer unique water features for residents of the community. The final element of Phase 2 is the development of a small number of rental garden plots which offer urban gardening opportunities. These would be leased garden plots that residents or community members can utilize for recreational gardening or to grow food for themselves, friends, or family.

# Phase 3

Figure 42: Phase Three




The final phase of development completely eliminates temporary agriculture to make room for the final phase of housing. After the first phase of residential development, the project site will have etched out a niche that may make cottages without direct auto access more attractive. This conclusion is drawn based on the Cohousing Development Company's experience with cohousing developments in Ann Arbor. There, homes located at the periphery near roads or parking lots are not as desirable to homebuyers as those that are surrounded by nature, pedestrian paths, and their neighbors. In this plan, all structures will be built using universal design principles so that no potential buyer will be excluded from the community. As mentioned in Phase 2, it is also suggested that roofs are seen as opportunities to manage stormwater, to cool a building, and/or to capture energy. Prefabrication should also be used whenever possible to cut down on construction costs and waste associated with traditional building methods. It is also important to note that there is a considerable amount of community green space in this plan. This site is one of very few in the City of Lansing that still features natural elements like old trees and undeveloped land. Because of this, we recommend that as much of this is preserved as possible. This may be an attractive feature to buyers who wish to live in the city but also appreciate the natural environment.

# CONCLUSION

This project incorporates many 'cutting edge' development practices emerging in the twenty-first century. Blending housing with agriculture is an innovative to utilize these practices and presents an opportunity to lead the application of them into common planning practice.

Key elements in progressive design such as green building, walkability, universal design, the utilization of alternative energy sources, and food independence can all be utilized in the development recommendation. And what better place to start than Lansing – it is the capitol of a state in transition. Perhaps if a progressive seed is planted in this struggling city, it will grow into an innovation that is healthy for the economy, the planet, and the people.

# APPENDICES

## Additional Schools Data

### *Forest View Elementary School*

In terms of geographic proximity, Forest View Elementary School on the corner of Stoneleigh and Fireside is the closest primary school to the site at one half mile. Forest View Elementary scored an EdYES! rating of "B" for the 2009-2009 school year. Forest View Elementary's MEAP score averages are generally below state averages (see Table 5).

### *Kendon Elementary School*

For the 2008-2009 school year, Kendon Elementary in a neighborhood near Pennsylvania and Jolly approximately 1.5 miles from the site earned an "A" EdYES! rating. Kendon Elementary School ranks consistently as one of the best schools in the Lansing School District. On average, Kendon Elementary students exceed state MEAP score averages. If housing is created on the project site, this well performing school's proximity to the site may entice potential homebuyers to locate there.

Table 5: MEAP scores, 2008-2009

| | Subject | State Average | Lansing School District | Forest View Element. | Kendon Element. | Cavanaugh Elementary | Gardner Middle School |
|---|---|---|---|---|---|---|---|
| **Grade 3** | Total ELA | 83% | 82% | 71% | 100% | 94% | - |
| | Math | 91% | 88% | 94% | 100% | 100% | - |
| **Grade 4** | Total ELA | 77% | 68% | 53% | 94% | 66% | - |
| | Math | 88% | 80% | 76% | 92% | 86% | - |
| **Grade 5** | Total ELA | 78% | 71% | 68% | 100% | 62% | - |
| | Math | 77% | 66% | 61% | 100% | 62% | - |
| **Grade 6** | Total ELA | 80% | 63% | - | - | - | 64% |
| | Math | 80% | 64% | - | - | - | 66% |
| **Grade 7** | Total ELA | 80% | 59% | - | - | - | 65% |
| | Math | 83% | 62% | - | - | - | 67% |
| **Grade 8** | Total ELA | 77% | 56% | - | - | - | 62% |
| | Math | 75% | 47% | - | - | - | 48% |

### *Gardner Middle School*

Gardner Middle School (approximately 2 miles away) off of Jolly between Cedar and Washington is the closest middle school to the site. Gardner has an EdYES! rating of C, and its MEAP scores, although consistent with the Lansing School District average, are well below state averages.

### *Everett High School*

Everett High School located on Cavanaugh Rd is the nearest high school at approximately 2 miles distance from the property. Everett High school is a magnet Lansing Public School which focuses on studies in the visual and performing arts. The student enrollment in 2007 was 1,675 and the student graduation rate was 72%. The 2007 MEAP scores for Everett High School were as follows are shown in Table 6 below. This figure is well below state average but consistent with district averages.

Table 6

**Everett High School M.E.A.P. scores 2007**

| | Math | Reading | Science | Social Studies | Writing |
|---|---|---|---|---|---|
| **Met or Exceeded** | 27% | 51% | 34% | 51% | 36% |
| **Not Met** | 73% | 49% | 66% | 49% | 64% |
| **Total** | 100% | 100% | 100% | 100% | 100% |

*There are four Performance Levels on MEAP: (1) Exceeded Michigan Standards, (2) Met Michigan Standards, (3) Basic, (4) Apprentice. Detailed descriptions of various performance levels can be found on the Michigan Department of Education website.*

### *Eastern High School*

Eastern High School is also in the Lansing Public School District and is 3.46 miles away from project site off of Pennsylvania Ave near Michigan Ave. Education at this school is geared toward the International Baccalaureate philosophy and offers a challenging program for international education. In 2007, the student enrollment at Eastern reached 1,383, and the graduation rate was 71%. In 2007, MEAP scores for Eastern High School can be found in Table 7 . This figure is well below state average but consistent with district averages.

| Eastern High School M.E.A.P. scores 2007 | | | | | |
|---|---|---|---|---|---|
| | Math | Reading | Science | Social Studies | Writing |
| **Met or Exceeded** | 34% | 55% | 41% | 63% | 31% |
| **Not Met** | 66% | 45% | 59% | 37% | 69% |
| **Total** | 100% | 100% | 100% | 100% | 100% |

# Building Permits, Lansing-East Lansing MSA

| Building Permits for New Single-Family Home Construction | | | | | | |
|---|---|---|---|---|---|---|
| Municipality | 2008 | 2007 | 2006 | 2005 | 2004 | Total |
| Lansing | 10 | 47 | 59 | 135 | 65 | 316 |
| Aurlieus Township | 5 | 7 | 25 | 23 | 18 | 78 |
| Bath Township | 20 | 26 | 81 | 98 | 89 | 314 |
| Bunker Hill Township | 0 | 1 | 2 | 6 | 16 | 25 |
| Charlotte | 1 | 24 | 5 | 27 | 47 | 104 |
| Dansville | 0 | 0 | 0 | 3 | 3 | 6 |
| Delphi Township | 21 | 57 | 125 | 227 | 266 | 696 |
| Delta Township | 19 | 61 | 93 | 153 | 123 | 449 |
| Dewitt | 4 | 9 | 18 | 19 | 10 | 60 |
| Dewitt Charter Township | 10 | 29 | 47 | 77 | 105 | 268 |
| East Lansing | 7 | 12 | 16 | 21 | 21 | 77 |
| Eaton Rapids | 3 | 5 | 7 | 5 | 15 | 35 |
| Grand Ledge | 4 | 3 | 11 | 21 | 16 | 55 |
| Hastings | 4 | 4 | 0 | 0 | N/A | 8 |
| Laingsburg | 0 | 3 | 6 | 3 | 14 | 26 |
| Lansing Township | 0 | 0 | 0 | 1 | 5 | 6 |
| Mason | 7 | 13 | 3 | 48 | 57 | 128 |
| Meridian Township | 32 | 59 | 117 | 87 | 80 | 375 |
| Olive Township | 12 | 15 | 12 | 25 | 26 | 90 |
| Onadaga Township | 0 | 0 | 4 | 5 | 13 | 22 |
| Oneida Township | 4 | 12 | 7 | 26 | 24 | 73 |
| Portland | 0 | 1 | 5 | 6 | 9 | 21 |
| Riley Township | 4 | 2 | 17 | 27 | 31 | 81 |
| Stockbridge | 3 | 6 | 14 | 15 | 20 | 58 |
| Vevay Township | 2 | 6 | 6 | 15 | 21 | 50 |
| Watertown Township | 6 | 19 | 26 | 60 | 78 | 189 |
| Webberville | 2 | 2 | 4 | 6 | 6 | 20 |
| Wheatfield Township | 3 | 1 | 2 | 5 | 10 | 21 |
| Williamstom Township | 4 | 12 | 3 | 16 | 22 | 57 |
| Williamston | 8 | 0 | 9 | 17 | 22 | 56 |
| Bengal Township | No Data | No Data | No Data | No Data | No Data | No Data |
| Benton Township | No Data | No Data | No Data | No Data | No Data | No Data |
| Bingham Township | No Data | No Data | No Data | No Data | No Data | No Data |
| Brookfield Township | No Data | No Data | No Data | No Data | No Data | No Data |

| Building Permits for New Single-Family Home Construction (cont). | | | | | | |
|---|---|---|---|---|---|---|
| **Municipality** | **2008** | **2007** | **2006** | **2005** | **2004** | **Total** |
| **Dallas Township** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Dandy Township** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Eaton Rapids Township** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Fowler** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Leslie Township** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Middlebury Township** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Ovid Township** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Potterville** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Sciota Township** | No Data | No Data | No Data | No Data | No Data | No Data |
| **St. Johns** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Westphalia Township** | No Data | No Data | No Data | No Data | No Data | No Data |
| **Windsor Charter Township** | No Data | No Data | No Data | No Data | No Data | No Data |

## Food Security

| Name | Address | Travel Time (Driving) | Distance to Site | Store Type |
|---|---|---|---|---|
| **R&R Market** | 4013 Aurelius Rd. | **26 seconds** | **0.19 miles** | Convenience store |
| **7-Eleven** | 1975 E. Jolly Rd. | **1 minute** | **0.82 miles** | 24 hour convenience |
| **Quality Dairy Co.** | 917 E. Cavanaugh | **2 minutes** | **1.10 miles** | 24 hour convenience |
| **Quality Dairy Co.** | 2625 E. Jolly Rd. | **2 minutes** | **1.31 miles** | 24 hour convenience |
| **International Supermarket** | 5324 S. Pennsylvania | **4 minutes** | **1.76 miles** | Ethnic grocery store |
| **Daily Deals Grocery Outlet** | 3630 S. Cedar St. | **4 minutes** | **1.91 miles** | Convenience Store |
| **Quality Dairy Co.** | 2600 S. Cedar St. | **6 minutes** | **2.59 miles** | 24 hour convenience |
| **Meijer** | 6200 S. Pennsylvania | **5 minutes** | **2.64 miles** | 24 hour big box supermarket |
| **Alharamain Halal Market** | 401 Shepard St. | **6 minutes** | **2.64 miles** | Ethnic grocery store |
| **Dong An Market** | 4320 S. MLK JR. BLVD | **6 minutes** | **2.64 miles** | Ethnic grocery store |
| **Lansing Ethnic Food & Halal Meet** | 2013 E. Michigan Ave. | **6 minutes** | **2.72 miles** | Ethnic grocery store |
| **Quality Dairy Co.** | 720 W. Jolly Rd. | **6 minutes** | **2.75 miles** | 24 hour convenience |
| **Quality Dairy Co.** | 2400 E. Michigan Ave. | **7 minutes** | **2.95 miles** | 24 hour convenience |
| **Quality Dairy Co.** | 400 S. Pennsylvania Ave. | **8 minutes** | **3.06 miles** | 24 hour convenience |
| **L&L Food Center** | 5016 S. MLK JR. | **7 minutes** | **3.14 miles** | Local supermarket |
| **Thai Bihn Oriental Food & Gifts** | 3600 S. MLK JR. BLVD | **8 minutes** | **3.16 miles** | Ethnic grocery store |
| **Goodrich's Shop Rite** | 940 Trowbridge Rd. (East Lansing) | **7 minutes** | **3.57 miles** | Local supermarket |
| **Kroger** | 1921 W. Holmes | **9 minutes** | **3.58 miles** | Supermarket |
| **South Washington Rd. Food Market** | 6065 S. Washington | **8 minutes** | **3.70 miles** | Convenience store |

| Name | Address | Travel Time (Driving) | Distance to Site | Store Type |
|---|---|---|---|---|
| **L&L Food Center** | 1615 W. Mt. Hope | **11 minutes** | **3.77 miles** | 24 hours supermarket |
| **Nineteen Ten Meat Market** | 2203 W, Holmes | **9 minutes** | **3.8 miles** | Butchery |
| **Quality Dairy Co.** | 947 Trowbridge Rd. (East Lansing) | **7 minutes** | **4.30 miles** | 24 hour convenience |
| **Kim's Oriental Food Store** | 901 Trowbridge Rd . (East Lansing | **7 minutes** | **4.34 miles** | Ethnic grocery store |
| **Better Health Food Store** | 305 N. Clippert St. | **8 minutes** | **5.15 miles** | Health food store |
| **Kroger** | 3131 Michigan Ave | **8 minutes** | **5.22 miles** | Supermarket |
| **Westlund's Apple Market** | 2301 E. Grand River Ave. | **9 minutes** | **5.99 miles** | Supermarket |
| **McDonalds** | 2530 E. Jolly Rd. | **3 minutes** | **1.2 miles** | Fast Food Restaurant |
| **Burger King** | 2520 E. Jolly Rd. | **3 minutes** | **1.2 miles** | Fast Food Restaurant |
| **Taco Bell** | 3000 Dunckel Rd. | **2 minutes** | **1.2 miles** | Fast food restaurant |
| **Leo's Lodge** | 2525 E. Jolly Rd. | **3 minutes** | **1.2 miles** | Bar/Restaurant |
| **Marco's Pizza** | 4320 S. Cedar St. | **4 minutes** | **1.6 miles** | Pizza |
| **House of Ing** | 4113 S. Cedar St. | **4 minutes** | **1.6 miles** | Chinese |
| **McDonalds** | 4700 S. Cedar St. | **4 minutes** | **1.8 miles** | Fast Food Restaurant |
| **Grumpy's Diner** | 1001 East Mount Hope Ave. | **4 minutes** | **1.9 miles** | Diner |
| **Little Caesar's** | 4929 S. Cedar St. | **5 minutes** | **1.9 miles** | Pizza |
| **Papa John's** | 3500 S. Cedar St. | **4 minutes** | **2 miles** | Pizza |
| **Subway** | 1824 S. Pennsylvania Ave. | **5 minutes** | **2.1 miles** | Fast food restaurant |
| **Quinney's Southern Soul Food** | 3308 S. Cedar St. | **4 minutes** | **2.1 miles** | Fast food restaurant |
| **Domino's Pizza** | 5214 S. Cedar St. | **5 minutes** | **2.2 miles** | Pizza |
| **Jon's Country Burger** | 3109 S. Cedar St. | **5 minutes** | **2.3 miles** | Burger Restaurant |
| **Taco Bell** | 5634 S. Cedar St. | **6 minutes** | **2.5 miles** | Fast food restaurant |
| **Tim Horton's** | 5625 S. Cedar St. | **6 minutes** | **2.5 miles** | Coffee Shop |
| **Fazoli's** | 5705 S. Cedar St. | **6 minutes** | **2.6 miles** | Fast food restaurant |
| **Munchie's Fried Chicken** | 4100 S. MLK JR BLVD | **6 minutes** | **2.6 miles** | Fast food restaurant |
| **Happy's Pizza** | 6045 S. Cedar St. | **6 minutes** | **2.8 miles** | Pizza |

| Name | Address | Travel Time (Driving) | Distance to Site | Store Type |
|---|---|---|---|---|
| **Hungry Howie's Pizza** | 900 W. Holmes | **6 minutes** | **2.9 miles** | Pizza |
| **Fleetwood Diner** | 2211 S. Cedar St. | **6 minutes** | **2.9 miles** | Diner |
| **Arby's** | 3065 S. Cedar St. | **6 minutes** | **2.9 miles** | Fast food restaurant |
| **KFC** | 3220 S. MLK JR BLVD | **7 minutes** | **3.1 miles** | Fast food restaurant |
| **Arby's** | 3229 S. MLK JR BLVD | **7 minutes** | **3.1 miles** | Fast food restaurant |
| **McDonalds** | 3135 S. MLK JR BLVD | **7 minutes** | **3.2 miles** | Fast food restaurant |
| **Cici's Pizza** | 6250 S. Cedar St. | **7 minutes** | **3.2 miles** | Pizza |
| **Pizza Hut** | 6200 S. Cedar St. | **7 minutes** | **3.2 miles** | Pizza |
| **Popeye's Chicken & Biscuits** | 3010 S. MLK JR BLVD | **7 minutes** | **3.3 miles** | Fast food restaurant |

# Additional Financing Information

## *Low Income Housing*

Low Income Housing Tax Credit

The Low Income Housing Tax Credit (LIHTC) program is intended to increase and preserve affordable rental housing by replacing earlier tax incentives with a credit applicable to taxable incomes. This program permits investors in affordable rental housing to claim a credit against their tax liability annually for a period of up to 10 years.

The maximum tax credit that a project may receive is based on a percentage of the portion of rental housing that the owner/investor agrees to maintain as both rent and income restricted for a period of at least 18 years. These properties can be either newly constructed or rehabilitated.

At a minimum, 20 percent of the units must be for residents whose incomes do not exceed 50 percent of area median income or 40 percent of the units must be for residents whose incomes do not exceed 60 percent of the area median income. The rents on these units must also be restricted. An annual credit estimated to equal 9 percent of the qualified basis of construction or rehabilitation costs is available to developments not already utilizing federal or tax-exempt financing.

The Michigan State Housing Development Authority (MSHDA) in conjunction with other state agencies have undertaken to an Affordable Assisted Living (AAL) pilot program. AAL developments provide apartment units for low- to moderate-income senior citizen residents. A key component of the AAL program is determining the most effective way to ensure that needed services are available and affordable to low- to moderate-income seniors. It is the goal of AAL to maximize residents' independence and choice in a physically accessible environment.

Currently the program is limited to 5 pilot sites, all outside the Mid-Michigan region. However if the program is expanded in the future, it should be considered a possible source of funding for senior-oriented housing development.

### Contact Information

Michigan State Housing Development Authority
35 E. Michigan Ave
P.O. Box 30044
Lansing, Michigan 48909
Tel: (517) 373-8370
Fax: (517) 335-4797
Website: http://www.michigan.gov/mshda/0,1607,7-141-5587_50429---,00.html

## *Senior Housing*

MSHDA Affordable Assisted Living (AAL) pilot program

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## *Agriculture Funding*

USDA

The United States Department of Agriculture (USDA) offers financial assistance for the construction of high-tunnels, also known as hoop houses (HighTunnels.org). This funding is part of a three year study that hopes to verify the capability of high tunnels to reduce pesticide use, keep nutrients in soil, extend the growing season, and increase crop yields (USDA1). Grants are available for 'beginning farmers' and can cover up to 90% of construction costs for a tunnel as large as 2,178 square feet (USDA1).

The USDA also has funding available for the construction on-farm storage facilities. Such facilities would be useful for storing crops before they can be picked up by the GLFB. The USDA has funding available in the form of a 5, 7, 10, or 12 year loans for up to $500,000 per applicant (USDA2).

Lastly, the USDA offers a one-time grant for non-profit entities that address food, nutrition, and farm issues. In the case that agricultural production on the project site is managed by a non-profit, this grant could help alleviate start-up as well as some operating costs.

### Contact Information

High Tunnels –
http://www.mi.nrcs.usda.gov/news/10%20NewsReleases/High_Tunnel_Pilot.html

On-farm Storage –
http://www.fsa.usda.gov/FSA/webapp?area=home&subject=prsu&topic=flp-fp

One-time Grant –
http://www.usda.gov/wps/portal/knowyourfarmer?contentid=kyf_grants_csree1_content.html&navtype=KYF&edeploymentaction=changenav

## "Let's Move!" Campaign

In 2010, First Lady Michelle Obama announced the "Let's Move!" campaign to combat childhood obesity. The campaign has stressed the importance of proper access to healthy and nutritious foods, especially in urban communities where options are often limited (Feldmann, 2010). With this in mind, it is possible that in the future there may be some governmental support for urban agriculture.

### For More Information

http://www.letsmove.gov/

## *Other Grants*

### Neighborhood Enterprise Zones

The Lansing Economic Development Corporation (LEDC) may be a good resource in the planning and construction phases of this project by providing information on what types of development may qualify for tax breaks or incentives. Tax breaks can be obtained through the creation of a Neighborhood Enterprise Zone (NEZ) or Renaissance Zone (RZ) on the project site, which currently does not utilize either of these tools (LEDC1).

NEZs were authorized by the State of Michigan by Public Act 147 of 1992 and aim to "…promote home ownership and investment in areas where the greatest impact would occur and where such improvements may trigger additional investment in adjacent neighborhoods. (LEDC2)" For property owners, this program provides a reduction in property taxes for the rehabilitation of existing residential housing as well as for new construction of residential units within the NEZ district. Although the project site does not currently reside in a NEZ, it may be advantageous to pursue such a designation.

### Renaissance Zone

Michigan's Renaissance Zones are designated tax free areas businesses and/or homeowners presently in, or moving into, a renaissance zone. The program was designed to encourage the redevelopment of distressed areas within designated communities.

Individuals living in new residential developments within a Renaissance Zone will be virtually exempt from state and local property and income taxes. New commercial/industrial developments that lie within a Renaissance Zone receive complete exemptions from real property taxes, personal property taxes, and State of Michigan Single Business Tax.

The City of Lansing is one of the 150 geographic communities designated as renaissance zones. Each RZ may have up to six subzones; Lansing currently has three, which opens the possibility for up to three additional RZs (MEDC1, MEDC2). The LEDC would be a good resource to contact to find more information of the application process for RZs.

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