

Land Use Data & Analysis: Addendum

Comprehensive Plan Amendment
for Long Term Master Plan

Plum Creek Envision Alachua Sector Plan

June 2014
(EASP - Data & Analysis - Land Use)

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CONTENTS

I. Envision Alachua Framework Map, June 2014 Revised Ownership.....	1
II. Envision Alachua Employment Oriented Mixed Use (EA-EOMU) Land Use Regional Suitability Analysis.....	2
III. EA-EOMU Land Use Suitability Analysis.....	4
III A. Suitability Analysis Methodology & Assumptions.....	5
III B. Suitability Analysis Scenarios.....	9

APPENDIX

- 1 Figures
- 2 EA-EOMU Land Use Suitability Scenarios Figures
- 3 Case Studies

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I. ENVISION ALACHUA FRAMEWORK MAP, JUNE 2014 REVISED OWNERSHIP

The Envision Alachua Sector Plan Framework Map (**Figure 1**, Appendix 1) and corresponding land use acreages (**Table 1**) have been revised to reflect Plum Creek ownership as of June 2014. The revised Framework Map and land use distribution are utilized as the foundation for the suitability analysis which is described in this memorandum.

Table 1: Envision Alachua Sector Plan Land Use Distribution (Revised June 2014)

Land Use	Acres*	% of Land Use	% of EASP
Conservation Land Use	46,084	--	76.6%
Existing Conservation Easement	22,865	50%	
New Conservation Easement	23,219	50%	
EOMU Land Use (includes Hawthorne Reserve - 1,283 acres)	11,390	--	18.9%
Open Space	3,785	33%	
Maximum Not in Open Space	7,605	67%	
Rural Land Use	337	--	0.6%
Agriculture Land Use	2,321	--	3.9%
Total	60,133	--	100%

*Acreages rounded to the nearest whole number.

For the purposes of the suitability analysis, the Employment Oriented Mixed Use (EA-EOMU) Land Use depicted on the Framework Map and noted in the table above has been organized into five geographic areas: Areas A, B, C, D, and E (**Figure 2**, Appendix 1). These five areas are proposed to be the focus of future economic and community development.

II. ENVISION ALACHUA EMPLOYMENT ORIENTED MIXED USE (EA-EOMU) LAND USE REGIONAL SUITABILITY ANALYSIS

Plum Creek Timber Company, Inc. (Plum Creek) has convened a nearly three-year community visioning and planning process, Envision Alachua, to develop a long-term master plan for its property in Alachua County. The process has been distinguished by a program of Task Force work sessions, Community Workshops, Educational Forums, Technical Advisory Group consultation, and a comprehensive project website (www.envisionalachua.com) documenting the evolving vision.

During Phase I of Envision Alachua, the Community Task Force identified Plum Creek lands framed by SR 20, SR 26, and US 301 in East Alachua County as potential areas of focus for economic development, conservation, and a range of supporting residential, commercial, educational, recreational, and community uses. The process and the analysis used to arrive at this initial conclusion is documented in Phase 1 Task Force Summary Report, Section IV.H.2 of the Envision Alachua Sector Plan (EASP) application. Following the Task Force recommendations, additional analyses were carried out to evaluate and confirm the regional suitability of these East Alachua County lands for job-creating, mixed-use community development.

The environmental and community context analysis presented in the Land Use Data and Analysis (Section IV.B, EASP, Dec. 2013), along with the Industrial Lands Needs Analysis (Section IV.B.1, EASP, Dec. 2013), support the regional suitability of the Envision Alachua Employment Oriented Mixed Use Land Use (EA-EOMU). Several guiding principles reinforce the suitability of EA-EOMU within the regional context:

Utilize Existing Infrastructure

The proposed EA-EOMU in East Alachua County (East County) is served by substantial existing infrastructure, including SR 20, SR 26, and US 301 and the CSX railroad. The presence of this existing infrastructure provides a strong basis for the focus of future economic development in the area. **Figure 3** in Appendix 1 depicts the Plum Creek EASP property within the County context, including existing infrastructure and commercial, institutional, and environmental assets.

Reinforce the Conservation Framework

As noted in the Land Use Data and Analysis, areas for Conservation Land Use have been identified based upon their contribution to regional landscape linkages, contiguity with existing conservation lands, and opportunity to contribute to the conservation and enhancement of natural resources, community watersheds, and natural preserves. Conservation Land Use and landscape linkages are shown in **Figure 4** in Appendix 1 and described in *Chapter 2, Section IV.B Land Use Analysis, EASP, Dec. 2013*.

The environmental analysis shows that 30% of the total EASP acreage is wetlands. Of the 11,390 acres designated EA-EOMU, approximately 18% are wetlands, rendering these lands more suitable for economic and community development than the rest of the property. **Table 2** below summarizes wetland acreage and percent distribution for both the EASP and EA-EOMU.

Table 2: Wetlands Distribution within the EASP and EA-EOMU

	Total Acreage	Total Wetlands Acreage	% Distribution of Wetlands
EASP	60,133	18,210	30%
EOMU	11,390	2,020	18%

With this approach to the regional conservation framework, the proposed EA-EOMU in East County is located within the context of a regionally-significant framework of conservation and silviculture land uses.

Ensure Economic Progress

The proposed EA-EOMU in East County is rooted in the goal of creating a progressive community development model with future opportunities for job creation and institutional partnerships. The economic engine of local institutional and commercial anchors, reinforced by the capacity and quality of existing transportation infrastructure, suggests an opportunity for an “Economic Progress Corridor” along SR 20, linking from east to west, the University of Florida, the City of Gainesville and East Gainesville, Plum Creek lands, and the City of Hawthorne (See Figure 30, Chapter 3, Section IV.B Land Use Analysis, EASP, Dec. 2013).

Reinforce & Enhance Local Communities

The proposed EA-EOMU in East County is strategically positioned to support the protection and enhancement of existing communities including Windsor, City of Hawthorne, and East Gainesville. Priorities for Windsor and other rural clusters include maintaining the rural character and the historic fabric of the community and respecting adjacencies with regard to edge conditions. The City of Hawthorne is well positioned at the nexus of SR 20, US 301, and the CSX rail line for future economic development opportunities. Plum Creek’s lands near the junction of 301 and SR 20 are already within Hawthorne’s future growth area as established in Alachua County Comprehensive Plan (Figure 5, Appendix 1). Similarly, East Gainesville, with its location between downtown Gainesville and East County, is well positioned for future expansion of economic opportunities (See Chapter 2.2, Section IV.B Land Use Analysis, EASP, Dec. 2013).

Provide Site Opportunities of Scale for Job Creation

The proposed EA-EOMU in East County provides an opportunity to establish large-scale, shovel-ready sites for industrial development. Currently there is a deficit of industrial sites within Alachua County, particularly sites of at least 500 acres and larger, or sites where major jobs centers can be developed. The proposed EA-EOMU is the only area in Alachua County with parcels of sufficient size, served by rail and major highways, that can accommodate this job opportunity. Of the approximate 658,000 acres within the County, less than one-half percent (0.5%) have industrial entitlements (See Section IV.B.1, EASP, Dec. 2013). The opportunity to attract significant additional employment to Alachua County is documented in Section IV.E of the EASP application.

III. EA-EOMU LAND USE SUITABILITY ANALYSIS

The overarching goal of the EA-EOMU land use is to focus future growth in key developable areas to maximize economic development potential while minimizing development pressure on surrounding rural, agricultural and conservation areas. EA-EOMU land use is assigned to 11,390 acres, or approximately 19% of the Envision Alachua Sector Plan area.

An employment-driven land use program is envisioned within the EA-EOMU area. This approach is based on the goal that development within the EA-EOMU area should create significant economic progress and opportunities for Alachua County, particularly the communities of Hawthorne and East Gainesville. For this reason, the land use program emphasizes commercial, research and manufacturing uses as catalysts for the planned development and the region as a whole. The proposed 3:1 jobs-to-housing ratio sets this project apart from precedent development communities which are largely driven by residential uses. The long-term vision is for a diverse mix of uses including office, research and development, advanced manufacturing, industrial, institutional, commercial, and high-to-low density residential development. These uses also include open space, active and passive parks and recreation spaces, agriculture, and infrastructure, among others.

The overall EA-EOMU land use program – developed by the Envision Alachua Task Force in conjunction with the planning team’s case study research and knowledge of best practices for planned communities – is summarized in **Table 3** below.

Table 3: 50-Year EA-EOMU Land Use Program

EOMU Land Use	Program	Assumptions
Economic Development		
R&D/Office/Institutional	6,000,000 sf	Estimated 18,000 - 24,000 jobs
Advanced Manufacturing	8,000,000 sf	Estimated 6,000 - 12,000 jobs
Community		
Residential	10,500 units	Net density of 3.0 du/ac; 3 jobs per household
Retail/Service	1,500,000 sf	125-150 sf per household
Schools & Civic Uses		Diverse community supporting uses
Major Roads / Infrastructure		10% of non-open space EOMU lands
Environment		
Open Space		Minimum of 33% open space

The suitability analysis methodology and scenarios which follow explore several conceptual options for the distribution of EA-EOMU land use program among the five geographic areas: Areas A, B, C, D and E. These are a few among many possible scenarios; they are intended to illustrate several potential land use concepts which may be applicable within the EA-EOMU, with a particular focus on the suitability of Areas A and B which are envisioned to have the most intense development.

III.A SUITABILITY ANALYSIS METHODOLOGY & ASSUMPTIONS

As previously noted, EA-EOMU land use is assigned to 11,390 acres within the Sector Plan. The EA-EOMU acreage can be broken down into several categories as shown in **Figure 6** in Appendix 1 and **Table 4** below.

Table 4: EA-EOMU Land Acreage Breakdown by Area

Areas	Total EOMU	Wetlands	75' Wetland Buffers	100' Edge Buffers	50' Edge Buffers	Remaining EOMU	% Remaining EOMU
Area A	2,893	688	391	98	-	1,717	59%
Area B	1,284	288	150	0	-	847	66%
Area C	2,760	369	211	70	-	2,110	76%
Area D	3,634	543	330	75	-	2,687	74%
Area E	819	133	87	20	7	573	70%
Total	11,390	2,020	1,168	262	7	7,933	70%

Of the total EA-EOMU acreage, 3,457 acres have been categorized as wetlands, wetland buffers, and edges. Subtracting these wetlands, buffers, and edges from the total EA-EOMU yields the "Remaining EA-EOMU" which is depicted in orange in **Figure 6**. There are a total of 7,933 acres of Remaining EA-EOMU.

The EA-EOMU land use suitability scenarios assign land uses to the Remaining EA-EOMU within Areas A-E. A series of assumptions have guided this assignment of land uses. These assumptions relate to such elements as the distribution of civic and recreation uses, land allocation for major infrastructure, the definition of density, and the suggestion of a maximum program by land use, as described below.

Civic Land Use Distribution

The suitability analysis assumes that a total of 360 acres of civic and school uses will be incorporated into the EA-EOMU land use. This acreage is embedded within the acreage allocations for residential and non-residential uses noted in the scenarios.

Of the 360 civic acres, the majority (235 acres) is allocated for primary and secondary education with an additional 100 acres reserved for potential overflow school needs,

community college and/or private schools (**Table 5**). Projections of school needs are based upon on-site population estimates and prevailing student generation rates within Alachua County. These are conservative projections since they do not factor in existing capacity in the neighboring school district.

Table 5: Primary and Secondary Education Assumptions

School Type	Students per 1,000 Households	Estimated # of Students	# of Students per School	# of Schools Needed	Acres per School	Acres Needed
K-5	153	1,607	400	4.0	25	100
Middle School 6-8	130	1,365	700	2.0	35	70
High School 9-12	142	1,491	1,500	1.0	65	65
Total		4,463				235

In addition, the planning team estimates that the EA-EOMU area should include approximately 25 acres to accommodate additional community facilities including fire, police, library, community centers, government offices, and churches. This figure is derived using square foot per functional population metrics adapted from Arthur Nelson's *Projecting Land-Use and Facility Needs*. The square foot need is translated into acres using a 0.2 FAR which translates into 1-2 story buildings with surface parking. **Table 6** below suggests potential distribution of the civic and school acreage.

Table 6: Civic Land Use Distribution by Area

Area	Civic Acres
Area A	100
Area B	75
Area C	150
Area D	35
Area E	---
Total	360

This distribution assumes that the majority of school needs (elementary and middle schools) as well as police, fire and other critical community services could be accommodated on Areas A and B in proximity to the major population cores. Larger users such as a future high school or community college site could be accommodated on Areas C and D in the later phases of development.

Major Infrastructure

For the purposes of this suitability analysis, acreage is reserved for major infrastructure rights-of-way that connect development parcels. This land allocation for infrastructure is estimated to be 10% of all developed land area, which means that the acreage will vary based on the overall land use program and density assumptions that drive a particular scenario. For the scenarios presented in this addendum, the amount of infrastructure corresponds to approximately 5% of the overall Remaining EOMU.

Floodplain and Active Recreation

The currently mapped U.S Army Corps of Engineers floodplain covers about 830 acres of the EA-EOMU. For the purposes of this suitability analysis, this acreage is allocated within the residential and non-residential land uses for floodplain management.

The planning team has estimated the recreational needs within the EA-EOMU lands at build-out, including parks/open space as well as specific recreational facilities. The analysis is based upon standards established by the National Recreation and Parks Association (NRPA). The standards for parks and open space are expressed in acres per 1,000 residents. Based on the NRPA standards, which exceed the standards for Alachua County, the EA-EOMU lands will need approximately 300 acres of parks and open space including playgrounds, neighborhood parks, community parks, regional parks, and trails. This acreage for active recreation is embedded within the acreage allocations for residential and non-residential uses noted in the scenarios; some active recreation uses may be accommodated within the floodplain. **Table 7** below describes the projected community recreation needs in greater detail.

Table 7: Projected Community Recreation Needs

NRPA Standards	Acres per 1,000 Population	Minimum Size	Total Acres	# of Parks
Playgrounds	0.5	2	12	6
Neighborhood Parks	3.5	5	84	17
Community Parks	4	30	96	3
Regional Park	4	180	96	0.5
Trails	---	---	17	---
Total	---	---	305	26.5

Source: National Recreation and Parks Association

Wetland Impact and Crossings

The suitability analysis scenarios illustrate selective filling of wetlands which are less environmentally critical. Filling of wetlands has been limited to three primary purposes: (1) to enable the creation of concentrated areas for higher density mixed use development, (2) to ensure connectivity to and between development areas, and (3) to

accommodate rail spur access to manufacturing sites. The planning team has assumed that wetland filling would not increase the overall amount of developable area but rather allow for a more compact and pedestrian oriented development form to occur. For example, filling of non-critical wetlands is shown in several of the Area A scenarios to illustrate the potential of higher density compact development form in the mixed use center, as well as the potential of a larger footprint mixed use center that will be important to attracting institutional and R&D/office uses.

Further, the scenarios utilize existing forestry road wetland crossings to the extent possible and illustrate selective new crossings to optimize the efficiency and connectivity of the internal road network which would in return minimize the use of the off-site road network. Approximately 25 forestry road wetland crossings currently exist within the EA-EOMU area and about 8 over Lochloosa Creek. These existing wetland crossings are illustrated in **Figure 6**, Appendix 1. Potential wetland filling is illustrated in the scenarios for Area B and Area C in order to enable rail spur connections to development parcels.

Definition of Density

For the purposes of this suitability analysis, density is calculated based on all residential units or commercial square footage within a delineated development area. This means that the density calculations include driveways, parking lots, yards, small neighborhood parks, local streets, and stormwater retention (15-20% of development area) but exclude large parks and recreation areas, major water systems, conservation lands, major roads, infrastructure right-of-way, treatment plants, et cetera.

Definition of Land Use Acreages

Land use acreages designated for residential and non-residential uses in the scenarios include an allocation for major infrastructure, stormwater facilities, civic and school uses, and floodplain outside of wetlands; these acreages also include driveways, local streets, parking lots, yards, small neighborhood parks, and storm water retention.

Maximum Program by Land Use

The EA-EOMU suitability analysis includes non-residential uses (R&D/office, advanced manufacturing, and service/retail) and residential uses (mix of housing types ranging from multifamily to single family). The suitability analysis notes a maximum program for each land use within each area. The maximum programs for the land uses are not intended to be “summed” – they do not constitute a feasible program in aggregate. This maximum program by land use methodology is based upon an understanding that the eventual land use mix will evolve over time in response to community planning goals and market forces.

III.B SUITABILITY ANALYSIS SCENARIOS

The EA-EOMU suitability analysis scenarios are fundamentally driven by two guiding principles which were developed in collaboration with the Envision Alachua Community Task Force:

- ***Focus on Areas A and B by locating approximately 60-70% of the overall EA-EOMU land use program within Areas A and B.***
- ***Locate the highest density employment and residential uses near existing major infrastructure.***

The specified densities and intensities in the suitability analysis scenarios are intended to illustrate several potential land use concepts that achieve these goals. Given the assumption that 60-70% of the overall program could be implemented in Areas A and B, the remaining program is then distributed in Areas C, D, and E. As a result of the defined focus of this suitability analysis, the land use acreages in areas C, D and E are not fully utilized and the scenarios which follow do not represent a complete illustration of the potential land use program for these areas. This approach assumes that high density development will be achievable within Areas A and B over the next twenty years. If the market does not accept higher densities in Areas A and B, it will likely increase the amount of land that would need to be developed in Areas C, D, E in order to achieve the same overall development program.

The assignment of EA-EOMU land use program to Areas A-E is further based upon the following goals:

- Locate a majority of homes within walking distance (1/2 mile) of non-retail employment (except for Area B).
- Locate a majority of the jobs within walking distance of transit that will serve Hawthorne and/or East Gainesville.
- Allocate land to accommodate civic uses and schools relative to on-site population.
- Maintain an overall 3:1 jobs-to-household ratio.

The EA-EOMU suitability analysis for Areas A, B, C, D, and E includes the following components:

- Description of the vision/intent for the area, including specific case study references (**Appendix 3**).
- Summary of the estimated maximum potential development program by land use.
- Scenarios exploring a range of land use program distributions / configurations. The scenarios are cumulative to the full EA-EOMU program as summarized in **Table 3** except when noted.

The EA-EOMU suitability analysis scenarios illustrate a range of potential options for land use program distribution and configuration. The scenarios are based upon the overall EA-EOMU development program (**Table 3**), the Remaining EA-EOMU acreage (**Table 4**), and the goals and assumptions derived from the Envision Alachua community planning process and the recommendations of the Task Force.

III.B.1: EA-EOMU Area A – The R&D, Office & Institutional Center

Area A is envisioned as the R&D, Office & Institutional Center – a collaborative mixed use R&D cluster that brings together the major drivers of the knowledge economy: higher education, private corporations, and complementary R&D institutes focusing on transformational and translational research. Area A is characterized by a diverse mix of compact, integrated land uses that include supporting and complementary residential, retail, commercial, and civic/community uses in which people can live-work-learn-play as part of a healthy and eco-friendly “innovation community.”

Area A is a compact, complete and connected community that includes the highest density mixed use center (MXD) envisioned within the EA-EOMU land use, with a range of R&D/office, institutional, residential, service/retail, and civic uses that promote sustainable and healthy living. Additional residential and complementary service/retail and civic uses, as well as advanced manufacturing/industrial uses, will be connected to the mixed use center. Area A will include and be within walking distance of experimental/R&D agricultural research and technology development fields and facilities.

Please refer to Figures 43-45, Section 3.4 of EASP IV.B Land Use Analysis for Area A’s preliminary design vision and concept.

The vision for Area A can be demonstrated in several precedent research parks, the most notable being Centennial Park – North Carolina State University in Raleigh, North Carolina (See **Appendix 3**). The planning team believes that Centennial Park embodies the vision for Area A in terms of the dense clustering of activity, the mix of uses, and the level of development intensity. Currently Centennial Park has 2.85 million square feet of users clustered in a 300-acre core. This format corresponds to a 0.66 FAR which is the metric used to model the mixed-use center on Area A.

The mix of institutional, private sector research and high-density residential uses at Centennial Park was part of the inspiration for the program allocated to Area A. To date, tenants as diverse as GlaxoSmithKline, the U.S. Department of Agriculture, and the National Weather Service have located at Centennial Park owing to its high quality environment and the proximity to the world class talent at NC State. A similar blend of institutional, public sector, and private sector research is envisioned for Envision Alachua, with its proximity to the University of Florida and the potential for partnership. To accommodate parking at this level of density, Centennial Park includes approximately 50% structured parking and 50% surface lots, a balance that could be achieved over time for Area A.

Additional analogues include University Park MIT in Cambridge, Massachusetts and Chiswick Park in London, UK (See **Appendix 3**). Both of these developments have been acclaimed for their ability to mix a variety of office and research uses in high quality physical environments. University Park and Chiswick Park have achieved higher densities than what is envisioned for Area A but the resulting quality of the built environment and the blending of the uses are consistent with the vision for Area A.

Please see **Appendix 2, Figures A** which include a map of the Area A Remaining EA-EOMU, a description of the maximum development program by land use, and maps/programs for several land use scenarios.

All three suitability scenarios for Area A are characterized by the following planning and urban design goals and principles:

- Locate the mixed use center (MXD) to be central to the development area and to take advantage of the higher/drier elevation (*Figure 19, Section IV.B Land Use Analysis, EASP, Dec. 2013*).
- Locate employment approximately within 1-mile of SR 20 capitalizing on existing infrastructure and access.
- Include the higher density residential program in the MXD.
- Create pockets of residential of varying mid-to-low densities outside of the MXD and directly adjacent to the employment areas to maximize the amount of homes within ½-mile of employment.
- Cluster lower residential densities within the framework of wetland systems and open space near larger natural amenities such as Lochloosa Creek and Newnan's Lake as well as proximity to Windsor.
- Selectively fill less-environmentally-critical wetlands (i.e isolated wetlands) to allow for higher density compact development form in the MXD (except in Scenario 1).
- Utilize existing forestry road wetland crossings to the extent possible and selectively create new crossings to achieve sufficient internal connectivity that minimizes the use of off-site road network.
- Utilize an existing forestry road crossing of Lochloosa Creek for internal connectivity between Area A and Area C.

In addition to these shared goals/principles, the three suitability scenarios for Area A are distinguished from one another by several unique characteristics and program components described below.

Scenario 1 (Figure A-1)

- No wetland road crossings and filling.
- Relatively fragmented development form due to the dispersed pattern of wetlands, resulting in less efficient road network, limited and constrained

development frontage in the MXD, and significantly less amount of walkable acreage compared to the other scenarios.

- Lower density commercial development within the core compared to other scenarios.
- Most of the R&D/office located outside of MXD in a conventional campus format.
- Supports approximately 7,200 jobs within the MXD, the lowest of the three scenarios.
- Advanced manufacturing located off SR 20 in two distinct zones.
- Conventional densities outside of the MXD.
- Employment uses spread further out than 1-mile off of SR 20.
- Accommodates 43% (4,500) of the total 10,500 residential units, the lowest of any of the scenarios.

Scenario 2 (Figure A-2)

- Filling of approximately 70 acres of wetlands in order to cluster uses and achieve compact development form in the MXD.
- Footprint of the employment uses minimized compared to Scenario 1.
- MXD accommodates the full R&D program within a ½-mile walk, meaning that R&D uses are tightly clustered.
- Supports approximately 21,500 jobs within the MXD.
- Advanced manufacturing cluster in one zone along SR 20 complements employment in the MXD.
- Closer fit to Centennial Park than Scenario 1, with a commercial FAR of 0.66.
- Accommodates 55% (5,800) of the total 10,500 residential units.

Scenario 3 (Figure A-3)

- Filling of to approximately 70 acres of wetlands in order to cluster uses and achieve compact development form in the MXD.
- The entire employment program in this scenario for Area A is accommodated within a walkable mixed-use framework.
- Advanced manufacturing uses are not included in this Scenario.
- Supports approximately 23,600 jobs within the MXD, the highest of any scenario.
- Most similar to Centennial Park.
- Accommodates 60% of the total 10,500 residential units within Area A, the most of any scenario.

- Has the highest residential density outside of the core at 5 units per acre.
- Represents the most compact urban form of the three scenarios.

Sample Residential Program

Table 8 and **Figure 7** in Appendix 1 describe an illustrative mix of residential types that could exist within Area A. The table corresponds to Scenario A2 (depicted in Attachment 1) which has the highest residential unit count within the urban mixed use center within Area A. In this scenario, the MXD consists of both townhomes and mid-rise apartments or condominiums that would be integrated within the office and R&D core of the development. The intent is that multifamily product would be clustered densely in the MXD but would be phased in over time to allow for an orderly absorption schedule. The residential types within the MXD have an average density of 30 dwelling units per acre. While the multifamily product makes up the majority of the residential units in Area A, it only represents 30% of the total residential program within EA-EOMU. Outside of the MXD the product mix includes different single-family lot typologies ranging from a 1/3 acre lot down to a 4,000 sf cottage lot. This product mix is intended to accommodate a wide range of different price points and appeal to a cross section of market audiences. The average density outside the Area A MXD is just above 4 dwelling units per acre.

Table 8: Area A Sample Residential Product Mix

Residential Type	Net Lot Size SF	# of Units	Product Mix	DU/AC
Residential				
Type A - Cottage (40')	4,000	116	2.0%	5.3
Type B - Cottage (42')	4,200	290	5.0%	5.2
Type C - Cottage (45')	4,500	290	5.0%	5.0
Type D - Single Family (50')	5,000	290	5.0%	4.7
Type E - Single Family (65')	6,500	580	10.0%	4.6
Type F - Single Family (80')	8,000	580	10.0%	4.0
Type G - Single Family (100')	15,000	480	10.0%	2.2
Type TH - Townhomes - MXD Center	---	464	8.0%	14.0
Type M - Multifamily - MXD Center	---	2,610	45.0%	38.7
Total	---	5,800	100.0%	7.0

III.B.2: EA-EOMU Area B – The Advanced Manufacturing & Industrial Center

Area B is envisioned to be an advanced manufacturing and industrial hub that provides a physical setting for the fusion of new ideas, partnerships, research, best practices, and facilities for large and small scale advanced manufacturing with strong connections to SR 20, US 301, and the railroad. It is envisioned to include nearby residential development, a multi-use activity hub and related commercial and retail services to provide for a balanced and integrated community.

Area B will reinforce the continued development of the City of Hawthorne by bringing new employment opportunities and residents that will contribute to the further development and growth of the city. The vision for Area B provides for the natural expansion of Hawthorne's residential community by extending and connecting into the existing street network and further activating the Gainesville-Hawthorne Trail. Development in Area B will complement and strengthen underutilized resources in Hawthorne such as schools, retail/commercial, and residential uses. Area B is seen as an early phase of development with strong roadway and rail connections and an opportunity to reinforce the Hawthorne community and economy.

Please refer to Figures 46-48, Section 3.4 of EASP IV.B Land Use Analysis for Area B's preliminary design vision and concept.

The vision for Area B is an advanced manufacturing hub that is more compact than the conventional development patterns and typologies typically observed in the United States. While the conventional density for industrial parks is in the range of 0.15 FAR, the vision for Area B is to achieve a more compact form represented by an FAR in the range of 0.30. An example of a precedent development that has been able to successfully achieve such a clustering of world class advanced manufacturers is the Advanced Manufacturing Park (AMP) in Rotherham, England (See **Appendix 3**). While not entirely built out, AMP has been able to achieve an FAR of 0.32, facilitating knowledge and resource sharing across some of the world's leading materials and manufacturing organizations including Boeing and Rolls Royce. Importantly, the organizations locating at AMP are not only doing manufacturing but also are engaged in cutting edge research to develop the new technologies and approaches that will form the basis for the factory facilities of the future.

An additional analogue is the Trumpf Laser Manufacturing Plant in Ditzingen, Germany (See **Appendix 3**). This facility is similar to the vision for Area B in that it represents a higher density manufacturing facility that is closely integrated within a mix of residential, commercial, and agricultural uses.

Please see **Appendix 2, Figures B** which include a map of the Area B Remaining EA-EOMU, a description of the maximum development program by land use, and maps/programs for several land use scenarios.

All three suitability scenarios for Area B are characterized by the following planning and urban design goals and principles:

- Locate advanced manufacturing and industrial uses north of SR 20 to capitalize on rail access. Supplement with complementary R&D uses to create

synergistic opportunities as envisioned in the preliminary concept plan for Area B.

- Selectively fill less-environmentally-critical wetlands (i.e. isolated wetlands) to accommodate rail access to manufacturing sites.
- Create an internal access spine road to achieve sufficient internal connectivity and minimize the use of the off-site road network.
- Strategically locate commercial (multi-use) development areas to create an activity hub with a horizontal mix of the highest density residential along with R&D and service/retail.
- Position large parcels along SR-20 and SE Terrace 193 to accommodate retail/service in conventional format or “lifestyle” higher density format.
- Locate the majority of residential land use program south of SR 20 as a natural extension of Hawthorne’s neighborhood character, taking advantage of access to schools and recreational opportunities such as the Hawthorne-Gainesville Trail.

In addition to these shared goals/principles, the three suitability scenarios for Area A are distinguished from one another by several unique characteristics and program components described below.

Scenario 1 (Figure B-1)

- Minimal wetland filling to allow for rail spur access to all development parcels.
- Envisions larger manufacturing sites compared to the other scenarios.
- Does not include any R&D uses outside of the commercial (multi-use).
- Lowest FAR on advanced manufacturing uses of any scenario at 0.15.
- Includes the smallest commercial (multi-use) hub (50-acres) and the smallest residential unit count (850).

Scenario 2 (Figure B-2)

- Minimal wetland filling to allow for rail spur access to the manufacturing sites.
- Builds on Scenario 1 and suggests complementary manufacturing with R&D to capitalize on synergistic opportunities as envisioned in the preliminary concept plan for Area B (See Figures 46-48 Section IV.B Land Use Analysis, EASP, Dec. 2013).
- Assumes larger commercial (multi-use) component at close to 150-acres.
- Most closely emulates the Advanced Manufacturing Park based on the density of the development and the inclusion of research focused sites in proximity to the manufacturing sites.
- Includes 1,000 residential units.

Scenario 3 (Figure B-3)

- Minimal wetland filling to allow for rail spur access to the manufacturing sites.
- Assumes smaller scale sites and the highest density FAR for the advanced manufacturing component compared to the other scenarios.
- Includes R&D/Office uses only in the commercial (multi-use).
- The residential component is the same as in Scenario 2: 1,000 residential units.

Residential Program

The residential program on Area B is assumed to include townhome-style product within the commercial (multi-use) hub at approximately 10 dwelling units per acre. The majority of residential product on Area B will be an average of 4 dwelling units per acre which represents a lot size of 8,000 square feet.

III.B.3: EA-EOMU Area C – The Multi-Use Community / Employment Campus

Area C is envisioned as a multi-use community featuring advanced manufacturing and industrial campuses which leverage the area's connections to US 301 and the CSX railroad tracks. The advanced manufacturing uses will be complemented by a mix of R&D, office, and institutional uses at lower densities than those in Area A, as well as residential and associated supporting commercial and civic uses. Area C is envisioned to have a physical and programmatic connection to Area A: The R&D, Office & Institutional Center.

The vision for Area C is a multi-use campus similar to Lake Nona South and Medical City in Orlando, Florida. Lake Nona South is a 2,800-acre master planned community made up of several distinct districts including a hospital/medical district, a retail town center, and a residential community (See **Appendix 3**). In total the community is made up of close to 7 million square feet of medical, R&D, and retail space as well as 2,700 residential units. The most distinctive element of Lake Nona South has been its ability to attract several very prominent tenants including Sanford-Burnham Medical Research Institute, the VA Medical Center, and Nemours Children's Hospital among others. Lake Nona Medical City is a 650 acre health and life sciences campus for medical care, research, and education based upon the proven theory that clustering health care and bioscience facilities in proximity to one another will accelerate innovation.

The development format at Lake Nona focuses on multi-use and the ability to offer several quality districts featuring different land uses, rather than a vertically integrated mixed-use format. Despite developing at conventional densities (approximately 0.25 FAR for office/medical and 4 units per-acre for residential) with primarily surfaced parked formats, the community had been able to achieve a strong brand through marketing and response to market needs. While the vision for Area C is different from Lake Nona in that the businesses are likely to be driven primarily by advanced manufacturing rather than medical institutions, the mix of uses, approach to districts,

physical proximity of employment to residential uses, and the level of density are envisioned to be similar.

An additional analogue is Research Triangle Park (RTP) in Durham, North Carolina (See **Appendix 3**). This development is aligned with the vision for Area C less in terms of physical form and layout but more in terms of its ability to attract a diverse mix of sectors including high tech R&D, agricultural biotechnology, life sciences, information technology, advanced materials, green technology, foundations, and institutions.

Please see **Appendix 2, Figures C** which include a map of the Area C Remaining EA-EOMU, a description of the maximum development program by land use, and maps/programs for several land use scenarios.

In addition, Area C scenarios are characterized by the following planning and urban design goals and principles:

- Capitalize on access to CSX rail and US-301 by locating advanced manufacturing and industrial land uses along the corridor.
- Locate employment uses within approximately 1-mile of US 301 and SR1474. Provide manufacturing and R&D adjacency/connection to agriculture.
- Strategically locate commercial (multi-use) development areas to create an activity hub with a horizontal mix of the highest density residential along with R&D and service/retail.
- Selectively fill less-environmentally-critical wetlands (i.e isolated wetlands) to accommodate rail access to manufacturing sites as well as to create opportunities for large-scale manufacturing users (sites > 100acres).
- Create pockets of varying mid-to-low density residential uses in proximity to the employment areas to maximize the amount of homes within ½-mile walk of employment.
- Envision lower density residential uses adjacent or in proximity to agriculture land use to build on agricultural heritage. In addition, locate lower density residential along Lochloosa Creek to build on the natural extension of the rural character of Windsor.
- Utilize the existing “necklace” of wetlands to serve as a natural transition/buffer from the non-residential to the residential land uses.
- Create an internal road framework interconnecting employment, multi-use, agriculture, and residential to minimize the use of off-site roads.
- Utilize existing forestry road crossings of Lochloosa Creek for internal connectivity to Area A and Area D.

In addition to these shared goals/principles, the three suitability scenarios for Area C are distinguished from one another by several unique characteristics and program components described below.

Scenario 1 (Figure C-1)

- Combines large manufacturing sites along the rail corridor with clusters of R&D and commercial off East County Road 1474.
- R&D users likely to locate further away from rail and closer to the commercial (multi-use) hub.
- Includes 3,500 units, many of which are within a ¼ mile walk to jobs.

Scenario 2 (Figure C-2)

- Does not include any R&D uses.
- At 3,700 units, features the largest residential component of any of the Area C scenarios.
- Smallest commercial (multi-use) component at 105-acres.

Scenario 3 (Figure C-3)

- Largest manufacturing component at close to 5,000,000 square feet over nearly 800 acres.
- Highest density manufacturing at 0.20 FAR.
- Does not include any R&D uses outside of the commercial.
- Smallest residential count at 2,000 units, most homes within a ½-mile walk to jobs.
- Additional developable acreage near Lochloosa Creek “land-banked” for the future for potential development/agriculture expansion area.

Sample Residential Program

Table 9 and **Figure 8** in Appendix 1 describe an illustrative mix of product that could exist within Area C. The table corresponds to Scenario C2 (see Attachment 3) which has the highest residential unit count of any of the Area C scenarios. The table shows a commercial (multi-use) hub consisting of townhome product at 10 units per acre. Outside of the commercial hub, the product mix includes different single-family lot typologies ranging from a ½ acre lot down to a 4,000 sf cottage lot. This product mix would accommodate a wide range of different price points and appeal to a cross section of market audiences, but is weighted towards lower density lots in order to counterbalance the higher residential densities existing within area A. The average density outside on the commercial hub on Area C is 3 dwelling units per acre.

Table 9: Area C Sample Residential Product Mix

Residential Type	Net Lot Size SF	# of Units	Product Mix	DU/AC
Residential				
Type A - Cottage (40')	4,000	185	5.0%	5.3
Type B - Cottage (42')	4,200	185	5.0%	5.2
Type C - Cottage (45')	4,500	370	10.0%	5.0
Type D - Single Family (50')	5,000	370	10.0%	4.7
Type E - Single Family (65')	6,500	370	10.0%	4.6
Type F - Single Family (80')	8,000	555	15.0%	4.0
Type G - Single Family (100')	15,000	740	20.0%	2.2
Type H - Single Family (120')	21,600	555	15.0%	1.6
Type TH - Townhomes - Multi Use	---	370	10.0%	10.2
Total	---	3,700	100.0%	3.2

III.B.4: EA-EOMU Area D – The Future Flex Community

Area D is envisioned to be a flexible multi-use community organized by its proximity to the Gainesville Airport, SR 26 frontage, and proximity to the SR 20/US301 interchange and CSX railroad tracks. These public infrastructure assets position Area D to become a community in which a wide range of employment oriented land uses—including airport and railroad related distribution, light manufacturing, office/R&D and commercial uses—are complemented by adjacent multi-family and single-family residential neighborhoods organized around existing natural resources and green spaces with supporting civic and retail development.

The Lochloosa Creek corridor to the east provides direct connection and access to significant natural resources and recreation amenities that will be connected by trails to the adjacent residential neighborhoods. Area D will be a balanced and connected community that provides opportunities for employment, living, services, education, and recreation in close proximity to the airport and regional highways within a connected system of natural resources.

Based on the flexible nature of the vision for Area D it is likely that development could resemble a variety of precedent communities. For residential uses, a good precedent is Lake Nona South with the majority of residential lots sized with frontages from 60 feet to 120 feet representing an average density of approximately 3 units per acre. This

density would likely make up the bulk of residential uses though a clustering of higher density uses (such as the townhome product in Baldwin Park) could locate in a commercial (multi-use) hub adjacent to SR 26.

If advanced manufacturing uses are included in the program it is likely that these uses would be located on the eastern portion of Area D proximate to US 301. A good precedent for this type of manufacturing/distribution format envisioned would be the Jetplex Industrial Park in Huntsville, Alabama (See **Appendix 3**). The Jetplex is adjacent to the Huntsville International Airport and is home to aviation, electronics, and manufacturing companies such as Boeing, Raytheon, and LG Electronics. While not directly adjacent to the Gainesville Airport, Area D is in very close proximity and could serve as a convenient location for companies in airport dependent industries.

An additional option for Area D could be a 'mega-user' such as the Volkswagen Manufacturing Plant in Chattanooga (See **Appendix 3**). While competition for this type of large scale user is considerable, there are few competitive sites of this scale in Alachua County for companies seeking to capitalize on the proximity to the University of Florida.

For the purpose of this suitability analysis, Area D is envisioned to develop as a flex community after, and in response to, Areas A, B, and C. As such, the illustrated scenarios represent the "remainder" program not accommodated elsewhere and are not representative of Area D's full program potential. For this reason, an additional scenario is included for Area D that suggests a potential "maximum program" land use alternative.

Please see **Appendix 2, Figures D** which include a map of the Area D Remaining EA-EOMU, a description of the maximum development program by land use, and maps/programs for several land use scenarios.

All suitability scenarios for Area D are characterized by the following planning and urban design goals and principles:

- Accommodate the remainder development program from Areas A, B, and C.
- Maintain forestry practices in areas that remain undeveloped.
- Position additional land capacity for program flexibility if the market fails to meet the higher density program targets established for areas A, B and C.
- Locate clusters of advanced manufacturing and R&D within close proximity of US 301 and CSX rail to support airport-centric users.
- Strategically locate commercial (multi-use) development areas to create an activity hub with a horizontal mix of the highest density residential along with R&D and service/retail.
- Create an internal road framework interconnecting employment, multi-use, silviculture, and residential users and potentially utilize the existing Lochloosa Creek forestry road crossing to Area C to provide rail access to manufacturing tenants.

In addition to these shared goals/principles, the three suitability scenarios for Area D are distinguished from one another by several unique characteristics and program components described below.

Scenario 1 (Figure D-1)

- Largest offering of lower density single-family residential at 1,650 units.
- About 1.5 million square feet of advanced manufacturing close to SR 26 and US 301.
- Advanced manufacturing has limited frontage along SR 26 but located closer to existing Lochloosa Creek forestry road crossing with access CSX rail.
- Largest commercial area creating a multi-use hub near the SR 26/US 301 junction.

Scenario 2 (Figure D-2)

- Only includes 1.5 million square feet of advanced manufacturing located along SR 26.
- Assumes residential uses will be accommodated entirely on Areas A, B and C.

Scenario 3 (Figure D-3)

- Includes 1,100 lower density single-family residential units.
- Smaller offering of 600,000 square feet of advanced manufacturing.
- Comparatively small retail/service area.

Maximum Scenario (Figure D-4)

- Represents one potential land use layout of a 'maximum program' scenario for Area D.
- Slightly larger commercial component includes some horizontal integration of medium density residential, R&D and retail/service.

III.B.5: EA-EOMU Area E – The Residential/Commercial Villages

Area E is envisioned to be comprised of residential villages and hamlets connected by green spaces and trails within a larger open space framework. The adjacent Balu Forest provides a natural amenity/resource for residential uses such as primary homes, pre-retirement and retirement communities, assisted living and wellness centers, among other types of residential uses. Area E will be supported by on-site retail and commercial services to minimize impacts to SR 20. Other commercial uses including advanced manufacturing with a programmatic connection to the nearby Gainesville Airport are envisioned along SR 26.

For the purpose of this suitability analysis, Area E is envisioned to develop in response to Areas A, B, C and possibly D. Assuming that the majority of EA-EOMU program is located in Areas A and B—and the remainder subsequently developed in Areas C and D—this suggests continuing forestry operations in Area E in the near-to-mid term. As such, Scenarios 1-3 are not representative of Area E’s full program potential. For this reason, an additional scenario is included for Area E that suggests a potential “maximum program” land use alternative.

The potential for residential development in Area E could be encapsulated in any number of residential communities included in **Appendix 3**. One example is Holiday Neighborhood in Boulder, Colorado. Though Holiday is much smaller in scale, it is a good model based on its clustered format of single-family houses and townhomes, its large portion of open space, and its diverse offering of community amenities.

Please see **Appendix 2, Figures E** which include a map of the Area E Remaining EA-EOMU, a description of the maximum development program by land use, and map/program describing a potential maximum program scenario. For Scenarios 1-3 in the preceding sections, the full EA-EOMU land use program is accommodated on Areas A through D and therefore Area E’s acreage remains as forestry/undeveloped lands.

The Area E maximum scenario (**Figure E-1**) is characterized by the following planning and urban design goals and principles:

- Represents a potential land use layout of a ‘maximum program’ scenario for Area E.
- Includes a small commercial/multi-use cluster on SR 26 with pockets of residential of varying mid-to-low densities within a framework of open space/recreation.
- Locates advanced manufacturing with a programmatic connection to the nearby Gainesville Airport along SR 26.
- Small offering of single-family residential units that slightly exceeds the by-right unit count of 5 DUs per acre over the 847 acres of EA-EOMU in Area E.

III.B.6 EA-EOMU Summary Composite Scenarios

The preceding suitability analysis scenarios illustrate several conceptual options for the distribution of EA-EOMU land use program among the five geographic areas: Areas A, B, C, D and E. Based on the guiding principle of locating 60-70% of the overall EA-EOMU program (**Table 3**) in Areas A and B, the suitability analysis then allocated the remaining program to Areas C, D, and E. Therefore, Scenarios 1-3 are cumulative to the full EA-EOMU program. That is, for example, Scenarios A1, B1, C1, and D1 sum to the full EA-EOMU program, and so on.

The following composite scenarios summarize the key takeaways of the suitability analysis and illustrate the potential relationships and connectivity among the five geographic areas.

Composite Scenario 1 (Figure S-1)

Composite Scenario 1 represents a more conventional land use approach. Wetland filling in this scenario is minimal compared to the other scenarios and occurs only to allow for rail spur access to the manufacturing sites. Similar to the other scenarios, Scenario 1 utilizes three of the existing forestry road crossings of Lochloosa Creek for internal connectivity among Areas A, C and D.

The dispersed pattern of existing wetlands lends itself to a comparatively fragmented development character and form, lower average densities, less efficient road networks and significantly less walkable acreage within the MXD/commercial hubs. For instance, only 1.4 million square feet of the office and R&D program is accommodated within the walkable MXD center, or approximately 7,000 jobs, in Area A which as a result pushes the remaining employment uses outside of the MXD, thereby taking up larger development area at conventional densities. This is in contrast to Scenarios 2 and 3 where close to 5 million square feet of R&D/Office use is located within the ½-mile radius MXD accommodating approximately 13,000 more jobs.

The lower employment densities in Scenario 1 result in less acreage available for the corresponding residential program on Area A and therefore the remaining residential program balance is distributed onto other areas, equating to more residential use on Areas C and D. This scenario also envisions the largest advanced manufacturing footprint intended to accommodate larger-scale tenants compared to the other scenarios. As a result, Scenario 1's development footprint is between 500 and 700 acres more than in Scenarios 2 and 3.

Composite Scenario 2 (Figure S-2)

Composite Scenario 2 falls in the middle of the spectrum between Scenarios 1 and 3 in terms of the realization of a more compact urban center on Area A and the maintenance of forestry/undeveloped acreage on D, and E. While some wetlands are filled in the MXD in Area A, the result is a much more compact and walkable development footprint accommodating the same amount of employment program as in

Scenario 1 within less than two-thirds of the development footprint. The vision for Area B's manufacturing area also builds on Scenario 1 and suggests complementing manufacturing with R&D to capitalize on synergistic opportunities as envisioned in the preliminary concept plan for Area B which depicts a higher density employment cluster. In addition, Scenario 2 includes the highest residential unit count on Area C with the remainder manufacturing program positioned for growth in Area D. In total, Scenario 2 develops approximately 150 more acres than Scenario 3.

Composite Scenario 3 (Figure S-3)

Composite Scenario 3 builds on Scenario 2 and places the most development onto Area A and Area B by minimally filling isolated wetlands in strategic locations and by including high density commercial and residential uses within the MXD center. In Area A, the employment program is accommodated wholly within a walkable mixed-use framework while manufacturing is allocated to the other areas. As a result, Area B assumes smaller scale sites and the highest density FAR for the advanced manufacturing component while Area C accommodates the largest manufacturing component at close to 5,000,000 square feet over nearly 800 acres. In each area the R&D/Office uses are fully integrated within the MXD/commercial hubs.

The advantages of Scenario 3 include the most compact and walkable MXD in Area A, as well as the ability to maintain forestry practices on sections of Areas C, D, and E in the short-to-mid term. Scenario 3 also develops the fewest acres of any scenario and envisions the most compact and vibrant mixed use center on Area A. However, this scenario will require a high level of execution and market acceptance to achieve relatively higher densities across all uses. Positioning additional capacity in Area C, Area D and Area E for program flexibility if the market fails to meet the higher density program targets established for Area A and Area B remains the cornerstone for this scenario.

Appendix 1:

Figures

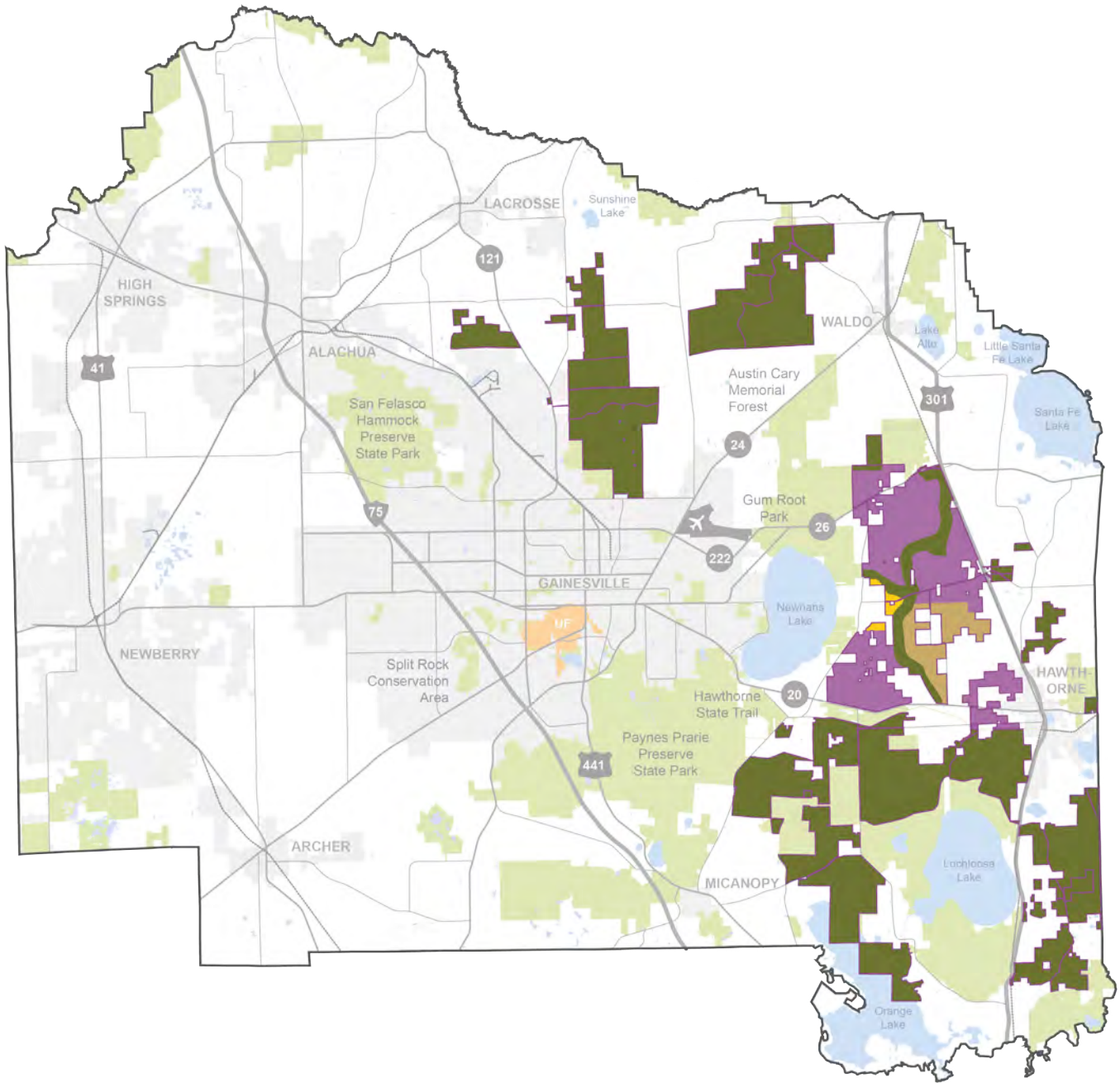


FIGURE 1: ENVISION ALACHUA SECTOR PLAN FRAMEWORK MAP

- EA-CON (CONSERVATION LAND USE)
- EA-EOMU (EMPLOYMENT ORIENTED MIXED USE)
- EA-AG (AGRICULTURE LAND USE)
- EA-RUR (RURAL LAND USE)



Data Source: Alachua County GIS, Plum Creek
June 2014

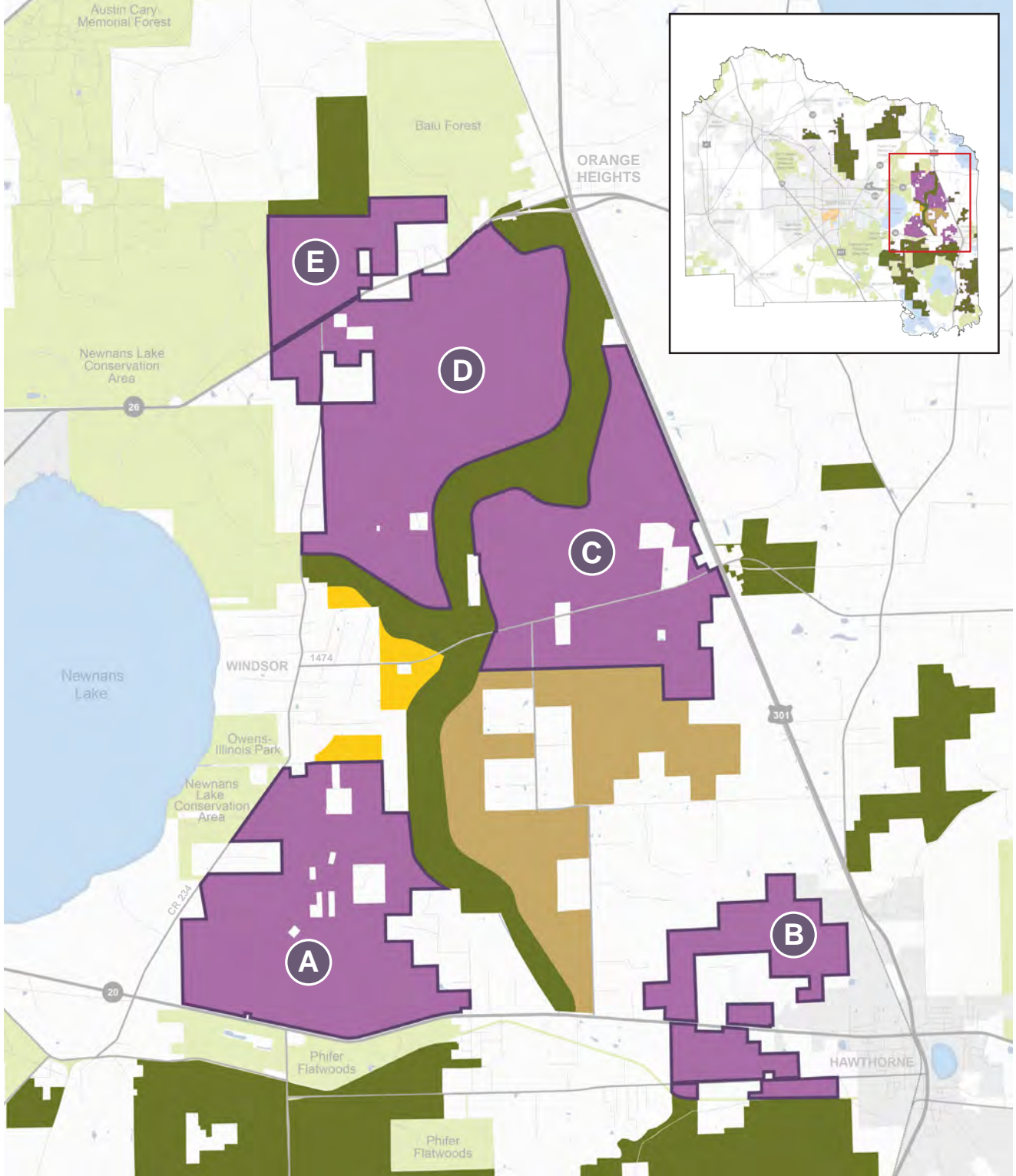


FIGURE 2: ENVISION ALACHUA SECTOR PLAN FRAMEWORK MAP (EAST ALACHUA COUNTY INSET)

- EA-CON (CONSERVATION LAND USE)
- EA-EOMU (EMPLOYMENT ORIENTED MIXED USE)
- EA-AG (AGRICULTURE LAND USE)
- EA-RUR (RURAL LAND USE)



Data Source: Alachua County GIS, Plum Creek
June 2014

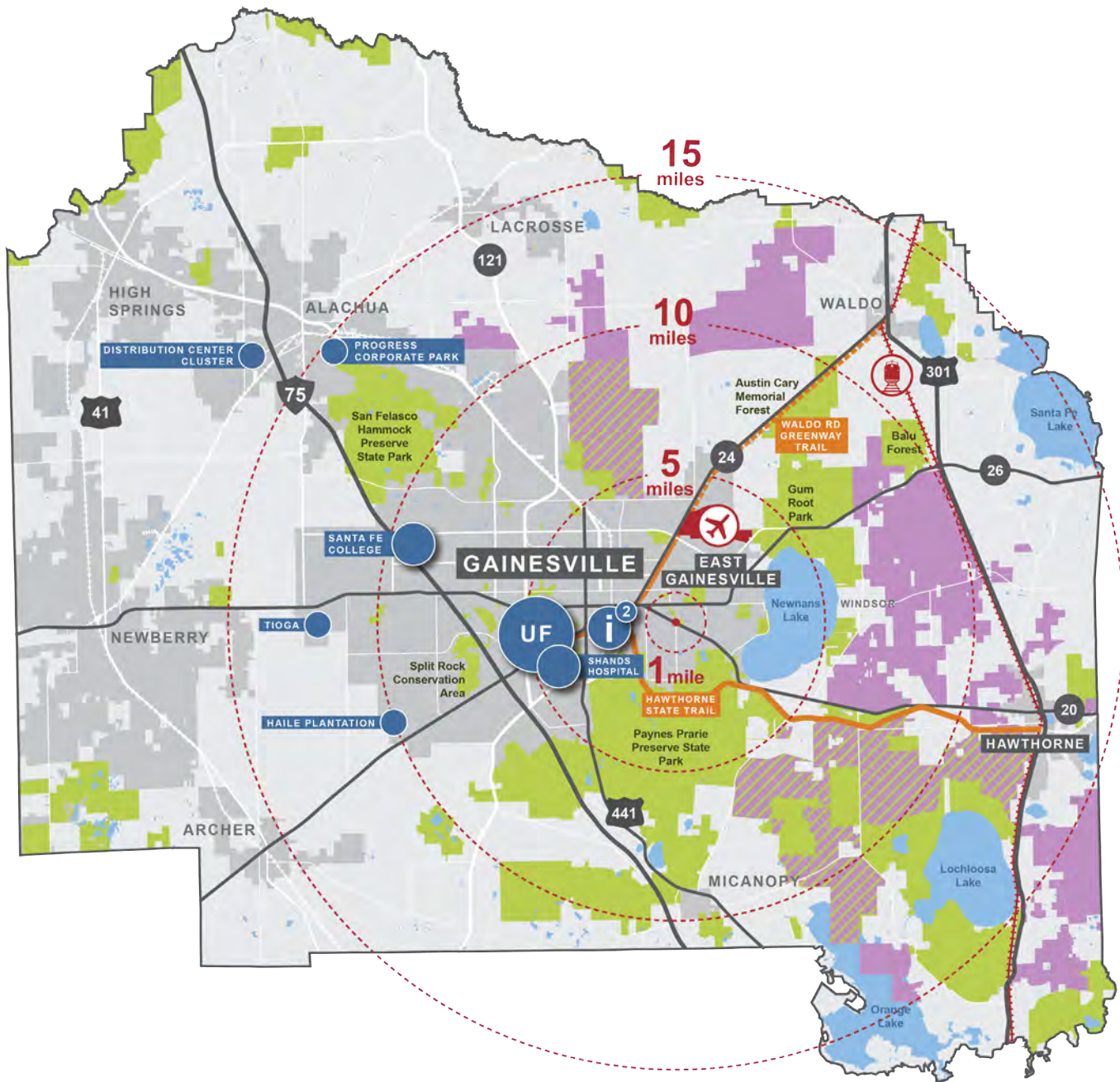
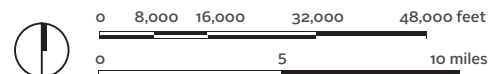


FIGURE 3: ALACHUA COUNTY ANCHORS AND ASSETS

- PLUM CREEK EASP PROPERTY
- EXISTING PLUM CREEK CONSERVATION EASEMENT
- CONSERVATION
- MUNICIPALITIES & URBAN CLUSTER

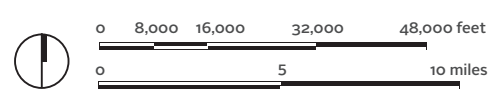


Data Source: Alachua County GIS, Plum Creek
June 2014



FIGURE 4: ENVISION ALACHUA CONSERVATION LAND USE AND LANDSCAPE LINKAGES

- CONSERVATION
- LANDSCAPE LINKAGES
- ENVISION ALACHUA SECTOR PLAN



Data Source: Alachua County GIS, Plum Creek
June 2014

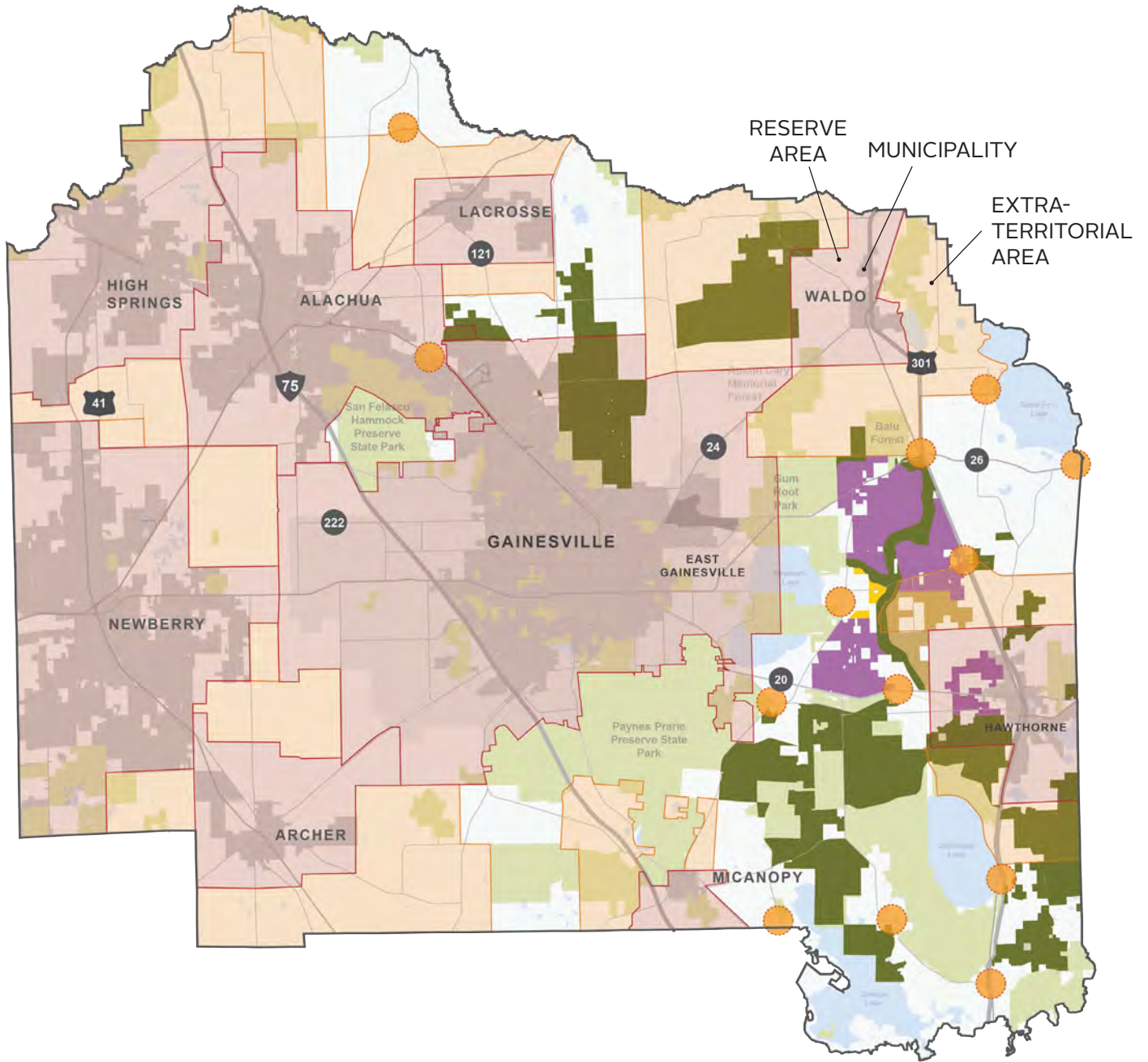


FIGURE 5: ENVISION ALACHUA SECTOR PLAN & ALACHUA COUNTY RESERVE & EXTRA-TERRITORIAL AREAS

- EA-CON (CONSERVATION LAND USE)
- EA-EOMU (EMPLOYMENT ORIENTED MIXED USE)
- EA-AG (AGRICULTURE LAND USE)
- EA-RUR (RURAL LAND USE)
- RURAL CLUSTER



Data Sources: MAP 1-Reserve and Extra-Territorial Areas (Alachua County Department of Growth Management), Alachua County GIS, Plum Creek, June 2014

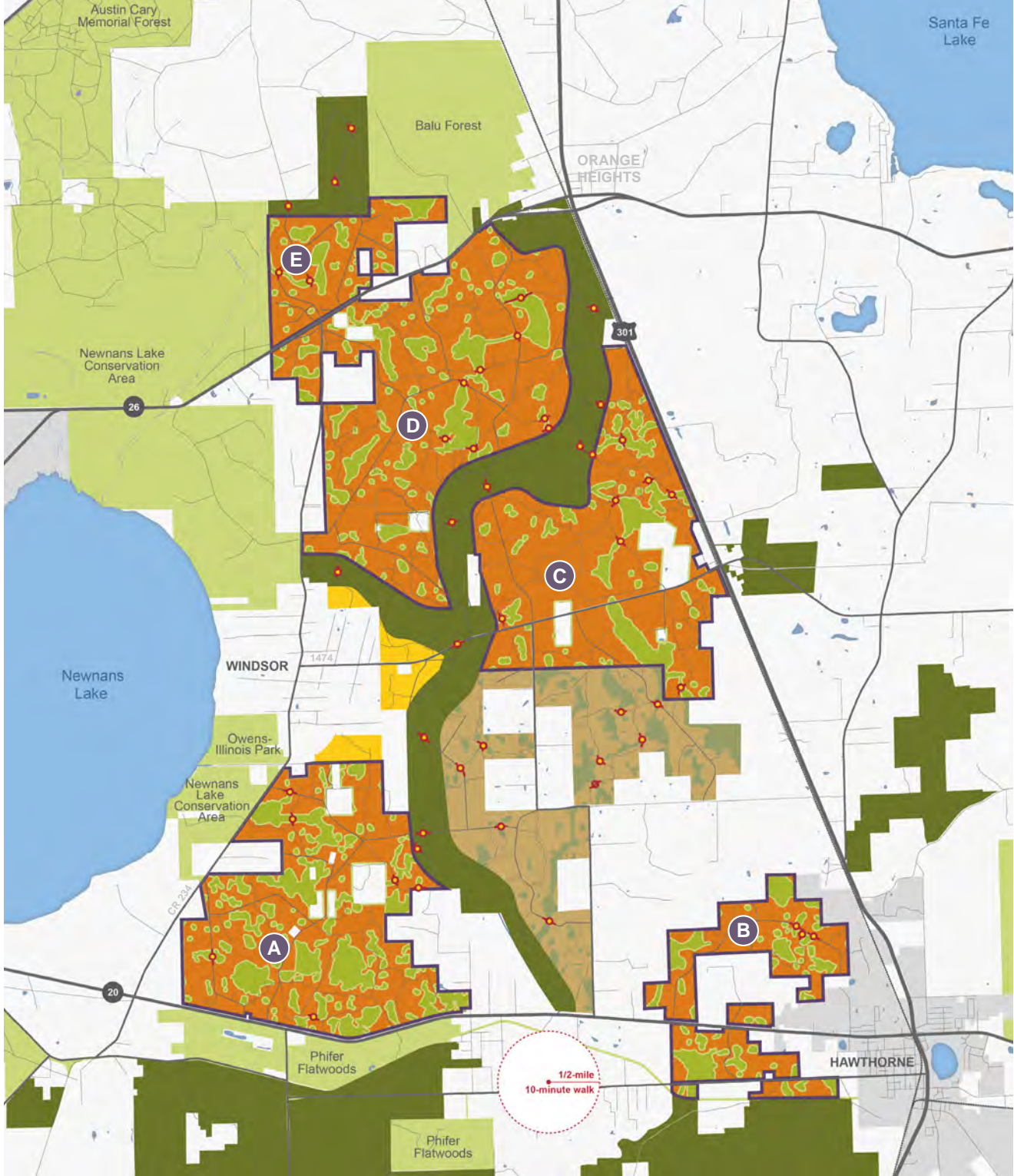









FIGURE 6: EA-EOMU WETLANDS, BUFFERS, AND EDGES ANALYSIS

	TOTAL EA-EOMU	11,390 ACRES
	WETLANDS	2,020 ACRES
	75' WETLAND BUFFERS	1,168 ACRES
	100' EDGE BUFFERS	262 ACRES
	50' EDGE BUFFERS	7 ACRES
	REMAINING EA-EOMU	7,933 ACRES
	EXISTING WETLAND FORESTRY ROAD CROSSING	



Data Source: Alachua County GIS, Plum Creek
June 2014

FIGURE 7: Area A Sample Residential Density Product Mix



SINGLE FAMILY (DETACHED) 60-120' LOTS

Description:

This single family product represents the lowest density unit typology in Area A. This density is primarily reserved for inner site areas near Lochoosa Creek and Windsor.

< Lake Nona - Orlando, FL

2-5
DU/AC

35%
OF UNITS



COTTAGE STYLE (DETACHED) 40-50' LOTS

Description:

The medium density lot sizes allow for full-sized single family product within a tight-knit urban fabric in proximity to mixed use and employment uses.

< Holiday Neighborhood - Boulder, CO

5-6
DU/AC

12%
OF UNITS



TOWNHOMES (ATTACHED)

Description:

This higher density single family product (attached) is located within/near the mixed use center in Area A.

< Baldwin Park - Orlando, FL

15
DU/AC

8%
OF UNITS



TOWN CENTER MULTIFAMILY

Description:

The highest density residential product within Area A; located within mixed-use center with potentially ground floor retail.

< The Woodlands Town Center, TX

40
DU/AC

45%
OF UNITS

FIGURE 8: Area C Sample Residential Product Mix



SINGLE FAMILY (DETACHED) 50-120' LOTS

Description:

This single family product represents the lowest density unit type in Area C. This designation is primarily reserved for inner site areas and near Lochosa Creek.

< Lake Nona - Orlando, FL

3-5
DU/AC

70%
OF UNITS



COTTAGE STYLE (DETACHED) 40-45' LOTS

Description:

The medium density lot sizes allow for full-sized single family product within a tight-knit urban fabric in proximity to commercial and employment uses.

< Holiday Neighborhood - Boulder, CO

5-6
DU/AC

20%
OF UNITS



TOWNHOMES (ATTACHED)

Description:

Highest density residential product within Area C; located near/within the commercial hubs with potential for live/work uses.

< Baldwin Park, FL

10
DU/AC

10%
OF UNITS

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Appendix 2:

EA-EOMU Land Use Suitability Scenarios

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FIGURE A-0: AREA A MAXIMUM DEVELOPMENT BY LAND USE



The R&D/Office and Institutional Center

- Highest density mixed use center (MXD): R&D/office, institutional, residential, retail/service, and civic uses
- Additional residential and complementary retail/service and civic uses
- Advanced manufacturing/industrial uses complementary to mixed use center
- Connected to agriculture uses
- Similar to:
 - Centennial Park, NC
 - University Park, MA
 - Chiswick Park, UK
 - The Woodlands, TX
 - UC Davis West Village, CA

Total EOMU Area (2,893 AC)

- Wetlands (688 AC) ■
- Buffers & Edges (489 AC) ■

= Remaining EOMU (1,716 AC) ■

Assumptions

All land use acreages include the following:

- Infrastructure
- Stormwater facilities
- Additional floodplain (outside of wetlands)
- Civic land uses

Maximum Development by Land Use*

SF/Dwelling Units

Non-Residential

Research & Development/Office	6,000,000
Advanced Manufacturing	2,000,000
Retail/Service	1,000,000

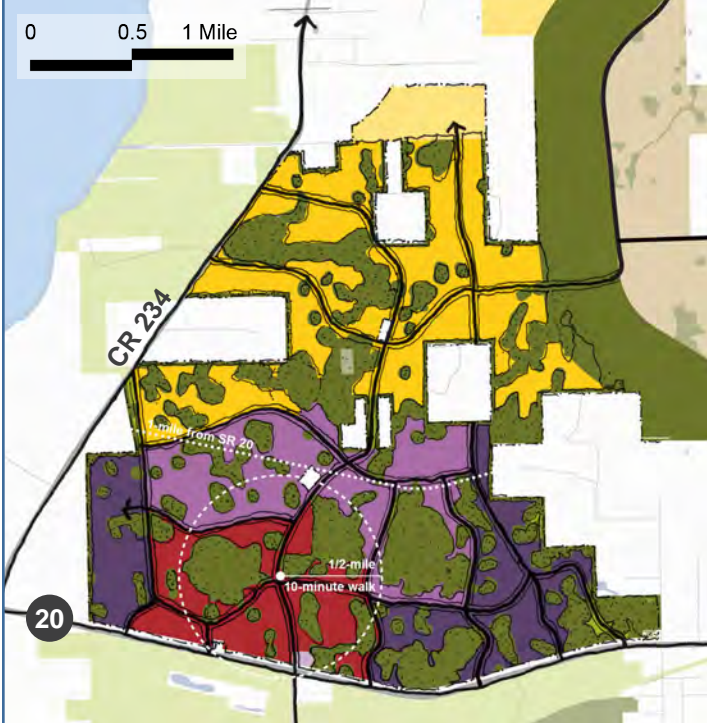
Residential

7,000

*Maximum development capacities are not cumulative.

AREA A: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

SCENARIO 1 (FIGURE A-1)

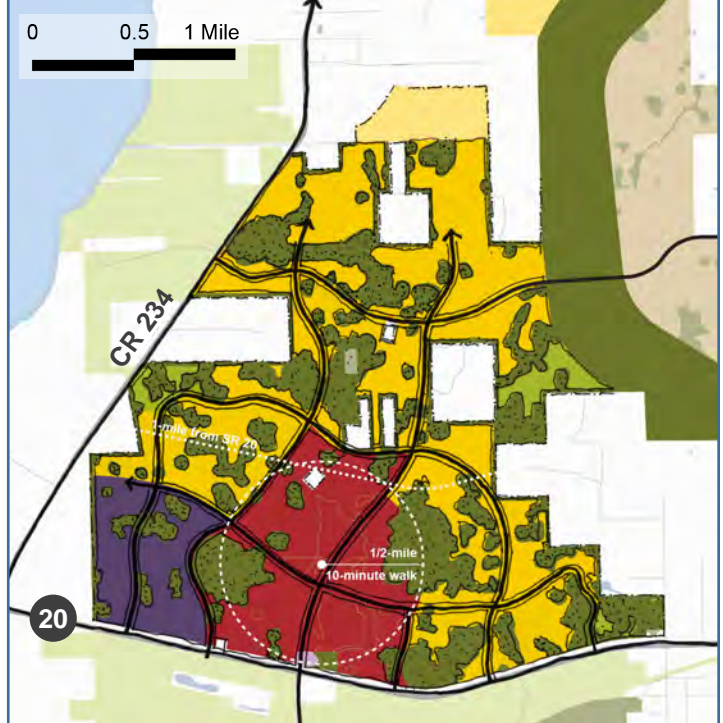


Program	SF/Units	Acres
Mixed Use Center		270
- R&D/Office	1,350,000	100
- Retail/Service	700,000	30
- Residential	2,800 DUs	140
R&D/Office	3,500,000	370
Adv. Manufacturing	1,350,000	340
Residential	1,700 DUs	720
Totals:	6,900,000 SF 4,500 Units	1,700 AC ²

Average Density Assumptions ³

	MXD	Outside MXD
Non-Residential		
R&D/Office	0.50 FAR	0.35 FAR
Adv. Manufacturing	---	0.15 FAR
Retail/Service	1.00 FAR	---
Residential	30 DU/AC	4 DU/AC

SCENARIO 2 (FIGURE A-2)



■ Additional Open Space/Conservation Easement (69 AC)
 Filled Wetlands for MXD (72 AC) ¹

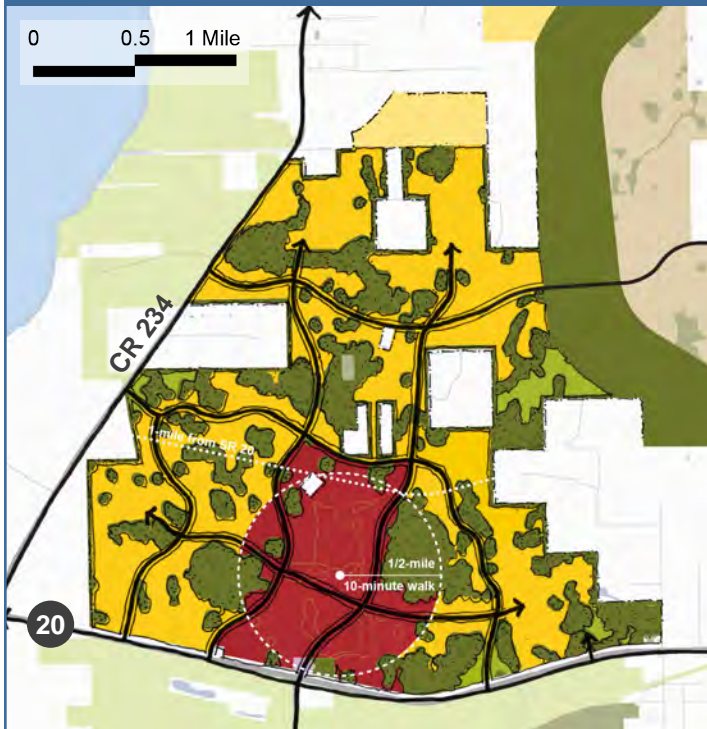
Program	SF/Units	Acres
Mixed Use Center		470
- R&D/Office	4,850,000	270
- Retail/Service	850,000	30
- Residential	3,200 DUs	170
R&D/Office	---	---
Adv. Manufacturing	1,350,000	200
Residential	2,600 DUs	1,100
Totals:	7,050,000 SF 5,800 Units	1,770 AC ²

Average Density Assumptions ³

	MXD	Outside MXD
Non-Residential		
R&D/Office	0.66 FAR	0.35 FAR
Adv. Manufacturing	---	0.25 FAR
Retail/Service	1.00 FAR	---
Residential	30 DU/AC	4 DU/AC

AREA A: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

SCENARIO 3 (FIGURE A-3)



■ Additional Open Space/Conservation Easement (79 AC)

■ Filled Wetlands for MXD (72 AC) ¹

Notes:

¹ Potential wetland fill for road crossings not included.

² Total acreage varies depending on the size of the illustrated development areas, open space, and wetland fill.

³ Average densities as defined in Chapter 3.3, IV.B Land Use Data & Analysis, EASP December 2013.

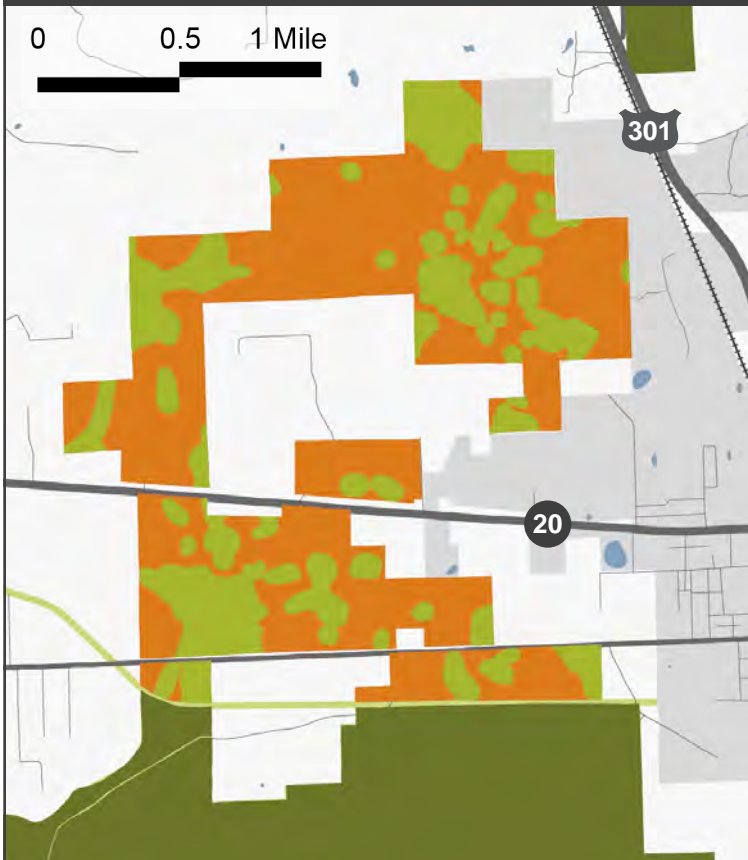
Program	SF/Units	Acres
Mixed Use Center		450
- R&D/Office	5,400,000	300
- Retail/Service	800,000	30
- Residential	2,300 DUs	120
R&D/Office	---	---
Adv. Manufacturing	---	---
Residential	4,100 DUs	1,300
Totals:	6,200,000 SF 6,400 Units	1,750 AC ²

Average Density Assumptions ³

	MXD	Outside MXD
Non-Residential		
R&D/Office	0.66 FAR	0.35 FAR
Adv. Manufacturing	---	0.25 FAR
Retail/Service	1.00 FAR	---
Residential	30 DU/AC	5 DU/AC

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FIGURE B-0: AREA B MAXIMUM DEVELOPMENT BY LAND USE



The Advanced Manufacturing and Industrial Center

- Expansion of Hawthorne industrial uses north of SR-20, rail oriented
- Complementary R&D/office uses
- Expansion of Hawthorne residential south of SR-20, complementary commercial and civic uses
- Similar to:
 - Advanced Manufacturing Park, UK
 - Trumpf Laser Manufacturing Plant, Germany

Total EOMU Area (1,284 AC)

- Wetlands (288 AC) ■
- Buffers & Edges (150 AC) ■

= Remaining EOMU (864 AC) ■

Assumptions

All land use acreages include the following:

- Infrastructure
- Stormwater facilities
- Additional floodplain (outside of wetlands)
- Civic land uses

Maximum Development by Land Use*

SF/Dwelling Units

Non-Residential

Research & Development/Office	1,000,000
Advanced Manufacturing	3,600,000
Retail/Service	400,000

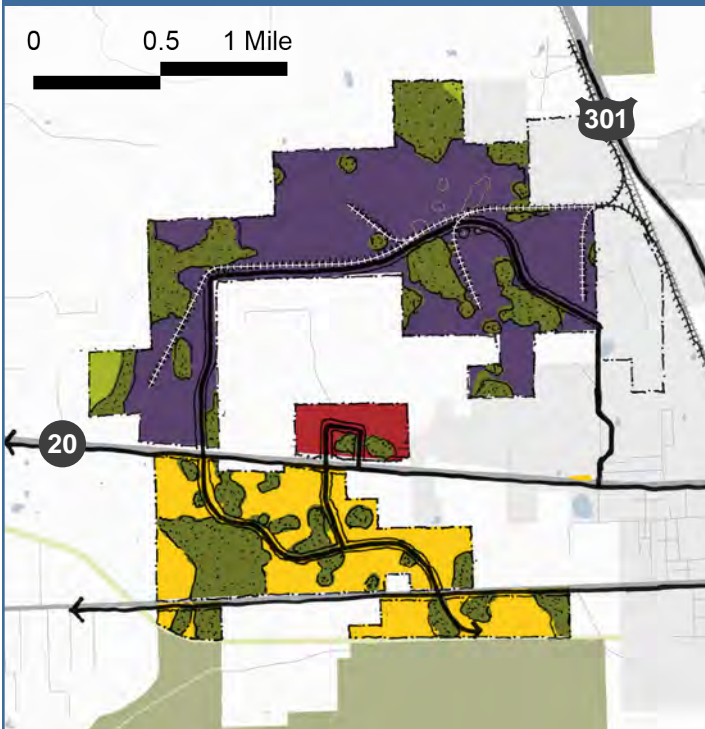
Residential

1,000

*Maximum development capacities are not cumulative.

AREA B: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

SCENARIO 1 (FIGURE B-1)



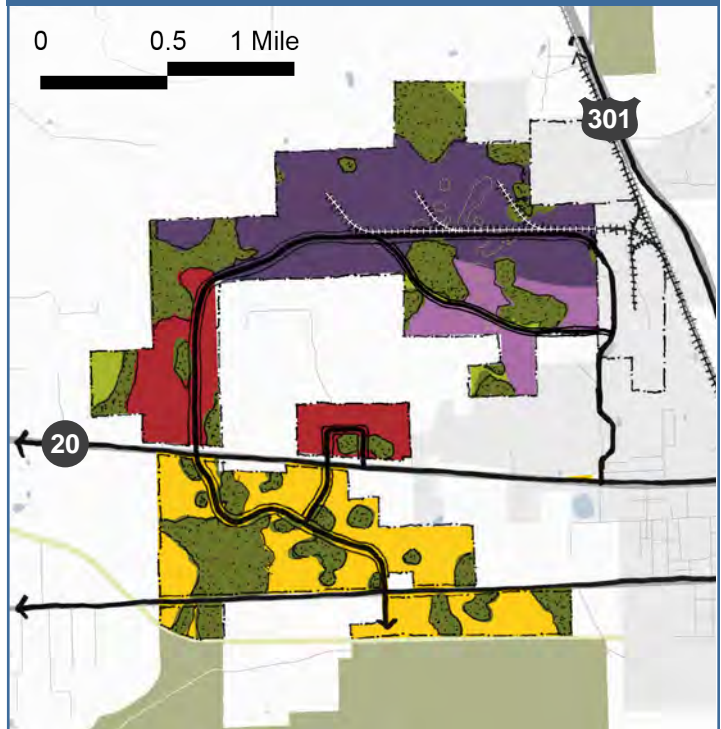
- Additional Open Space/Conservation Easement (11 AC)
- Filled wetlands for rail spurs & employment connectivity (11 AC) ¹

Program	SF/Units	Acres
Commercial		50
- R&D/Office	150,000	15
- Retail/Service	150,000	15
- Residential	130 DUs	20
R&D/Office	---	---
Adv. Manufacturing	2,200,000	530
Residential	720 DUs	270
Totals:	2,500,000 SF 850 Units	850 AC ²

Average Density Assumptions ³

	Commercial	Other
Non-Residential		
R&D/Office	0.30 FAR	0.30 FAR
Adv. Manufacturing	---	0.15 FAR
Retail/Service	0.25 FAR	---
Residential	10 DU/AC	4 DU/AC

SCENARIO 2 (FIGURE B-2)



- Additional Open Space/Conservation Easement (25 AC)
- Filled wetlands for rail spurs & employment connectivity (20 AC) ¹

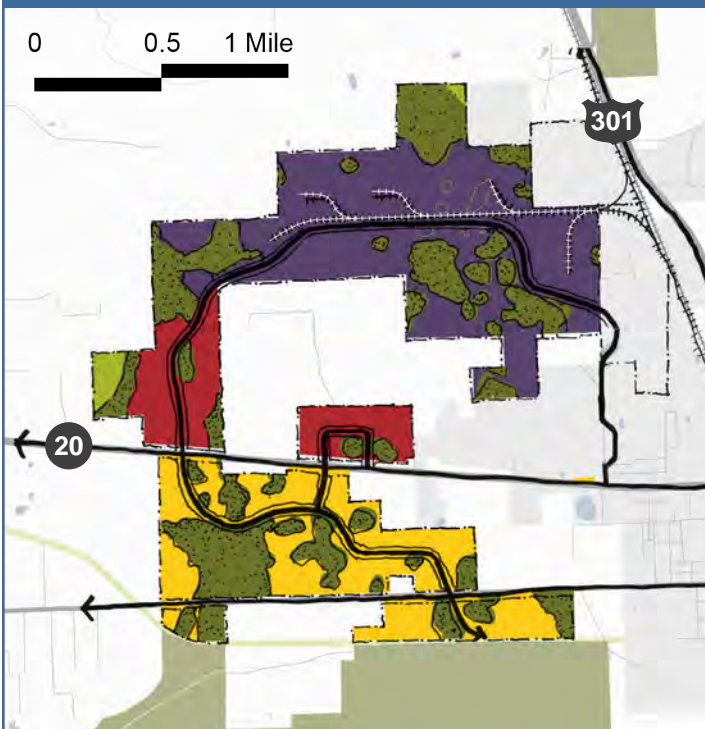
Program	SF/Units	Acres
Commercial		150
- R&D/Office	420,000	50
- Retail/Service	350,000	50
- Residential	300 DUs	50
R&D/Office	480,000	85
Adv. Manufacturing	2,000,000	365
Residential	700 DUs	270
Totals:	3,250,000 SF 1,000 Units	870 AC ²

Average Density Assumptions ³

	Commercial	Other
Non-Residential		
R&D/Office	0.30 FAR	0.30 FAR
Adv. Manufacturing	---	0.20 FAR
Retail/Service	0.25 FAR	---
Residential	10 DU/AC	4 DU/AC

AREA B: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

SCENARIO 3 (FIGURE B-3)



■ Additional Open Space/Conservation Easement (16 AC)

▨ Filled wetlands for rail spurs & employment connectivity (11 AC) ¹

Program	SF/Units	Acres
Commercial		140
- R&D/Office	400,000	45
- Retail/Service	300,000	45
- Residential	300 DUs	50
R&D/Office	---	---
Adv. Manufacturing	2,500,000	460
Residential	700 DUs	270
Totals:	3,200,000 SF 1,000 Units	870 AC ²

Average Density Assumptions ³

	Commercial	Other
Non-Residential		
R&D/Office	0.66 FAR	0.35 FAR
Adv. Manufacturing	---	0.25 FAR
Retail/Service	0.25 FAR	---
Residential	10 DU/AC	4 DU/AC

Notes:

¹ Potential wetland fill for road crossings not included.

² Total acreage varies depending on the size of the illustrated development areas, open space, and wetland fill.

³ Average densities as defined in Chapter 3.3, IV.B Land Use Data & Analysis, EASP December 2013.

⁴ These scenarios assume no edge buffers given the adjacent lands are expected to convert to urban uses in the future.

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FIGURE C-0: AREA C MAXIMUM DEVELOPMENT BY LAND USE



The Multi-Use Community/ Employment Campus

- Advanced manufacturing/industrial campuses leveraging connections to US 301 and CSX railroad
- Medium-to-low density R&D, office, and institutional uses
- Medium-to-low density residential, complementary commercial and civic uses
- Connected to R&D/Office/Institutional center
- Similar to:
 - Lake Nona South/Medical City, FL
 - Research Triangle Park, NC
 - Baldwin Park, FL

Total EOMU Area (2,760 AC)

- Wetlands (369 AC) ■
- Buffers & Edges (281 AC) ■

= Remaining EOMU (2,110 AC) ■

Assumptions

All land use acreages include the following:

- Infrastructure
- Stormwater facilities
- Additional floodplain (outside of wetlands)
- Civic land uses

Maximum Development by Land Use*

SF/Dwelling Units

Non-Residential

Research & Development/Office	3,000,000
Advanced Manufacturing	5,000,000
Retail/Service	500,000

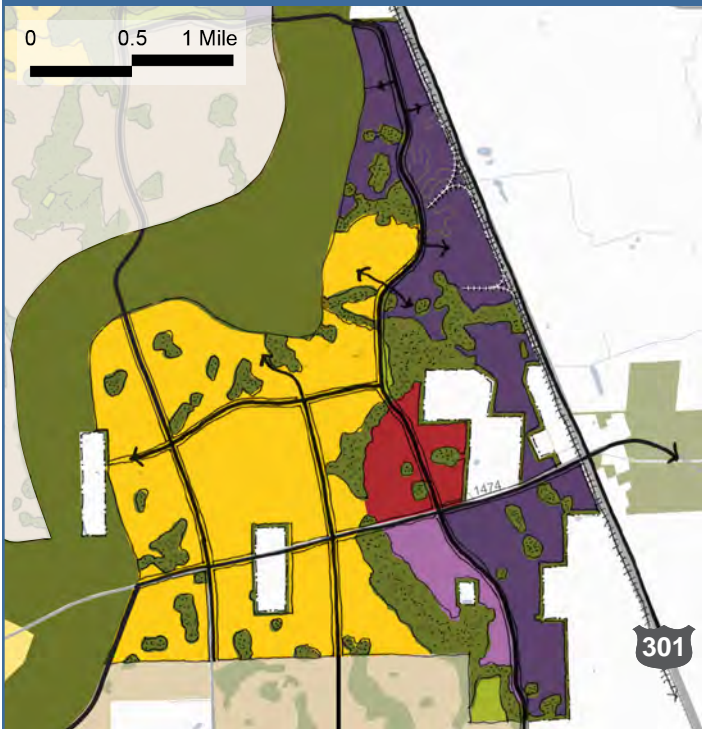
Residential

5,000

*Maximum development capacities are not cumulative.

AREA C: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

SCENARIO 1 (FIGURE C-1)



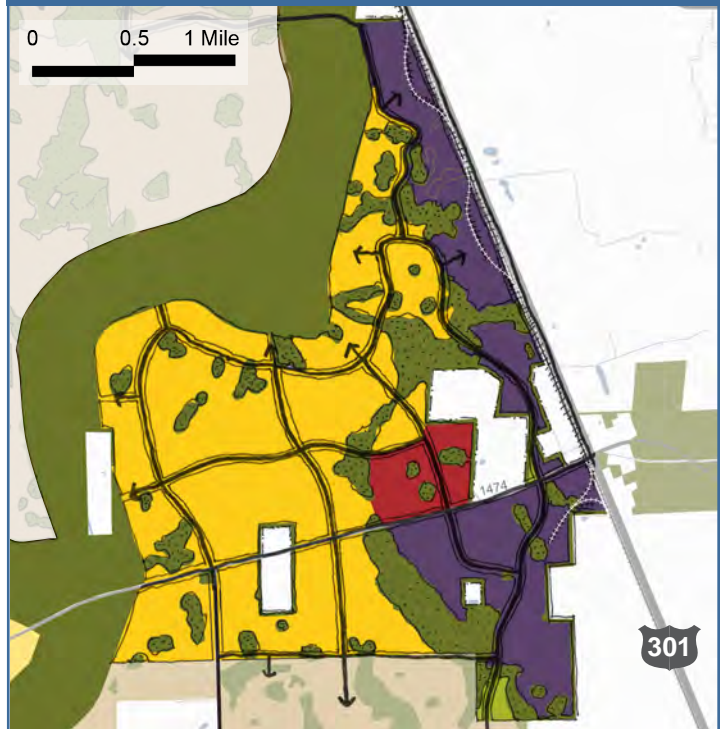
- Additional Open Space/Conservation Easement (28 AC)
- Filled wetlands for rail spurs & employment connectivity (28 AC) ¹

Program	SF/Units	Acres
Commercial		140
- R&D/Office	---	---
- Retail/Service	400,000	80
- Residential	500 DUs	60
R&D/Office	1,000,000	100
Adv. Manufacturing	3,000,000	600
Residential	3,000 DUs	1,200
Totals:	4,400,000 SF 3,500 Units	2,040 AC ²

Average Density Assumptions ³

	Commercial	Other
Non-Residential		
R&D/Office	---	0.30 FAR
Adv. Manufacturing	---	0.15 FAR
Retail/Service	0.20 FAR	---
Residential	10 DU/AC	3 DU/AC

SCENARIO 2 (FIGURE C-2)



- Additional Open Space/Conservation Easement (20 AC)
- Filled wetlands for rail spurs & employment connectivity (11 AC) ¹

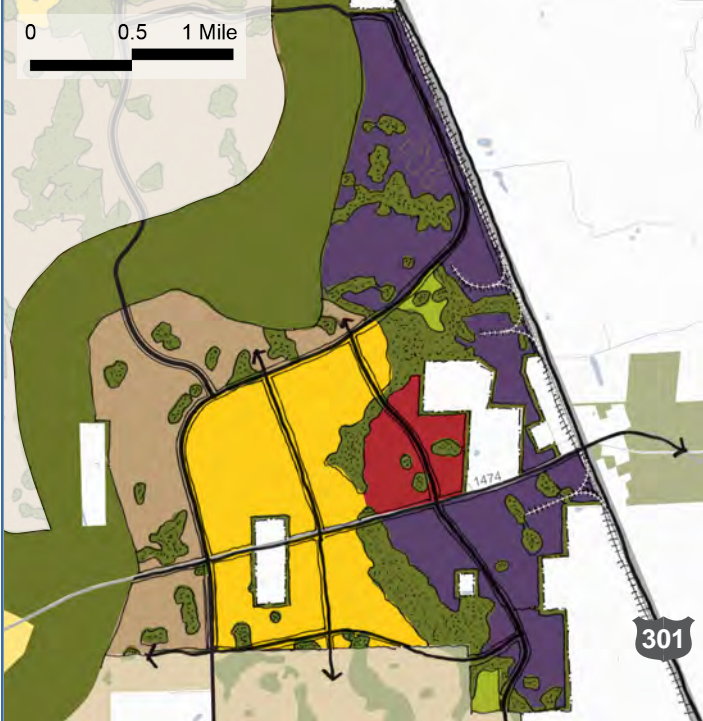
Program	SF/Units	Acres
Commercial		100
- R&D/Office	250,000	20
- Retail/Service	300,000	40
- Residential	300 DUs	40
R&D/Office	---	---
Adv. Manufacturing	3,150,000	650
Residential	3,400 DUs	1,350
Totals:	3,700,000 SF 3,700 Units	2,100 AC ²

Average Density Assumptions ³

	Commercial	Other
Non-Residential		
R&D/Office	0.30 FAR	0.30 FAR
Adv. Manufacturing	---	0.15 FAR
Retail/Service	0.25 FAR	---
Residential	10 DU/AC	3 DU/AC

AREA C: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

SCENARIO 3 (FIGURE C-3)



- Additional Open Space/Conservation Easement (37 AC)
- Filled wetlands for rail spurs & employment connectivity (16 AC) ¹
- Undeveloped Land (492 acres)

Notes:

¹ Potential wetland fill for road crossings not included.

² Total acreage varies depending on the size of the illustrated development areas, open space, wetland fill, and undeveloped land.

³ Average densities as defined in Chapter 3.3, IV.B Land Use Data & Analysis, EASP December 2013.

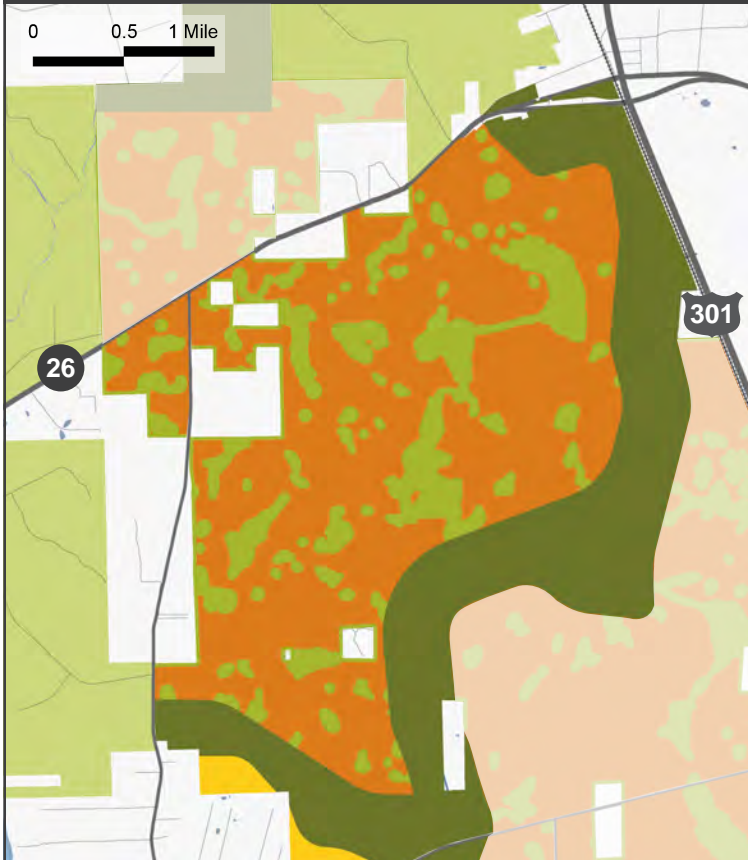
Program	SF/Units	Acres
Commercial		120
- R&D/Office	200,000	30
- Retail/Service	250,000	30
- Residential	500 DUs	60
R&D/Office	---	---
Adv. Manufacturing	4,900,000	800
Residential	1,500 DUs	680
Totals:	5,350,000 SF 2,000 Units	1,600 AC ²

Average Density Assumptions ³

	Commercial	Other
Non-Residential		
R&D/Office	0.30 FAR	0.30 FAR
Adv. Manufacturing	---	0.20 FAR
Retail/Service	0.25 FAR	---
Residential	10 DU/AC	3 DU/AC

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FIGURE D-0: AREA D MAXIMUM DEVELOPMENT BY LAND USE



The Future Flex Community

- Airport and railroad related distribution, light manufacturing and office/R&D
- Complementary medium-to-low density residential neighborhoods with supporting commercial and civic uses
- Connected to the Multi-Use Community/ Employment Campus
- For employment uses, similar to:
 - Jetplex Industrial Park, AL
 - Volkswagen Manufacturing Plant, TN

Total EOMU Area (3,634 AC)

- Wetlands (543 AC) ■
- Buffers & Edges (405 AC) ■

= Remaining EOMU (2,686 AC) ■

Assumptions

All land use acreages include the following:

- Infrastructure
- Stormwater facilities
- Additional floodplain (outside of wetlands)
- Civic land uses

Maximum Development by Land Use*

SF/Dwelling Units

Non-Residential

Research & Development/Office	1,500,000
Advanced Manufacturing	1,500,000
Retail/Service	300,000

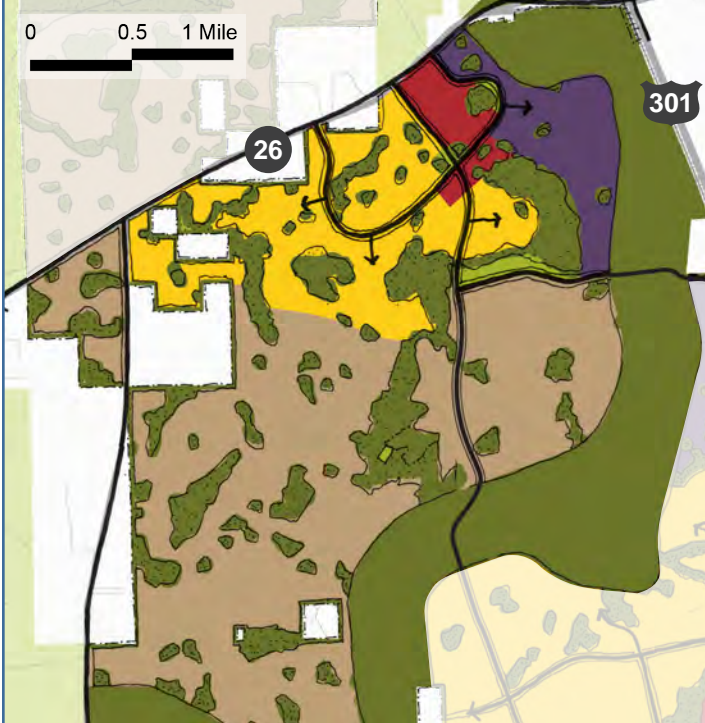
Residential

2,000

*Maximum development capacities are not cumulative.

AREA D: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

SCENARIO 1 (FIGURE D-1)



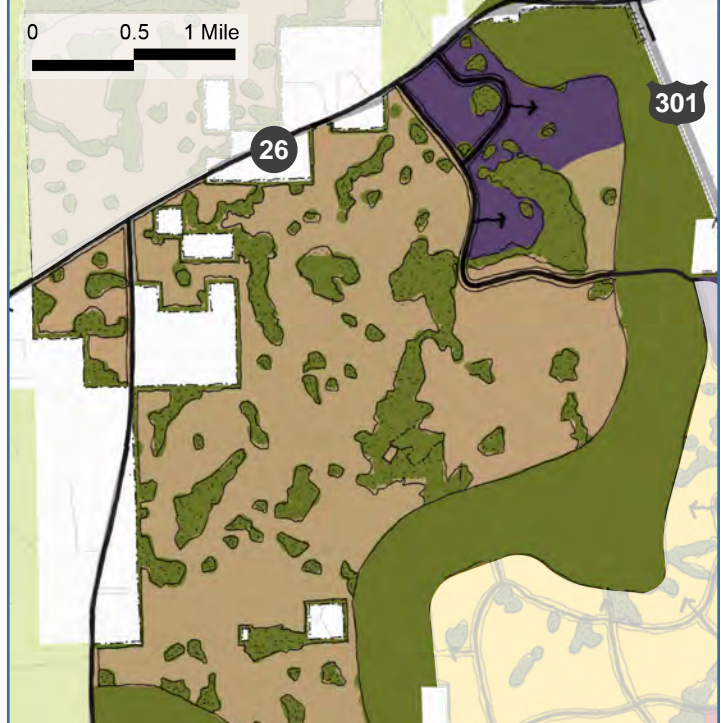
■ Additional Open Space/Conservation Easement (35 AC)
■ Forestry/Undeveloped Land (1,540 acres)

Program	SF/Units	Acres
Commercial		100
- R&D/Office	---	---
- Retail/Service	250,000	30
- Residential	650 DUs	70
R&D/Office	---	---
Adv. Manufacturing	1,450,000	250
Residential	1,000 DUs	600
Totals:	1,700,000 SF 1,650 Units	950 AC ¹

Average Density Assumptions ²

	Commercial	Other
Non-Residential		
R&D/Office	---	---
Adv. Manufacturing	---	0.15 FAR
Retail/Service	---	---
Residential	10 DU/AC	3 DU/AC

SCENARIO 2 (FIGURE D-2)



■ Forestry/Undeveloped Land (2,374 acres)

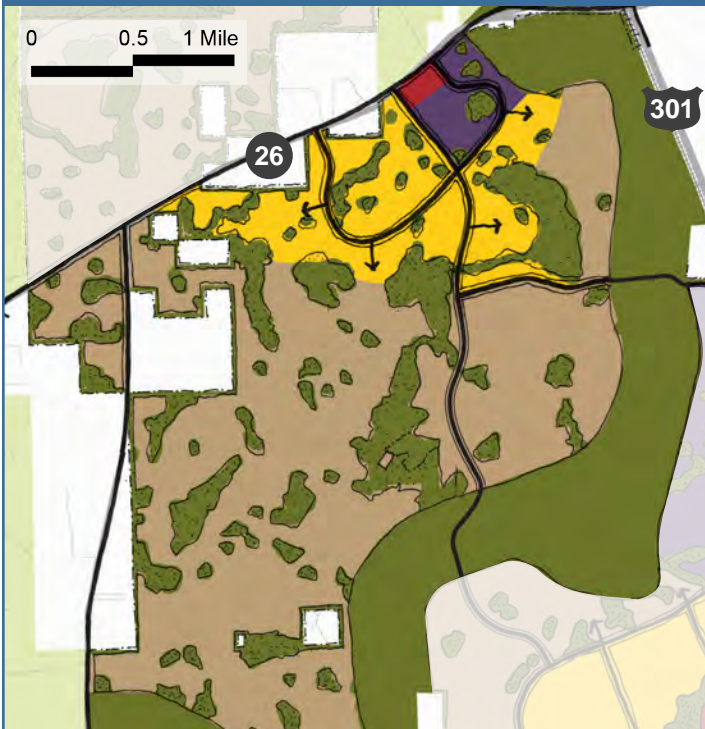
Program	SF/Units	Acres
Commercial		---
- R&D/Office	---	---
- Retail/Service	---	---
- Residential	---	---
R&D/Office	---	---
Adv. Manufacturing	1,500,000	300
Residential	---	---
Totals:	1,500,000 SF 0 Units	300 AC ¹

Average Density Assumptions ²

	Commercial	Other
Non-Residential		
R&D/Office	---	---
Adv. Manufacturing	---	0.15 FAR
Retail/Service	---	---
Residential	---	---

AREA D: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

SCENARIO 3 (FIGURE D-3)



■ Forestry/Undeveloped Land (2,096 acres)

Notes:

¹ Total acreage varies depending on the size of the illustrated development areas, open space, and undeveloped land.

² Average densities as defined in Chapter 3.3, IV.B Land Use Data & Analysis, EASP December 2013.

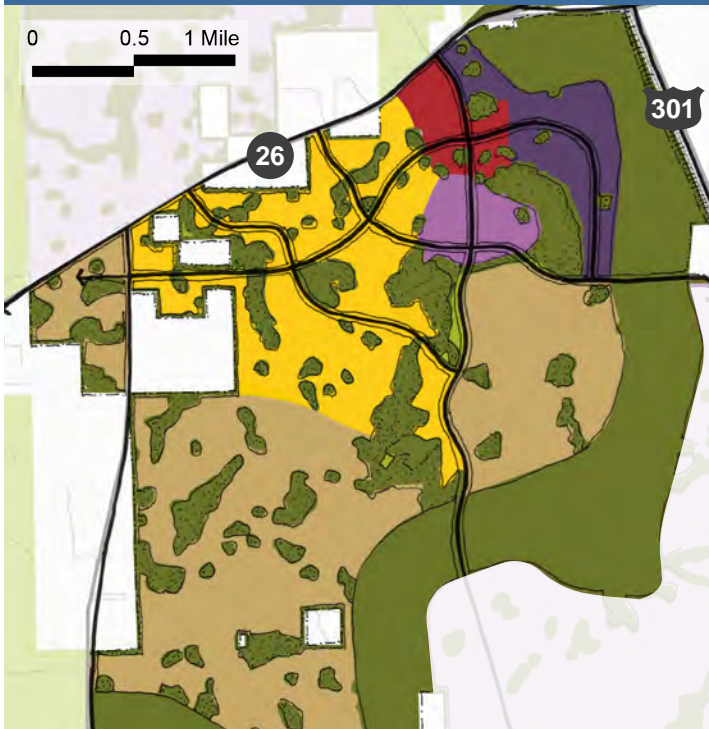
Program	SF/Units	Acres
Commercial		20
- R&D/Office	---	---
- Retail/Service	150,000	20
- Residential	---	---
R&D/Office	---	---
Adv. Manufacturing	600,000	100
Residential	1,100 DUs	500
Totals:	750,000 SF 1,100 Units	620 AC ¹

Average Density Assumptions ²

	Commercial	Other
Non-Residential		
R&D/Office	---	---
Adv. Manufacturing	---	0.15 FAR
Retail/Service	0.25 FAR	---
Residential	---	3 DU/AC

AREA D: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

MAXIMUM SCENARIO (FIGURE D-4)



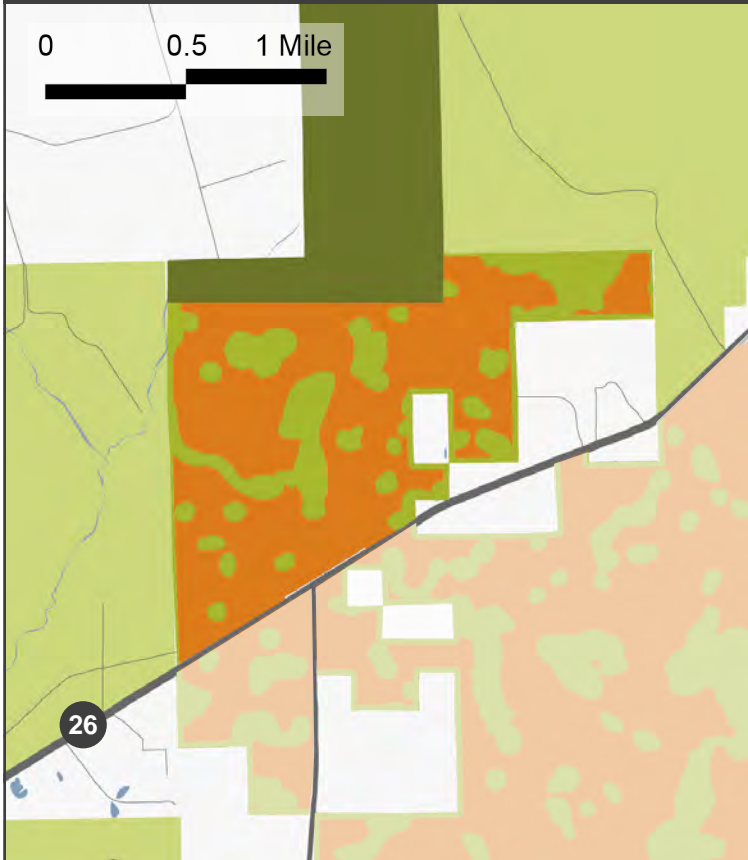
- Additional Open Space/Conservation Easement (24 AC)
- Forestry/Undeveloped Land (1,535 AC)

Program	SF/Units	Acres
Commercial		110
- R&D/Office	250,000	30
- Retail/Service	300,000	50
- Residential	300 DUs	30
R&D/Office	1,250,000	95
Adv. Manufacturing	1,500,000	230
Residential	1,700 DUs	700
Totals:	3,300,000 SF 2,000 Units	1,135 AC ¹

Average Density Assumptions ²

	Commercial	Other
Non-Residential		
R&D/Office	0.30 FAR	0.30 FAR
Adv. Manufacturing	---	0.15 FAR
Retail/Service	0.20 FAR	---
Residential	10 DU/AC	3 DU/AC

FIGURE E-0: AREA E MAXIMUM DEVELOPMENT BY LAND USE



The Residential/ Commercial Villages

- Medium-to-low density residential villages with complementary commercial and civic uses
- Airport and US 301 oriented advanced manufacturing/industrial/distribution cluster
- Similar to: Holiday Neighborhood - Boulder, CO

Total EOMU Area (819 AC)

- Wetlands (133 AC) ■
- Buffers & Edges (114 AC) ■

= Remaining EOMU (572 AC) ■

Assumptions

All land use acreages include the following:

- Infrastructure
- Stormwater facilities
- Additional floodplain (outside of wetlands)
- Civic land uses

Maximum Development by Land Use*

SF/Dwelling Units

Non-Residential

Research & Development/Office	1,000,000
Advanced Manufacturing	1,000,000
Retail/Service	100,000

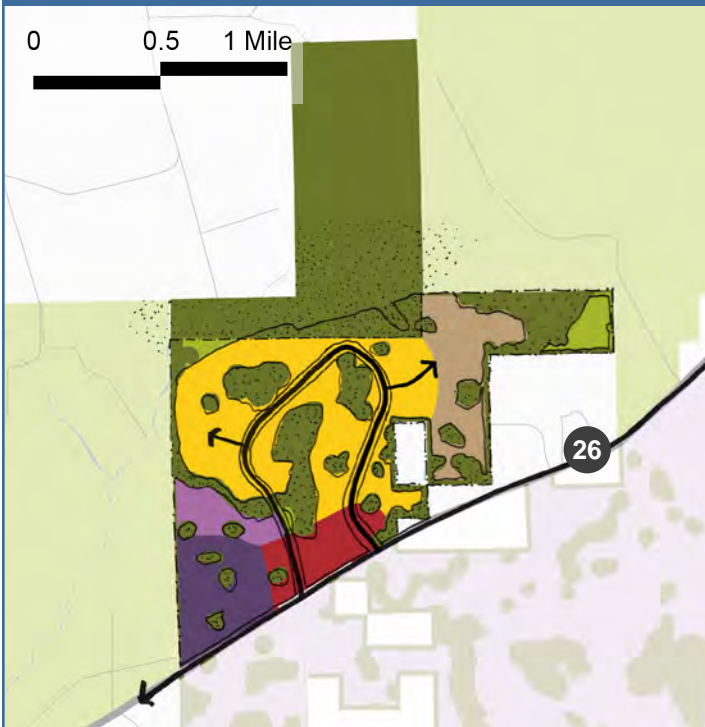
Residential

500

*Maximum development capacities are not cumulative.

AREA E: LAND USE & PROGRAM DISTRIBUTION SCENARIOS

MAXIMUM SCENARIO (FIGURE E-1)



- Additional Open Space/Conservation Easement (35 AC)
- Forestry/Undeveloped Land (88 AC)

Notes:

¹ Total acreage varies depending on the size of the illustrated development areas, open space, wetland and buffer fill, and undeveloped land.

² Average densities as defined in Chapter 3.3, IV.B Land Use Data & Analysis, EASP December 2013.

Program	SF/Units	Acres
Commercial		65
- R&D/Office	300,000	30
- Retail/Service	50,000	15
- Residential	150 DUs	20
R&D/Office	200,000	25
Adv. Manufacturing	500,000	80
Residential	350 DUs	230
Totals:	1,050,000 SF 500 Units	400 AC ¹

Average Density Assumptions ²

	Commercial	Other
Non-Residential		
R&D/Office	---	---
Adv. Manufacturing	---	0.15 FAR
Retail/Service	---	---
Residential	10 DU/AC	3 DU/AC

FIGURE S-1: COMPOSITE SCENARIO 1

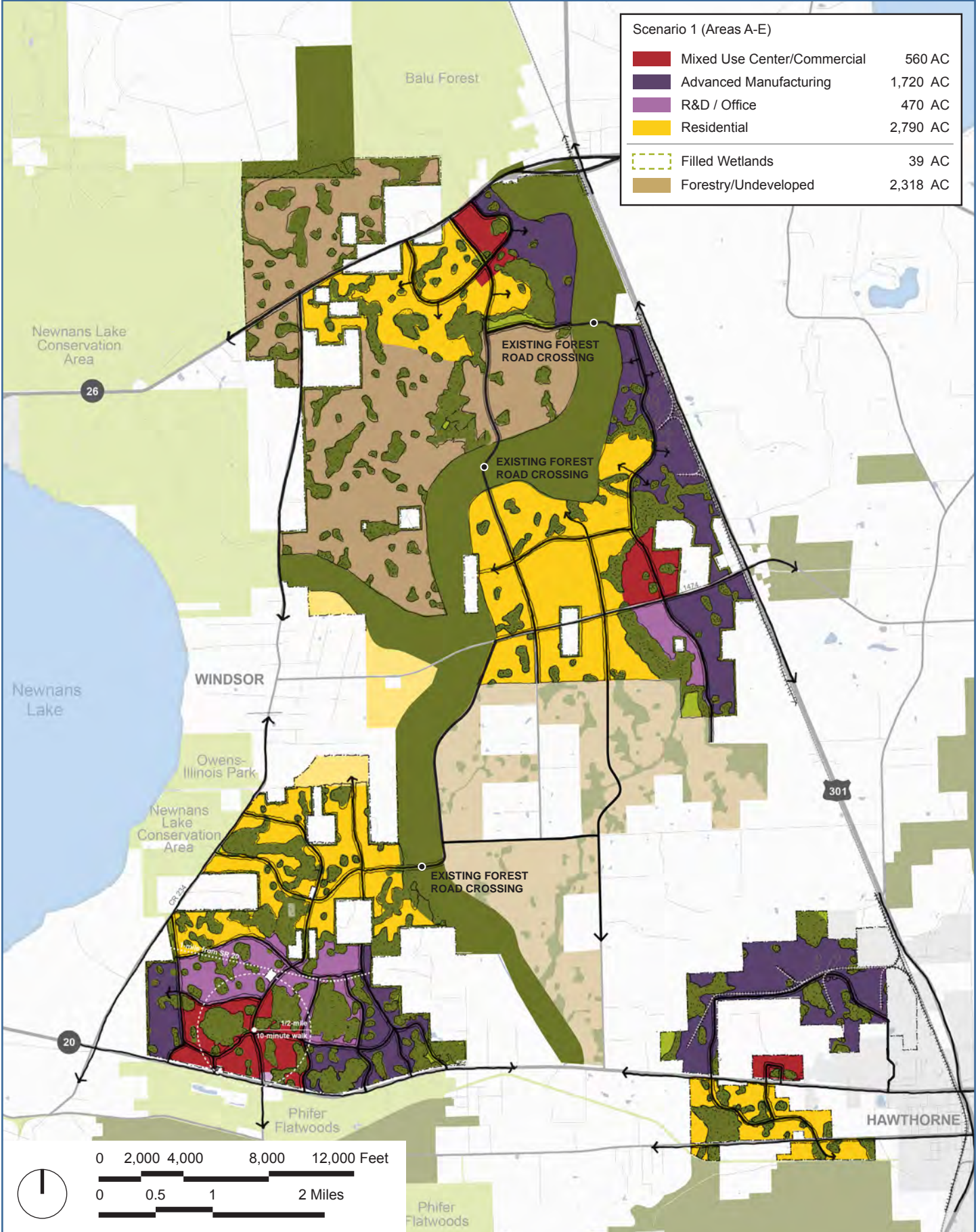


FIGURE S-2: COMPOSITE SCENARIO 2

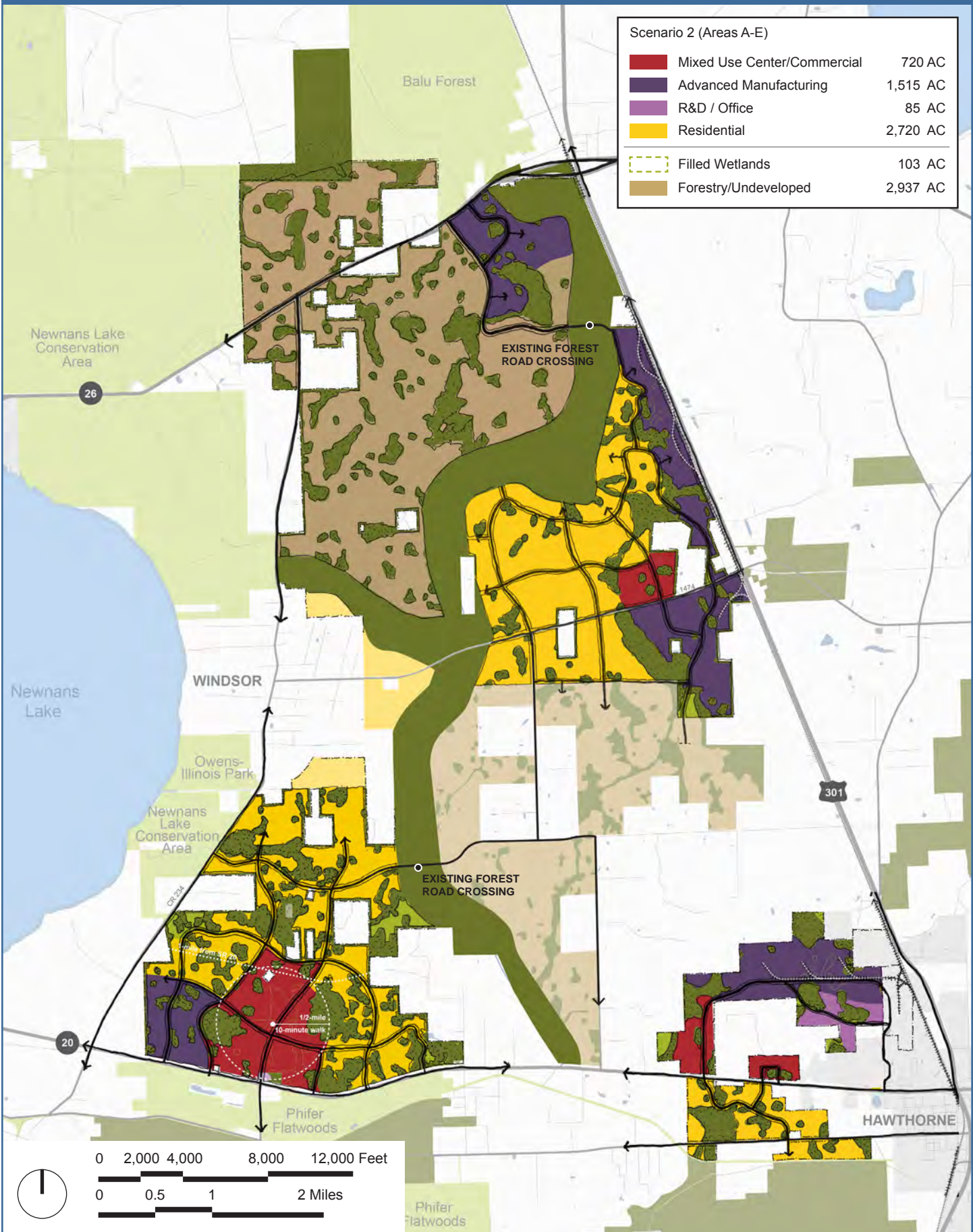
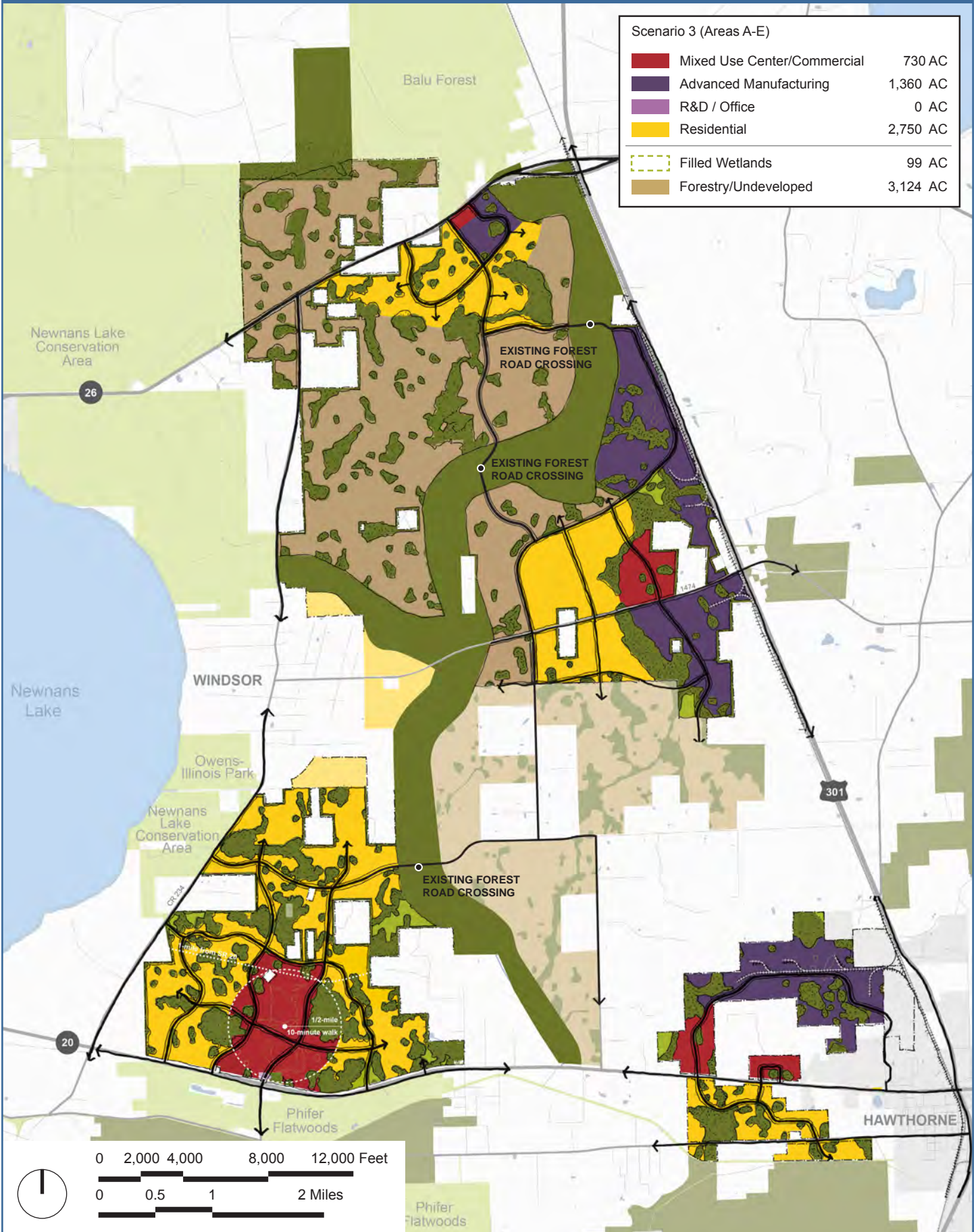


FIGURE S-3: COMPOSITE SCENARIO 3



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Appendix 3:

Case Studies

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Summary Table

AREA A CASE STUDIES	ACRES	PROGRAM	DENSITY
CENTENNIAL PARK, NCSU RALEIGH, NORTH CAROLINA	1,227	3,500,000	0.66 FAR
UNIVERSITY PARK, MIT CAMBRIDGE, MASSACHUSETTS	27	2,300,000 SF 670 Units	2.6 FAR 25 DU/AC
CHISWICK PARK LONDON, UNITED KINGDOM	34	1,800,000	1.25 FAR
THE WOODLANDS TOWN CENTER RESIDENTIAL THE WOODLANDS, TEXAS	1,300	7,000 Units	10-50 DU/AC
UC DAVIS, WEST VILLAGE DAVIS, CALIFORNIA	205	105,000 SF 2,455 Units	0.5-1.0 FAR 15 DU/AC
AREA B CASE STUDIES	ACRES	PROGRAM	DENSITY
ADVANCED MANUFACTURING PARK ROTHERHAM, UNITED KINGDOM	100	1,400,000 SF	0.32 FAR
TRUMPF LASER MANUFACTURING PLANT DITZINGEN, GERMANY	100	1,500,000 SF	1.0 FAR
AREA C CASE STUDIES	ACRES	PROGRAM	DENSITY
LAKE NONA SOUTH/MEDICAL CITY ORLANDO, FLORIDA	2,800	6,770,000 SF 2,700 Units	0.25 FAR 3-4 DU/AC
RESEARCH TRIANGLE PARK DURHAM, NORTH CAROLINA	7,000	22,500,000 SF	0.10-0.15 FAR
BALDWIN PARK BALDWIN PARK, FLORIDA	1,093	9,500,000 SF 3,600 Units	0.25-0.5 FAR 5-20 DU/AC
AREA D CASE STUDIES	ACRES	PROGRAM	DENSITY
JETPLEX INDUSTRIAL PARK HUNTSVILLE, ALABAMA	1,470	1,750,000	0.15
VOLKSWAGEN MANUFACTURING PLANT CHATTANOOGA, TENNESSEE	1,400	2,500,000	---
AREA E CASE STUDIES	ACRES	PROGRAM	DENSITY
HOLIDAY NEIGHBORHOOD BOULDER, COLORADO	27	333 Units	12 DU/AC

Centennial Park - North Carolina State University

Raleigh, NC



Image Credit: North Carolina State University

1,227 acres	3,500,000 square feet	0.66 FAR (est.)
-----------------------	---------------------------------	---------------------------

11,000 staff & students
3-5 stories average building height

Residential: ~1,500 Units (including student housing)
Institutional/Office/R&D: >3,500,000 SF
Open Space: 25%
Expected Completion: 2035

DESCRIPTION

Centennial Park is a mixed use institutional, commercial, and research park built and operated by North Carolina State University in Raleigh, NC. The park hosts several notable tenants, such as GlaxoSmithKline, Grifols, the U.S. Department of Agriculture, the National Weather Service, and the Green Energy Corporation. At full build-out, NCSU expects the total institutional/office/R&D program to reach 9,000,000 SF and serve 30,000 tenants, students, and staff.

In addition to several academic, non-profit, government, and private research facilities, the campus includes:

- James B. Hunt Jr. Library
- Veterinary Medical Center
- Technology incubator
- Residential complex, Student dormitories
- Wetland park
- Public fishing pier and lake
- 18-hole golf course



Image Credit: Google Aerial Photography



Image Credit: North Carolina State University

Source: North Carolina State University

University Park, MIT

Cambridge, MA



Image Credit: Sasaki Associates, Inc.

27 acres	2,300,000 square feet	2.6 FAR (est.)
	670 units	25 DU/acre (est.)

Hotel/Retail: 250,000 SF
 Structured Parking Spaces: 2,800
 5-7 Stories, average building height
 10% Open Space

DESCRIPTION

University Park at MIT is a vibrant 27-acre development located directly adjacent to the MIT Campus. The project successfully integrates scientific research facilities with 670 high density residential units, a hotel, a full-size urban supermarket, a variety of retail amenities, and an expansive central community park.

University Park was born out of a public-private partnership between MIT and the private developer/property manager, Forest City. Today, the project continues to serve as a successful model of urban mixed use development worldwide.

The development includes a 1.3 million square feet of advanced research and laboratory space for rent, as well as a variety of rental housing products, including studio, one, two, and three bedroom apartments, townhouses; and high-rise luxury units.



Image Credit: Forest City



Image Credit: Forest City

Chiswick Park

London, UK



Image Credit: Chiswick Park

34 acres	1,800,000 square feet (office)	1.25 FAR (est.)
--------------------	--	---------------------------

- 12,000 Occupants
- 4-5 Stories (average building height)
- 25% Open Space
- 1,700 Structured parking spaces

DESCRIPTION

The vision for Chiswick Park called for a new way of working within the inner ring of the city's suburbs. The Park is tied closely to commuter transit lines and major highways, and focuses on creating a high-end office experience for tenants.

Over 40 national and international companies rent office space within the park's 11 buildings. Chiswick Park is designed to incorporate a full spectrum of professional and lifestyle amenities. The office buildings are clustered around a central open space promoting informal gathering and collaboration in addition to providing shared access to a variety of amenities. Such amenities include retail, cafe, and restaurant spaces, entertainment and sports programming, professional development classes, guest speakers, clubs, and other social events.

The facilities at Chiswick Park sit within a highly natural landscape and are designed with many green and energy-efficient technologies, including full exterior sun-shading.



Image Credit: Google Aerial Photography



Image Credit: Chiswick Park

The Woodlands Town Center Residential

The Woodlands, TX



Image Credit: Google Street View

1,300 acres	7,000 units	10-50 DU/acre (est.)
-----------------------	-----------------------	--------------------------------

DESCRIPTION

The Woodlands is a large, diverse, and highly successful master planned community north of Houston, TX. Founded nearly 40 years ago—the community continues to rapidly grow its residential and commercial components.

The residential areas of The Woodlands consist of 8 neighborhoods or “villages” as they are called. These villages are comprised of a variety of housing types, patterns, and densities—from the multifamily apartment and condominium buildings in and around the town center, to the large-lot single family products concentrated within the older villages of The Woodlands.

Considered the “downtown” of The Woodlands, Town Center represents 1,300 acres of mixed use shopping, restaurants, entertainment and high density living. Town Center brings an urban feel to the otherwise mostly residential focus of The Woodlands with a more compact form of streets, shops, restaurants, hotels, office buildings, lofts, town homes, and condominiums.



Image Credit: Google Street View



Image Credit: Sasaki Associates, Inc.

UC Davis - West Village

Davis, CA



Image Credit: Google Aerial Photography

205 acres	105,000 square feet	0.5-1.0 FAR (est.)
	2,455 units	15 DU/acre (est.)

Retail/office: 45,000 SF
 Community College: 60,000 SF
 Recreation: 22 acres'

R&D facilities, Agricultural research fields, Academic buildings, Student housing, Student life facilities, Private research facilities

DESCRIPTION

The leading college of its kind in the nation, the College of Agricultural and Environmental Sciences at UC Davis addresses critical issues related to agriculture, food systems, the environment, and human and social sciences through research, undergraduate and graduate education, and internationally recognized outreach programs.

West Village is one of the newest mixed use districts within the UC Davis campus. The district includes a variety of commercial and institutional programs, as well as housing for faculty, staff, and students—all directly adjacent to the school's agricultural research fields. Amenities include significant recreation fields and parks, a fully integrated community bikeway, a village square, and solar-canopied parking.

Source: UC Davis College of Agricultural & Environmental Sciences



Image Credit: UC Davis



Image Credit: UC Davis

Advanced Manufacturing Park

Rotherham, UK



100 acres	1,400,000 square feet	0.32 FAR (est.)
---------------------	---------------------------------	---------------------------

1-2 stories average building height
700 employees

Office/Administrative: 400,000 SF
Manufacturing: 1,000,000 SF

DESCRIPTION

The Advanced Manufacturing Park (AMP) is a 100-acre site on the Rotherham-Sheffield border in South Yorkshire. It is a joint venture between public and private sector organizations. The AMP's goal is to capitalise on the advanced engineering and manufacturing expertise within the region, and to further strengthen that capability in order for the region's companies to remain globally competitive in the 21st century.

The compact form and relatively higher density of the AMP distinguishes the park from the more traditionally low-density model that has developed across the world. At its hub, the AMP has some of the world's leading materials and manufacturing technologies organizations: the University of Sheffield Advanced Manufacturing Research Centre with Boeing (AMRC), Rolls-Royce Factory of the Future, Castings Technology International (CTi), TWI Technology Centre (Yorkshire) and the new Nuclear AMRC.



Source: AMP website

Trumpf Laser Manufacturing Plant

Ditzingen, Germany



100 acres	1,500,000 square feet (office/R&D)	1.0 FAR (est.)
---------------------	--	--------------------------

2,500 Employees

DESCRIPTION

The Trumpf Company's Ditzingen Laser factory is an advanced manufacturing facility that has been closely integrated within an existing residential, commercial, and agricultural landscape in southern Germany.

The core tenets of the master plan called for an integration of facility operations and operators—closing the divide between white-collar management and more traditionally blue-collar machine operators and technicians. The campus is arranged to facilitate close interaction between R&D and production operations. The campus is revered for its significant and award-winning industrial architecture.

The entire campus is connected by a system of underground tunnel infrastructure, which enables goods, employees, and customers to move throughout and in adverse weather. New or renovated buildings simply plug into this expanding network marked by a primary east-west tunnel axis which connects both the west and east campus under the street.



Source: Barkow Leibinger

Lake Nona South & Medical City

Orlando, FL



Image Credit: orlandoicc.org

2,800 acres	6,770,000 square feet	0.25 FAR (est.)
	2,700 units	3-4 DU/acre (est.)

Office: 5,820,000 SF
Retail: 950,000 SF
Open Space: 40%

DESCRIPTION

Lake Nona South is a 2,800-acre mixed use master planned community within the city limits of Orlando that is home to education and recreational facilities, a medical city, diverse workspaces, retail centers, entertainment choices and a multitude of residential options.

The major commercial/institutional anchor of Lake Nona is Medical City. Medical City currently encompasses 650 acres of the total Lake Nona development area, and is comprised of 5 major regional hospitals:

- University of Central Florida Health Sciences Campus
- Sanford-Burnham Medical Research Institute
- VA Medical Center
- Nemours Children's Hospital
- University of Florida Academic & Research Center

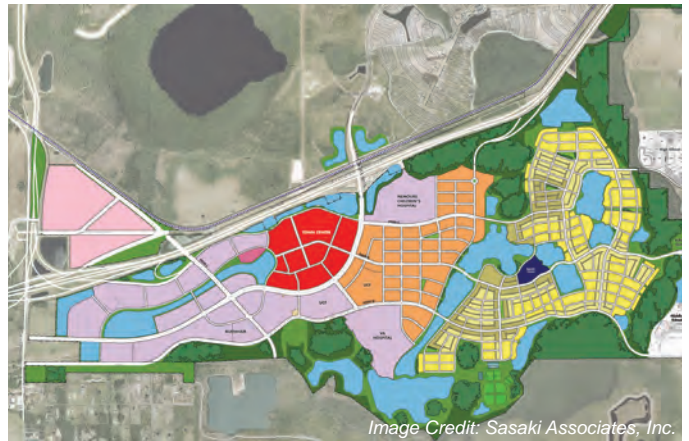


Image Credit: Sasaki Associates, Inc.



Image Credit: Valencia Community College

Source: Lake Nona website

Research Triangle Park

Durham, NC



Image Credit: Google Aerial Photography

7,000 acres	22,500,000 square feet	0.10-0.15 FAR (est.)
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170 tenants (52,000 employees)
2-3 stories (average height)

High-tech R&D, agricultural biotechnology, life sciences, information technology, clean/green technologies, foundations, institutions, scientific associations

DESCRIPTION

Opened in 1959, Research Triangle Park (RTP) was the first major university-driven research park in the United States. The park's moniker is a result of its location at the intersection of three major 'brain-hub' cities in central North Carolina—Raleigh, Durham, and Chapel Hill. Today, RTP serves as one of the most successful research parks in the world, and over the past 50+ years, it has grown to stretch across 7,000 acres and host over 150 corporations and organizations.

Today, RTP exists as a lower density collection of large single-use office facilities, each standing on its own surrounded by significant open space and surface parking. In an effort to modernize the facilities, RTP issued a new master plan in 2012 that calls for a densification of its existing layout and character. The new plan enables RTP to triple the number of employees currently working in the Park, quadruple the amount of office/R&D square footage, and introduce a new mix of uses including high-density residential product.

Source: RTP website, 2012 RTP Master Plan



Image Credit: Research Triangle Park



Image Credit: inhabitat.com

Baldwin Park

Orlando, FL



Image Credit: Google Street View

1,093 acres	9,500,000 square feet	0.25-0.5 FAR (est.)
	3,600 units	5-20 DU/acre (est.)

8,000 residents
125 businesses
Open Space: 400 acres (35%)

DESCRIPTION

One of the largest infill redevelopment projects in the United States, Baldwin Park is located on the site of the former Orlando Naval Training Center (NTC). At full completion, the 1,093-acre Baldwin Park will contain approximately 3,600 homes and 950,000 square feet of retail and office space.

The retail and office components of Baldwin Park are largely concentrated within the mixed-use center to the southwest of Lake Baldwin. The core of the development features several blocks of medium-density commercial space, including high-end retail shops, restaurants, and condominium units. Baldwin Park currently features more than 400 acres of parks, lakes, and open space, and has become a gathering place for the Orlando community.

The development is closely adjacent to several regional draws, including Winter Park to the north, and the Orlando International Airport and theme parks to the south.

Sources: Baldwin Park website, 2008 ULI case study



Image Credit: Google Street View



Image Credit: tndtownpaper.com

Jetplex Industrial Park

Huntsville, NC



Image Credit: Microsoft Aerial Photography

1,470 acres	1,750,000 square feet (manufacturing/warehousing)	0.15 FAR (est.)
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Jetplex Industrial Park is located adjacent to the Huntsville International Airport and offers Foreign Trade Zone #83, the International Intermodal Center, U.S. Customs Port of Entry and interstate access via I-565. The Huntsville-Madison County Airport Authority manages the Park, which contains 1,470 acres and 54 corporate tenants. Jetplex Park is home to several electronics companies such as Boeing and Raytheon, electronics manufacturer LG Electronics and Siemens VDO Automotive.



Image Credit: Sasaki Associates, Inc.

Source: Huntsville, AL website

Volkswagen Manufacturing Plant

Chattanooga, TN



1,400
acres

2,500,000
square feet (manufacturing)

The new VW plant location was selected as a result of Chattanooga's position in the region as a major hub of advanced manufacturing and commerce, the close adjacency of the land to major infrastructure such as rail and state highways. The facility has brought 2,000 new jobs to Chattanooga directly, and an additional 9,500 jobs are expected to be created by suppliers.

The state-of-the-art Volkswagen's plant includes environmental/ecological features such as on-site protected wetlands, creek restoration, and the protection/recreation of native wildlife habitats. These features, along with the several designations of easements, offer extensive conservation lands to the Chattanooga community.

The facility includes various amenities for employee wellness, including an on-site fitness center that includes rehabilitation, a nearby child-care facility, and a VW Academy for apprenticeships and vocational training.



Source: Volkswagen, Autoblog

Holiday Neighborhood

Boulder, CO



Image Credit: Sasaki Associates, Inc.

<p>27 acres</p>	<p>333 units</p>	<p>12 DU/acre (est.)</p>
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Retail: 5,000 SF

DESCRIPTION

The Holiday neighborhood project is a redevelopment effort that has turned a greyfield site in Boulder, CO into a low-rise, mixed use/residential community that is transit-supportive, energy efficient, and affordable.

Holiday is located in the northern section of Boulder and surrounded by conventional post-war suburban development. The planning goals for this new community included the creation of a more responsible development pattern that provides easy access to jobs, urban agriculture, shopping and entertainment while remaining affordable for families in the region.

The community takes advantage of existing major roadways, as well as Boulder's extensive bike and bus infrastructure. The community provides a wide variety of housing types and styles—such as single family, townhouse, artist live/work, and cohousing units, as well as a mix of land uses and services. The community puts an emphasis on shared community amenities including community agriculture.



Image Credit: Sasaki Associates, Inc.



Image Credit: Sasaki Associates, Inc.

Source: www.terrain.org, ULI case study

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