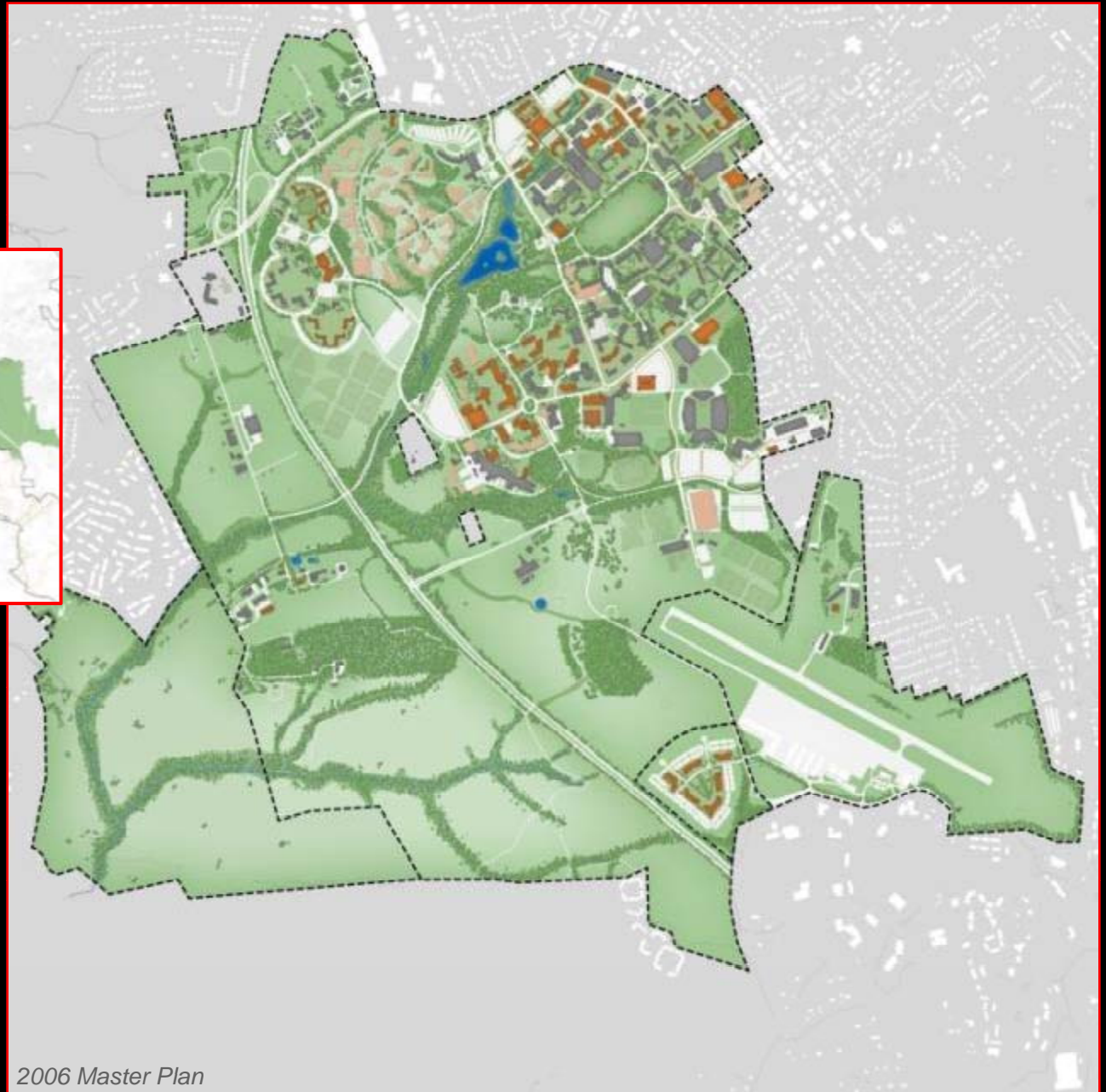




Virginia Tech Owned Lands

LAND USE

The Virginia Tech Master
Plan Amendment 2009



2006 Master Plan



LAND USE

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Acknowledgments

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Acknowledgments

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Corporate Research Center

Airport Authority

Foundation

Executive Staff

Farm Bureau

College of Agriculture and Life Sciences

Student Affairs

College of Natural Resources

Athletics

Real Estate Management

Environmental Health & Safety

Planning Team

Hanbury Evans Wright Vlattas

Curry-Wille Associates

Draper Aden



Executive Summary

Developments Since Master Plan Publication

During the development of the 2006 Campus Master Plan certain considerations regarding the ultimate disposition of lands supporting agricultural uses were deferred for later consideration. The lands on the east and west sides of the 460 bypass having been considered in the 2006 Master Plan are now being supplemented by lands owned by the University in Montgomery County. The following development plans play an important role in the university's decision to update land use plans at this time:

- A. The planned expansion of the University airport impacting the dairy facility and recreation fields in the Chicken Hill area;
- B. The planned expansion of the Virginia Tech Corporate Research Center (CRC) into land supporting the dairy operation; and
- C. The decisions to locate the 460 bypass interchange south of Southgate Drive and the future cross-county connector.



Executive Summary

Program Components / Drivers

In order to articulate a long range planning scenario which addresses various development pressures on existing agricultural lands (such as the proposed expansion of the airport and the CRC and the proposed interchange on the 460 bypass), the university decided to proceed with this amendment to the Master Plan that includes a comprehensive strategy to address the ultimate disposition of agriculture lands, and the implications to other programs such as student life and campus recreation facilities. The resulting multiphase implementation strategy addresses:

- A. Crop and silage, hay and pasture operations
- B. Dairy operations and associated manure nutrient balance
- C. All animal and horticultural teaching, service and research including hands-on contact
- D. The growth and diversity of student beds and accommodations
- E. A new recreation facility and recreation fields for both intramurals and club sports
- F. Campus roadway networks



Executive Summary

Recommendations

The Amendment recognizes the University's commitment to excellence in teaching, service and research in the agricultural and life sciences as well as to student life and recreation. It outlines a phased implementation strategy that

- A. Relocates existing agricultural uses such as the equine, dairy facility, heifer and beef production, and silage crop lands from land east of the 460 bypass to land holdings west of 460 and to University landholdings in Montgomery County.
- B. Reflects the proposed expansion of the airport
- C. Reflects the proposed expansion of the CRC
- D. Reflects new ideas about recreation and student housing in the Oak Lane Area and the expansion of recreation and facilities at Chicken Hill.
- E. Reflects a new transportation initiatives that include:
 - A interchange located along Route 460 eliminating the current Southgate Drive
 - A longer range objective for a cross-county connector to western Montgomery County



Process

In the summer of 2008, the University commissioned Hanbury Evans Wright Vlattas + Company to assist in the development of the Campus Master Plan Amendment focusing on land use. The process was governed by a Steering Committee chaired by then CALS Dean Sharon Quisenberry.

Beginning in September Hanbury Evans is association with Curry-Wille Associate and Draper Aden Associates (Planning Team) conducted a series of workshops with program departmental leadership as well as a broad range of other stake holder representatives to understand what needs and expectations exist as well as the aspirations held by each. Interviews were also conducted with representatives from the Airport Authority, Corporate Research Center and the Virginia Tech Foundation to understand the status of their respective initiatives. Regular updates were provided to the university's executive staff culminating with briefings to the Buildings and Grounds Committee of the Board of Visitors in March of 2009 and to the Farm Bureau in Richmond in April 2009.



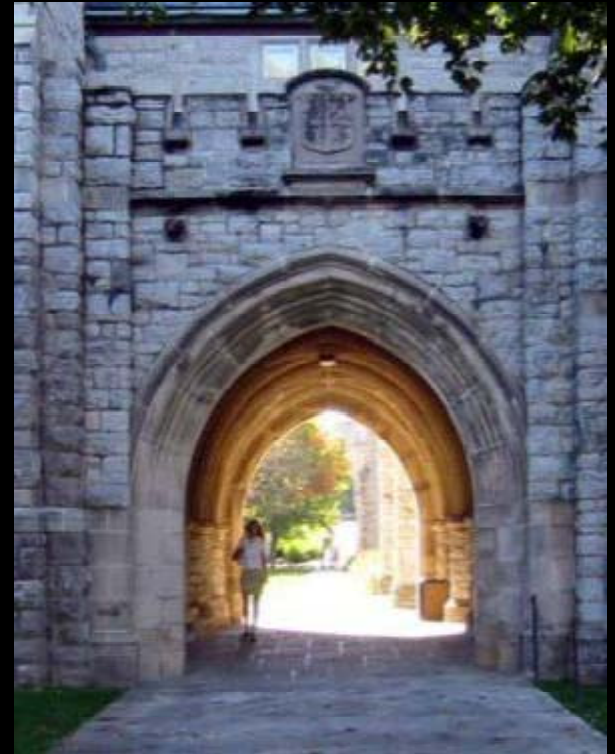
Planning Goals

The Master Plan Amendment establishes a set of goals that were developed early in the process. They were discussed among the Steering Committee and shared with the various constituent groups to insure alignment with the goals and planning objectives as stated in the 2006 Master Plan.

Throughout the process each emerging idea was evaluated as to its consistency with these goals and those of the 2006 Master Plan insuring that the framework of change as outline in the implementation plan was in full compliance with the University's strategic mission.

Land Use Goals

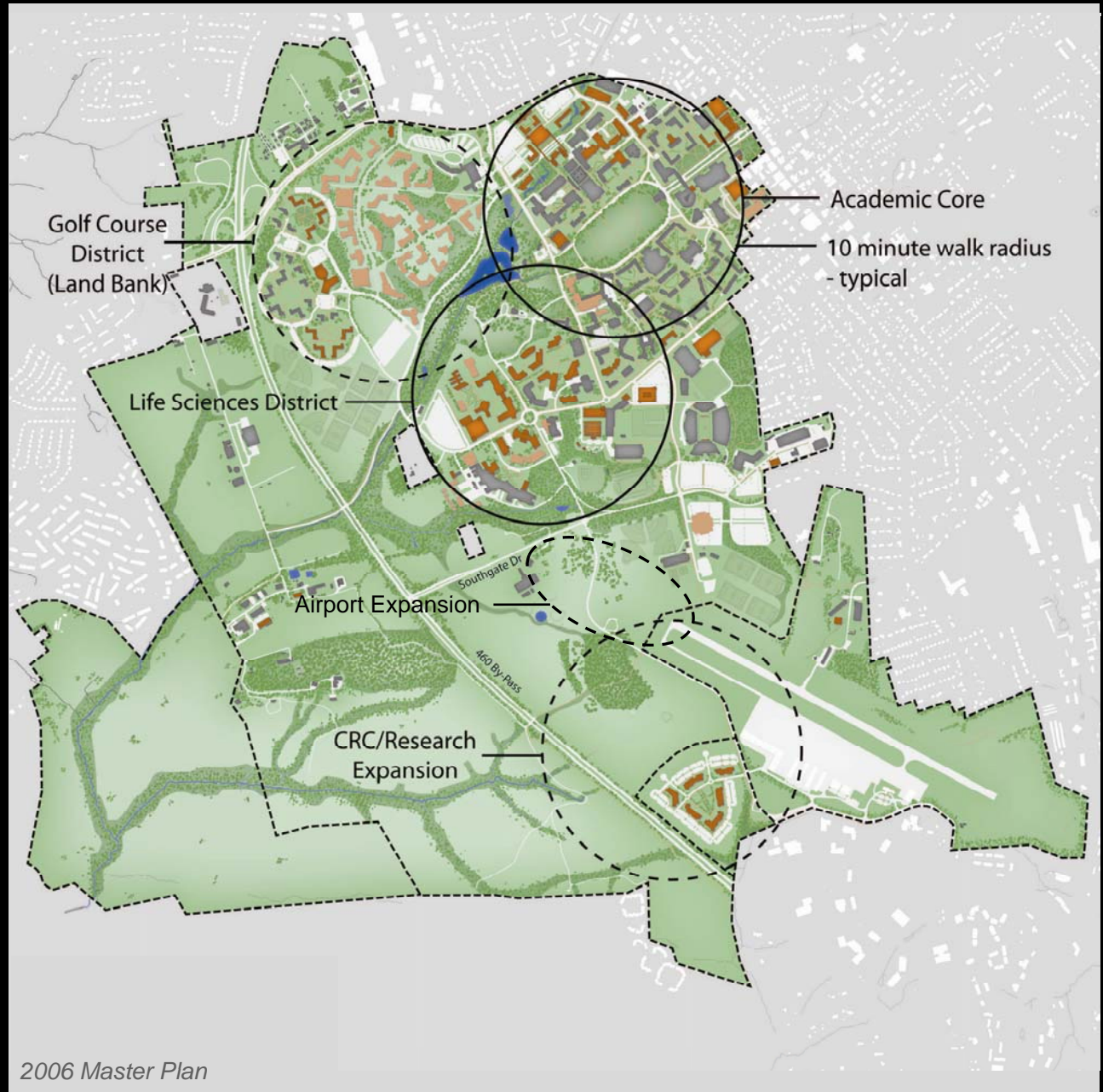
1. Integrate new University and Regional Planning initiatives with the 2006 Master Plan and amend the plan.
2. Determine 'highest and best use' of land resources on the contiguous campus.
3. Identify and determine 'highest and best use' of land resources available for agricultural operations within Montgomery County.
4. Continue to support and expand on the Universities Strategic Plan and initiatives.
5. Develop strategies to enhance student life on an increasingly complex, dense, and layered campus.
6. Propose an implementation / phasing strategy.



Existing Conditions

The 2006-2016 Master Plan

The 2006 Master Plan reflects patterns of development which achieve ideal densities in the core district. It implements western expansion of the campus by proposing a Life Science District in the ten-year horizon, and preserves the golf course as a future district and land bank. The Master Plan also codifies and designates the environmental and cultural greenway as a significant reservation of lands, waterways, tree stands, and cultural landmarks for future generations and “best management practices” of sustainable land use. Finally, this plan allows for the growth of the airport, CRC, the core campus, and fulfills objectives of the Master Plan for the Town of Blacksburg and, most importantly, aligns with and helps to implement Virginia Tech’s strategic vision.

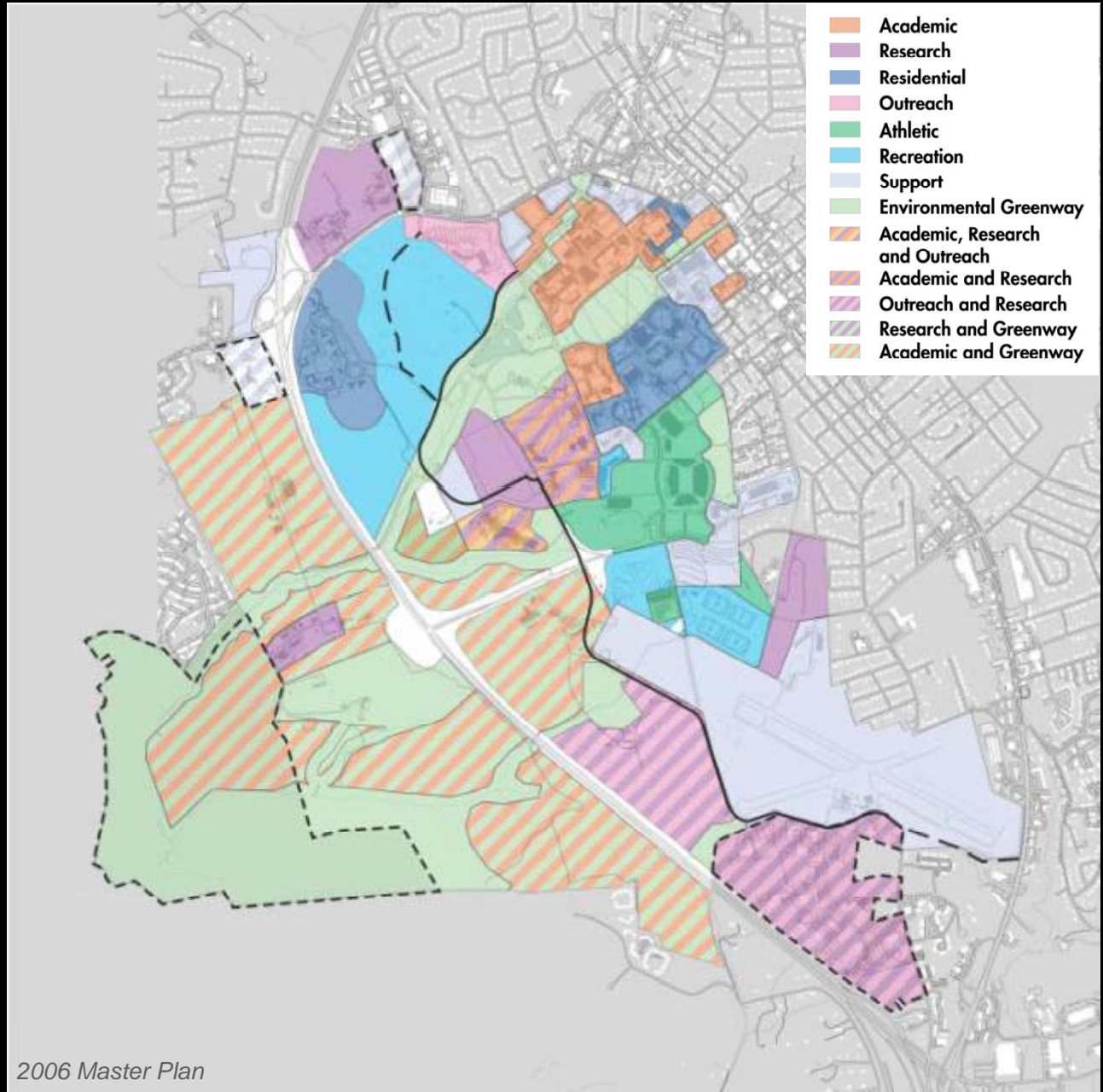


2006 Master Plan

Existing Conditions

The 2006-2016 Master Plan Land Use Short Term

The Primary Program accommodation will occur in two areas; the Life Sciences District, and the northern expansion of the Core Academic Campus. Short-term development will have minimal impact on existing agricultural lands east of the bypass. Any land development should minimize environmental impact and should support the storm water strategies outlined in this document. The Golf Course will serve as a land bank for the short-term development strategies.



2006 Master Plan

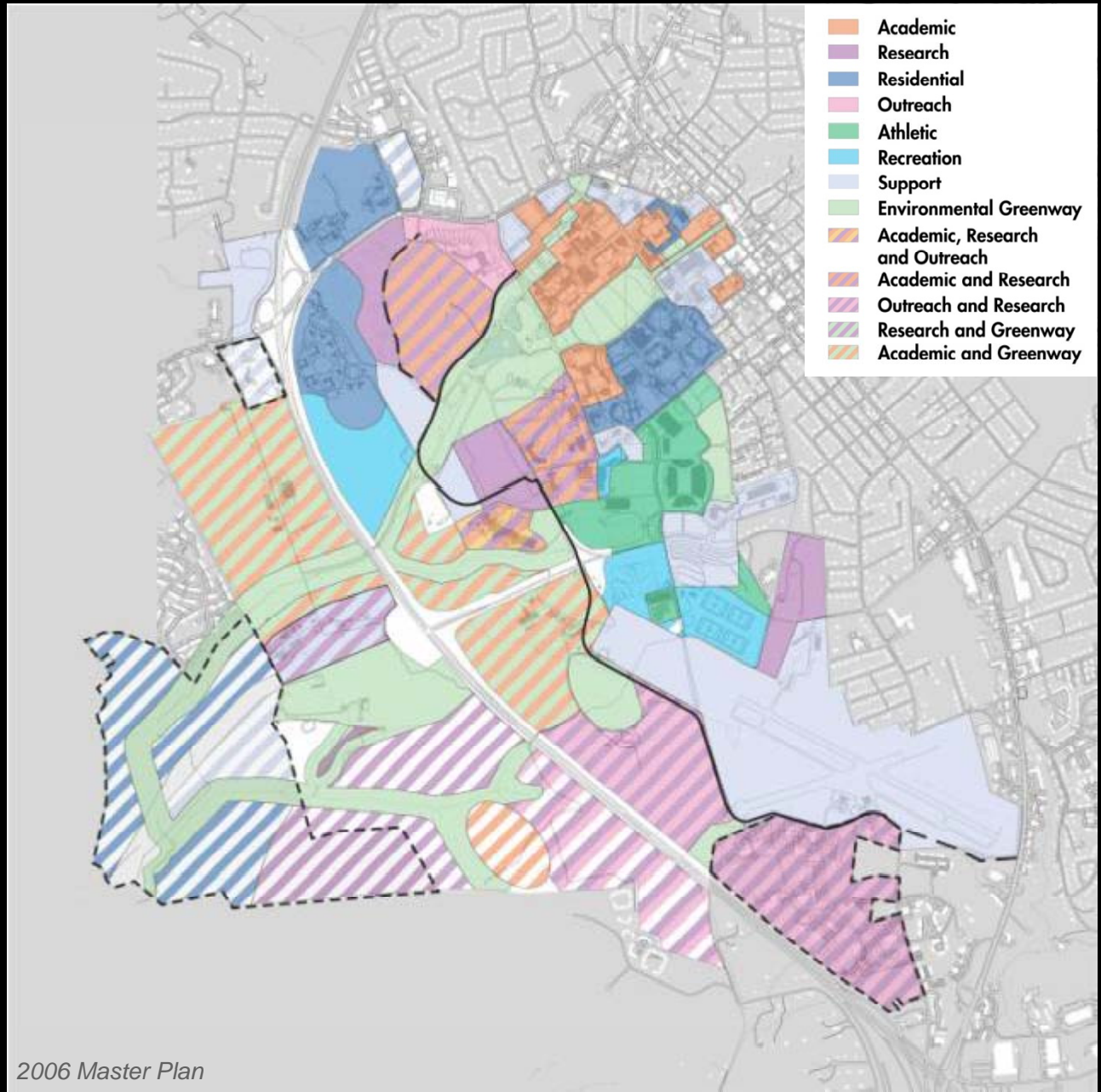
Existing Conditions

The 2006-2016 Master Plan Land Use Long Term

Long term land use strategies will expand campus development toward the 460 bypass. Agricultural land use east of 460 will, over time, relocate west of the bypass and to other areas. The Golf Course land will be developed as the third walkable district of the campus.

The Heth Property will be developed to support the University community in the longer term. In addition, the University will explore redevelopment opportunities for key parcels which may include mixed use and public/private partnership opportunities. For example, the University land west of Glade Road and north of Prices Fork Road may present a unique opportunity for redevelopment in the future.

Land development should minimize environmental impact and should support the storm water strategies outlined in this document.



2006 Master Plan

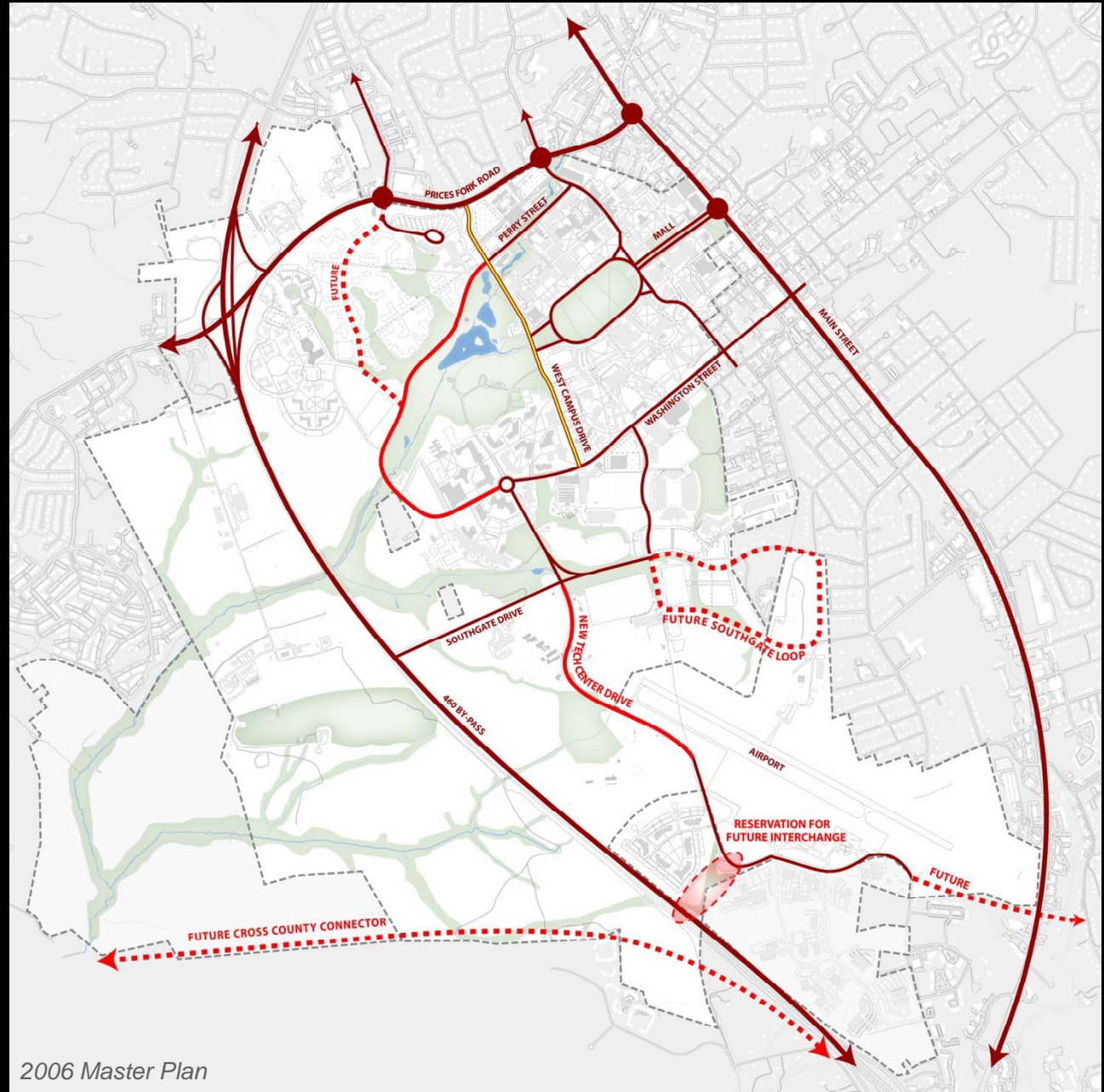
Existing Conditions

The 2006-2016 Master Plan Campus Access

Proposed roadway systems will provide for future growth as well as mitigate existing traffic issues. Primary 10-year strategies involve the relocation of Duck Pond Drive from Washington Street to Perry Street to create a system of streets providing a western perimeter route for the campus, while enhancing the pedestrian connections from the Life Sciences District to the Academic Core District. This proposed system of streets will reduce loads on West Campus Drive.

Additionally, traffic calming strategies should be implemented to further reduce loads on West Campus Drive.

The second primary short-term strategy involves the realignment of Tech Center Drive to Duck Pond Drive in order to allow for the airport runway expansion.



2006 Master Plan

Existing Conditions

Land Resources (East of 460)

Current Land Uses

- A. Chicken Hill – parking, recreation and teaching/ research
- B. Turf Grass Research – turf grass research plots
- C. University Airport
- D. Oak Lane – Greek Housing and equine breeding area and grazing
- E. Smithfield Plantation – privately owned
- F. School of Veterinary Medicine
- G. Dairy facility – milk production and teaching
- H. Heifer area – pasture, crop / silage production (dairy effluent distribution area)
- I. Corporate Research Park (CRC)
- J. Glade Road Research and Center for Molecular Medicine and Infectious Disease (CMMID)
- K. Golf Course District

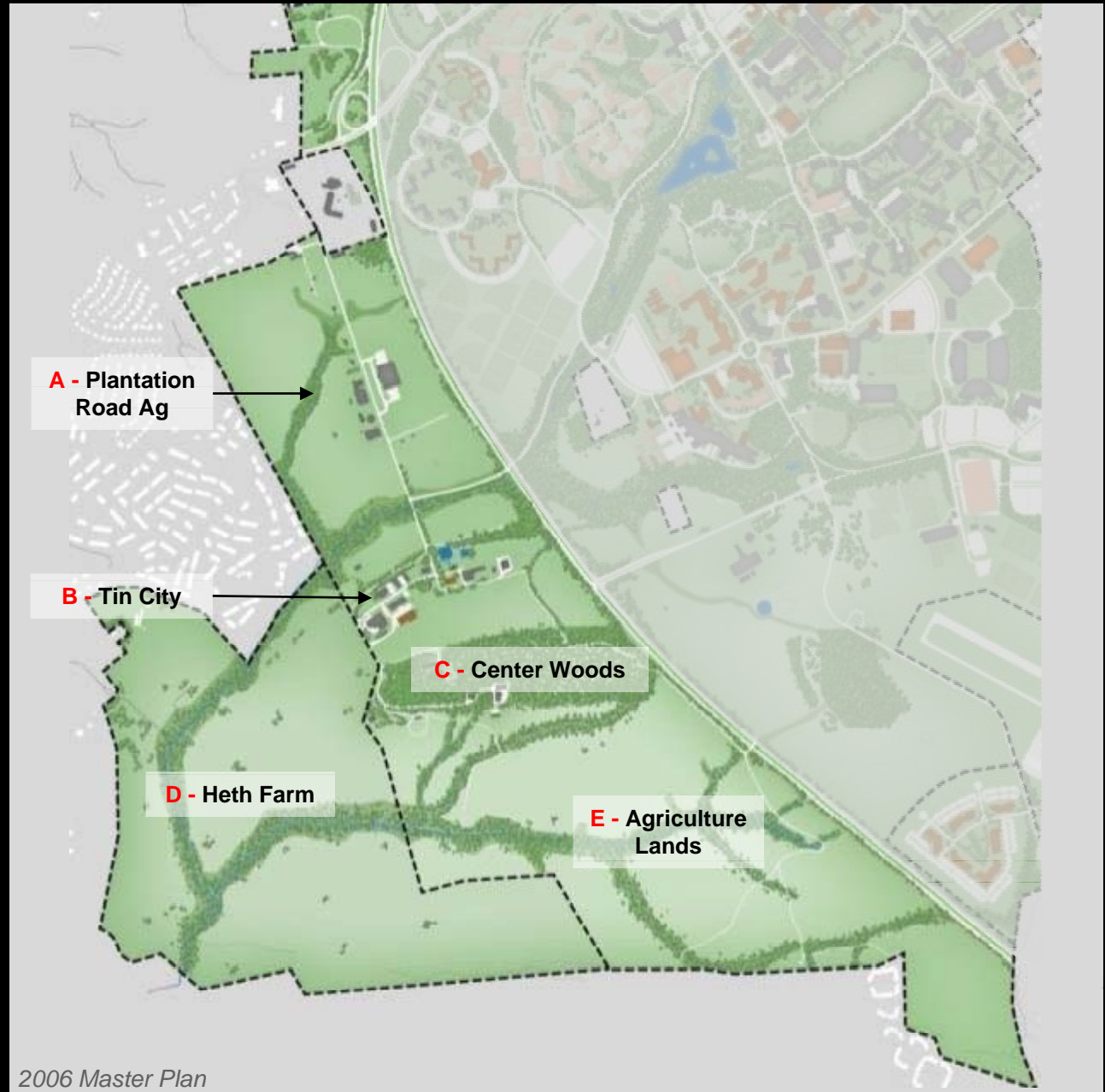


Existing Conditions

Land Resources (West of 460)

Current Land Uses

- A. Plantation Road Agriculture Uses—equine arena, beef and sheep paddocks, grazing area and employee houses
- B. Plantation Road Research Area (Tin City) – departmental research, swine research area and crop/silage production
- C. Center Woods Research – aquaculture, forestry and wildlife Research; managed by the College of Natural Resources
- D. Heth Farm – crop production area owned by the Virginia Tech Foundation
- E. Agriculture production – crop/silage production (dairy effluent distribution area)

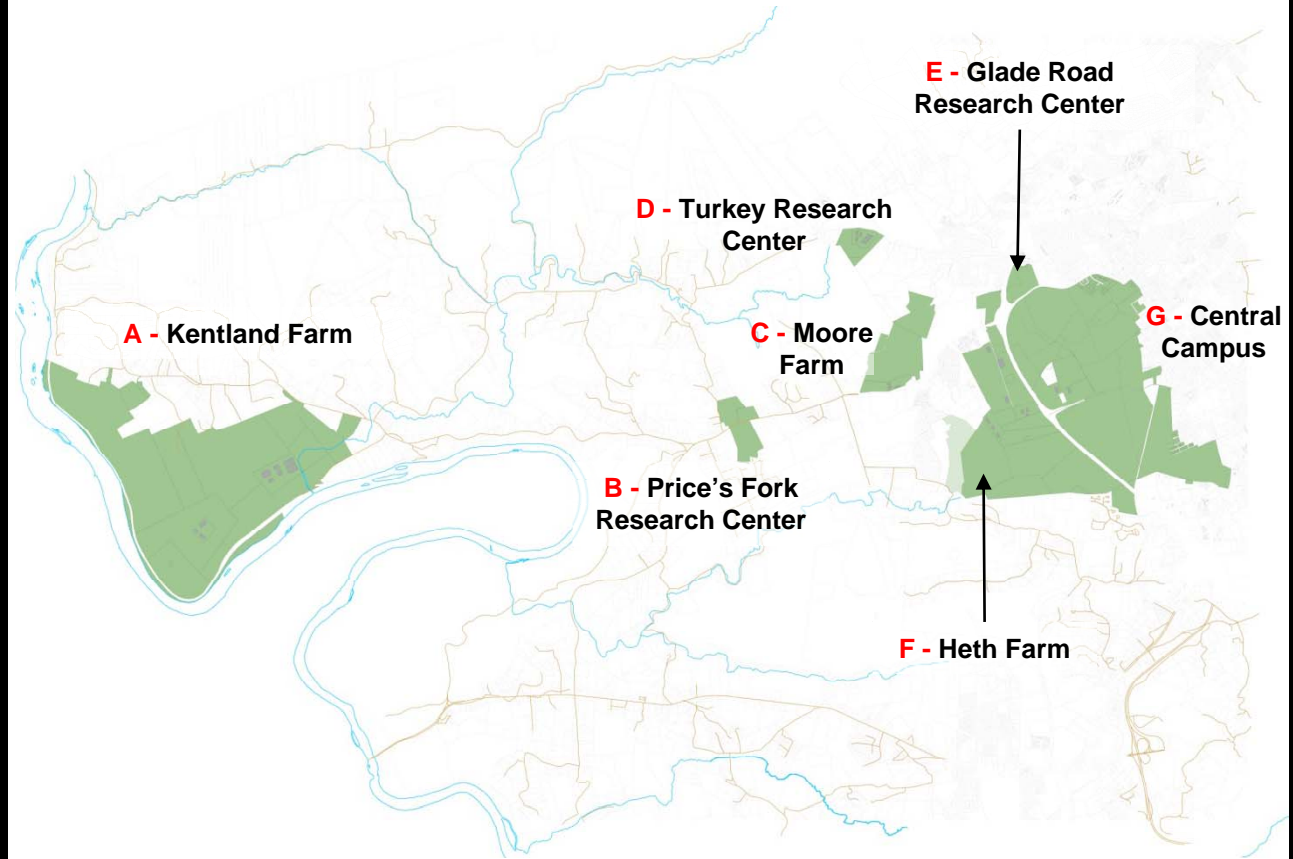


Existing Conditions

Land Resources (County Wide)

Current Land Uses

- A. Kentland Farm - Plant Science Research Plots, Crop/Silage Production, Beef Production and Pasture
- B. Prices Fork Research Center – Crop/Silage Production
- C. Moore Farm – Crop/Silage Production and Grazing land for Cattle and Sheep
- D. Turkey Research Farm –Poultry Research, Grazing Land for Horses and Employee Housing
- E. Glade Road Research Area – Veterinary Medicine Research Laboratories and Turf Research
- F. Heth Farm
- G. Central Campus
- H. Fishburn Property –Forestry Lab with parcels owned by the Virginia Tech Foundation (Not shown/not studied)



Drivers

Airport Runway Expansion CRC Expansion

The 2006 Campus Master Plan generally identified land use impacts related to the Corporate Research Center (CRC) expansion and the airport expansion.

Based on an understanding of the most recent planning for both the Airport and CRC the following issues have been identified.



CRC

Crop production and related effluent disposal west of the airport and northeast of 460 will be lost to the Phase II expansion of the CRC within the next year or two. The CRC would like to implement the first two or three buildings along the alignment of the relocated Tech Center drive until such time as funding is secured for phase II infrastructure development. One of these early buildings will be for CALS use. The Heifer operation will need to be moved within the next year.

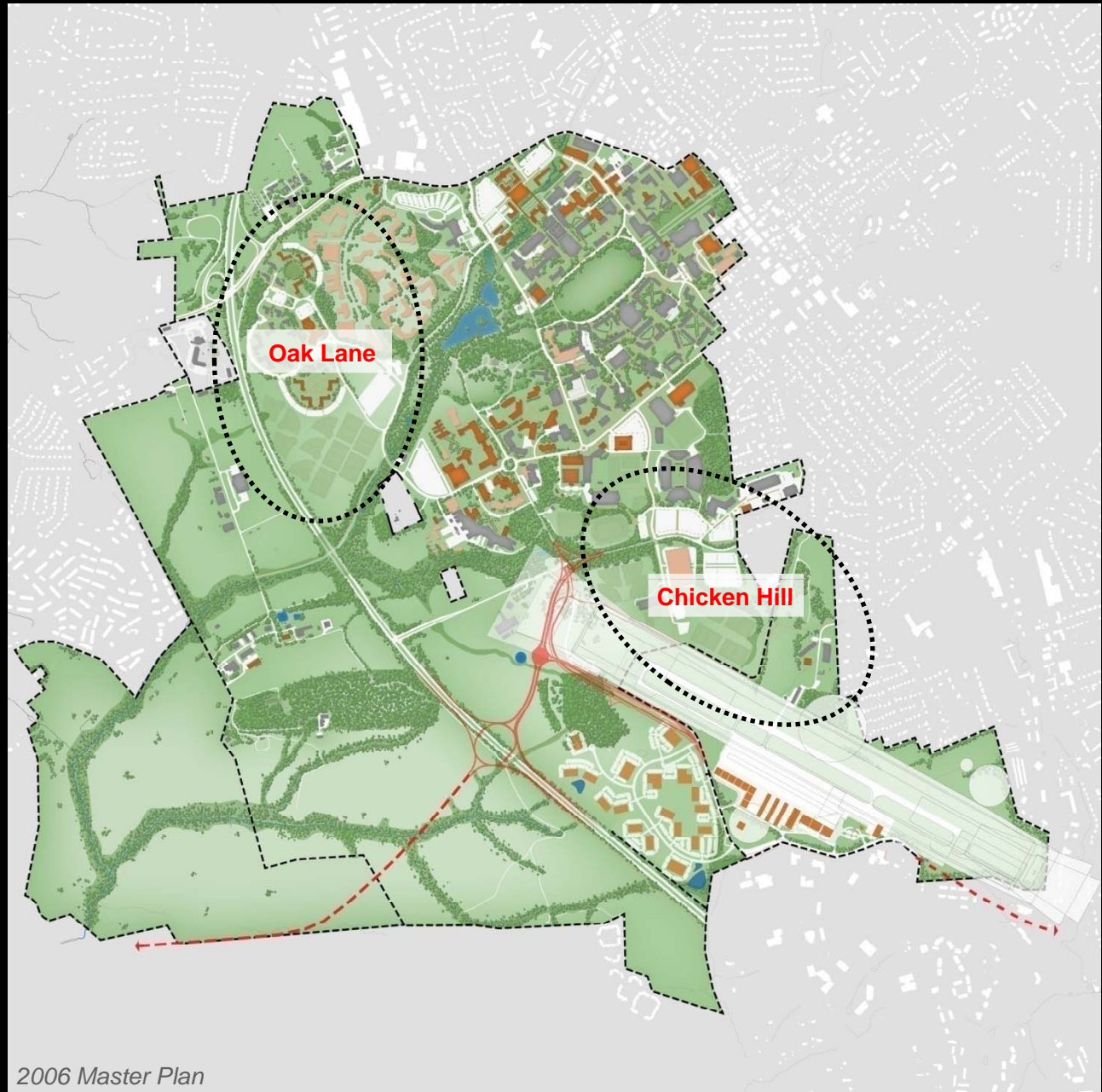
VT / Montgomery Co Executive Airport:

The FAA has approved the Airports expansion. The initial phase will eliminate most of the support building infrastructure for the Dairy Barn Operation. The final development of the airport eliminates all dairy facilities but the initial phase requires relocation due to necessary support structures. The current phase will be under construction in three years (2012). Tech Center drive will need to be realigned around the 'Controllable Runway Protection Zone' as illustrated but can run through the Non Controllable Protection Zone. Two recreation fields, two tennis courts and two baseball fields will need to be relocated out of the 'Protection Zone'. A new roadway concept has been develop with respect to the above that ultimately replaces Southgate Drive.

Student Life Program

The primary aspects of the student life program are focused in the Oak Lane and Chicken Hill areas. The components considered include:

1. Housing (10-year time horizon)
 - 8-12 additional Special Purpose Houses
 - 250-bed (suite-style) Residence Hall
2. Housing (20-year time horizon)
 - 8 additional Special Purpose Houses
 - 250-bed (suite-style) Residence Hall or apartment-style housing
3. Recreation
 - 97,000 SF Recreation/Sports Facility w/dining and commons facilities
 - 10-12 Intramural Fields
 - 4 Softball Fields
 - 12 Tennis Courts
 - 2 Club Sports Fields
4. Athletics
 - Cross-Country Course
5. Marching Virginians
 - 30,000 SF indoor practice facility
 - Football Field-sized outdoor practice field



2006 Master Plan

Land Use Programs

Considerations for Agricultural Land Use

The land use decisions considered were based on the following:

- A. Decisions about animal locations are based on needs and land availability
 - Transporting students/animals
 - Centralizing individual agricultural activities
 - Applying manure produced on site to nearby crop land
 - Maximizing pasture use
- B. Pasture and Hay to simplify animal management
- C. Manure management
 - Balancing crop nutrient needs with manure production
 - Harvesting corn silage from land with manure applied
 - Injecting liquid manure on each site
 - Limiting solid manure transport on roadways

1. The College of Agriculture and Life Sciences land use program includes:

- A. Dairy
 - Production, Teaching, Research
- B. Heifer and Calf Operations
 - Production
- C. Beef
 - Production, Teaching, Research
- D. Poultry
 - Production, Teaching, Research
- E. Equine
 - Sport
 - Breeding Research
- F. Sheep
 - Research
- G. Swine
 - Research
- H. Crop
 - Agriforestry
 - Silage
 - Hay
 - Nutrient Management
- I. Entomology
 - BSL 1
 - Field Nurseries
 - Long Term Plots

2. The College of Veterinary Medicine includes:

- A. Bovine Palpation
 - Teaching
- B. Equine
 - Teaching, Research

3. The College of Natural Resources includes:

- A. Forest Resources and Environmental Conservation
- B. Turf
 - Plant Pathology and Weed Science
- C. Horticulture





LAND USE

Program Accommodations

Program Accommodations

Land Use Strategies County Wide Lands

A. Kentland Farm

- 230 Lactating Cows
- 225 Dairy Heifers
- 40 Dairy Dry Cows
- 35 Dairy Calves
- 120 Beef Cow-Calf

B. Turkey Research Center

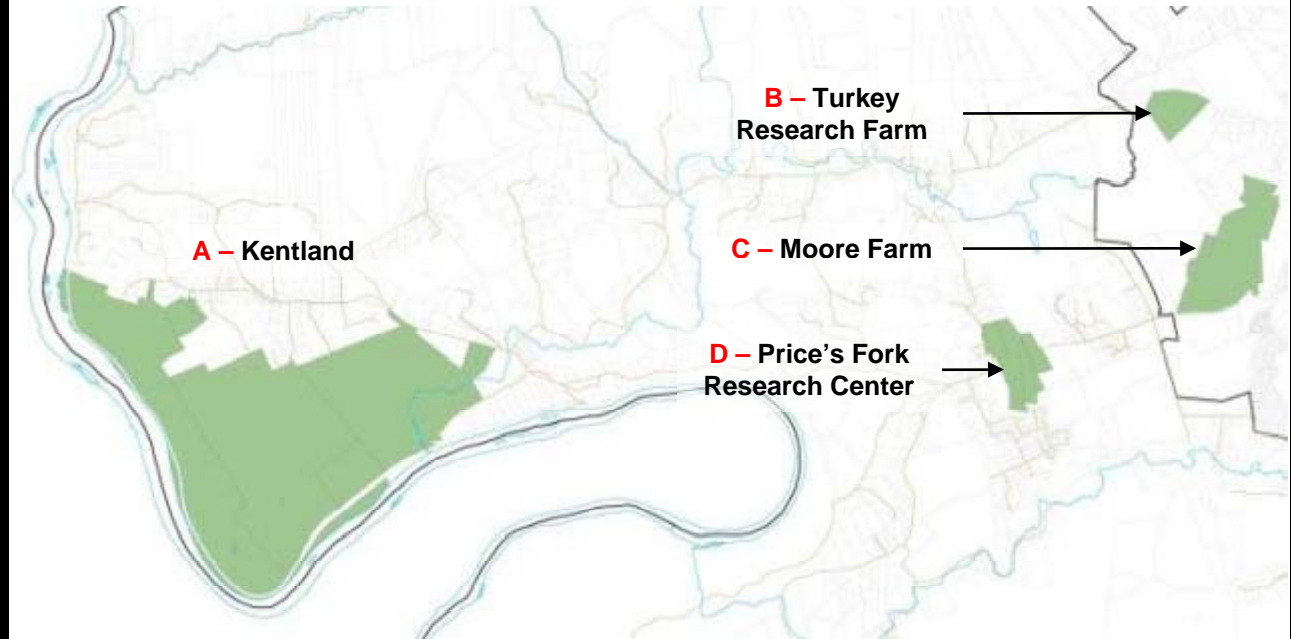
- 6,000 Turkey
- 2,000 Chickens

C. Moore Farm

- 500 Head Sheep

D. Price's Fork Research Center

- No Livestock



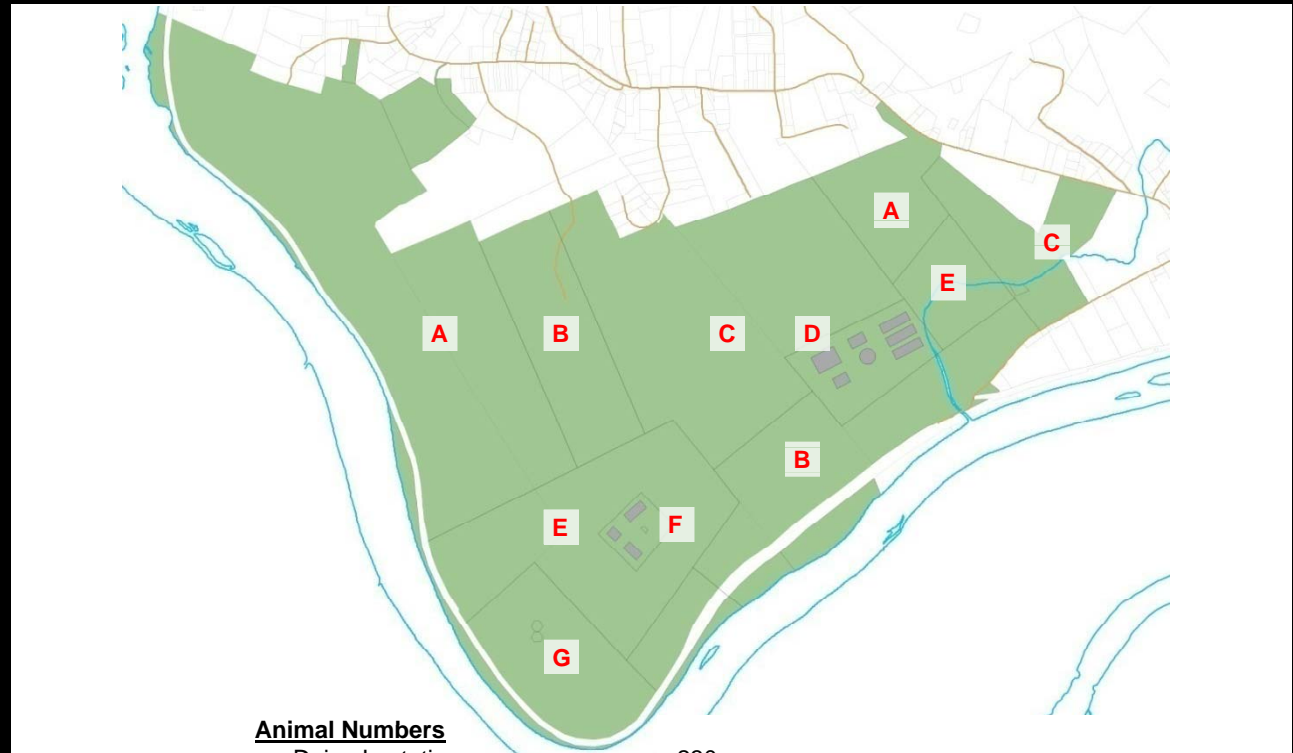
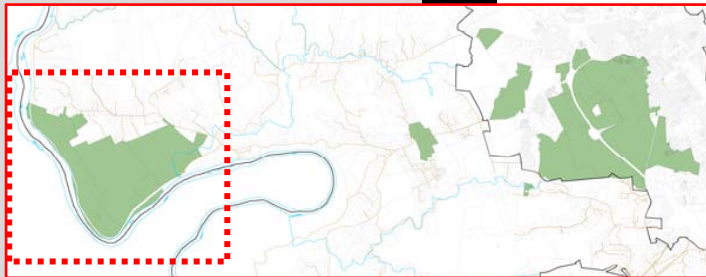
Program Accommodations

Land Use Strategies Kentland Farm

The Kentland / Whitethorne Farm is the largest contiguous land asset that the University owns in Montgomery County. The existing land uses are pasture lands, crop production, Department of Plant Science research and hay production.

The plan proposes the reallocation of land uses to accommodate:

- A. Existing Woodlands
- B. Dept. of Plant Science Research
- C. Pasture Lands
- D. Dairy Production Facilities
- E. Crop Production
- F. Centralized Farm Services
- G. Beef Cattle



Animal Numbers

Dairy, Lactating cows	230
Dairy, Heifers (3 to 23 months)	225
Dairy, Dry cows	40
Dairy, Calves (0 to 3 months)	35
Beef, Cows with calves	120

Forage and Hay Needs

Corn silage	5,070 Tons
Alfalfa hay	300 Tons
Haylage	1,300 Tons
Grass hay	970 Tons

Available Land Base

Crop	
Existing	262 AC
Convertible from Research land	55 AC
Convertible from Pasture land	6 AC
Total	323 AC
Pasture	611 AC

Building Land Base Needs

Dairy facilities	30 AC
Beef facilities	7 AC
Feed Mill	5 AC
Farm Services	5 AC

Pasture Land Base Needs

Dairy	265 AC
Beef	300 AC

Crop Land Needed for Manure

Application and Corn Silage Production

Liquid Manure

Volume	3,940 kgal
Crop Land Needed	170 AC

Solid Manure

Volume	3,390 Tons
Crop Land Needed	173 AC

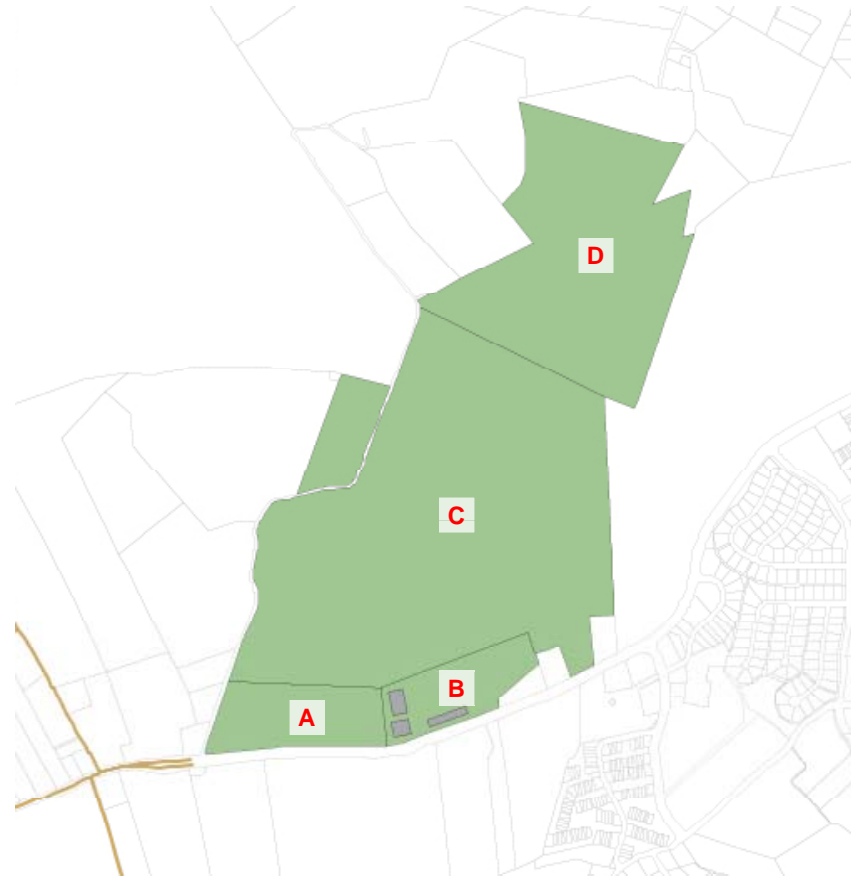
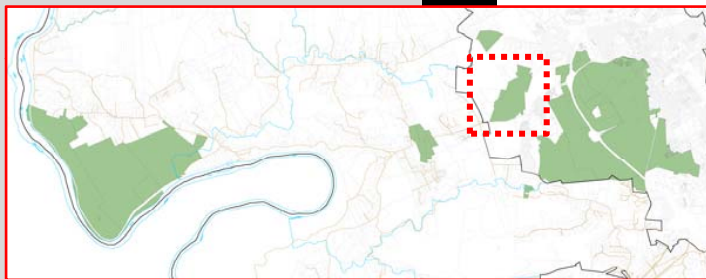
Program Accommodations

Land Use Strategies Moore Farm

The Moore Farm is the second largest contiguous land asset that the University owns in Montgomery County. The existing land use is Department of Plant Sciences, crop production, pasturing, and farm services.

The plan proposes the reallocation of land uses to accommodate:

- A. Department of Plant Sciences
- B. Sheep
- C. Pasture Lands
- D. Crop Production



Animal Numbers

Sheep 500

Forage and Hay Needs

Corn Silage 11 Tons
Alfalfa Hay 61 Tons
Alfalfa/Grass Hay 58 Tons

Available Land Base

Crop 48 AC
Pasture 152 AC

Building Land Base Needs

Sheep Facilities 6 AC
Horticulture Facilities 4 AC

Pasture Land Base Needs

Sheep 100 AC

Crop Land Base Needs for Manure Application and Corn Silage Production

Solid Manure
Volume 126 Tons
Crop Land Needed 16 AC

Program Accommodations

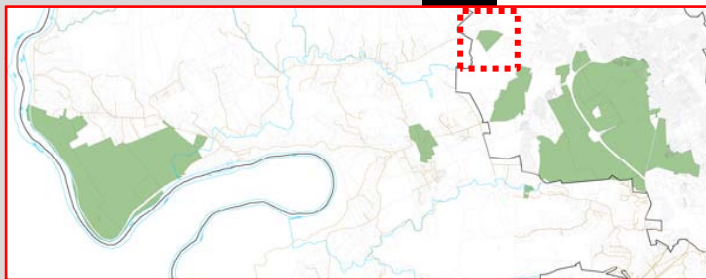
Land Use Strategies

Poultry (Turkey) Research Farm

The Turkey Research Center current land use provides paddock space for Vet Med Equine and space for turkey research.

The plan proposes the reallocation of land uses to accommodate:

- A. Poultry
- B. Existing Turkey Research
- C. Pasture Lands
- D. Existing Woodlands



Animals Numbers

Turkeys (150 pens with 40 birds per pen)	6,000
Chickens, Broilers	1,000
Chickens, Layers	1,000

Available Land Base

Crop	0 AC
Pasture	10 AC

Building Land Base Needs

Turkey facilities	13.5 AC
Chicken facilities	5 AC

Pasture Land Base Needs

Turkey	0 AC
Chicken	10 AC

Crop Land Base Needs for Manure

Application

Manure Volume, Solid	74.5 Tons
Needed crop land area	47 AC

Program Accommodations

Land Use Strategies

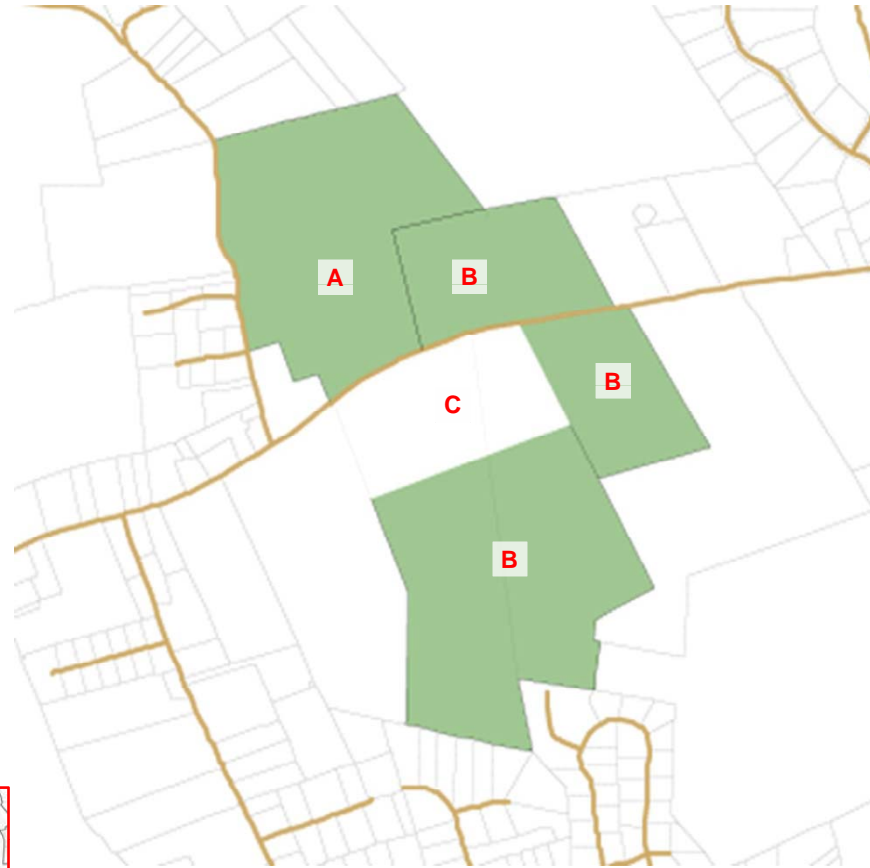
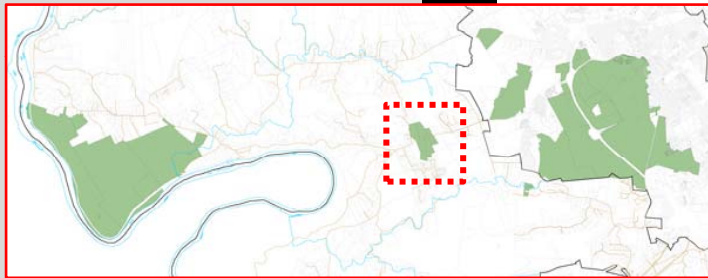
Prices Fork Research Center

The Prices Fork Research Center current land use provides space for research and crop production.

The plan proposes no animals and no new changes in the allocation of land uses:

- A. Research
- B. Crop production
- C. Conveyed to Montgomery County

The plan does propose the addition of Feed milling and Feed processing at Kentland Farm.



Program Accommodations

Land Use Strategies

Western Lands (West of 460)

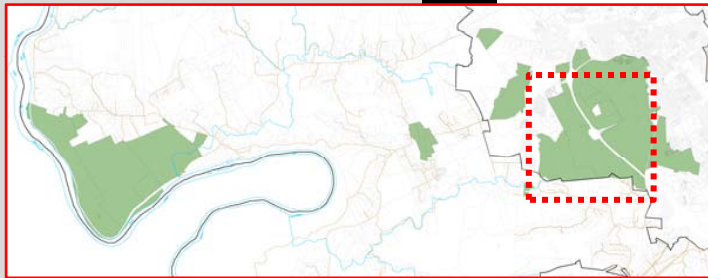
The University owned lands West of highway 460 and the addition of a long-term lease of the Heth property, provide for the placement of certain College of Agriculture and Life Sciences Department uses.

- A. CALS Equine
- B. Veterinary Medicine Equine
- C. Veterinary Medicine BSL Labs
- D. Swine
- E. Tin City Expansion / Power Plant
- F. Center Woods
- G. Aquaculture
- H. Bovine Palpation
- I. CALS Beef
- J. Crop Production (multiple locations)
- K. Pasture (multiple locations)



Program Accommodations

Land Use Strategies Western Lands (West of 460)



Animal Numbers

• Dairy (Palpation Animals)	100
• Beef (Non-Cow/Calf)	60
• Horses, Teaching	30
• Horses, Mares, Reproduction	30
• Horses, Foals	30
• Horses, Others, Reproduction	30

Forage and Hay Needs

• Corn Silage	1,560 Tons
• Haylage	200 Tons
• Grass Hay	1,670 Tons
• Alfalfa/Grass Hay	115 Tons

Available Land Base

Crop

• Plantation Road & Associated Properties	15 AC
• Pig Farm	34 AC
• West of Highway 460 South	106 AC
• Heth Property	<u>197 AC</u>
Total:	352 AC

Pasture

• Plantation Road & Associated Properties	92 AC
• East of Highway 460 North	51 AC
• West of Highway 460 South	<u>190 AC</u>
Total:	333 AC

Building Land Base Needs

• Dairy Facilities	5 AC
• Beef Facilities	3 AC
• Swine Facilities	3 AC
• Horse Facilities (Teaching and Research)	8 AC

Pasture Land Base Needs

• Dairy	100 AC
• Beef	75 AC
• Horse (Teaching and Research)	90 AC
• Horse (Vet Med)	45 AC

Crop Land Base Needs for Manure Application and Corn Silage Production

Liquid, Non-Sludge

• Volume	714 kgal
• Needed Crop Land Area	7 AC

Liquid, Sludge

• Volume	110 kgal
• Needed Crop Land Area (applied every 5 years)	65 AC

Solid

• Volume	1,700 Tons
• Needed Crop Land Area	96 AC

Program Accommodations

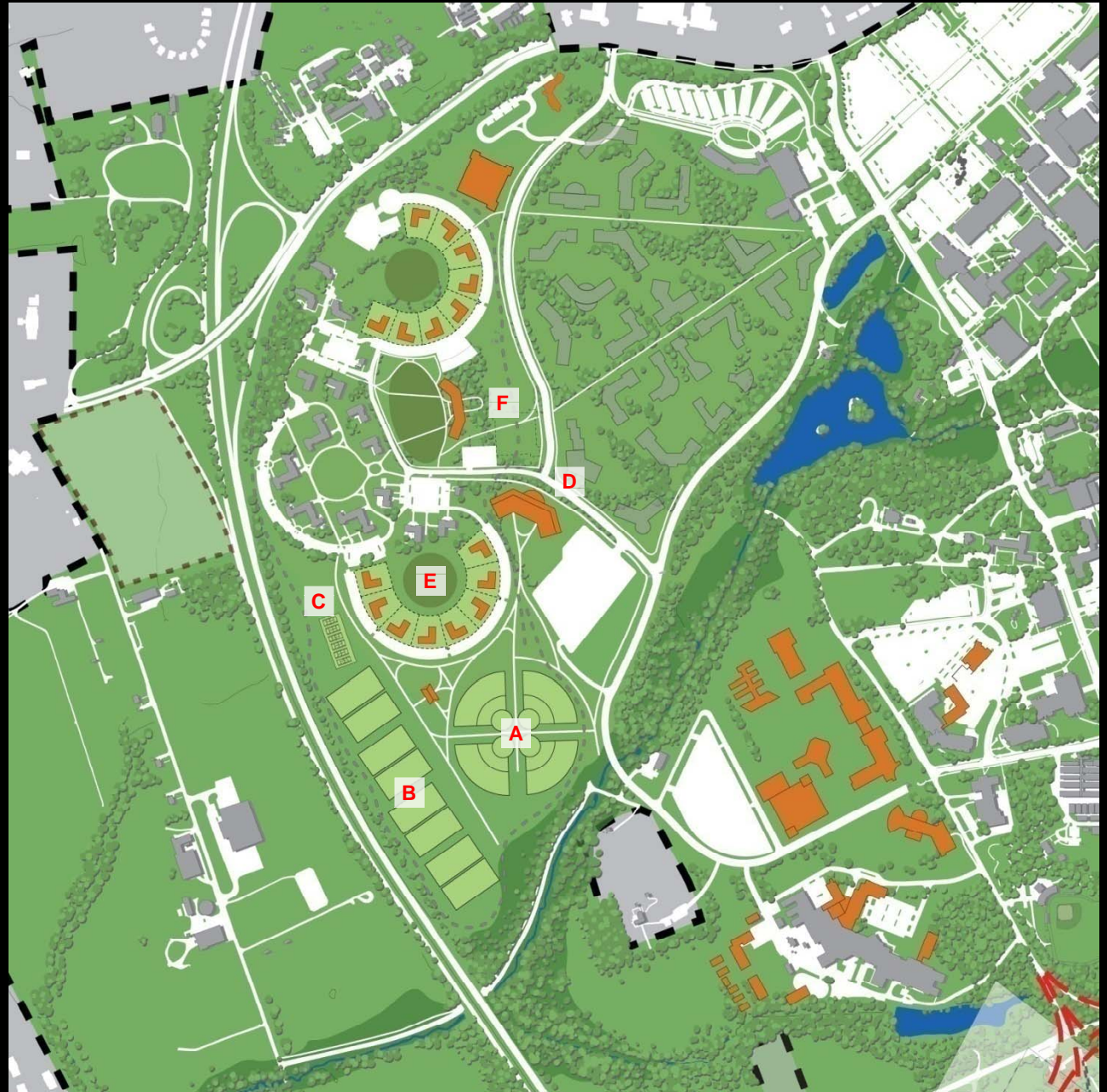
Land Use Strategies Contiguous Campus Oak Lane Area

The Golf Course Graduate / Professional District and the Oak Lane area are affected by the Airport Expansion due to the relocation of displaced recreation fields from the Chicken Hill area. The expansion of special purpose housing was envisioned in the Master Plan, however the Addendum also proposes additional Residence Hall beds in a suite style configuration.

The plan proposes the addition of:

- A. Four Intramural Softball Fields
- B. Eight Intramural Recreational Fields
- C. 6 Tennis Courts
- D. A 97,000 SF Recreation/Commons/Dining Facility
- E. 8-12 special purpose houses (with 8 houses in the future)
- F. 250 suite style residence hall beds

An alternative development of the Oak Lane Area can be found in the Appendix



Program Accommodations

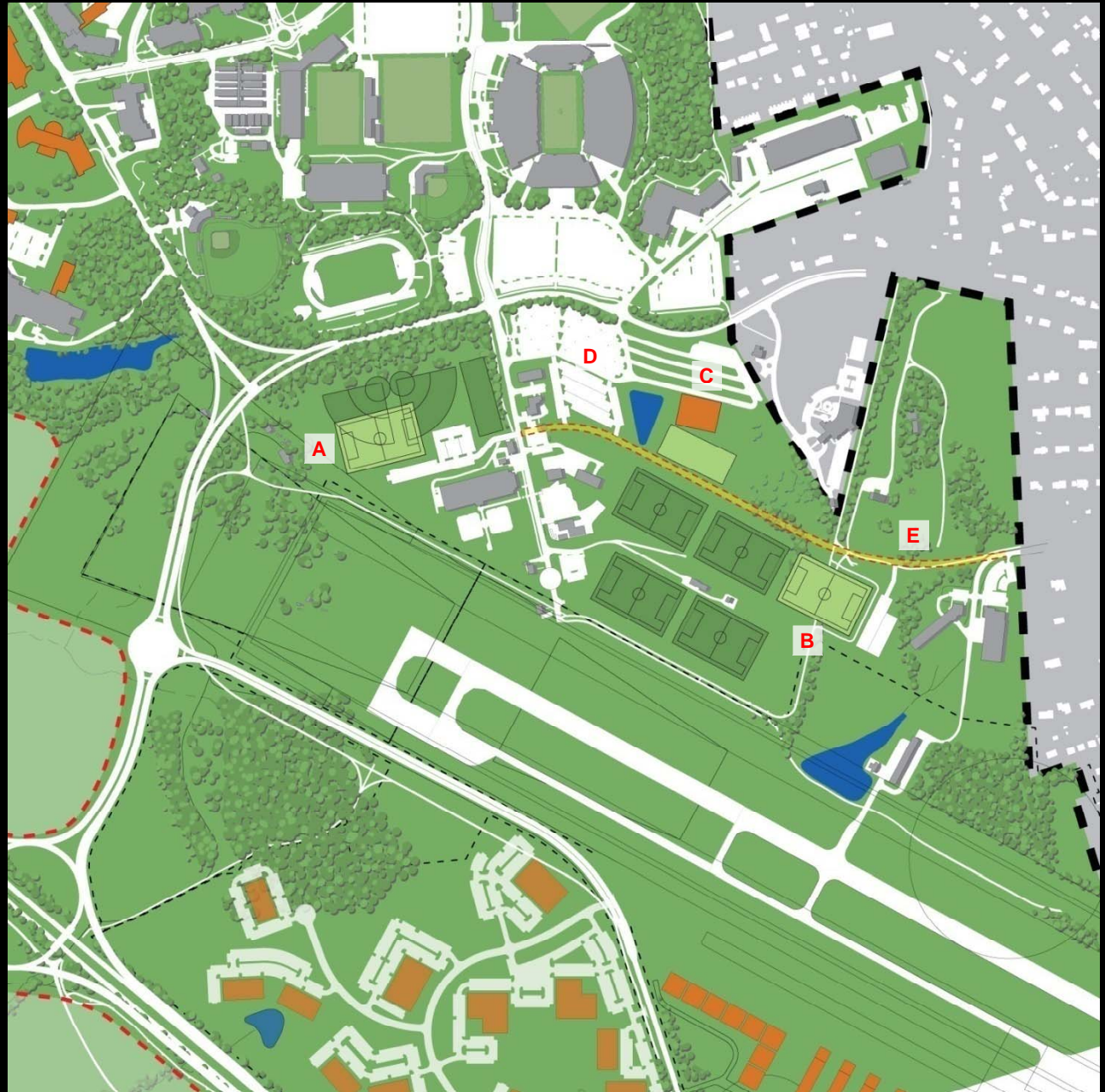
Land Use Strategies Contiguous Campus Chicken Hill

The Chicken Hill District is directly affected by the airport expansion with the loss of:

- Two recreational fields
- Two tennis courts
- Two softball field

The plan proposes the addition of:

- A. One club sports field near the existing softball fields
- B. One club sports field adjacent the existing club fields
- C. A 30,000 SF Marching Virginians Practice facility and field
- D. Additional surface parking for student and game day uses
- E. Country Club Dr. Extended providing access to physical plant facilities and the adjacent neighborhood



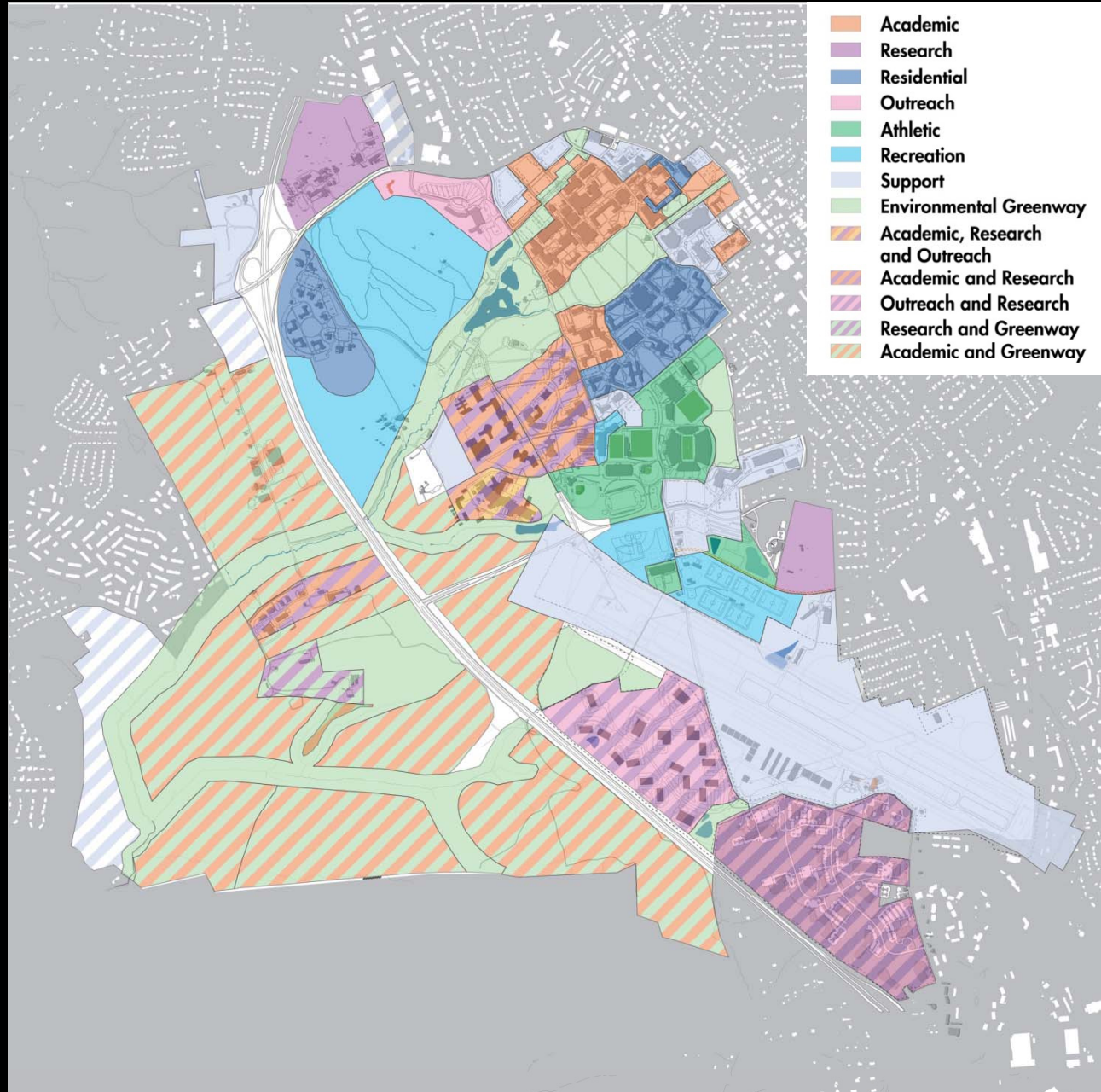
Program Accommodations

Land Use Strategies Amended Land Use Short Term

Short-term development will have immediate impact on existing agricultural lands east of the Route 460 bypass. The Primary Program accommodation will include:

- Relocation of the heifer herd and dairy operation to Kentland
- Bovine palpation and research will be relocated to the west side of 460
- The equine breeding area will be moved to the west side of 460
- New Greek Housing will be constructed along the western edge of the Golf Course
- New recreational sports fields will be constructed in the Oak Lane area adjacent to the Greek Houses

Any land development should minimize environmental impact and should support the storm water strategies outlined in the 2006 Master Plan. The Golf Course will serve as a land bank for the long-term development strategies.



Program Accommodations

Land Use Strategies Amended Land Use Long Term

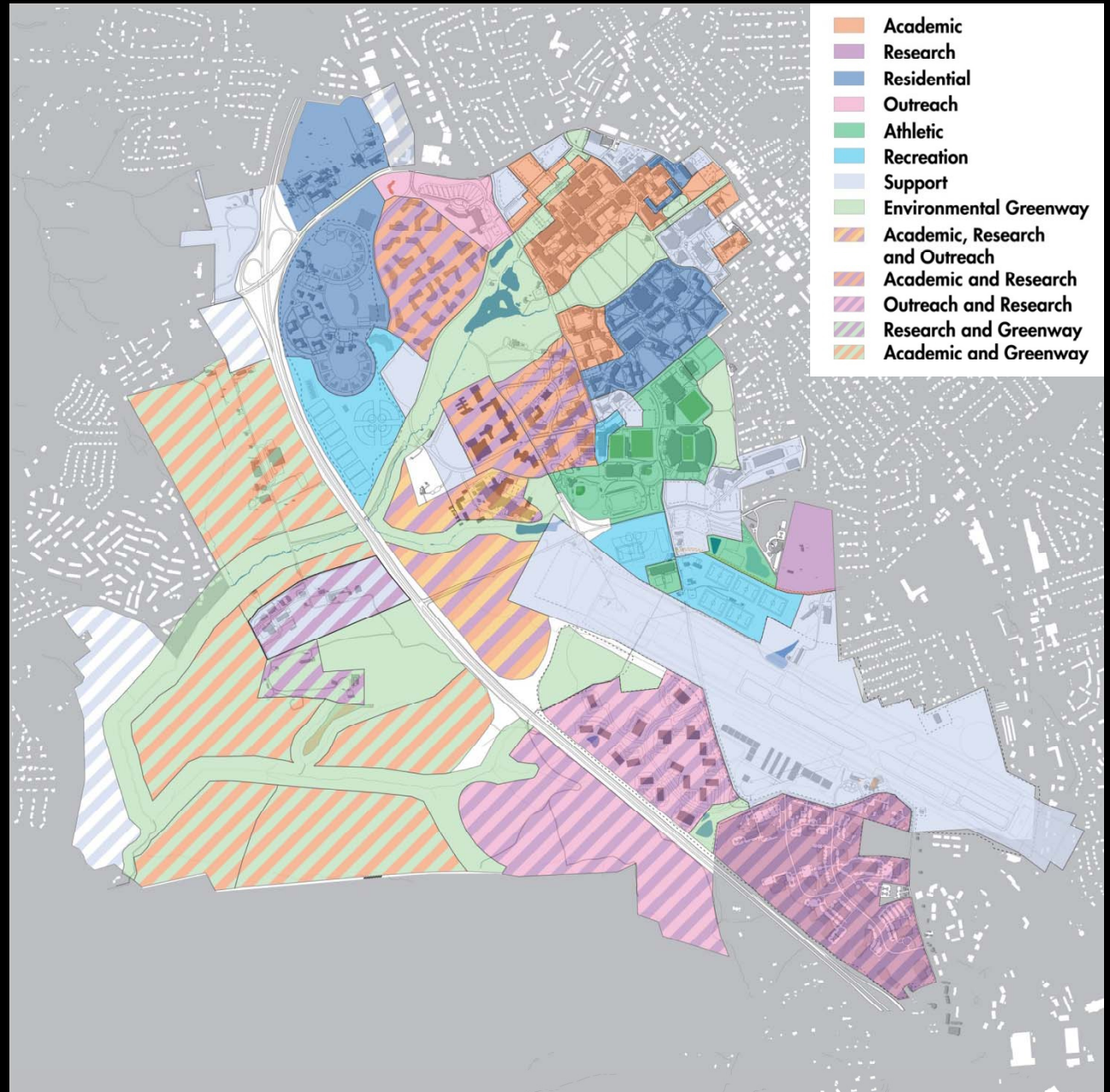
Long term land use strategies will relocate current agricultural land uses east of Route 460 bypass to lands west of 460 and to other land holdings within Montgomery County.

The majority of the Heth Property will be used to support agricultural land uses including bovine, equine and swine research as well as crop / silage production. In addition, the Virginia Tech Foundation will explore redevelopment opportunities for the remainder of the Heth Property which may include mixed use and public/private partnership opportunities.

Center Woods will continue to be used by the College of Natural resources for wildlife research.

The Oak Lane area will see an expansion of Greek Housing, suite-style single student housing, a student recreation facility with commons and dining components and a recreational sports field complex.

Club sports facilities will be expanded in the Chicken Hill area as well as the development of indoor and outdoor facilities for the Marching Virginians.



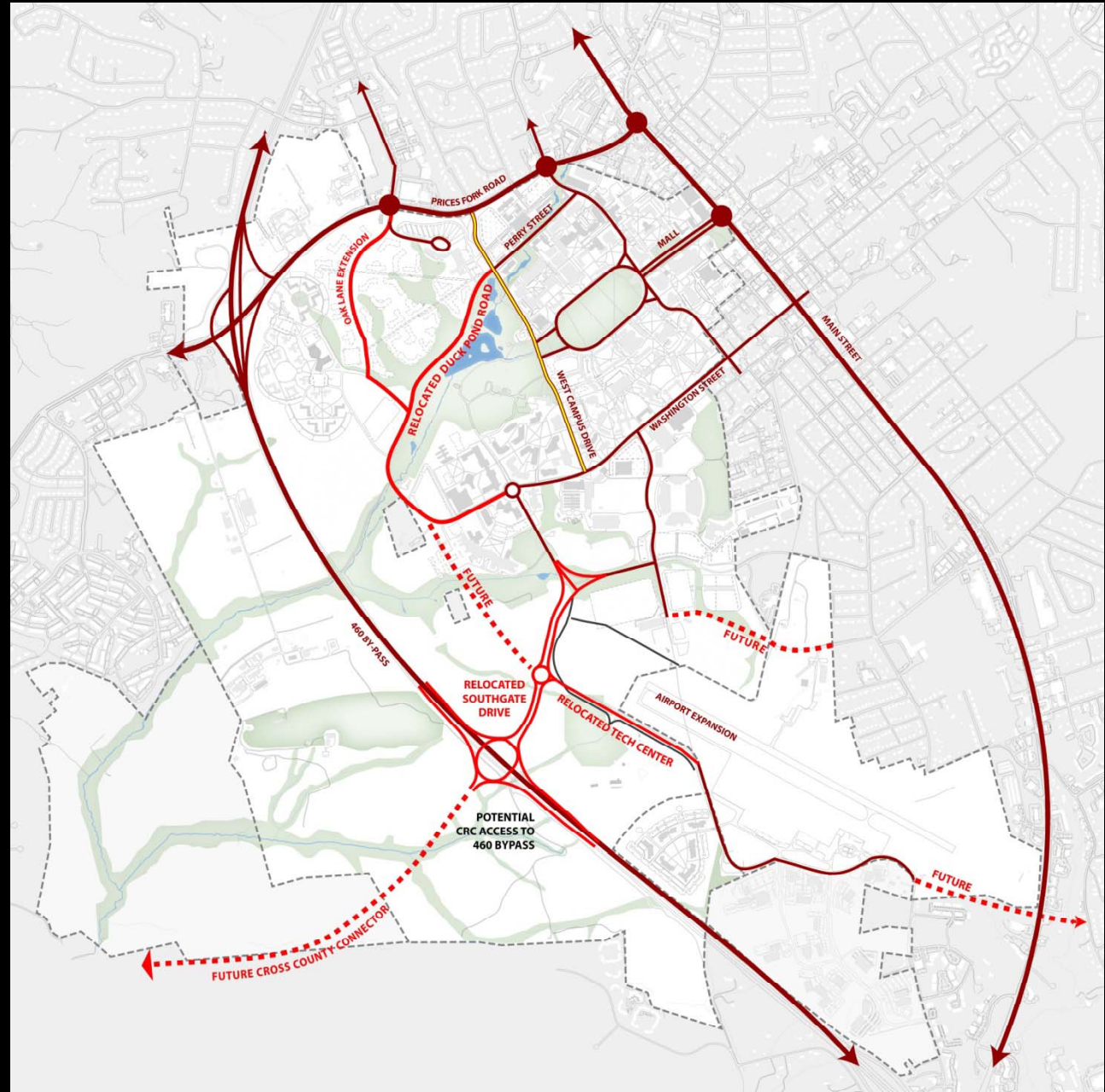
Campus Access

Two primary short term strategies for campus access will be employed to accommodate future growth; mitigate existing traffic issues and enhance the pedestrian connections from the Life Sciences District to the Academic Core District. The first relocates Duck Pond Drive from Washington Street to Perry Street and incorporates traffic calming strategies targeted to reduce loads on West Campus Drive and provide a western perimeter route for the campus.

The second involves the realignment of Tech Center Drive to Duck Pond Drive in order to accommodate the planned expansion of the airport runway.

Future long term strategies include:

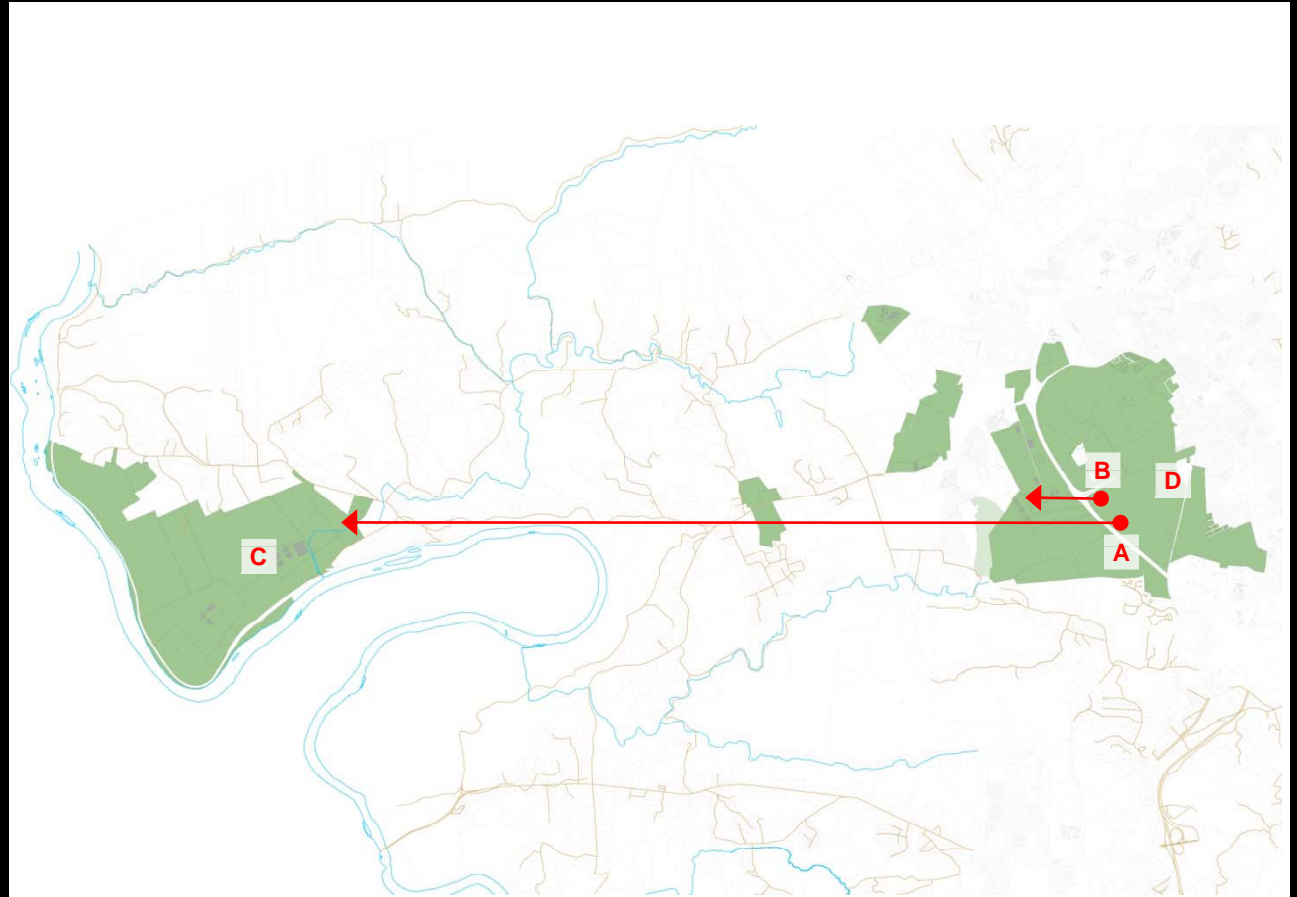
1. A connection from Price's Fork Road through the future Golf Course District to the proposed realigned Duck Pond Drive;
2. A connection between Tech Center Drive and Main Street;
3. A new interchange/flyover south of Southgate Drive on the Route 460 Bypass; and
4. A regional traffic initiative for a cross-county connector to be aligned with the proposed interchange.



Implementation

1st Biennium

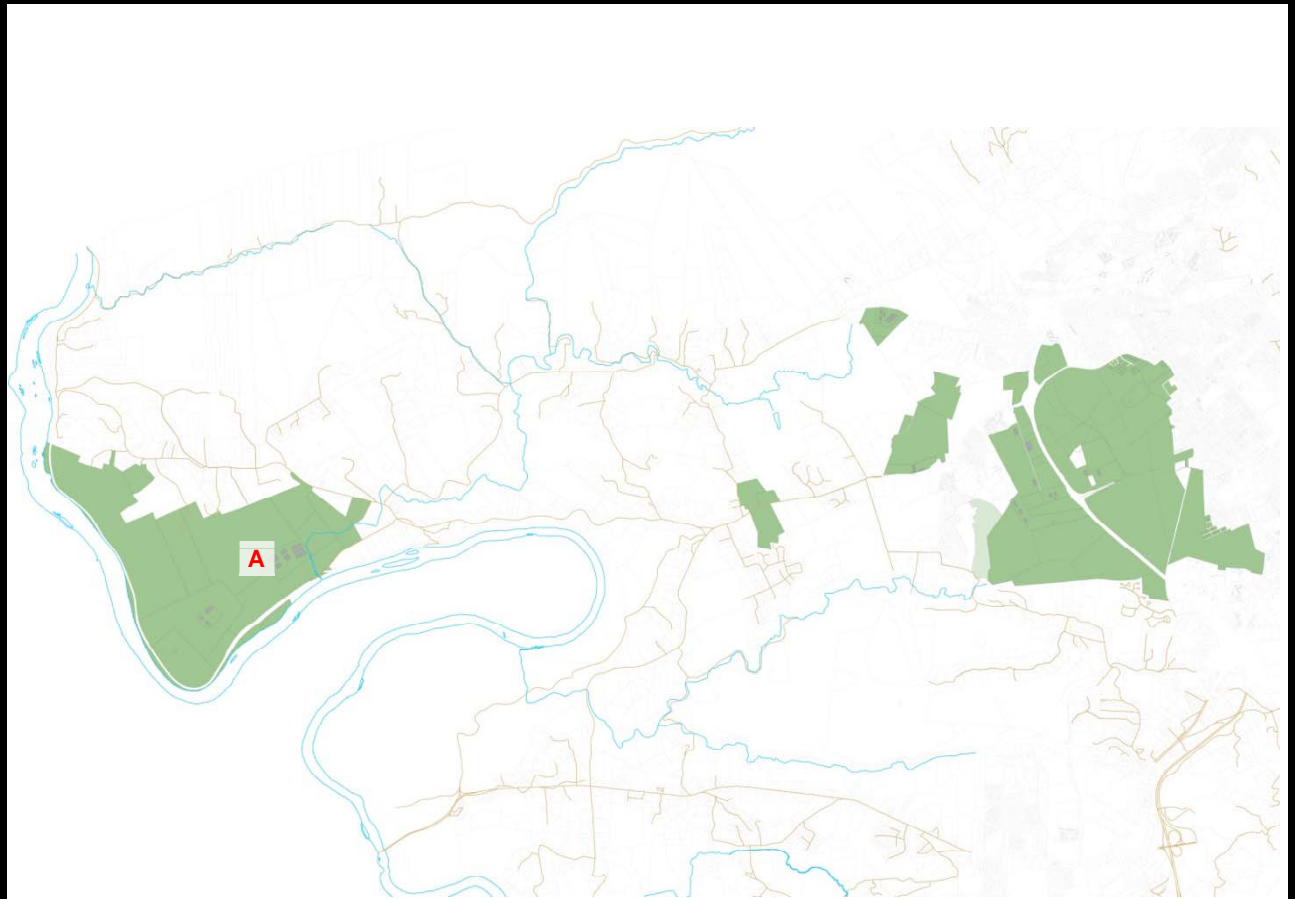
- A. Heifers to Kentland
- B. Bovine Palpation Cows to Heth Farm
- C. Begin Dairy Design and Construction at Kentland
- D. One Artificial Turf Field at Chicken Hill



Implementation

2nd Biennium

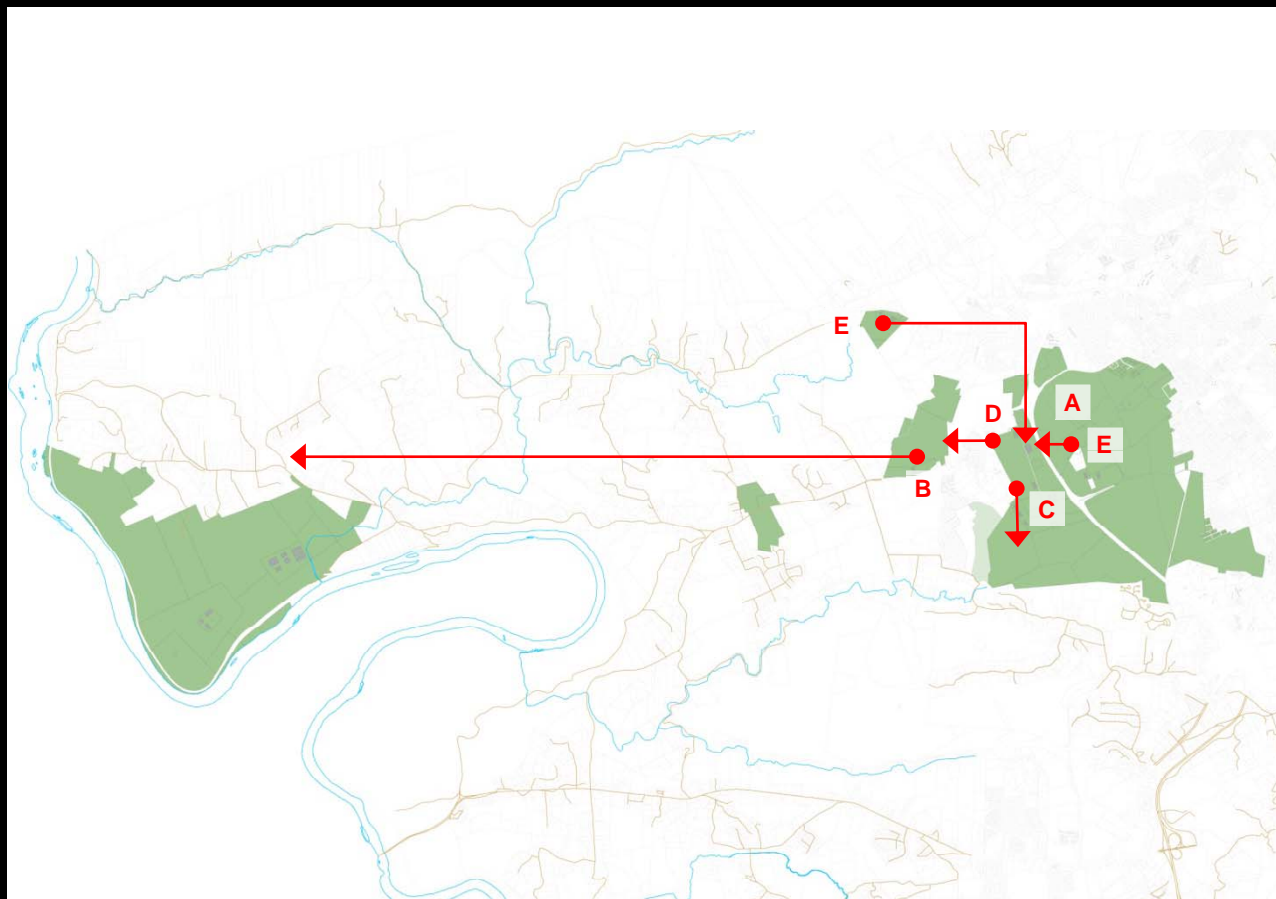
A. Dairy Construction at Kentland



Implementation

3rd Biennium

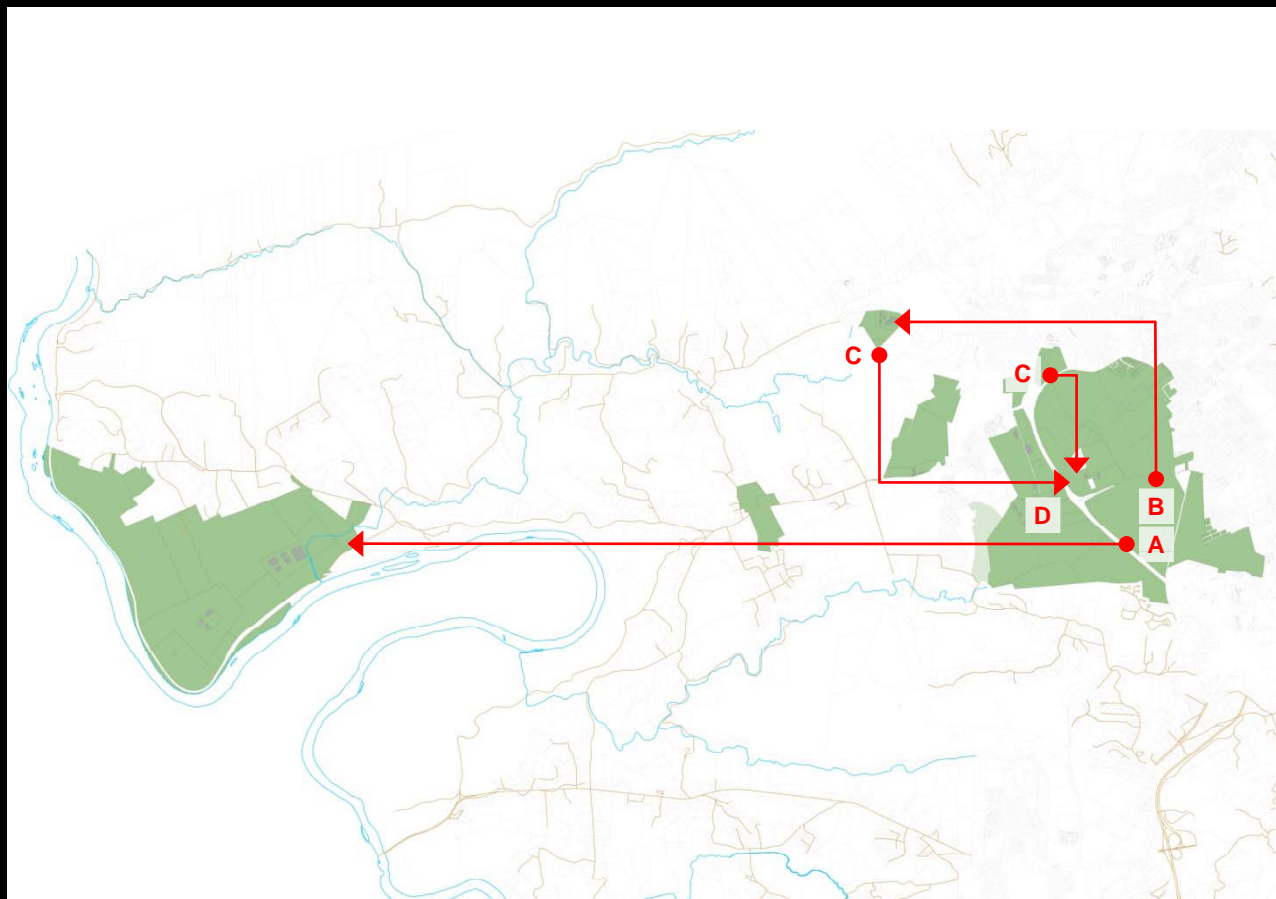
- A. Recreation Fields at Oak Lane
- B. Farm Services to Kentland
- C. Beef Teaching to Heth Farm
- D. Sheep to Moore Farm
- E. CALS Equine to West of 460



Implementation

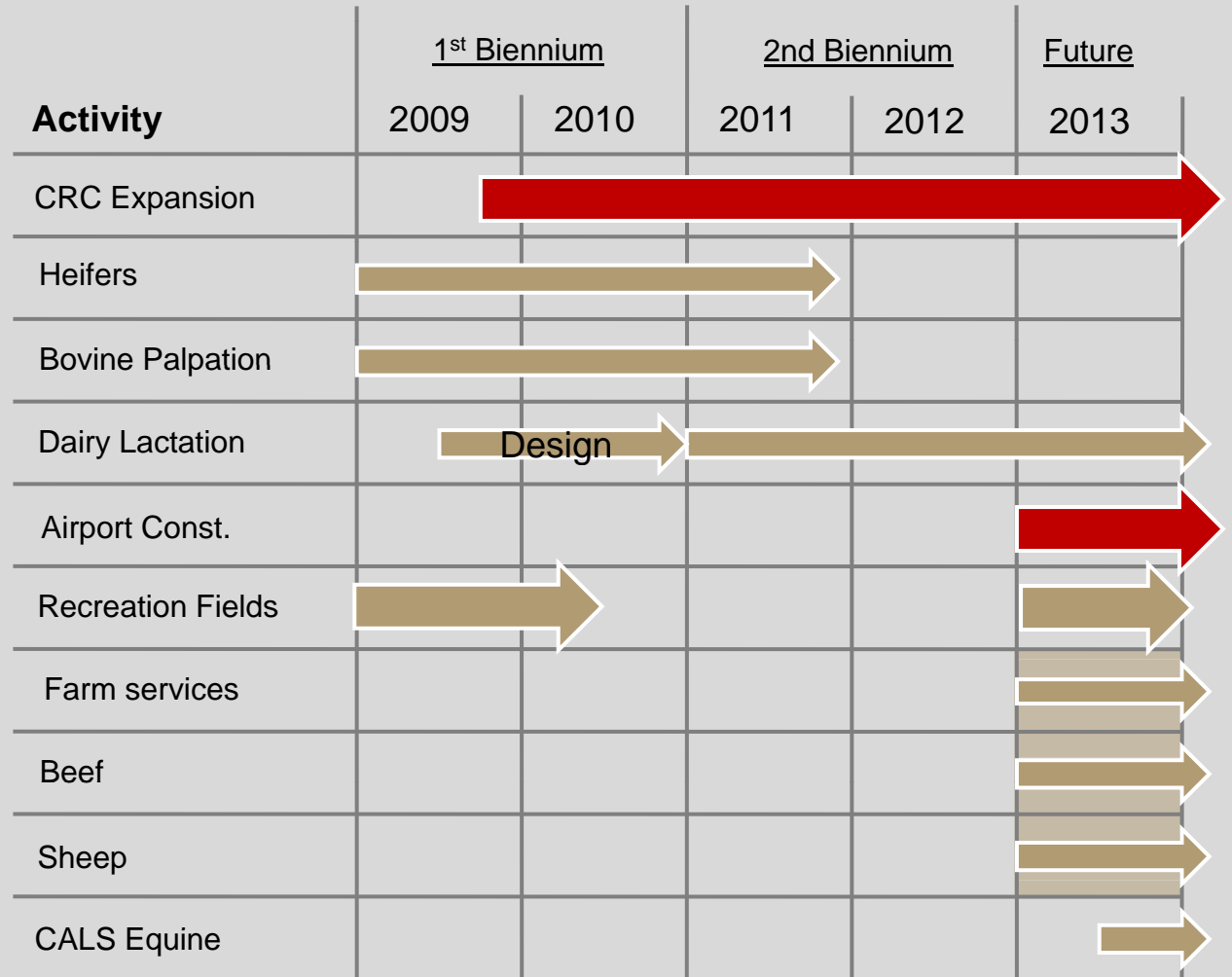
Other Moves

- A. Beef Cow-Calves to Kentland
- B. Poultry to Turkey Research Farm
- C. Vet Med Equine to East of 460
- D. Swine Facilities



Implementation

Schedule



LAND USE





Appendix



Appendix

Oak Lane Area Alternative

1. Phase 1 housing expansion
2. Future SPH housing and quads
3. Golf course area master plan build out
4. Future parking structure
5. Future Rec Sports / Dining
6. Future residence hall
7. Future mixed use building with parking
8. On-street parking – double loaded
9. Future loop road
10. Future connector road
11. Future parking
12. VTES duct bank
13. Future softball fields
14. Future regulation sized soccer fields (3)
15. Future regulation sized football fields (6)
16. Future tennis courts (12)
17. Relocated #4 tee for phase one housing
18. Future bioretention
19. Existing parking converted to stream buffer
20. Land bank, crop and hay production
21. Visitors center
22. Existing Special Purpose Housing

