Technical Appendix K, "Anticipated Research and Development"

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K.1 Executive Summary

The paper describes the planned amounts of space anticipated for R&D sites within the UC Merced Campus and the University Community Plan. The data sources for this description are threefold:

- 2009 UCM LRDP
- 2004 University Community Plan
- 2008 EIR/EIS for UCM Phase 2020 and the University Community

Appendix K Findings:

Within the Campus:	75 acres (or 40 acres) for R&D. No plan has stated an actual amount, though the 2009 UCM LRDP includes bulk standards. Assuming a 40-acre site developed with the range of intensities described in the 2009 UCM LRDP, approximately 588,000 sq. ft to 1,672,640 square feet of building space for Research and Development use are contemplated to be sited on the UCM campus. This figure would almost double if 75 acres were dedicated for these uses.
Within the UCP North area:	The revised land use plan for Community North provides about 100 acres in the northwestern portion of Community North for the development of the Gateway District, which would focus on R&D and would be adjacent to similar R&D land uses on the campus. This area would be developed with approximately *2.3 million square feet* of building space that would house research laboratories and industrial R&D.
Within the UCP South area:	No R&D has been planned in the 2004 UCP or the 2009 EIS/EIR.

K.2 Information from the 2009 UCM LRDP

K.2.1 Overview

The campus extends over 815 acres and features six land use types. [1] These include, 1) Academic Core; 2) Campus Services; 3) Student neighborhoods; 4) Parking; 5) Athletics and Recreation; and 6) Passive Open Space. These are described below. The Campus would ultimately serve 25,000 FTE students and an associated faculty of 1,420, 4,828 staff, and about 312 postdoctoral researchers (total 6,560 FTE employees). [21] The "academic core" includes 75 acres of r**esearch & development. Within the** Gateway District, the campus area will include academic buildings oriented towards research.

- **Academic Core - 200 acres**
  Academic/Laboratory 115 acres
  Research & Development 75 acres **(**Within the Gateway District, the campus area will include academic buildings oriented towards research).
  Alumni/Conference Ctr. 10 acres

- **Campus Services - 40 acres**
  Corporation Yard 10 acres
  Logistics/Receiving 15 acres
  Central Plant/Energy Ctr. 13 acres
  Public Safety 2 acres

- **Student Neighborhoods - 225 acres**
  Student Services 30 acres
  High Density Residential 25 acres
  Medium Density Residential 90 acres
  Low Density Residential 80 acres

- **Parking - 110 acres**
  Parking Structures 12 acres
  Distributed Lots/Streets 98 acres

- **Athletics and Recreation - 140 acres**

- **Passive Open Space 100 acres**

TOTAL: 815 acres

R&D at UCM Academic Core

The "academic core" includes 75 acres of research & development. Within the Gateway District, the campus area will include academic buildings oriented towards research.

K.2.2 The Gateway District [2]

Within the Academic Core is the Gateway District, a the link between UC Merced's core mission of focused education, research and public service on the one hand and the private sector and Valley communities on the other. The Gateway District establishes a presence that reinforces three key elements:

- ***The Public Face***

  The Gateway District is the public face of the university in that its location represents the relationship between UC Merced and the larger community.

- ***Community Link***

  As evidenced by its prominent location, the Gateway District and the research activities that occur here link the university as a resource to the region. Its proximity to the *Academic Core* makes it close enough to campus for students to contribute to Gateway District research.

- ***Entrepreneurial Venue***

  The Gateway District is also a resource for public-private ventures and a means for expression of the growing entrepreneurial culture at UC Merced. The most outward directed and dynamic research and educational programs will migrate to this area because of its easy public access and the potential for joint venture relationships. Bordering it to the south in the University Community area owned by the UCLC is a proposed Research and Development District. This will provide additional resources and potential for a variety of implementation mechanisms to facilitate joint ventures and commercial relationships.

Gateway District

The Gateway District would primarily include academic and industrial joint-development research activities.

Throughout the 2009 UCM LRDP, the ***Gateway District*** is described as follows:

- Containing collaborative research buildings. [5]
- The Crescent (in the Gateway District) will be an important address for the future research and development activities. [6]
- The Crescent is the symbolic business address for the research and development uses in the Gateway District. This landscaped pedestrian-friendly street will act as the front door address for collaborative ventures interfacing with the campus.[7]

- The Gateway District would primarily include academic and industrial joint-development research activities.[8]

K.2.3 Site Design Descriptors [9]

Industrial Research Block will be located within the Gateway District. These blocks are dedicated to joint development with industry. As commercial ventures, these blocks may require on-site parking. Other supporting uses in the district would include parking, transit facilities, and research-related office and administrative activities.

Illustrated Example

This example illustrates a commercial-style research park with surface parking, but with higher density and less parking than found in most suburban developments (increased from 0.30 FAR to 0.45 FAR). There are three buildings illustrated from one to two stories.

Block Size: 3 acres

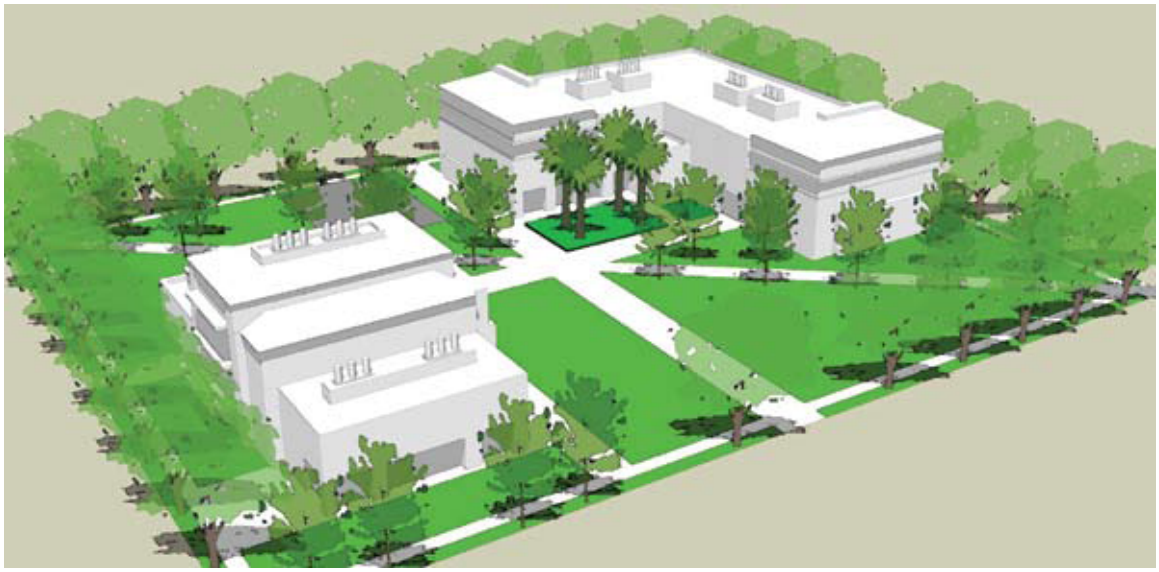
Land Use: Industrial Research Buildings (1L-3L)

Net Density (on 3 acre block):
0.45 FAR x 130,680 SF site area = ***58,800 SF, or 19,600 sq. ft. per acre.***

Gross Density (assumes 75% efficiency for streets):
0.34 FAR x 130,680 SF site area/.75 = ***44,100 SF, or 14,700 sq. ft. per acre.***

Building Height: 80' [10]

The **Industrial Research Block** will be located within the Gateway District. These blocks are dedicated to joint development with industry. As commercial ventures, these blocks may require on-site parking. Other supporting uses in the district would include parking, transit facilities, and research-related office and administrative activities.



Illustrated Example

This example illustrates the character and site coverage of blocks that share parking with UC Merced or have structured parking. There are two buildings ranging from three to four stories.

Block Size: 3 acres

Land Use: Industrial Research Buildings (1L-3L)

Net Density (on 3 acre block):
0.96 FAR x 130,680 SF site area = ***125,450 SF, or 41,816 sq. ft. per acre.***

Gross Density (assumes 75% efficiency for streets):
0.72 FAR x 130,680 SF site area/.75 = ***94,090 SF, or 31,363 sq. ft. per acre.***

Building Height: 80' [10]

K.3 2004 University Community Plan

K.3.1 Overview

The anticipated development of the University Community at build-out is correlated with the planned enrollment and staffing of UC Merced and is described below. As shown, the University Community will occupy approximately 2,133 acres of land and contain 11,616 residential units, 716,000 square feet of retail, 1.3 million square feet of office/research and development space, and seven public schools. [11]

- **UC Merced Campus Generated Population**
  Students / 25,000
  Faculty / 1,420
  Staff / 4,828

  Direct Campus Population / 31,248

- **University Community Residential Development**
  Single-Family / 6,968 Units
  Multi-Family / 4,648 Units

  Total / 11,616 Units

- **University Community Commercial Development**
  Retail / 716,000 Square Feet
  Office/Research and Development (R&D) / 1,307,000 Square Feet

  Total / 2,023,000 Square Feet *{per Table 2, page 28 of the UCP, of this amount, 400,000 square feet is for R&D and to be located in the "Town Center" portion of the UCP}. Also see* Policy LU 4.4

- **Public Schools (Estimated)/ 7**

- TOTAL: 2,133 acres

R&D in the UCP

Approximately 400,000 square feet is anticipated for Research and Development and located in the "Town Center" portion of the UCP.

The amount and type of land use planned for the University Community is based on an analysis of the socio-economic impact of the UC Merced campus. Specifically, UC Merced through its population of students, faculty, staff, and their families, as well as their expenditures and the expenditures of the University itself, will create a demand for housing, retail, and other locally produced goods and services. The corresponding amount of residential, commercial, and industrial real estate demand generated by UC

Merced has provided a point of reference for determining the development potential of the University Community. [11]

K.4 2008 EIR/EIS for UCM Phase 2020 and the University Community Plan

K.4.1 Overview

Changes to both the Campus and the University Community have resulted in the development of revised land use plan proposals for both the Campus and Community North. [18] Acreage changes from the 2002 UCM LRDP and 2004 UCP Plans to the 2008 EIR/EIS are described below. [19]

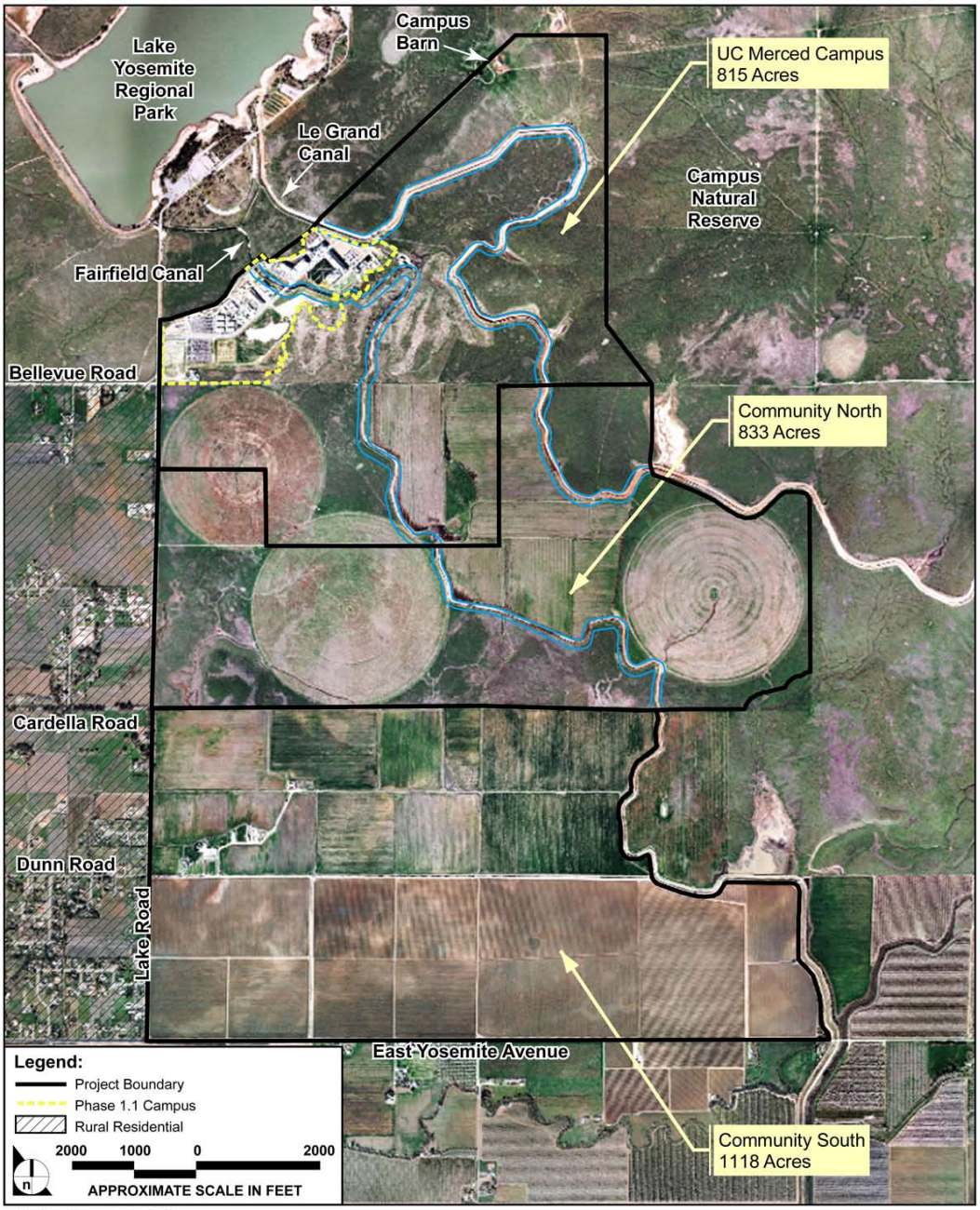
Current Acreages of UCM and UCP	
Plan Area	**Acres**
UCM Campus	815
Community North	833
Community South.	1,118
UCP subtotal	*1,951*
Total	**2,766**

K.4.2 2008 EIR/EIS Project Area Description

Overview: The project site is composed of approximately an 815-acre Campus and a 1,951-acre University Community (Yosemite Avenue forms the southern project site boundary). The University Community is itself organized into an 833-acre Community North and 1,118-acre Community South. [13] Detailed Descriptions: The Proposed Action encompasses two major areas: the UC Merced Campus and the University Community. The UC Merced Campus includes the 815-acre Campus that would be built with academic buildings, student housing, campus support, recreation facilities and infrastructure, and a 1,307-acre Campus Natural Reserve that would not be developed. The University Community comprises the 833-acre Community North and the 1,118-acre Community South. Community North would be developed with a town center, business park, residential neighborhoods, parks, open space, schools, and other amenities. With respect to Community South, it is anticipated that this approximately 1,118-acre area would be developed in accordance with the previously adopted University Community

Plan. The University Community would include 11,616 dwelling units and a total residential population of about 30,780 persons. [14]

2008 EIR/EIS Project Areas:



SOURCE: UC Merced – June 2008

FIGURE 2.0-2

Campus and University Community Planning Areas

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K.4.3 Land Use Changes in the 2002 UCM LRDP and 2004 UCP Plans [19]

Along with the change in acreage to the Campus and the University Community, the EIR/EIS project description included changes in land use; these changes are described in the table below.

Table 2.0-1: Proposed Changes to the UC Merced LRDP and UCP [20]

Parameter	Previous Proposal	Current Proposal
UC Merced LRDP		
Campus Land Area	910 acres	815 acres
Campus Land Reserve Land Area	340 acres	0 acre
Campus Natural Reserve Land Area	750 acres	1,307 acres
Total Enrollment at Buildout	25,000 FTE	25,000 FTE
Total Faculty and Staff at Buildout	6,248 FTE	6,560 FTE
Total Students Housed on Campus	12,500 (50%)	12,500 (50%)
Total Faculty Housed on Campus	710 (50%)	0
Total Academic Building Space *	**3,560,000 gsf**	**6,250,000 gsf**
University Community Plan		
Total Land Area	2,133 acres	1,951 acres
Total Residential Area	1,132 acres	1,024 acres
Total Number of Residential Units	11,616	11,616
Total Mixed Use/Retail/Office/R&D Acreage	96 acres	129 acres
Total Mixed Use/Retail/Office/R&D Building Space *	**2,023,000 gsf**	**3,696,700 gsf**
Total Residential Population (head count)	30,782	30,782
Total Employment (head count)	5,524	10,244

gsf= gross square feet

* These are discussed in greater detail in sections K.4.4 and K.4.5 below.

K.4.4 2008 EIR/EIS / Total UCM 2009 LRDP Academic Building Space

Table 2.0-2: Major Land Uses Proposed in 2009 LRDP [22]		
Land Use	**Approximate Acreage**	**Building Space/Units**
Academic Core	200	6,250,000 sf
-Academic/Laboratory	-115	
-Research and Development	-75	
-Alumni/Conference Center	-10	

The 200 acres includes administration space

The "Academic Core" would also include ***a 40-acre block*** [but, table above notes 75-acres] that would be located near the intersection of Bellevue Road and Lake Road and used to site facilities for nonprofit or grant-based research programs. This area ***may also include*** a research park that would be used for research collaboration with outside entities, including for-profit organizations, similar to research parks at Stanford University and UC Irvine. [23]

Generally, on-campus research areas are required for research that needs to be near the central campus but does not absolutely require, or is unsuitable for, contiguity with the academic area. Such research may be under the aegis of UC, but could be funded independently or managed by a private for-profit or non-profit entity. Some UC campuses host research entities that are wholly or partially independent of the University. Many businesses and industries look for opportunities to locate near research universities to improve access to future employees with advanced training and access to new knowledge. [23]

Campus research parks also are incubators for new companies that benefit from the increasing rate of technology transfer from basic to applied research and on to real-world applications. The on-campus location enriches the research environment by offering opportunities for extramural research collaborations and graduate student and undergraduate employment and internships. It is also an important factor in attracting top-quality faculty to the new campus and generating informal, spontaneous interactions, which contribute to successful research partnerships. Additional research and development land uses would be distributed within the academic core in clusters of interdisciplinary research facilities, which would facilitate cross-disciplinary collaborations within the academy. [23]

K.4.5 2008 EIR/EIS / University Community Plan / Total Mixed Use/Retail/Office/R&D Building Space

Gateway District

The UCP, as previously adopted in 2004, included 22 acres of land for the development of 400,000 square feet of research and development (R&D) space. The revised land use plan for Community North provides about 100 acres in the northwestern portion of Community North for the development of the Gateway District, which would focus on R&D and would be adjacent to similar R&D land uses on the campus. This area would be developed with approximately 2.3 million square feet of building space that would house research laboratories and industrial R&D. The distribution and amounts of retail, office and research and development land uses are described in the table below.

Table 2.0-6: Major Land Uses in the 2009 Proposed University Community [24]

	UCP North	UCP North	UCP South	Total
Land Use	Town Center	R-Neighborhood	Villages	
Retail				
Acres	8	6	15	29
Square Feet	130,700	78,400	250,000	459,100
Office				
Acres	5	0	9	14
Square Feet	292,700	0	140,000	432,700
Research and Development				
Acres	71			71
Square Feet	2,308,300			2,308,300
Mixed Use				
Total Acres	15			15
Retail (sf)	183,000			183,000
Office (sf)	313,600			313,600
Housing Units	540			540

Table 2.0-7: University Community Population [25]

Total Population	Community North	Community South
Residential Population	15,351	15,431
Employment	9,219	1,025
Total	**24,570**	**16,456**

Bibliography of Appendix K

1. UCM 2009 LRDP, page 47
2. UCM 2009 LRDP, page 48
3. UCM 2009 LRDP, page 49
4. UCM 2009 LRDP, page 68
5. UCM 2009 LRDP, page 68
6. UCM 2009 LRDP, page 72
7. UCM 2009 LRDP, page 72
8. UCM 2009 LRDP, page 126
9. UCM 2009 LRDP, page 130-131
10. 2004 UCM 2009 LRDP, page 135
11. 2004 UCP, page 9
12. 2004 UCP, page 12
13. 2008 DEIR/EIS, page ES-1
14. 2008 DEIR/EIS, page ES-6
15. 2008 DEIR/EIS, page 1.0-2
16. 2008 DEIR/EIS, page 1.0-2
17. 2008 DEIR/EIS, page 1.0-5
18. 2008 DEIR/EIS, page 1.0-5
19. 2008 DEIR/EIS, pages 1.0-3 to 5
20. 2008 DEIR/EIS, page 2.0-11
21. 2008 DEIR/EIS, page 2.0-18
22. 2008 DEIR/EIS, page 2.0-12
23. 2008 DEIR/EIS, page 2.0-13
24. 2008 DEIR/EIS, page 2.0-41
25. 2008 EIR/EIS, page 2.0-42