

MAINE



UNIVERSITY of

MAINE

master plan report

2008/2009 Recipient of the Society for College and University Planning, Excellence in Planning Merit Award



Office of the President
December 2009

Dear Family and Friends of UMaine,

I am delighted to present to you the 2008-2009 Campus Master Plan for the University of Maine. It is an exceptional document, representing the culmination of dozens of hours of rigorous planning encompassing the many diverse aspects of our beautiful campus. This plan delineates a comprehensive vision for the University's future planning while full supporting our academic, research and public service mission and promoting our commitment to social, economic and environmental sustainability. It inspires campus planners with strategies to further improve campus life, reutilize and protect our historic buildings and landscapes, make more efficient use of our property through infill and redevelopment, and engage collaboratively with our neighboring communities.

Our Plan, I am pleased to tell you, during its final editing stages, won its first award: the 2009 National Merit Award for Excellence in Planning for an established Campus from the Society for College and University Planning. The selection committee chose UMaine's plan out of 200 entries, saying that it was "...refreshing to see... a good environmentally driven plan... first attempt out of the box and is admirable..." Our Plan, we have also been informed, is already becoming well known in higher education planning circles for its unique focus on sustainability. It is truly a document to be proud of.

I sincerely thank the professionals at Sasaki Associates for their assiduous dedication and exemplary vision for our campus, Mac Collins for all the work he did on the Historic Preservation Master Plan which helped lay the groundwork for this Plan, and Vice President for Administration and Finance Janet Waldron and the Campus Planning Committee members for effectively guiding the master planning process.

I trust that your reading will be both enjoyable and informative.

With warmest regards and sincerest appreciation for your continued interest in the University of Maine.


Dr. Robert A. Kennedy, President

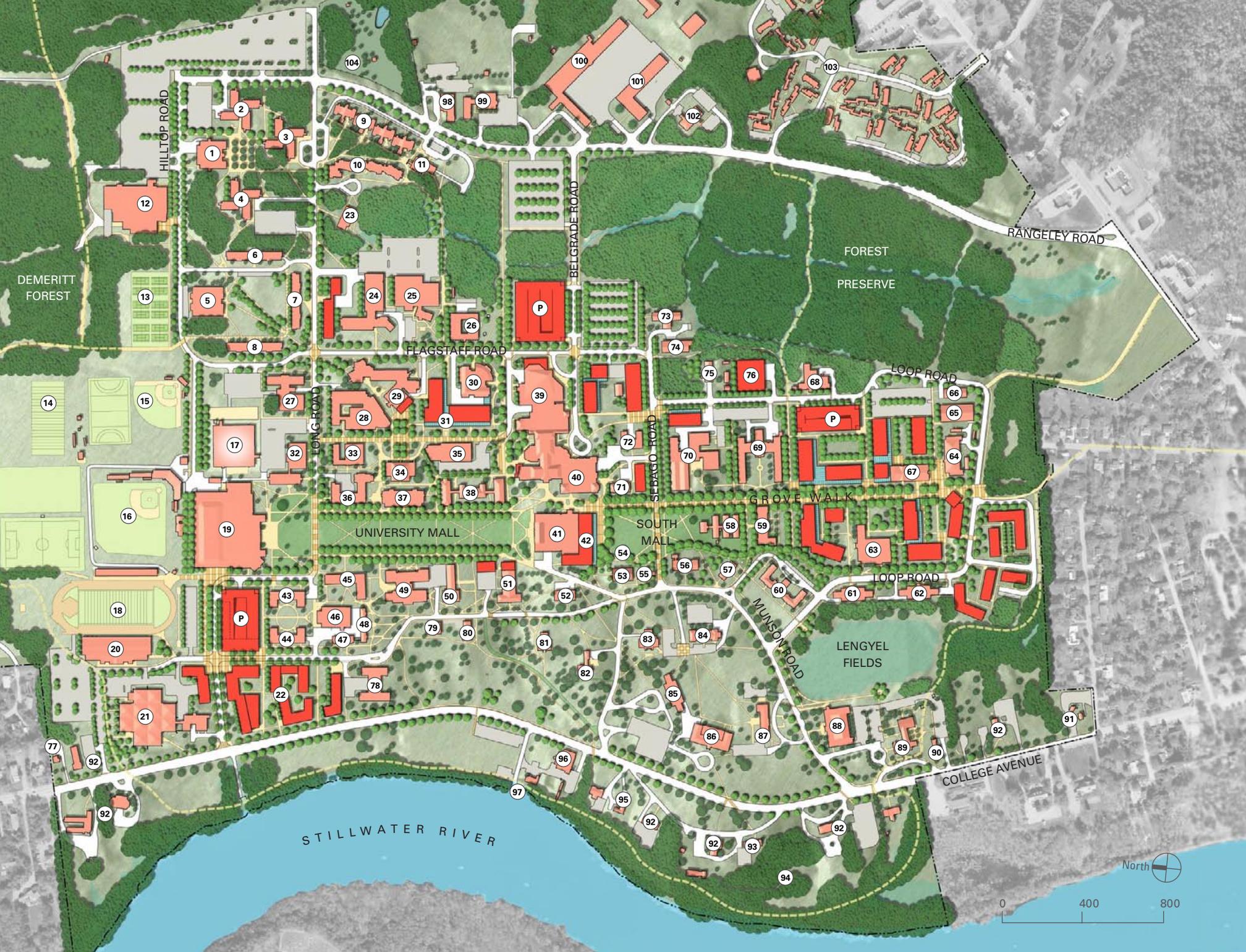
Table of Contents

Introduction	1	Sustainability Indicators	103
Master Plan	3	Natural Systems and Habitats	105
Introduction	5	Water Recovery	111
Planning Background	9	Energy and Emissions	117
Planning Context	11	Implementation and Governance	125
Master Planning History	15	Implementation	127
Planning Process	19	Governance	129
Master Plan Drivers	22	Appendices	135
Master Plan Vision, Frameworks and Elements	27	Landscape Design Guidance	137
The Master Plan Vision	29	Community Collaboration Opportunities	153
Land Use Framework	35	Space Planning Issues	159
Landscape Framework	41	Acknowledgements	162
Campus Access and Circulation Framework	53	Bibliography	166
Cultural Resources	63		
Community Resources	69		
Development Capacity	73		
Campus District Design Guidelines	77		
Campus Districts	79		
Front Lawn District	80		
Riverfront District	82		
University Mall North District	84		
South Campus District	88		
Core Campus Infill District	92		
Black Bear Village	96		
North Athletic District	98		
North Residential District	100		





introduction



DEMERITT
FOREST

HILLTOP ROAD

104

100

101

103

RANGELEY ROAD

FOREST
PRESERVE

BELGRADE ROAD

FLAGSTAFF ROAD

P

LOOP ROAD

14

15

17

27

33

34

35

38

39

72

70

75

69

68

66

65

64

P

GROVE WALK

SOUTH
MALL

41

42

54

56

58

59

63

67

62

UNIVERSITY MALL

45

49

50

51

52

83

84

57

60

LENGYEL
FIELDS

18

P

43

46

48

47

79

80

81

82

85

86

87

88

89

90

77

92

21

22

78

96

95

92

92

93

94

92

92

90

92

91

STILLWATER RIVER

COLLEGE AVENUE



0 400 800

2008 Master Plan: Existing and Proposed Buildings

North Residential Villages

1. HILLTOP
2. SOMERSET HALL
3. OXFORD HALL
4. KNOX HALL
5. STEWART COMMONS / ARTS BUILDING
6. ANDROSCOGGIN HALL
7. CUMBERLAND HALL
8. GANNETT HALL
9. DORIS TWITCHELL ALLEN VILLAGE (DTAV)
10. EDITH PATCH HALL
11. DTAV COMMUNITY CENTER

North Athletic and Black Bear Village

12. STUDENT RECREATION AND FITNESS CENTER
13. BRIDGE TENNIS COURTS
14. NORTH ATHLETIC FIELDS
15. KESSOCK FIELD
16. MAHANEY DIAMOND
17. MAHANEY DOME
18. MORSE FIELD / BECKETT FAMILY TRACK
19. MEMORIAL GYMNASIUM
20. HAROLD ALFOND STADIUM
21. HAROLD ALFOND SPORTS ARENA
22. BLACK BEAR VILLAGE

Academic Core

23. BION AND DORAIN FOSTER STUDENT INNOVATION CENTER
24. JENNESS HALL
25. ADVANCED ENGINEERED WOOD COMPOSITES (AEWC)
26. MURRAY HALL
27. CUTLER HEALTH CENTER
28. BARROWS HALL / ENGINEERING AND SCIENCE RESEARCH BUILDING (ESRB)
29. NEVILLE HALL AND EXPANSION
30. DONALD P. CORBETT BUSINESS BUILDING
31. SHIBLES HALL REPLACEMENT
32. BENNETT HALL

33. MACHINETOOL LAB
34. CROSBY HALL
35. ADVANCED MANUFACTURING CENTER (AMC)
36. BOARDMAN HALL
37. LITTLE HALL
38. STEVENS HALL
39. COLLINS CENTER FOR THE ARTS
40. MEMORIAL UNION
41. RAYMOND H. FOGLER LIBRARY
42. FOGLER LIBRARY ADDITION
43. CORBETT HALL
44. DUNN HALL
45. HART HALL
46. WELLS CONFERENCE CENTER
47. HANNIBAL HAMLIN HALL
48. OAK HALL
49. AUBERT HALL
50. LORD HALL
51. ALUMNI HALL AND ADDITION
52. HOLMES HALL
53. WINSLOW HALL
54. EDGAR ALAN CYRUS PAVILION THEATER
55. THE MAPLES
56. MERRILL HALL
57. COLVIN HALL
58. ROGER CLAPP GREENHOUSES
59. DEERING HALL
60. ESTABROOKE HALL
61. KENNEBEC HALL
62. AROOSTOOK HALL
63. YORK HALL AND COMMONS
64. SAWYER ENVIRONMENTAL CHEMISTRY RESEARCH LABORATORY
65. LIBRARY STORAGE
66. OCEANOGRAPHIC OPERATIONS BUILDING
67. BRYAND GLOBAL SCIENCES CENTER
68. USDA LAB
69. NUTTING HALL
70. HITCHNER HALL

71. ROGERS HALL
72. NORMAN SMITH HALL
73. AQUACULTURE RESEARCH BUILDING
74. PERKINS HALL
75. PAGE FARM AND HOME MUSEUM
76. USDA AQUACULTURE LAB

Front Lawn and River Front

77. NAVY ROTC
78. HANCOCK HALL
79. WINGATE HALL
80. FERNALD HALL
81. COBURN HALL
82. PRESIDENT'S HOUSE
83. CARNEGIE HALL
84. BALENTINE HALL
85. PENOBSCOT HALL
86. STODDER HALL
87. CHADBOURNE HALL
88. LENGYEL HALL
89. BUCHANAN ALUMNI HOUSE
90. CANADIAN-AMERICAN CENTER
91. UMAINE PRESS
92. GREEK ORGANIZATIONS
93. SIGMA CHI HERITAGE HOUSE
94. FAY HYLAND BOTANICAL GARDEN
95. CHILDREN'S CENTER
96. STEAM PLANT
97. DOCK AND BOAT LAUNCH

East Campus Facilities

98. UNIVERSITY CREDIT UNION
99. KEYO PUBLIC AFFAIRS BUILDING
100. SERVICE BUILDING
101. UNIVERSITY GARAGE
102. PUBLIC SAFETY BUILDING
103. TALMAR WOOD APARTMENTS (PRIVATE)
104. LYLE E. LITTLEFIELD ORNAMENTAL GARDEN

-  Existing Building
-  Proposed Building





INTRODUCTION

The 2008 University of Maine Master Plan provides a vision rooted in the unique history and traditions of the University land grant, academic, research and public service missions, the goals and aspirations of the campus community, and opportunities for the future. It simultaneously looks to the past, addresses the present, and promotes a philosophy of stewardship and sustainability. The Master Plan is based on four strategic opportunities:

1. Adopt an Ethic of Sustainability

The Master Plan embraces the three pillars of sustainability at the broadest level: social, economic and environmental with the intent of making “Stewardship and Sustainability” the guiding principles of the University. It specifically focuses on sustainable environmental and physical design principles while identifying opportunities for community, local government and business partnerships. The partnership opportunities are intended to stimulate social and economic development in Maine.

2. Enhancing the Cultural and Land Grant Legacy

The Master Plan looks to the rich planning history of the campus with the aim of protecting cultural and land resources. UMaine is distinguished by the involvement of Frederick Law Olmsted, Sr. and the Olmsted Brothers in the early design and development of the campus. This involvement provides the University with a rich array of architectural and landscape resources, the future of which has been thoughtfully considered in the 2007 Historic Preservation Master Plan for the campus. The key recommendations of that plan are reinforced in the Master Plan.

◀ WINTER VIEW OF GROVE WALK, LOOKING NORTH TOWARDS HITCHNER HALL, ILLUSTRATING THE PROPOSED SOCIAL SPACES, GROUP LEARNING AREAS AND INTERIOR ‘STREETS’ FOR WINTER CIRCULATION.



DEMERITT FOREST



UNIVERSITY MALL AND FOGLER LIBRARY

The land grant legacy provides the University with tremendous natural resources and stewardship opportunities. The Master Plan establishes a physical design and policy framework to ensure that this legacy is protected for future generations as well as the current teaching and research mission.

3. Improving the Collegiate Environment

The Master Plan places particular emphasis on improving the overall environment and amenities of the campus. This emphasis will result in a stronger sense of collegiality and community and assist in attracting a larger and more diverse population of students, faculty and staff. To that end, improvements to the campus focus on the social and learning environment, the residential experience, pedestrian connectivity, and design considerations in a northern climate.

4. Fostering Community Outreach

The Master Plan identifies opportunities for social and economic development beyond the campus boundaries. The opportunities are based on consultation with the local communities of Orono and Old Town and represent the first steps toward better community/campus integration and future planning processes. The emerging planning and economic development initiatives of both communities are addressed in the Master Plan.

Within the campus boundaries, the Master Plan enhances the educational, cultural, athletic and recreational amenities that serve the campus as well as broader communities.



CARNEGIE HALL



COBURN HALL



SUGAR MAPLE TREES IN AUTUMN



EARLY VIEW OF THE CAMPUS WITH ROGER CLAPP GREENHOUSES IN THE FOREGROUND (1836)



PAVILION THEATER WITH WINSLOW HALL IN BACKGROUND





planning
background



Laurentides
Provincial Park

Quebec

New Brunswick

Baxter SP

Maine

Saint John

UMaine

Bangor

Augusta

Acadia NP

Kejimikujik NP

Nova Scotia

Vermont

Montpelier

White Mountain NF

New Hampshire

Concord

Green Mountain NF

Massachusetts

Boston

Atlantic Ocean

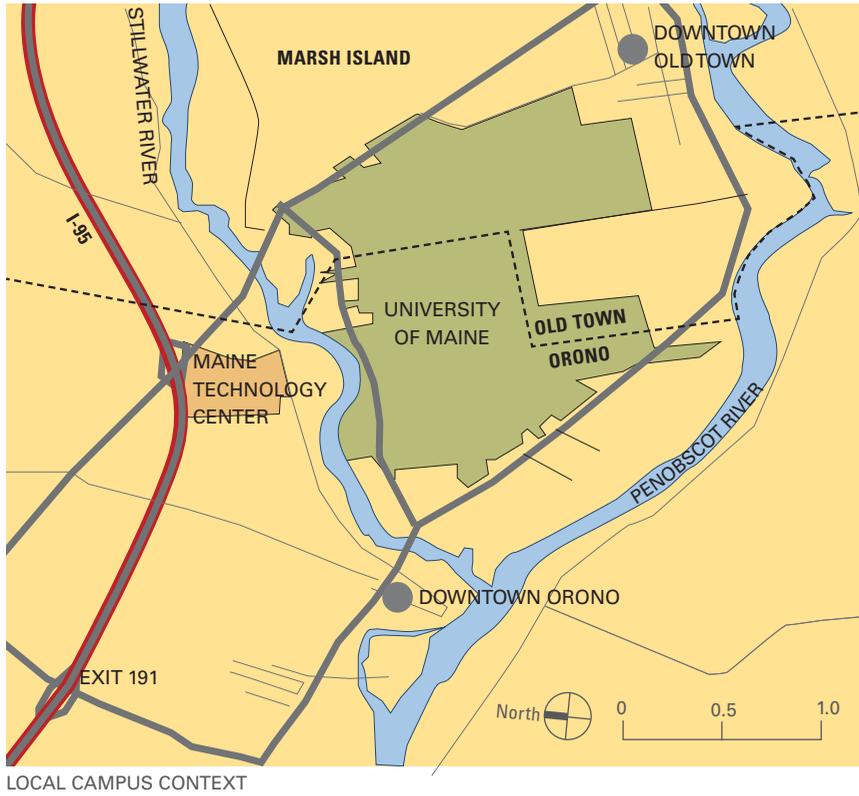
The Master Plan is based on a rigorous and defensible analysis and alternatives exploration process. This section provides an overview of the regional context, history, planning process and the key drivers behind the Master Plan.

PLANNING CONTEXT

The University of Maine campus is located 30 miles from the coast, approximately 200 miles from the New Hampshire border and 185 miles from the Canadian (Quebec) border. There are approximately 82,500 people within a 30-minute drive time radius of the UMaine campus. Ten miles to the south, Bangor is the largest nearby population center with just over 31,500 people.¹

The 1,598 acre campus straddles the town line between Orono and OldTown, though the majority of the developed campus is located in Orono. In 2007, the University drew almost 16 percent of the 12,000 students from outside the state. Potential growth for the University is expected to come from areas beyond Maine, a major consideration in terms of marketing and planning for the future of the campus.

1. 2002 Census



Regional Context

The coastal zone of Maine is the most developed region of the state, with over half of the state's population and much of its economic activity. The majority of the population and economic activity are concentrated in the southern half of the state.

As the University looks to partner with businesses and other institutions and draw from a wider student population, opportunities to the north should be considered. The University of Maine is as close to Boston, Massachusetts as it is to Quebec City (both are 242 miles away via shortest roadway travel routes). In addition to Quebec City and Montréal, several other Canadian maritime cities are as close to the campus as are comparable cities in the northeastern United States. This proximity to Canadian centers of economic activity may present opportunities for the University, and, in particular, the Canadian-American Center.

State of Maine

Within the State of Maine, the University is located near a variety of outdoor recreation amenities. Maine boasts some of the best ski and hiking trails in the northeast region of the United States. Along the Appalachian Trail are several state parks and ski resorts, such as Sunday River and Sugarloaf. To the southeast, Bar Harbor, Acadia National Park, Old Orchard Beach and the rest of the coast of Maine routinely attract people for their natural beauty and history. Marketing the University in this context is important in attracting faculty, staff and students from areas outside Maine.

The campus is also centrally positioned between the numerous experimental forests, research farms and other University facilities throughout the State. It serves as a hub for these various research initiatives.

Economic/Cultural Context

The economic and cultural context of the University are reviewed with the aim of highlighting key issues considered in the Master Plan and to begin the process of positioning the University in a broader context of economic and cultural resources. Given the focus on sustainability, the intent is to assist the University with the goal of contributing to economic and social development. While this is not the primary focus of the physical Master Plan, opportunities are highlighted as the basis for this and future planning processes.

Economic spill-overs from University research benefit the University, local communities and the entire State of Maine. The University plays a significant role in creating attractive jobs within the state and the Orono region. For every dollar the State of Maine invests in its university system, eight dollars are generated, which results in \$1.5 billion of economic impact in the State.¹

Orono and Old Town

The University is located in two municipalities: Orono to the south with a population of 9,100 and Old Town to the north with 8,100 residents. The town/city line crosses through the southern portion of Demeritt Forest, dividing the forest on the north side from the developed campus on the south. As such, the main entrance to campus from College Avenue is located in Orono but the local cultural amenities of each municipality are still a short drive away.

Both downtown Orono and Old Town are buffered from the campus by natural features: Old Town residents pass the Demeritt Forest and Orono citizens cross the Stillwater River. Both communities would like to “bridge” the gap that physically separates their respective downtowns from the campus. Old Town officials would like to develop along Stillwater Avenue to connect the downtown to College Avenue and the front door of campus. City planners would also like to establish an R&D park adjacent to the east side of campus along Penny Road.

Orono town planners have developed a strategy to link their downtown with the campus through a series of “stepping stone” development sites. Positioned on either side of the Stillwater River Bridge, at the southern approach to the campus, these potential development sites are within walking distance of downtown Orono and the University. Some of the development opportunities are envisioned as adaptive re-use of existing buildings while others involve new construction. A variety of different uses are also imagined for these sites, including; office, residential, hotel/inn, housing for graduate students or faculty/staff, University back-office space, gallery/exhibition space, cultural amenities, and extension/outreach programs. Retirement communities for individuals that would appreciate the cultural and educational benefits of living in close proximity to the University are also a potential market.

In addition to the stepping stone sites, Orono has identified development opportunities that capitalize on the proximity to campus, downtown Orono and I-95. One of these development projects is the Maine Technology Center, a research and development park. Located directly across the Stillwater River from campus, the center is the location for University-related research and business activities. Orono is considering additional development off of I-95 at exit 191 on approximately 150 acres, known as the Kelley Road planning area. The mix of uses proposed for this site is currently under review.

The initiatives of both municipalities are acknowledged in the Master Plan and will form the basis for University/community partnerships. Appendix B summarizes potential opportunities.

1. University of Maine System. Economic Impact on the State of Maine (University of Maine System: Orono, ME, September 2007).





MASTER PLANNING HISTORY

The University of Maine was founded in 1865 under the Morrill Act as a land grant university. It is the flagship institution of the University System of Maine and host to nearly 12,000 students. In 1980, the University received federal designation as a Sea Grant College, thereby expanding its mission.

The University has a rich academic and physical planning history. Fredrick Law Olmsted, designer of iconic landscapes such as Central Park, developed the first Master Plan for the campus in 1867. Although never officially adopted, the Olmsted influence is evident today in the Front Lawn, a picturesque landscape setting along the Stillwater River encompassing many of the historic buildings of the campus.

The University of Maine was founded in 1865 under the Morrill Act as a land grant university. It is the flagship institution of the University System of Maine and host to nearly 12,000 students. In 1980, the University received federal designation as a sea grant college, thereby expanding its mission.

◀ EARLY VIEW OF THE UNIVERSITY OF MAINE FROM
ACROSS THE STILLWATER RIVER



EARLY VIEW OF THE FRONT LAWN AREA

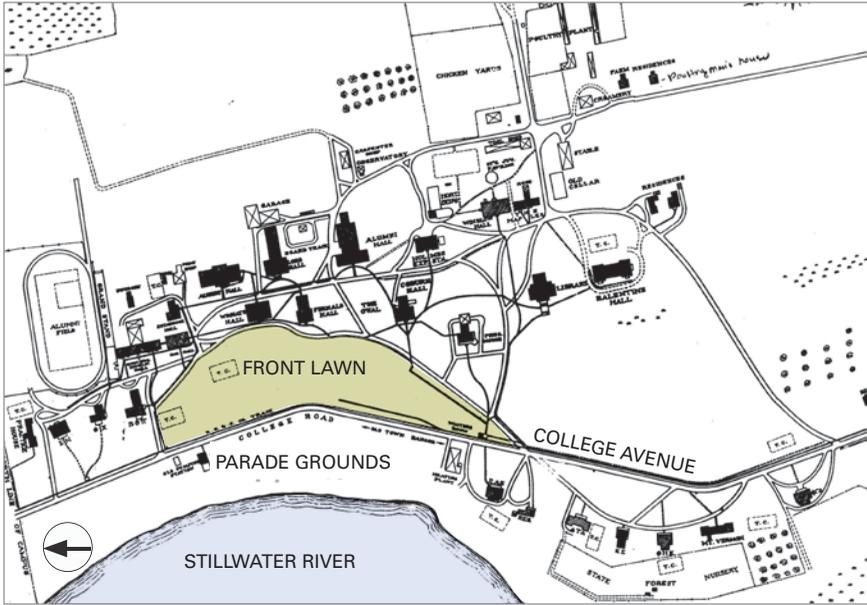


UNIVERSITY FARM HOUSE (1905)

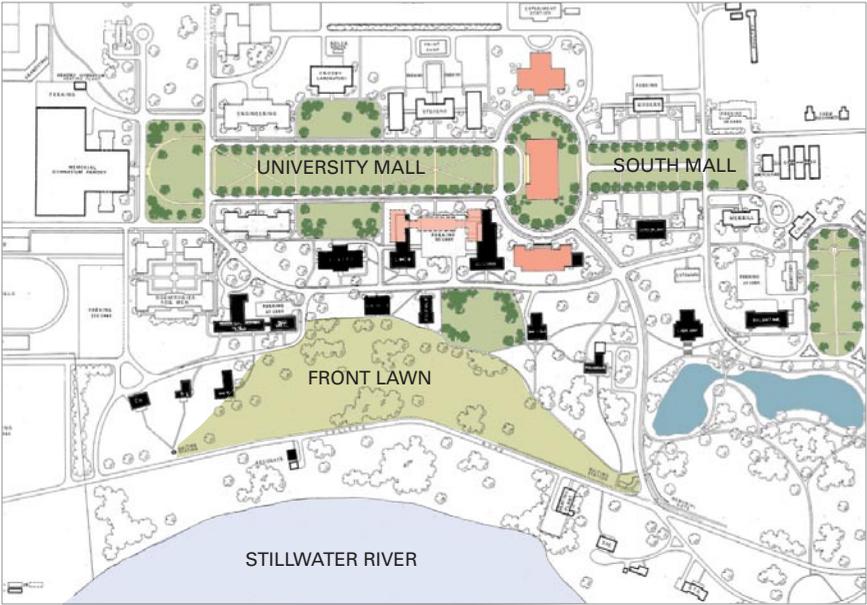
In 1932, the master plan for the campus was updated by the Olmsted Brothers firm, the successor firm to Olmsted Sr. Rather than expanding the picturesque landscape, the Olmsted Brothers created a plan more characteristic of the City Beautiful movement and in keeping with other classic campus plans. The 1932 master plan is characterized by the University Mall, a north-south oriented open space located on a plateau of former agricultural land. The University Mall served as the organizing principle for growth and expansion that occurred from 1932 well into the 1950s. Although the plan called for two malls bisected by a student center (in the location of the current library), the southern mall was never fully defined.

In the early 1970's, Perry Dean completed a master plan that proposed expansion east and south of the University Mall. The south mall was reintroduced as an organizing feature, as was a new east-west mall, housing towers and various road realignments. Although never fully realized, the plan influenced the placement of the Collins Center for the Arts, the associated parking on Belgrade Road, the Belgrade Spur roadway and located the Somerset, Oxford, and Knox residence Halls.

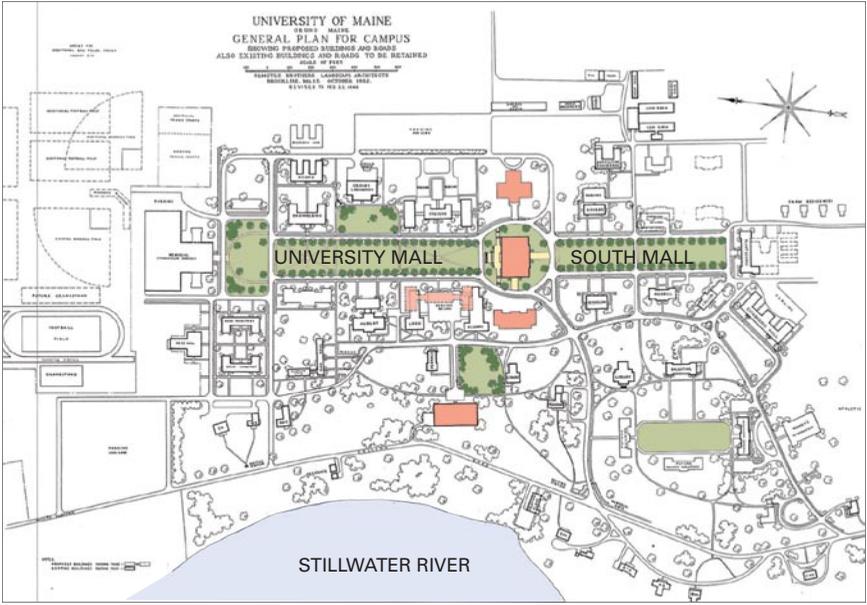
The 2008 Master Plan is distinguished by being the first comprehensive effort to define and address the University's land and facilities needs for the 21st Century. The Plan addresses cumulative changes in the campus environment and sets forth a vision for the campus over the next 20 to 25 years.



1922 OLMSTED SENIOR MASTER PLAN



1932 OLMSTED BROTHERS MASTER PLAN SHOWING THE UNIVERSITY MALL AND SOUTH MALL



1948 MASTER PLAN UPDATE BY THE OLMSTED BROTHERS





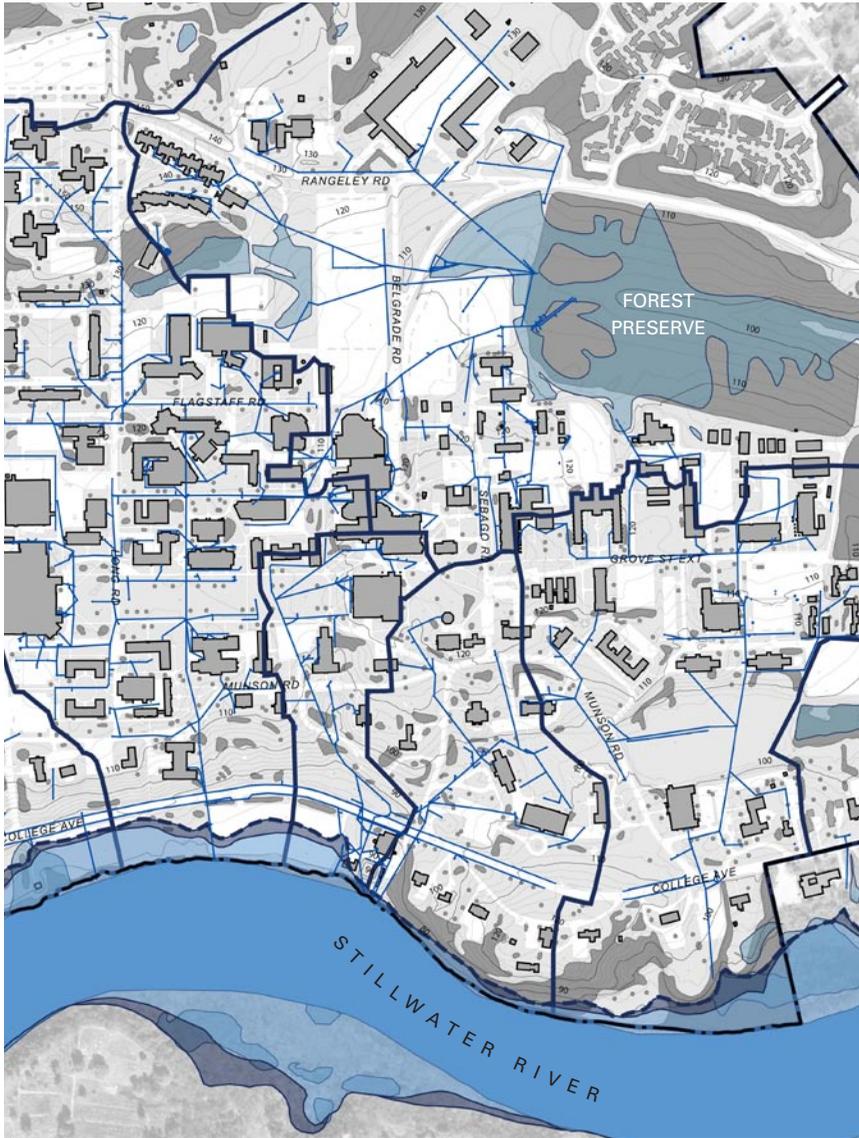
PLANNING PROCESS

The Master Planning process commenced in June of 2007 with representation from the University and broader communities. It continued over the course of one year including several site reconnaissance visits and seven multi-day work sessions with a variety of University and community representatives. The acknowledgement section at the end of this document provides a complete list of participants in the planning process.

The master planning process consisted of three phases structured around the seven work sessions. The products of each phase are recorded in detailed and extensive PowerPoint presentations which were provided to the University in digital format.

The 2008 Master Plan incorporates the recommendations and findings of several previous studies completed in recent years. These studies addressed a number of campus environment and operational issues. The 2008 Master Plan comprehensively evaluates the previous studies and adopts many of the recommendations, highlighting new opportunities as well as conflicts. A complete list of the studies reviewed is provided in the Bibliography of this document.

◀ PRELIMINARY MASTER PLAN CONCEPT



STORMWATER ANALYSIS SHOWING WATERSHEDS, UTILITY LINES, FLOOD ZONES AND WETLANDS

Phase One: Inventory and Analysis

Phase One included interviews with University stakeholders to ascertain the desired outcomes, principles, goals and objectives for the Master Plan. A preliminary investigation of existing conditions was also conducted of the campus and surrounding community context. These initial efforts were followed by an in-depth analysis of campus conditions, addressing such elements as program organization, open space structure, circulation patterns, utilities and stormwater management, energy use, carbon emissions and overall campus integration. As noted, the analysis incorporated the findings of several previous studies.

The findings of the Phase One analysis were presented during an on-campus work session involving presentations and meetings with the Campus Planning Committee and other University stakeholders.

Phase Two: Concept Alternatives

The concept alternatives phase of work examined the most favorable and acceptable options for near-term and long-term campus development. The concept alternatives addressed options for land use, building use, reuse and program accommodation, circulation and parking, open space, and overall campus integration. The intent of this phase was to identify a preferred concept alternative or a hybrid of the alternatives. The process included a comparative assessment of the concept alternatives in association with the Campus Planning Committee and other University stakeholders. The Phase Two process resulted in the selection of a preferred direction for the future of the campus.

Phase Three: Master Plan Documentation

Phase Three focused on the detailed development and documentation of the Master Plan. The final documentation records the findings of the process and will guide decision-making and the incremental implementation of the Master Plan over the next twenty years. The Master Plan provides a vision for the future and illustrates the long-term build-out potential of the campus. It prioritizes immediate and long-term strategies, identifying specific target projects for implementation. The Master Plan also provides a foundation document for development opportunities.



MASTER PLAN CONCEPT ALTERNATIVES

Master Plan Drivers

The Master Plan was initiated in response to several important issues and considerations identified by the University:

- The University of Maine Strategic Plan 2006-2011
- The Academic, Research and Public Service missions of the University
- Sustainability, the three pillars; environmental, financial and social
- The American College and University Presidents Climate Commitment
- Projected enrollment growth
- Physical and financial conditions
- Stormwater and regulatory issues

2006 Strategic Plan

The 2008 Master Plan recognizes and incorporates previous strategic planning goals articulated in the University of Maine Strategic Plan 2006-2011 (dated May 15, 2006). The Strategic Plan establishes a theme of Leadership, Engagement and Discovery focusing on eight goals. The goals are listed below along with actions or outcomes considered in the Master Plan.

1. Be a first choice institution for highly qualified and diverse students, employees, and faculty. *The campus environment should be memorable and facilities should improve the quality of life. The University message should emphasize the opportunities associated with UMaine's economic and cultural context.*
2. Sustain an engaged and supportive learning community through policies and organizational culture. *The learning and social nodes of the campus environment should be an important consideration and should be enhanced throughout the campus.*
3. Strengthen essential partnerships with, and accountability to, the communities and people of Maine by ensuring that UMaine is an institution that meets their educational, economic, social, and cultural needs and aspirations. *Collaboration with Orono, Old Town, the State of Maine and potential private sector partners is important. The University should make accessible the major public venues and resources of the campus.*

4. Increase critical role in the economy and well-being of the State of Maine. *The University should explore options for integrating University technology transfer and creativity into local partnerships or business endeavors.*
5. Expand the University's role in the creation of new knowledge through research, scholarship, and the arts. *The University should provide a forum for information exchange, encourage publications and encourage public access to University events and activities.*
6. Increase public and private support for the institution. *The Master Plan and vision should be used to capture the attention of University alumni, state government and potential private sector partners with the aim of increasing donations and identifying funding sources.*
7. Develop comprehensive informational and promotional strategies to publicize the excellence of the institution. *The Master Plan should result in documentation that can be utilized to highlight development opportunities.*
8. Excel among peer institutions in quality of life measures. *Facilities and campus environmental improvements that contribute to the overall quality of life must be a high priority. Housing, amenities and social space will be important for recruiting faculty, staff and students.*

Academic, Research and Public Service Missions

The University of Maine is the premier research and graduate institution among the seven public universities in the State of Maine. The academic study and research conducted at UMaine generate new technologies, patents and job creation. The reach of UMaine's public service extends well beyond its campus and state, enriching the lives of numerous citizens.

Economic spill-overs from University research benefit the University, local communities and the entire State of Maine. The University plays a significant role in creating attractive jobs within the state and the Orono region. For every dollar the State of Maine invests in its university system, eight dollars are generated, which results in \$1.5 billion of economic impact in the State.¹

The University Research Council, a 26 member interdisciplinary group of faculty and staff, has identified sustained Research and Development investment as a key to a vital, sustainable Maine economy. The Council established the goal of raising research at UMaine to a leadership position among compara-

1. University of Maine System. Economic Impact on the State of Maine (University of Maine System: Orono, ME, September 2007).

ble land and sea grant research universities within five years.¹ To accomplish this goal, University officials proposed that the State increase investment in R&D, scholarship and creative activity from the 2005 rate of \$16 million/year to \$60 million in 2010. By focusing this investment on existing academic strengths and emerging opportunities for interdisciplinary collaboration, officials hope to engage local communities and serve as an economic engine for Maine.

To accommodate the research vision, additional University faculty and facilities will be required. To that end, the Master Plan proposes a flexible framework for accommodating research yet to be defined and academic space on campus over the next 20 to 25 years.

Sustainability

The University of Maine is committed to social, economic and environmental sustainability. Synergies between these “three pillars” are encouraged in the Master Plan.

Environmental Sustainability

The University of Maine possesses vast intact natural resources and a constituency committed to environmental sustainability. The academic and research programs at UMaine reflect this commitment through departments such as the Climate Change Institute, an interdisciplinary research unit of international significance. The special history and mission of UMaine as both a land-grant and sea-grant university is in line with an attitude of stewardship and sustainability and supports efforts to utilize the campus environment as a lab for sustainable practices and research.

The University of Maine leads other universities in environmental sustainability with the commitment to achieve carbon neutrality under the American College and University Presidents Climate Commitment (ACUPCC). Under this program, the University will begin to implement a Climate Action Plan. The Master Plan examines, in further detail, the steps the University must take to comply with the ACUPCC and provides a global view of the major issues the University faces with regard to environmental sustainability.

1. University Research Council. Strategic Implementation Plan for Enhancement of Research, Scholarship and Creative Activity, (The University of Maine: Orono, ME, December 9, 2005).

Economic Sustainability

Through a variety of academic and research endeavors, UMaine makes significant contributions to local and statewide economic sustainability. The University is committed to increasing its research activity in line with its special mission and role within the University System of Maine and the State as a whole. The Master Plan examines how this expansion can be accommodated on campus.

Social Sustainability

The University is dedicated to public outreach, engagement and interaction. Existing programs and facilities, such as the Collins Center for the Arts, promote social interaction and cultural enrichment. Through the master planning process, University officials engaged the local community to identify synergies and opportunities. As a result, the Master Plan establishes the basis for continued public involvement. The Master Plan itself will be a living document, providing a framework and vision for growth but adjusting to as yet unforeseen issues and needs.

American College and University Presidents Climate Commitment

As a signatory of the American College and University Presidents Climate Commitment (ACUPCC), the University of Maine has committed to the goal of climate neutrality.¹ The University was a charter signatory of the Commitment in 2007. ACUPCC leaders believe that educators have a societal responsibility to prepare students with the skills and mindset necessary to achieve climate neutrality. By modeling best practices, changing curriculum and through general education, students will be immersed in sustainability precepts.

Achieving climate neutrality will necessitate significant changes to University operations. The Master Plan balances this objective within the context of other goals and considerations. It provides preliminary, overarching guidance to help the University begin the transition toward climate neutrality and to assist with the development of a Climate Action Plan.

1. www.presidentsclimatecommitment.org/ (June 11, 2008).

The ACUPCC not only signals the beginning of a focused effort to reduce carbon emissions on the campus but also a commitment to sustainability in the broadest sense—a commitment not only to transform the UMaine campus, but to continue with the transformation of the mission, curriculum, research and operations of the University. This commitment is consistent with the University's original land grant values: stewardship, education, research and outreach.

Enrollment projections

The following enrollment assumptions were determined through discussions with members of the Master Planning Committee, the President and Senior Administrators and guided the development of the Master Plan:

- The campus will accommodate an additional 2,000 students within the next five to seven years.
- 1,300 of these students will be located on the Orono campus.
- The percentage of Full Time Equivalent (FTE) students housed on campus will be 40% for undergraduates and 20% for graduate students.

Facilities and Resources

The University faces a future of decreased public funding and a considerable deferred maintenance backlog. A coordinated approach to existing resource management is crucial. The Master Plan document establishes a framework for rational investment in the campus.

Despite financial constraints, the University has grown at an average rate of 75,000 assignable square feet (asf) per year since World War II, or about 110,000 gross square feet (gsf) per year. Based on this historic trend, the campus could expect to grow by over 2 million GSF over the next 20 to 25 years. The Master Plan identifies potential building and redevelopment sites to accommodate the potential space needs.

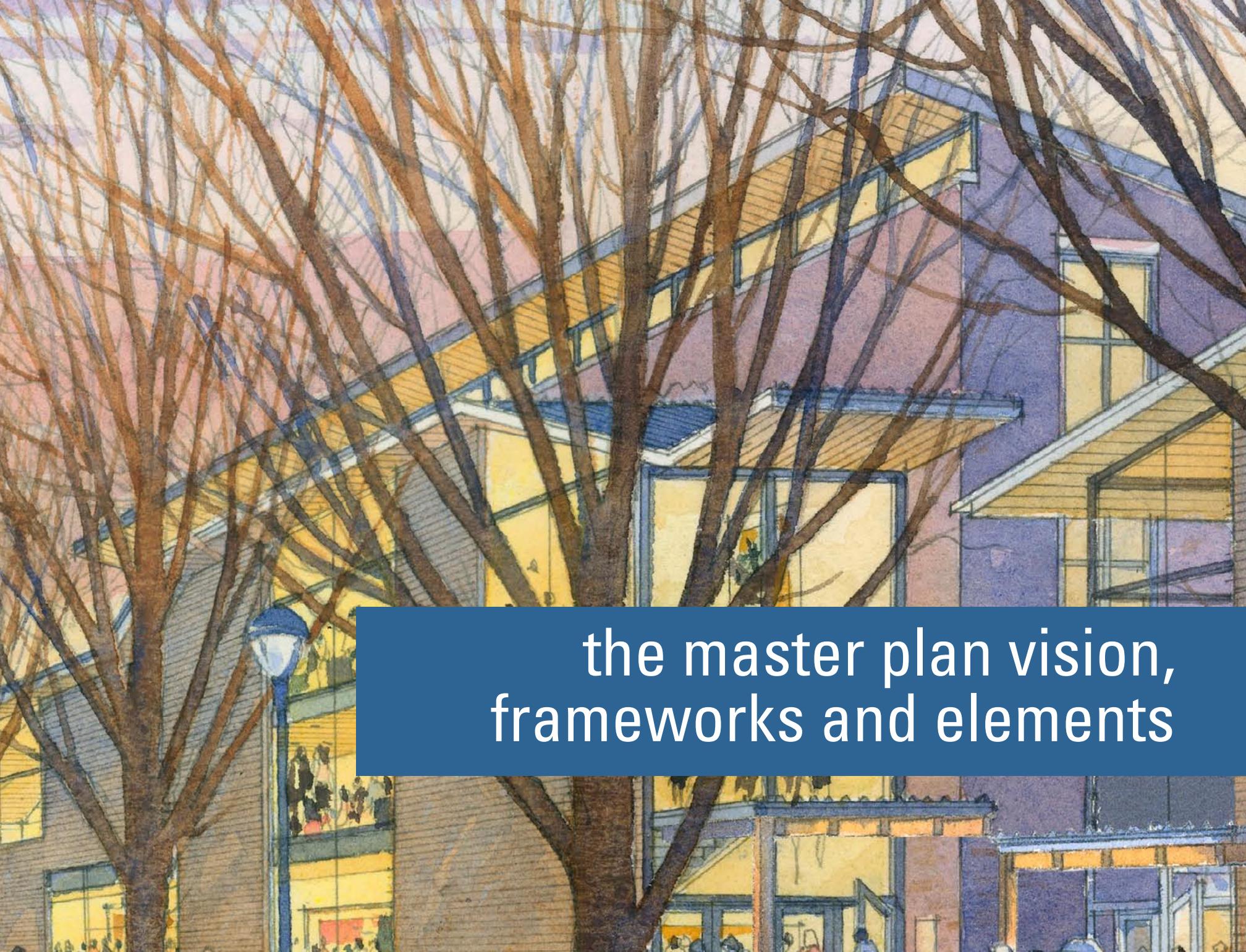
Deferred maintenance is an important issue at the University. The Master Plan suggests priority buildings for investment and identifies buildings that may be better suited to demolition and replacement based on several criteria: historical significance, deferred maintenance costs, contribution to campus character, utilization of land and ability to best provide for academic needs or other program.

Stormwater Regulatory Issues¹

Much of the campus rainwater runoff flows directly into the Stillwater River. As such, stormwater management and water quality issues will be a key concern for future campus development. The University has both the legal obligation to mitigate the impacts of development and strong tradition of land stewardship to responsibly manage natural resources. The State Department of Environmental Protection, through the Bureau of Land and Water Quality, provides site standards designed to mitigate runoff flow, prevent erosion and maintain water quality. The state also encourages the use of Low Impact Development measures, which are discussed in greater detail in the Water Resources section of this document.

1. Maine Bureau of Land and Water Quality, Stormwater Management: <http://www.maine.gov/dep/blwq/docstand/stormwater/storm.htm>





the master plan vision,
frameworks and elements

DEMERITT
FOREST

GYM

P

LIBRARY

UNION

P





FOREST
PRESERVE

THE MASTER PLAN VISION

The Master Plan establishes a vision for a vibrant and attractive campus setting. The vision is rooted in the unique history and traditions of the University, the academic and research mission, the goals and aspirations of the campus community, and opportunities for the future. The vision is further informed by the goals set forth for the 2008 Master Plan.

The Master Plan promotes sustainable and responsible development that enriches both the natural environment and campus life. To this end, the Plan establishes a Campus Growth Boundary that concentrates academic, research and support facilities in the central campus area, limits impacts on natural habitat, efficiently utilizes existing infrastructure and promotes a collegiate, pedestrian-scale environment.

The sustainable design strategies of the Master Plan respond to the natural systems and speak to the relationship between the quality of life, the local climate and resource consumption patterns. The Master Plan addresses environmental sustainability in four key areas: 1) natural systems and habitats; 2) water resources; 3) energy and atmosphere; and 4) access and circulation

The Master Plan consists of several functional and design frameworks which collectively form a comprehensive and coordinated vision for guiding incremental change on the campus over the next 20 - 25 years. The vision is based on the principles and goals established at the outset of the planning process in conjunction with the University. It should be noted that the Vision illustrates the full build-out of the Master Plan and a development capacity in excess of known space needs. While the form and extent of future facilities will evolve over time in response to program, logistical and financial considerations, it is the open space, landscape and circulation improvements identified in the Plan that will provide the lasting organizational structure for the campus.

- Existing Building
- Proposed Building

◀ BIRD'S EYE VIEW OF CAMPUS MASTER PLAN

Principles and Goals

Through a broad consultation and review process, the following goals were developed to guide the planning process:

Academic and Research

The Plan should define the terms by which the University's strategic academic and research vision can be physically accommodated to best effect—through integration of basic and applied research in the campus learning environment and technology transfer initiatives located to benefit the community.

Sustainability & Stewardship

The Plan should advance the philosophy of sustainability, quality of life and human betterment as a 21st century expression of the land and sea grant mission of UMaine. It should promote prudent stewardship and sound management of physical resources and make the campus a working model of sustainability and smart growth. It should enhance the connections between the developed areas of the campus and the surrounding natural systems to reinforce UMaine's origins as a land grant institution.

Collegiality and Community

The Plan should create an environment that facilitates community and an academic setting that fosters robust, innovative and collaborative research, scholarship and creative activity, including strong connections between graduate and undergraduate programs.

Compact Land Use Pattern

The Plan should maintain a compact land-use pattern in order to reinforce the pedestrian qualities of the campus; maintain operational and infrastructure efficiencies; preserve natural systems; and enhance campus vitality by placing a variety of activities in close proximity to one another.

Campus Access

The Plan should promote the pedestrianization of the central campus, taking into consideration issues of climate, security, comfort and convenience, including interior/exterior pedestrian circulation connectivity. In conjunction with this goal, the Master Plan should encourage alternative modes of transportation in line with sustainability and carbon emissions reduction goals.

Landscape

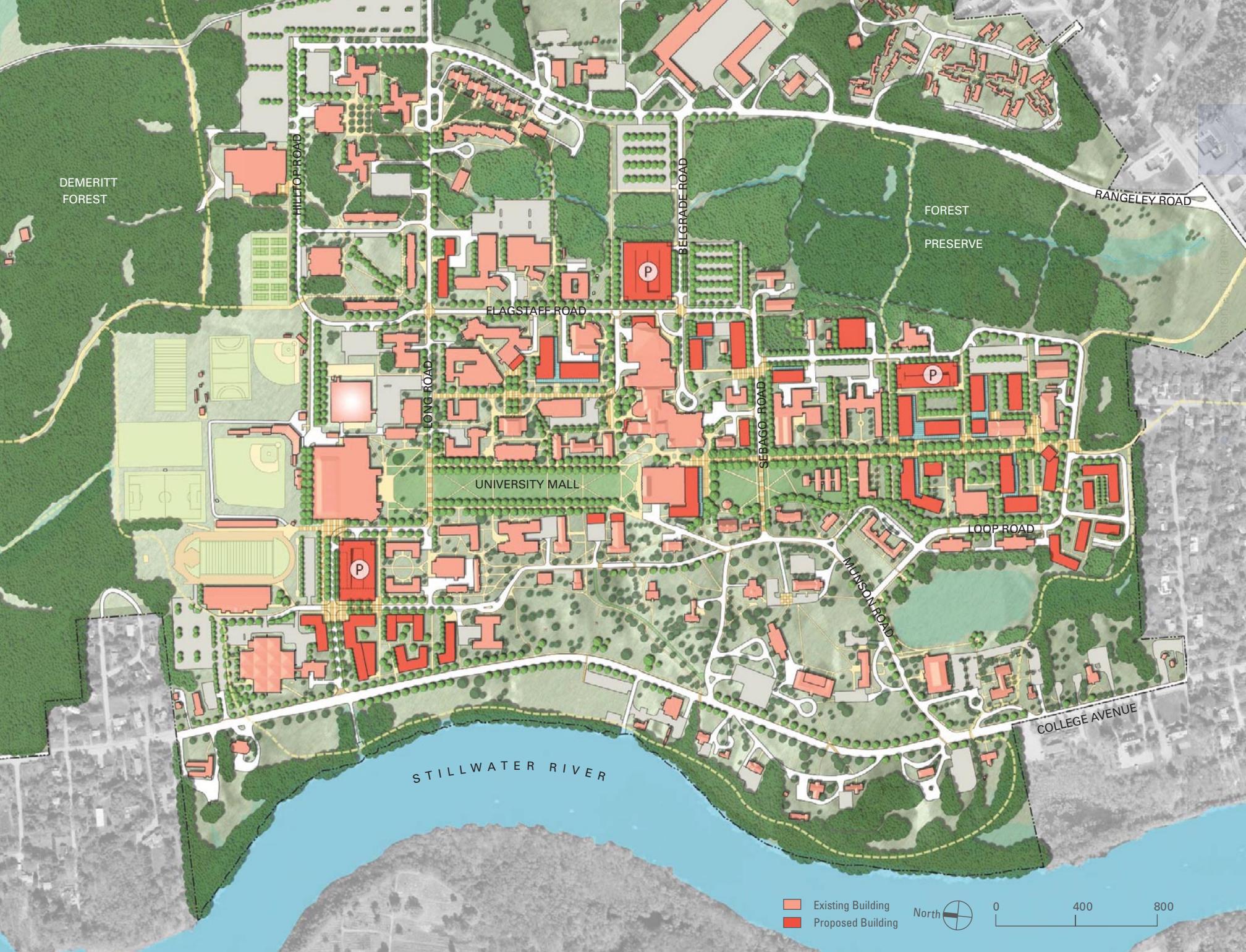
The Plan should restore, enhance and extend the quality and character of the historic campus core landscape by means of a well-defined framework of open spaces and linkages as well as sustainable implementation guidelines. It should adopt, as appropriate, recommendations of the 2007 Historic Preservation Plan.

Architectural Design

The Plan should inform guidelines for historic and future buildings taking into account the materials, building forms, massing and building-to-site ratios of existing buildings while addressing energy efficiency, modern program requirements, and accessibility.

Partnerships and Community Interface

The Plan should maintain the existing compatible land use relationships with the surrounding business and residential districts of Orono and Old Town in order to enhance partnership opportunities with the local community. New partnerships should be carefully weighed as potential economic and community revitalization generators for both the University and the broader community. Cultural, educational and recreational partnerships should be facilitated.



DEMERRITT
FOREST

HILLTOP ROAD

FLAGSTAFF ROAD

BELGRADE ROAD

FOREST
PRESERVE

RANGELEY ROAD

LONG ROAD

UNIVERSITY MALL

SEBAGO ROAD

LOOP ROAD

MANSON ROAD

STILLWATER RIVER

COLLEGE AVENUE

Existing Building
Proposed Building



0 400 800

Master Plan Frameworks and Elements

The Master Plan consists of several functional and design frameworks which collectively form a comprehensive and coordinated vision for guiding incremental change on the campus.

1. Land Use Framework

The Land Use Framework provides connections between the natural features and the existing landscape spaces of the core campus. The Framework, by protecting and extending the natural systems and woodlands, defines the development and spatial pattern of the Master Plan. It sets in place policies such as the Campus Growth Boundary to protect outlying land uses including the Demeritt Forest, the Forest Preserve, and the Stillwater Riverfront. Academic, research and support facilities are concentrated inside the Growth Boundary to promote a pedestrian scale, and maintain a compact land use pattern.

2. Landscape Framework

The Landscape Framework links the “frame” of natural systems that surround the developed campus with the formal landscapes within the Growth Boundary. New pathways connect campus districts; new formal spaces organize future development; a series of east/west windbreaks shelter buildings and pathways from northern winter winds; and south-facing quadrangles provide sheltered micro-climates. The Landscape Framework maximizes the value of landscape elements to promote human comfort and capitalize on solar energy.

3. Circulation Framework

The Circulation Framework enhances the pedestrian, bicycle, and transit networks of the campus with the aim of providing a number of access options. It eliminates redundant roads, simplifies vehicular circulation and removes traffic from the central campus to improve the pedestrian experience. The creation of a Loop Road is proposed to rationalize traffic flow around the perimeter of the campus. The Loop Road is defined, in general, by existing roadways including Long Road, Flagstaff Road, Munson Road and new roadway segments in the south campus area. Future development is concentrated in the core campus area within a ten minute walk of the Fogler Library. The compact campus development is achieved by the relocation of existing parking from the campus interior to consolidated garages and peripheral parking locations. The garages are linked with the enhanced pedestrian network to encourage campus users to “park once and walk.”

4. Cultural Resources

The Cultural Resource Framework preserves and enhances the unique history and traditions of the UMaine campus. It adopts the recommendations of the 2007 Historic Preservation Master Plan including the architectural guidance for “contributing” buildings and the Landscape Recommendations for the iconic landscapes of the Front Lawn, the Riverfront and the University Mall. The proposed expansion of the existing Historic District is also adopted in the Master Plan with minor modifications.

5. Community Resources

The Community Resources Plan highlights the amenities, civic nodes and residential communities that contribute to the quality of campus life. The Master Plan supports a sense of community by creating and enhancing civic meeting points and by providing connectivity between these nodes. Community is addressed at the following levels: 1) campus-wide gathering and meeting spaces such as the expanded Library; 2) learning nodes; 3) residential communities; 4) dining and food services; 5) cultural amenities and 6) athletics and recreation facilities.

6. Development Capacity

The Master Plan provides ample capacity to accommodate future academic, research and campus life facilities. An estimated net 1.7 million gsf of new academic space can be accommodated in the Master Plan. Based on growth trends since 1945, this represents 25 years of expansion. The Master Plan proposes locations for known program elements including the Fogler Library Expansion, the Jordan Planetarium and the Aquatic Research Center.

Campus District Design Guidelines

This section provides guidance for building placement and placemaking within the Master Plan. Recommendations are provided for infill development and redevelopment in areas of the campus that are underutilized or that may benefit from regeneration. Guidance is provided for the following campus districts:

- **Front Lawn**—the original campus landscape and buildings set out in the 1867 Olmsted Master Plan are maintained in the Master Plan in general accordance with the recommendations of the Historic Preservation Master Plan.

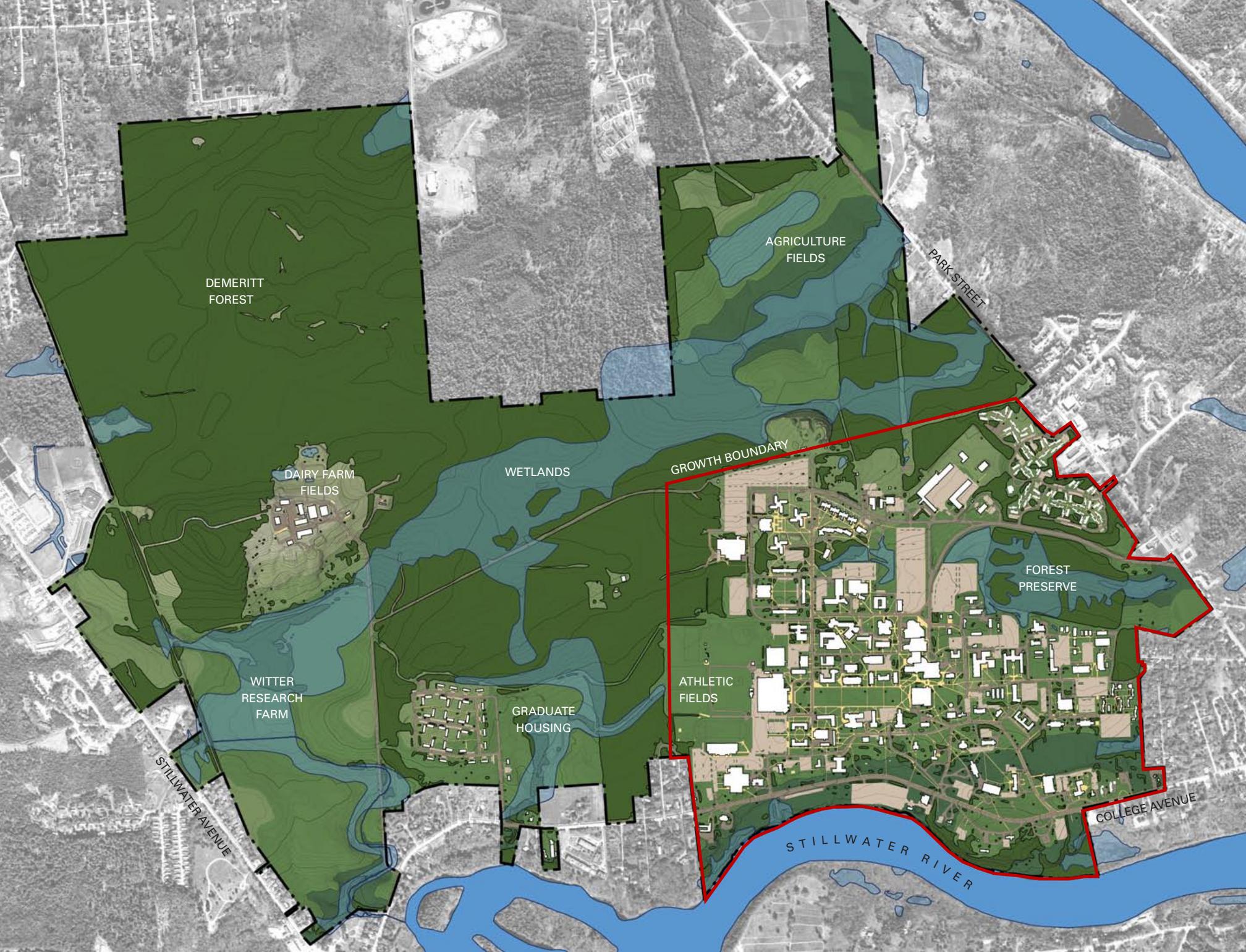
- **River Front**—the Stillwater riverfront landscape is transformed in the Master Plan by the removal of surface parking, replacing it with the Parade Ground as proposed in the 1867 Olmsted plan. A riverfront trail which pays homage to the Wabanki people, provides recreational access to the riparian landscape. The existing Greek Houses along the riverfront remain in the Master Plan.
- **University Mall (North Mall)**—the iconic open space of the UMaine campus, the University Mall landscape is improved in the Master Plan by new trees, diagonal pathways and limited infill development. Improvements and additions are proposed in accordance with the 2007 Historic Preservation Master Plan.
- **Core Campus Infill**—infill development and redevelopment is proposed in areas east of the University Mall to provide opportunities for growth in conjunction with new pedestrian walkways and plazas. Specific proposals include the Diagonal Walk, Beddington Walk, Martin Luther King, Jr. Walk and Plaza and Cloke Plaza.
- **South Campus**—the South Campus District combines the longstanding planning goal of creating a South Mall with the need to accommodate new academic, research and support facilities. The South District provides the opportunity to address future facility needs in conjunction with major new improvements to the landscape and pedestrian circulation frameworks.
- **Black Bear Village**—located at the intersection of Long Road and College Avenue and extending eastward to the Memorial Gym, Black Bear Village is envisioned as a major development opportunity site on the campus. Subject to future study, the area is reserved for potential public / private partnerships that would facilitate the construction of new housing, parking and potentially retail and restaurant facilities.
- **North Residential Villages**—the landscape structure surrounding the residence halls of the Hilltop area, the Stewart quadrangle and the Doris Twitchell Allen Village are enhanced in the Master Plan in general accordance with the 2006 Residence Hall Landscape Guidelines. The intent is to transform the landscape to promote more outdoor gathering and passive recreation spaces.
- **North Athletic District**—Improvements to the Athletic District are proposed in accordance with current program needs including a new field hockey facility. The district is linked in the Master Plan via Black Bear Way, an east/west windbreak and pedestrian corridor linking the Alford Sports Arena with the Student Recreation and Fitness Center.



GROVE WALK AND SOUTH MALL—PROPOSED VIEW



UNIVERSITY MALL AND ENGINEERING QUADRANGLE—PROPOSED VIEW



DEMERITT FOREST

AGRICULTURE FIELDS

PARK STREET

DAIRY FARM FIELDS

WETLANDS

GROWTH BOUNDARY

FOREST PRESERVE

WITTER RESEARCH FARM

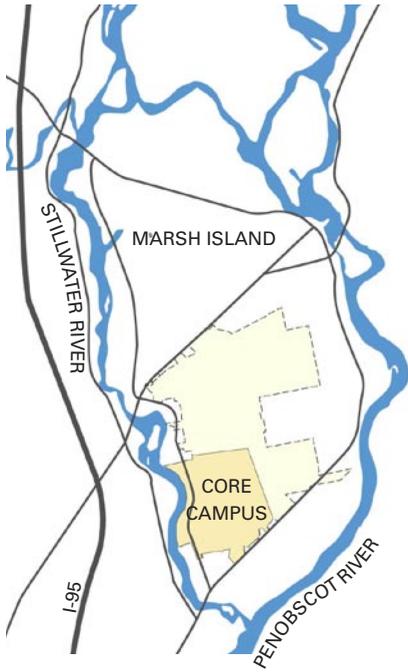
GRADUATE HOUSING

ATHLETIC FIELDS

STILLWATER AVENUE

STILLWATER RIVER

COLLEGE AVENUE



◀ CAMPUS GROWTH BOUNDARY,
LAND USE AND NATURAL FEATURES

LAND USE FRAMEWORK

The University of Maine campus is located on Marsh Island—an island defined by the Penobscot River on the east and the Stillwater River on the west. The 1,598 acre campus includes 775 acres of woodland, 197 acres of farmland and a substantial area of waterfront along the Stillwater River. The developed area occupies approximately 380 acres in the southwest area of the campus.

Natural Environments “Frame”

Campus Forests

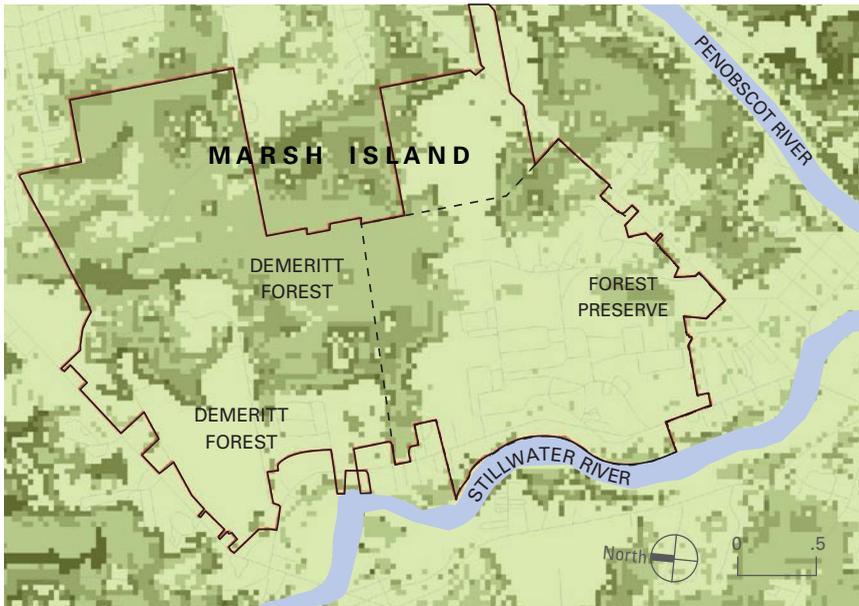
The Plan acknowledges the value of the Demeritt Forest, the Forest Preserve, the Stillwater River Front, the Witter Research Farm and the Dairy Farm.

Demeritt Forest

The Demeritt Forest south of Stillwater Avenue occupies approximately 685 acres of the contiguous 1,598 acre campus or 43 percent of the land area. The Forest serves as a recreational amenity with numerous walking and bike trails. It is recognized for the functions it performs in terms of habitat, storm-water management, air quality and carbon sequestration. It is also acknowledged for the research and passive recreational opportunities it presents. The Forest contains a range of species as recorded in a 1968 inventory:

- White Pine 27%
- Spruce 29%
- Red Maple 18%
- Balsam Fir 14%
- Hemlock 12%
- Birch 10%¹

¹ University of Maine. College of Forest Resources (1968)



HABITAT VALUE (FISH AND WILDLIFE SERVICE, 2003)



Campus woodlands and wetlands are important habitats in the context of Marsh Island.

Forest Preserve

The Forest Preserve is a 30 acre wooded area located on the south end of campus. The Preserve lies in a wetland area that extends from Long Road to Park Street. The Preserve is disconnected from other forest areas such as the Demeritt Forest as a result of previous agriculture and development projects such as Belgrade Road and the Collins Center for the Arts parking lot.

Carbon Sequestration of Campus Forests

CityGreen, software developed by American Forests and the USDA Forest Service, was utilized to calculate the carbon sequestration potential of the Demeritt and other campus woodland. By absorbing carbon dioxide, the campus woodlands perform a vital environmental service in removing CO₂ from the atmosphere. According to the CityGreen analysis, the campus forests sequester 10.73 metric tonnes of CO₂ annually. An estimated 868 tonnes of CO₂ are stored in the existing biomass.

It is recommended that the Forest be managed in a sustainable manner and that the overall campus land area dedicated to woodland be maintained at no less than the existing 775 acres. Opportunities should be explored for utilizing the campus forests for academic and research purposes by the College of Natural Sciences, Forestry and Agriculture. It should be noted that per the guidance of the ACUPCC, existing forests are not considered as carbon offsets. Reforested areas, however, may be counted.

While the University owns and operates a number of other forested areas in the state, only those lands contiguous to the core campus area were included in the sequestration calculations.

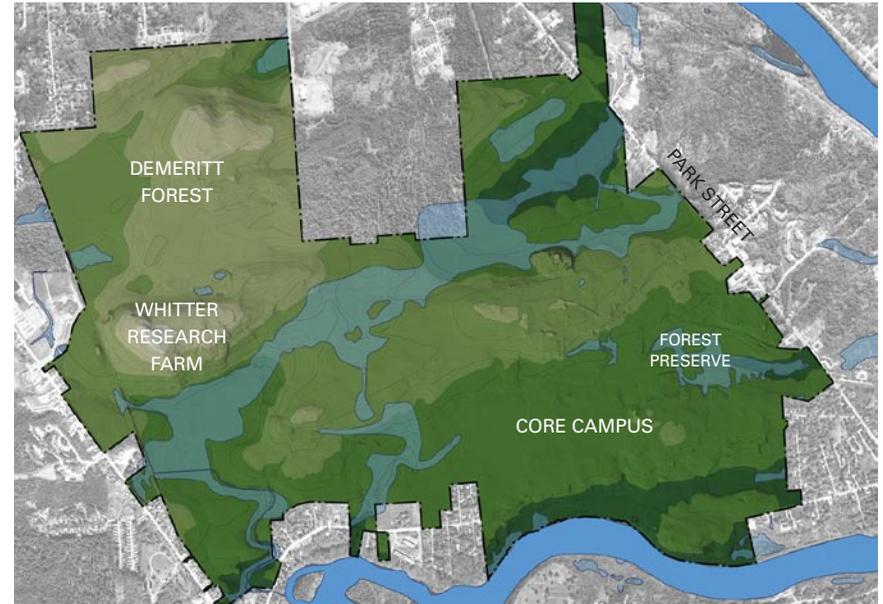
Campus Wetlands

The campus has an estimated 254 acres of wetland which are known habitats for waterfowl and wading birds contributing to Marsh Island's designation as a bird sanctuary. Wetlands are present on the campus in three general areas:

1. A major system of wetlands traverses the campus from the northwest corner to the southeast corner of the landholdings. This system encompasses the Witter Research Farm, passes through the Demeritt Forest in the area north of the Student Recreation Center, and continues toward Park Street on the southeast;
2. A second system is located to the south of University Park flowing toward the Stillwater River, and;



CAMPUS WOODLANDS STORE 868 TONNES OF CO₂ AND SEQUESTER AN ADDITIONAL 10.73 TONNES ANNUALLY.



THERE ARE 254 ACRES OF WETLANDS ON THE CAMPUS.

- The third is located within the developed area of the campus, extending from Long Road southward toward Park Street. This system is recommended for restoration in areas where it has been compromised, notably, in the area of the Collins Center for the Arts parking lot. This area of the wetland was filled for the parking lots in the 1970s.

Habitats

While it is generally agreed that the woodlands and wetlands are important habitats in the context of Marsh Island, no habitat inventories have been conducted. It is recommended that the University consider an inventory in conjunction with appropriate departments and expertise on the campus and distinguishing between interior versus peripheral habitats.

Campus Agriculture

The campus includes two farm areas. The Dairy Farm Fields and Witter Farm located on the north side of campus lie within a wetland area and are utilized for hay production and for research. The second area lies on the east side of campus off of Park Street and is utilized for hay and corn production.

Proposed Land Use Framework

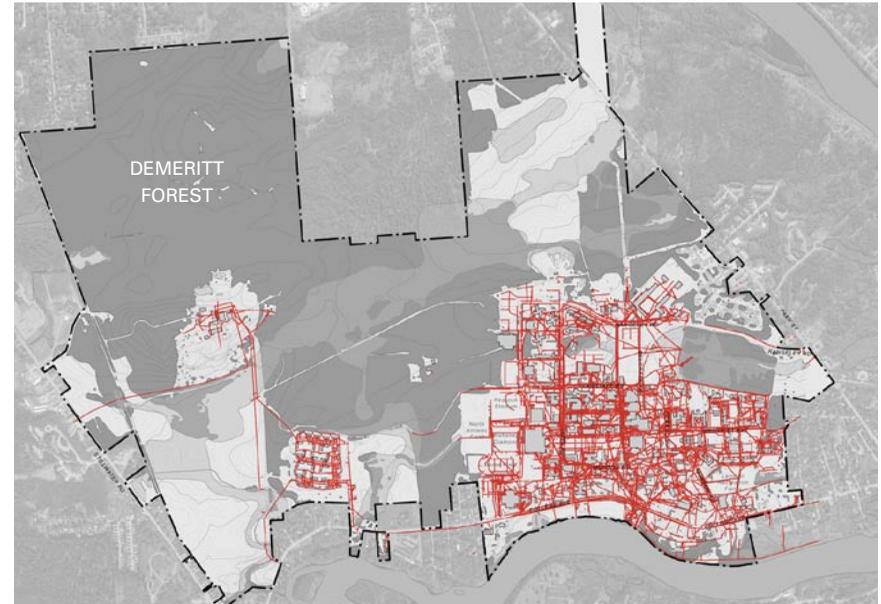
The Land Use Framework of the Master Plan provides connections between the natural features and the existing landscape spaces of the core campus. The Framework, by protecting and extending the natural systems and woodlands, defines the development and spatial pattern of the campus.

Growth Boundary

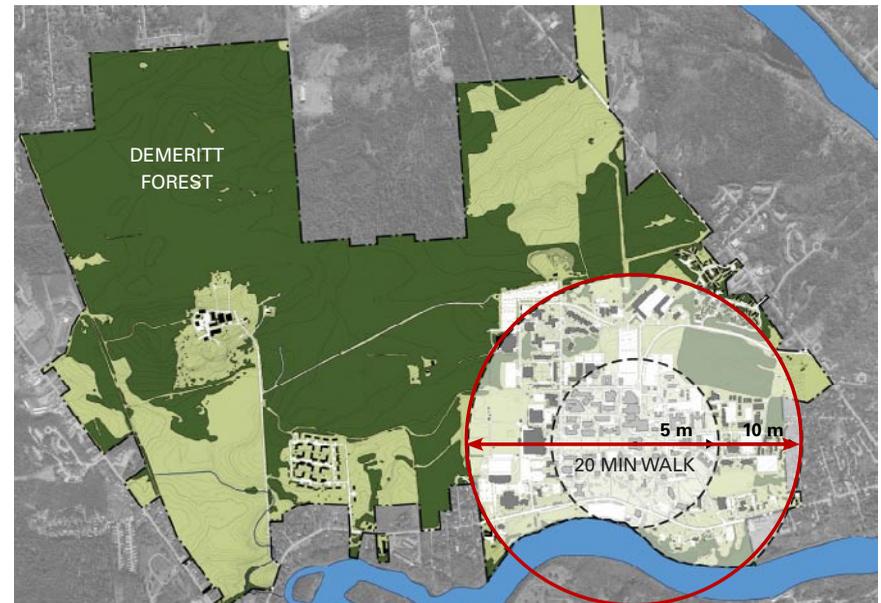
A Growth Boundary is designated around the developed academic core of the campus based on existing land use patterns and the extent and capacity of the infrastructure systems. The purpose of the Growth Boundary is to maintain a compact land use pattern; facilitate a pedestrian-scale pattern of development; encourage walking; limit the need to extend campus infrastructure; and protect the outlying forested and agricultural areas from development pressure.

Growth Boundary Policies

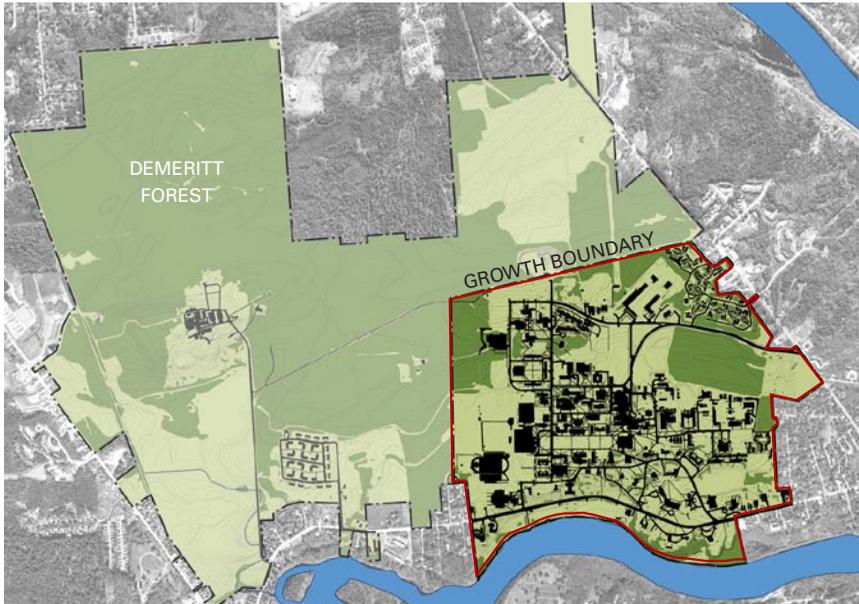
Development outside the Growth Boundary is discouraged unless necessary for agricultural and forest-related research facilities. University Park is the exception, as redevelopment of this area is encouraged for replacement housing, remote parking or other facilities that may not be appropriate inside the Growth Boundary. Buildings proposed outside the Growth Boundary should be subject to debate and careful consideration and should only be approved if no other viable alternative can be identified. Similarly, the construction of new roads that divide or segment the existing wooded areas or agricultural land should not be permitted. All major academic, research and support facilities are to be located within the Growth Boundary.



EXISTING INFRASTRUCTURE



PEDESTRIAN REALM



PROPOSED GROWTH BOUNDARY

Land Use within the Growth Boundary

The proposed Land Use Framework within the Growth Boundary reinforces the existing patterns of development. The land use districts are as follows:

- **Central Academic Core**—The Front Lawn and expanded Historic District define the academic core of the campus, which is enhanced for continued core mission-related purposes.
- **Academic and Research Expansion**—The South end of campus is the focus of future infill academic and research space with an emphasis on the sciences.
- **Housing and Student Life**—The existing residential communities are enhanced and expanded to accommodate existing and future housing needs.
- **Athletics and Recreation**—The north area of the campus is designated for continued athletics and recreation purposes.

Development Outside of the Core Campus

Outside the developed academic core there are two residential areas: University Park and Rangely Road Apartments. University Park is a 22 acre area with 48 one-bedroom, 46 two-bedroom and 22 three-bedroom apartments constructed in the 1950s. Rangely Road Apartments are located east of the campus core area, along Rangely Road. The development contains units developed by the private sector on land leased from the University.



DEMERITT FOREST

FOREST PRESERVE

STILLWATER RIVER

- 1. Wetland Restoration
- 2. Reforestation
- 3. Stillwater River Flood Plain
- 4. Front Lawn
- 5. University Mall
- 6. South Mall
- 7. South Academic Quadrangle
- 8. Beddington Walk
- 9. Grove Walk
- 10. Windbreaks/Connectors
- 11. MLK Plaza
- 12. Cloke Plaza
- 13. Athletic Fields
- 14. Lengyel Fields
- 15. Bike Paths
- 16. Wabanaki Trail
- 17. Fay Hyland Botanical Garden
- 18. Littlefield Ornamental Garden



0 400 800

LANDSCAPE AND OPEN SPACE FRAMEWORK

The existing campus landscape includes several significant landscapes, notably: the university forests and wetlands; the Stillwater Riverfront; the Front Lawn and the University Mall.

Several landscape connectors and new spaces are proposed to extend and repair natural systems and provide linkages between those systems and landscape spaces of the academic core. These natural areas provide a landscape “frame” for the developed area of the campus. The frame consists of the Demeritt Forest and the Forest Preserve on the north and east and the Stillwater riverfront on the west. This “frame” is protected and enhanced in the Master Plan by means of the Growth Boundary. Within the Growth Boundary, a number of landscape linkages are proposed to connect the natural “frame” landscape with the formal open spaces of the campus.

The proposed Landscape Framework consists of the following elements:

- Natural Forest and Wetlands Landscapes
- Formal Campus Open Spaces
- Connector Landscapes
- Campus Plazas

Detailed landscape design guidance is provided in Appendix A.



OPEN SPACE AT THE UNIVERSITY MALL

The existing campus landscape includes several important open spaces: the natural system “frame”; the Stillwater Riverfront; the Front Lawn and the University Mall.



STILLWATER RIVER ALONG THE WESTERN BORDER OF THE CAMPUS

Natural Landscapes “Frame”

A key objective of the Master Plan is to protect the landscape frame and repair areas where it has been compromised. To that end, recommendations are provided for restoring wetland and forest conditions in the parking areas east of the Collins Center for the Arts. Restoring the former wetland in this area will address some of the stormwater management issues of adjacent sub-watersheds and provide a more positive entry into the campus.

Forest Preserve

The Forest Preserve is a 30 acre wooded area located on the south end of campus. The Preserve lies in a wetland area that extends from Long Road to Park Street. The Preserve is disconnected from other forest areas such as the Demeritt Forest as a result of previous agriculture and development projects such as the Collins Center for the Arts parking lots.

Belgrade Road Wetlands

The wetlands along Belgrade Road are currently fragmented by parking areas and piped drainage systems. The Master Plan envisions this area as a reclaimed wetland system that reconnects the Forest Preserve and Demeritt Forest to enhance both habitat and stormwater treatment.

Stillwater Riverfront

The riverfront parade grounds are restored per the original intent of the 1867 Olmsted master plan vision. The Steam Plant Lot and other parking areas are removed in order to restore a more natural condition in the 100 year floodplain of the river. The area will provide access for riverfront recreation and the University boat launch. A trail commemorating the Wabanaki people will run parallel to the river; it will be linked with the broader trail system of the campus. The Fay Hyland Botanical Garden is maintained in the Master Plan.

Campus Open Spaces

The Master Plan maintains and enhances the iconic open spaces of the campus and includes new open spaces based on the Olmsted Legacy as well as principles for creating sheltered micro-climates.

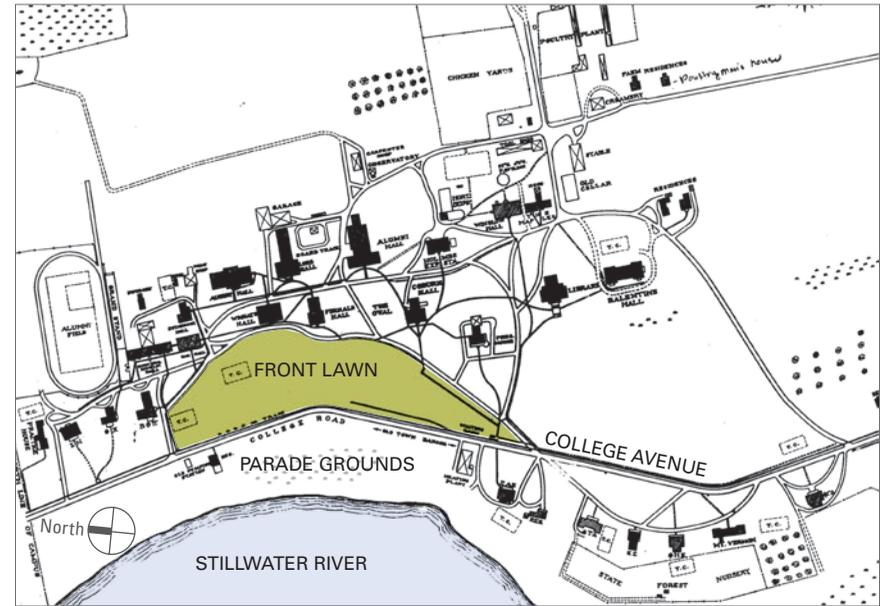
Front Lawn and the Olmsted Landscape Legacy

The University of Maine campus is distinguished as one of the few campuses to have been planned by the preeminent landscape architect, Frederick Law Olmsted Sr. This legacy is largely intact with a majority of the buildings constructed during this planning phase remaining. The Olmsted planning influence extends from the late 1800s to master plans designed by the Olmsted Brothers, the office operated by Olmstead Jr., in 1932 and 1948.

The Olmsted influence is evident in the Front Lawn area along College Avenue and in the University Mall. The former represents the work of Olmsted Sr. and is designed in the picturesque style. It contains a number of small architecturally significant buildings including Wingate, Fernald, Coburn, and Carnegie. The Front Lawn, defined as the area west and north of Munson Road, is recognized as a key cultural landscape of the campus. The Front Lawn and the associated buildings are preserved in the Master Plan. No major new development is proposed for the Front Lawn. Landscape improvements recommended in the 2007 Historic Preservation Master Plan will guide changes to the Front Lawn.

The Historic Preservation Master Plan should be referenced for general landscape improvements in the Front Lawn area. A summary of the major recommendations is as follows:

- Street tree planting along Munson Road
- Street tree planting on College Avenue from Long Road to Hancock Hall and from Munson Road to Sebec Road



1922 OLMSTED SENIOR MASTER PLAN

- Selective pruning of trees to open up views of the river
- Selective removal of shrubbery that obstructs views
- Screen planting from Munson Road to Sebec Road to screen Stodder Hall and the surface parking areas

One notable departure from the Historic Preservation Master Plan recommendations for the Front Lawn area is the recommended closure of Sebec Road. This Master Plan recommends consolidating vehicular entrance traffic onto Schoodic and Munson Roads, transforming Sebec into a pedestrian carriage road.

Lengyel Recreation Fields

The Lengyel Recreation Fields are maintained in the Master Plan for the continued passive and organized recreational needs of the campus community, a land use well suited for this low lying area.

Women's Quadrangle

Landscape improvements to the former Women's Quad defined by Penobscot, Balentine, Stodder and Chadbourne Halls are proposed in accordance with the Historic Preservation Master Plan. Specific improvements include new walkways and crosswalks.

Athletic Fields

The athletic fields on the north side of the campus remain with the addition of a field hockey field adjacent to the softball area.

The University Mall

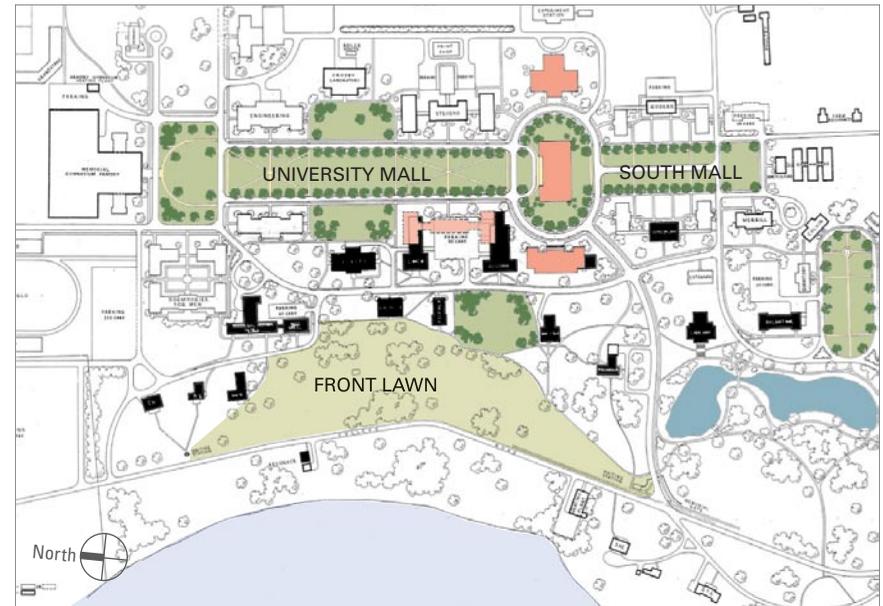
The University Mall is the iconic open space on the UMaine campus, establishing a memorable image and place. Improvements to the Mall are guided by the recommendations of the Historic Preservation Master Plan, which should be referenced for more detail. Notable improvements include the replacement of the trees defining the edges of the Mall and the selective removal of shrubbery obstructing views of buildings. Departing somewhat from the recommendations of the Historic Preservation Master Plan, diagonal walkways are proposed to facilitate pedestrian movement across the Mall.

The South Mall

The Master Plan proposes the creation of the South Mall, a design concept in line with the Olmsted Brothers plans of 1932 and 1948. The South Mall will establish a sense of place between the Fogler Library and Deering Hall to the south. In keeping with the design of the University Mall, the South Mall will feature lawn areas and an edge framed by trees. Creation of the Mall requires the removal of parking and a redesign of Sebago Road between Munson Road and Grove Walk to include traffic calming elements.

South Mall Quadrangles

The proposed redevelopment of the South Campus includes several new quadrangles defined by new buildings. The quadrangles are located on the south side of the proposed buildings with the intent of creating micro-climates that extend the outdoor season for campus activities.



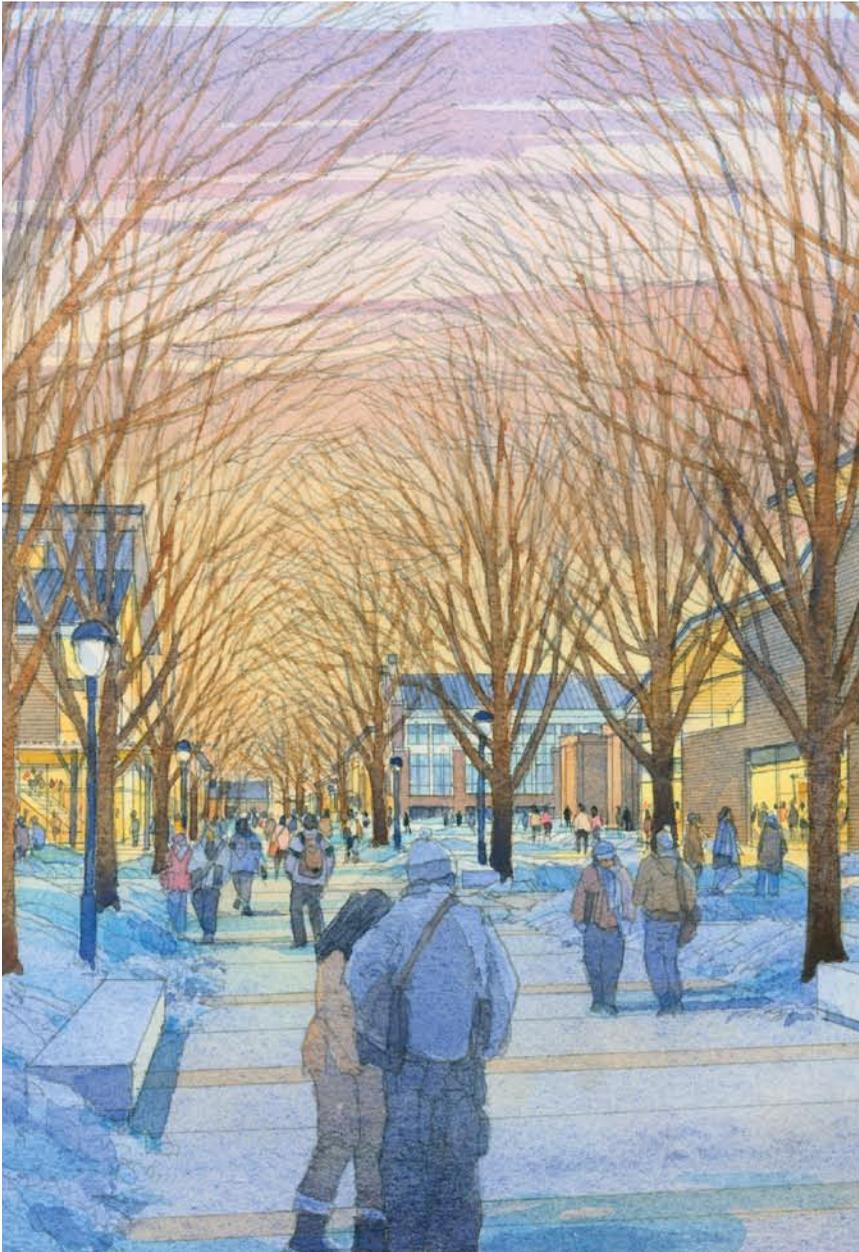
1932 OLMSTED BROTHERS MASTER PLAN SHOWING THE UNIVERSITY MALL AND SOUTH MALL



KEY PLAN

VIEW OF THE PROPOSED SOUTH MALL FROM THE EDGE OF THE LIBRARY LOOKING SOUTH ALONG GROVE WALK ►





PROPOSED VIEW OF GROVE WALK IN WINTER, LOOKING NORTH

Connectors

Several landscape and pedestrian circulation connectors are proposed in the Master Plan.

Grove Walk

Grove Walk is envisioned as the key north / south pedestrian route linking the redeveloped sites of the South Campus to the University Mall and academic facilities to the north. It will run along the western edge of the South Mall and will have consistent tree planting, new lighting, benches and paving. The walk will be accessible to service vehicles.

Beddington Walk

Beddington Walk is envisioned as a combined pedestrian and service route in the engineering sub-district. The walkway will feature a narrowed cross section, trees, lighting and new paving. Cloke Plaza will form a node for gathering and events along this route.



PROPOSED VIEW NORTH ALONG GROVE WALK

North Campus Connectors

Windbreak/Connectors are proposed in the North Campus area as follows:

- **Belgrade Road**—improving the gateway into campus with a windbreak along the northern edge
- **Martin Luther King Plaza Gateway**—providing a pedestrian walkway north of the Collins Center for the Arts and Memorial Union
- **The Diagonal Walk**—linking the University Mall with Barrows/Neville and ultimately the Stewart quadrangle and Student Recreation and Fitness Center. Cloke Plaza is located along this route
- **North of D.P. Corbett Business Building**—linking the Advanced Manufacturing Center with the Doris Twitchell Allen Village to the east
- **Long Road**—improving streetscape with new trees, a bike lane and paving
- **Hilltop Road / Walk**—extending to the west to provide a windbreak and improved pedestrian route between the Student Recreation and Fitness Center and the Alford Sports Arena

South Campus Connectors

Several windbreak connectors are proposed in the south campus area, linking Grove Walk and the South Mall with the Forest Preserve to the east:

- **North of Sawyer Center**—connecting to parking areas and future research buildings
- **North of Bryand Center**—providing a pedestrian connection to a future garage
- **South of Nutting Hall**—connecting to the Forest Preserve and bike trail, this wooded corridor integrates the forest habitat into the campus
- **Sebago Road**—providing new street trees and pedestrian walkway improvements are on Sebago Road so that it functions as a windbreak/connector for the South Mall and the northern façade of Hitchner Hall



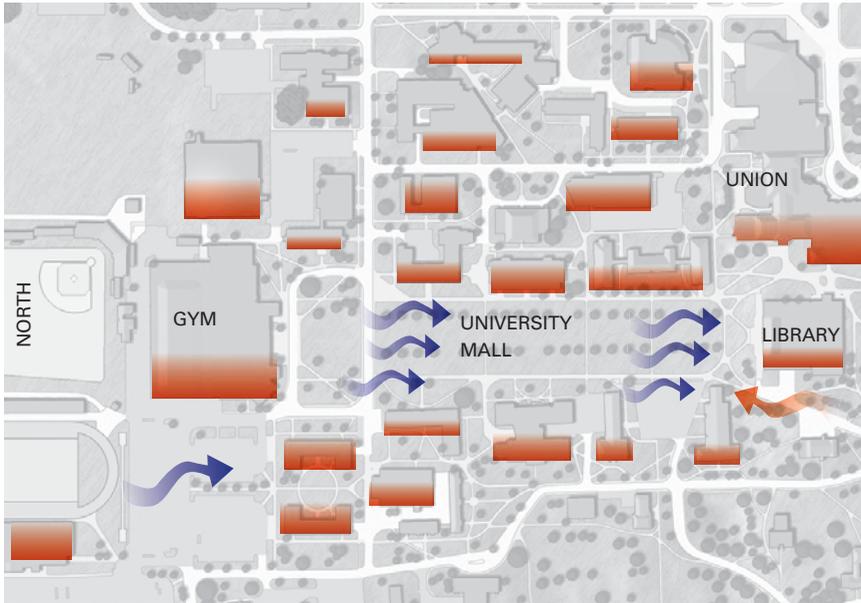
VIEW EAST ALONG PROPOSED EAST-WEST CORRIDOR, SHOWING RE-ESTABLISHED WOODLANDS NORTH OF THE EXISTING PRESERVE



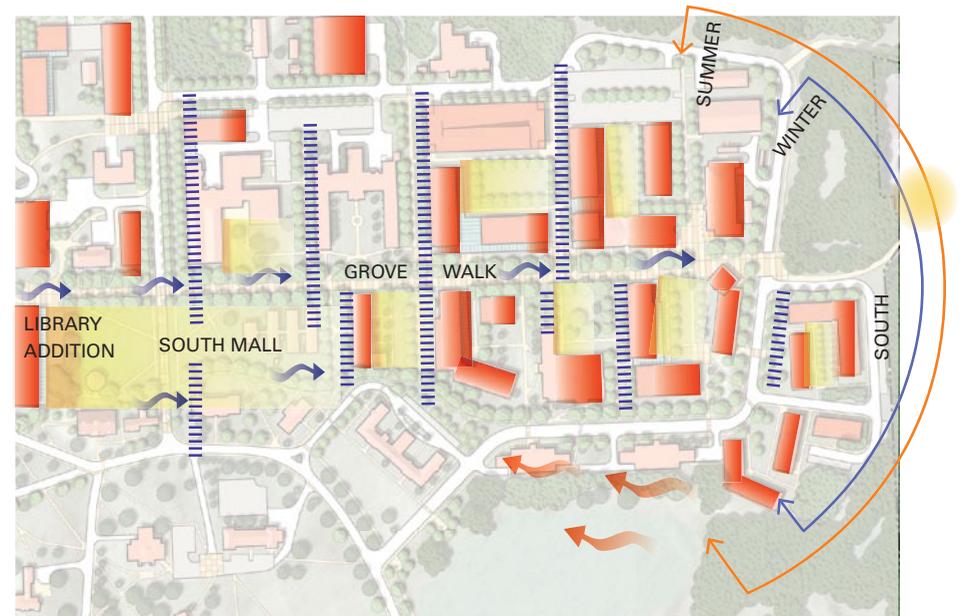
VIEW OF EXISTING CONDITIONS, SHOWING SURFACE PARKING LOTS SCATTERED THROUGHOUT THE SOUTH CAMPUS LANDSCAPE

East / West Connectors and Windbreaks

A series of East / West connector landscapes are proposed to link the natural frame of the campus to the formal and picturesque landscapes that define the central academic core. The connectors are envisioned as landscape corridors / windbreaks that address a number of aesthetic and functional needs. The corridors will feature evergreen tree planting to mitigate winter winds and will be coordinated with new pedestrian circulation routes and potential storm-water detention swales, depending on site conditions. The connectors are also aligned with future building placement to provide additional wind protection and create sunny micro-climates on the south side of those buildings.

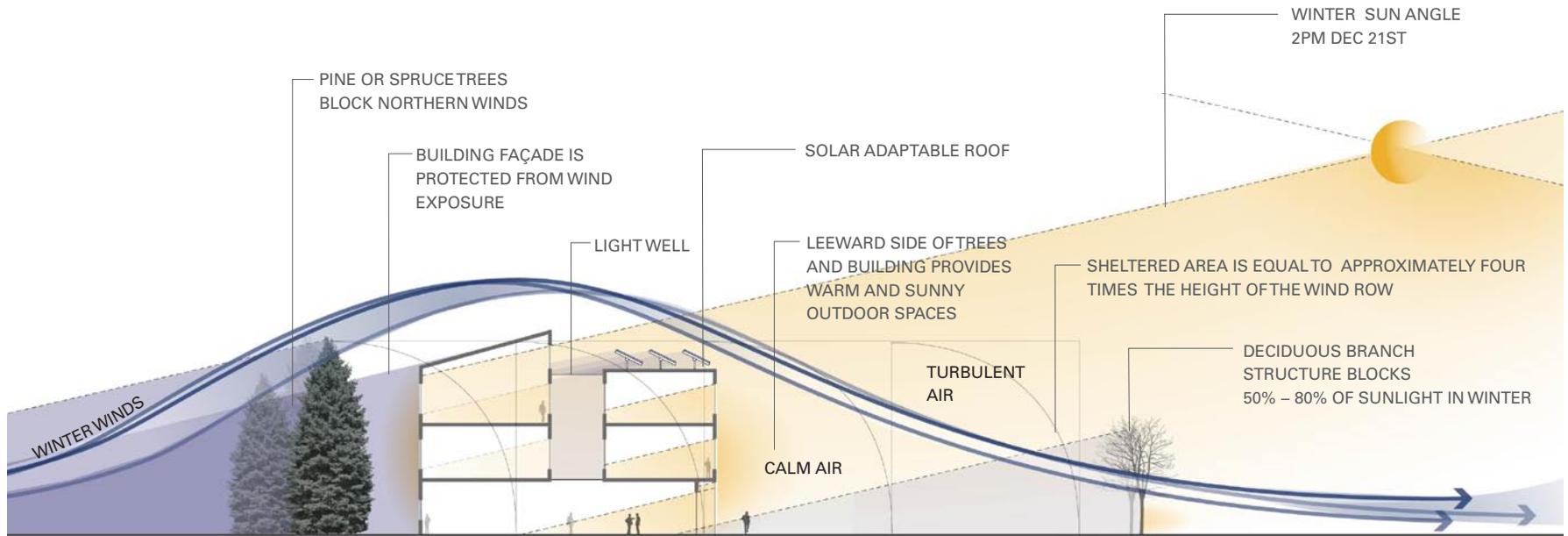


NORTH CAMPUS WIND CONDITIONS AND HISTORIC BUILDING ORIENTATION WITH EXTENSIVE WESTERN EXPOSURE

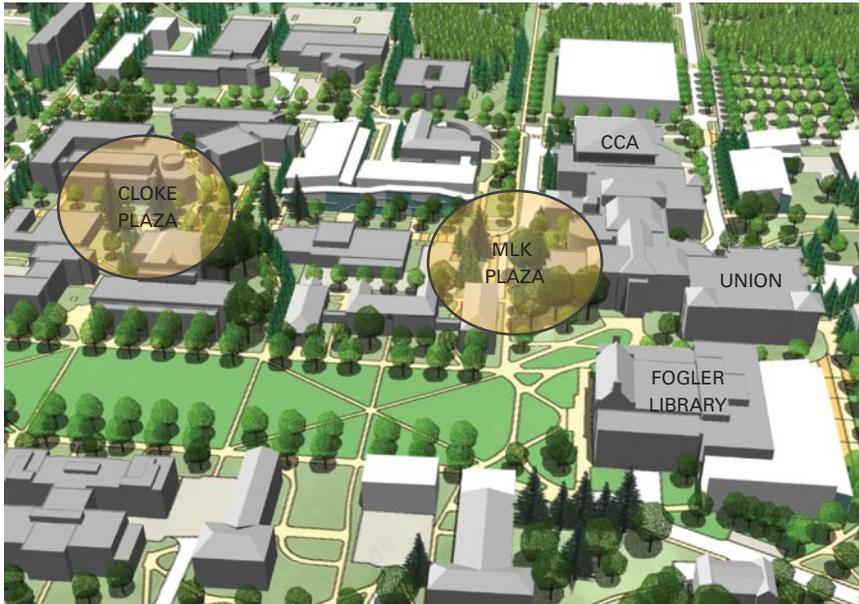


SOUTH CAMPUS WIND BREAKS AND OPTIMAL BUILDING ORIENTATION

- Sheltered Area
- Wind Break Connector
- Southern Façade
- Summer Wind
- Winter Wind



SECTION OF OPTIMAL BUILDING ORIENTATION SHARING WINDBREAK AND SHELTERED SOUTHERN OUTDOOR SPACE



BIRD'S EYE VIEW OF THE CLOKE PLAZA AND MLK PLAZA AREAS



RENDERING OF CLOKE PLAZA DESIGN BY LANDSCAPE ARCHITECTS COPLON ASSOCIATES AND ARTIST BUSTER SIMPSON

Plazas

Two new plazas as proposed in the landscape and open space framework to establish new gathering and commemorative spaces:

Martin Luther and Coretta Scott King Plaza (MLK)

Located along a major student thoroughway to the north Memorial Union entrance, the MLK plaza was recently completed. The plaza establishes a reflective area that is part of the daily pedestrian movements. The Plaza location takes advantage of an existing wind block formed by mature spruce trees and creates a warm, south facing outdoor space.

The plaza is part of a larger improvement plan linking the north Union entrance to the Collins Center for the Arts parking area. Future construction will include a redesign of the adjacent outdoor seating / dining areas north of the Memorial Union, pedestrian walkway improvements east of Stevens and the potential redesign of the north Union entrance.

Cloke Plaza

A commemorative plaza for Professor Paul Cloke, founding dean of the College of Engineering, is under construction in the area of Crosby and Barrows Halls. The Plaza is envisioned as a gathering space featuring art commissioned through Maine's Percent for Art program.



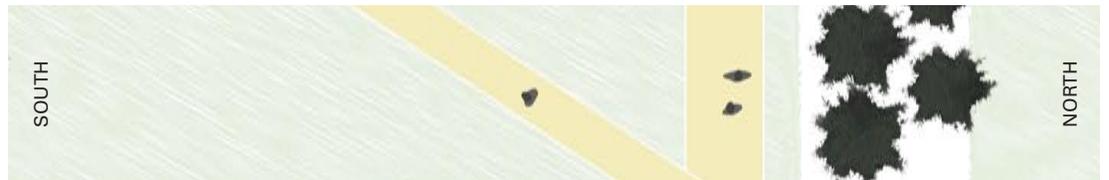
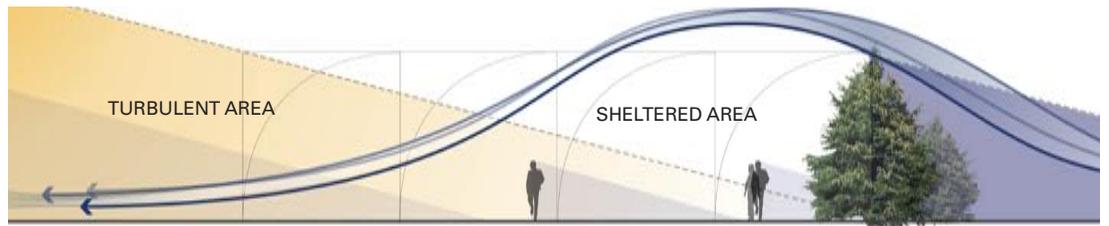
WALKWAY PRIOR TO THE PLAZA CONSTRUCTION



MLK PLAZA



A ROW OF SPRUCE TREES PROTECTS THE MARTIN LUTHER AND CORETTA SCOTT KING PLAZA AND WALKWAY FROM NORTHERN WINTER WINDS, CREATING A SHELTERED AND SUNNY OUTDOOR SPACE



WINDBREAKS / CONNECTORS CREATE SHELTERED PEDESTRIAN ENVIRONMENTS



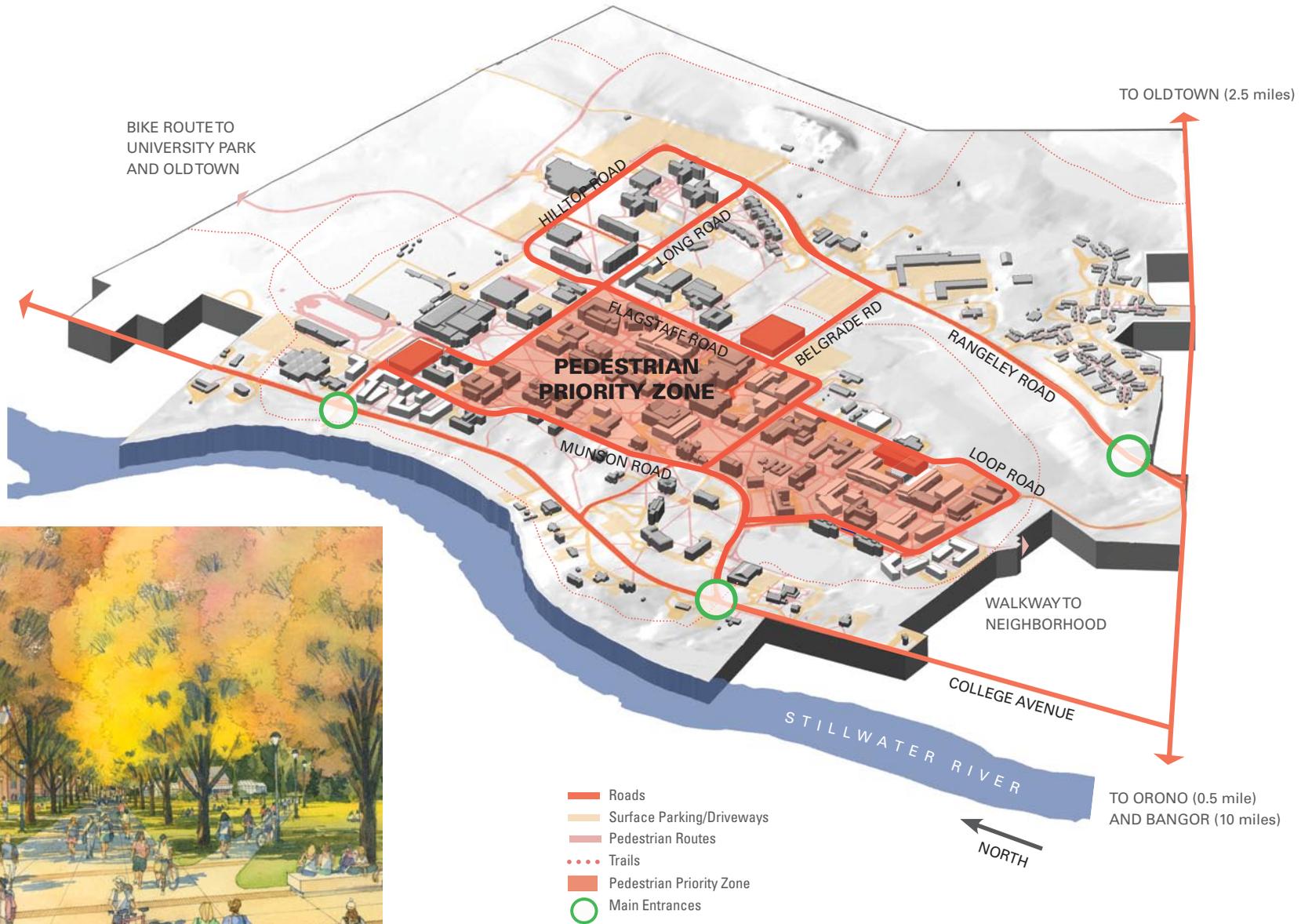


CAMPUS ACCESS AND CIRCULATION FRAMEWORK

Existing Conditions

Access to the campus is currently dominated by the single occupancy vehicle with several notable areas of pedestrian/vehicular conflict including Sebago Road at Grove Street, Long Road at the North Mall, the intersection of Flagstaff and Long Road and the intersection of Flagstaff and Belgrade Road at the Collins Center for the Arts. Parking is distributed throughout the campus core, contributing to the large impervious surface area of the campus and stormwater runoff. There are several areas of parking located directly on roadways which have been identified for removal in previous studies. Parking also occupies key sites within the pedestrian core that are better suited to academic and support related purposes. Areas of concern with regard to traffic volume include the intersection of College Avenue and Long Road, and the intersection of Rangeley Road and Park Street. Long Road at College is noted to be of particular concern in winter icing conditions given the slope of Long Road. Several redundant roads have been identified for removal including the Belgrade Spur, Beddington Road, and Sebec Road.

◀ PROPOSED VIEW LOOKING NORTH ALONG GROVE WALK,
WITH SOUTH CAMPUS IN THE FOREGROUND



PROPOSED VIEW ALONG GROVE WALK

The overall layout of the campus is conducive to pedestrian movement with most destinations within a 10 minute walk of the Fogler Library. Improvements are required to enhance the pedestrian experience and to create a more comprehensive and coordinated network of routes. The existing recreation trails beyond the core offer connectivity to the surrounding context and are well mapped. Bicycle use in the core could be facilitated by the Green Bike program but dedicated routes need to be identified within the core. Transit services are limited at present but opportunities exist to coordinate additional services with Bangor Area Transit (BAT) and to introduce campus shuttle services.

Parking is dispersed throughout the core campus with several large peripheral parking lots. The total space count exceeds 7,200 and is deemed to be adequate to serve existing demand.

Transportation Related Green House Gas Emissions

The green house gas inventory conducted for the master planning process indicates that transportation sources contribute in the range of 12 percent of the University's total carbon dioxide equivalent (eCO₂) emissions. A more detailed green house gas inventory will likely yield a higher transportation related contribution to total emissions as more data on student addresses, commuting distances and vehicle types are collected.

Proposed Access and Circulation Framework

The Master Plan places priority on pedestrian, bicycle and transit options. To facilitate pedestrian movement, the Master Plan establishes a perimeter Loop Road with the aim of reducing the volume of traffic entering the core campus.

The Master Plan provides an integrated approach to circulation to transition the modal split to include better utilization of pedestrian, bicycle and transit networks. This transition is intended to reduce vehicular traffic and to assist the University in reducing greenhouse gas emissions.

As the single occupancy vehicle will continue to be the primary mode of access, vehicular access and parking are reorganized to provide convenience while reducing pedestrian vehicular conflicts.

The specific access and circulation recommendations are as follows:

Pedestrian Network

A goal of the Plan is to create a pedestrianized core or Pedestrian Priority Zone within the proposed perimeter Loop Road. Emphasis is placed on creating a safe, sheltered pedestrian environment taking into account winter conditions. To that end, interior and exterior pedestrian networks are coordinated to enable movement through buildings during inclement weather. Providing connections to the extensive system of walking and bike trails that extend from the campus core through the Demeritt Forest and to the surrounding community is also a priority.

Specific improvements to the pedestrian network include:

- **Grove Walk**—the existing alignment of Grove Street is closed to vehicular traffic to create a new north / south pedestrian route. Grove Walk forms the eastern boundary of the South Mall. The walk will be framed by a formal allee of trees, a symbolic continuation of the North Mall plantings.
- **West Walk**—the west side of the South Mall is defined by an undulating walk leading from the Library southward linking with Square Road.
- **Interior Connectivity**—the South Mall and Grove Walk serve as the armature for organizing redevelopment on the south end of campus. To facilitate interior / exterior connectivity, the major circulation spines of the proposed buildings are conceived as interior streets. The interior streets are positioned on the periphery of the buildings and are designed to link with exterior routes, thus enabling pedestrians to logically move through and between buildings during the winter months. The interior streets will incorporate lounges, study spaces and food services. They will feature glass facades, contributing to the transparency of the buildings, thereby helping "activate" the south campus by placing activity so that it is visible from the exterior.
- **East/West Pedestrian Routes**—The south campus area also features a series of east/west pedestrian routes coordinated with the proposed windbreaks. East/West routes and windbreaks are located south of Nutting, north of Bryand and north of the Sawyer Environmental Research Center. Sebago Road is also improved as an East West pedestrian route.

DEMERRITT FOREST

FOREST PRESERVE

P

P

P

LOOP ROAD

GROVE WALK

LOOP ROAD

UNIVERSITY MALL

SOUTH MALL

10 MIN WALK

STILLWATER RIVER

COLLEGE AVENUE

WABANAKI TRAIL

20 MIN WALK

-  Pedestrian Plaza
-  Main Pedestrian Route
-  Minor Pedestrian Route
-  Interior Pedestrian Route
-  Bike Routes / Trails



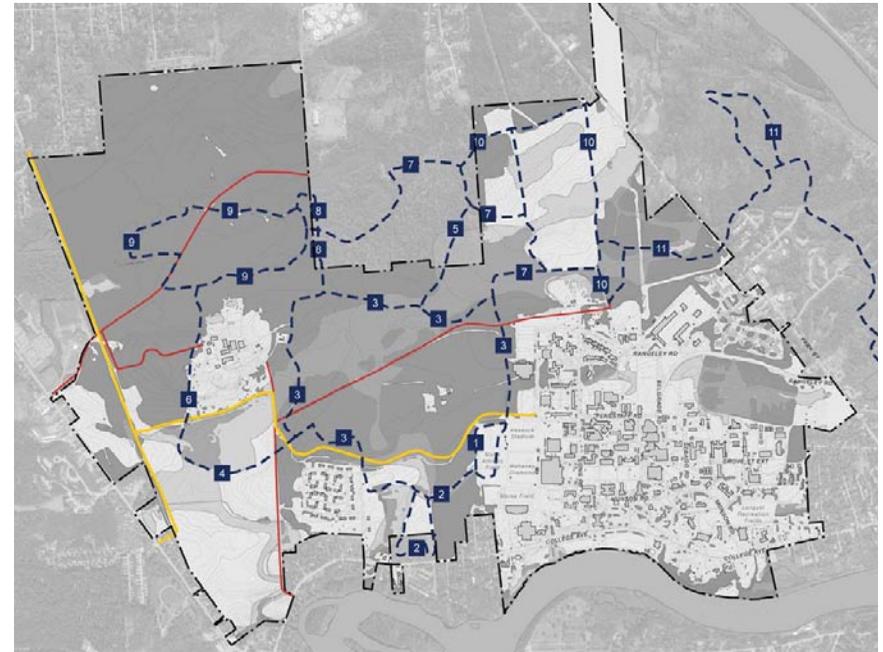
- **Martin Luther King Walk**—improvements are planned to the existing walkways north of the Memorial Union in conjunction with the proposed Martin Luther King Plaza. This new walk is envisioned as a pedestrian gateway into campus from the parking facilities located east of the Collins Center for the Arts.
- **The Diagonal**—improvements are proposed to the existing diagonal pedestrian route leading from the Advanced Manufacturing Center northeast toward Barrows and Neville. The Diagonal will pass through the proposed Cloke Plaza, located east of Crosby. The route continues to the northeast through the Cumberland-Gannett-Androscoggin quadrangle to the Student Recreation and Fitness Center.
- **Beddington Road**—the closure of Beddington Road is proposed to create a north/south pedestrian route and limit vehicular traffic in the proposed Pedestrian Priority Zone of the campus.
- **University Mall**—pedestrian improvements on the University Mall include new trees defining the east and west sides of the Mall. Diagonal walkways are proposed to facilitate cross Mall movement.
- **Trail network**—the proposed improvements within the campus core are coordinated with the existing trail systems extending into the Demeritt Forest and to the surround community. Additions to the system include a new trail along the Stillwater River commemorating the Wabanaki Tribe that utilized these grounds for fishing.

Bicycle Network

The campus bicycle network is extended and coordinated with existing community routes. Bike paths and biking lanes will provide access throughout the core campus. The core campus bike network utilizes roads transitioning to off road systems outside the Campus Growth Boundary.

In general, bicycle use within the Pedestrian Prioritization zone is not encouraged, with the exception of the following routes:

- East/West routes south of Estabrooke, Deering and Nutting Halls linking Square Road to the Forest Preserve and Rangeley Road
- Sebago Road
- Beddington Road
- East/West route linking Munson Road to Beddington Road



EXISTING CAMPUS AND COMMUNITY TRAIL NETWORK

Transit Network

The Bangor Area Transit System (BAT) services are integrated with the campus transit hub located at the Memorial Union. The Master Plan identifies roadways for transit services when such options become a greater focus of the campus access strategy. Potential shuttle services and other routes will utilize the proposed Loop Road. Bus stops are coordinated with activity nodes and major destinations, the intent of which is to utilize interior lobby spaces for waiting areas during the winter.

Vehicular Circulation

Several improvements are proposed to the campus road network to create a Pedestrian Priority Zone, to resolve pedestrian/vehicular conflicts and to provide access to parking. Improvements include:

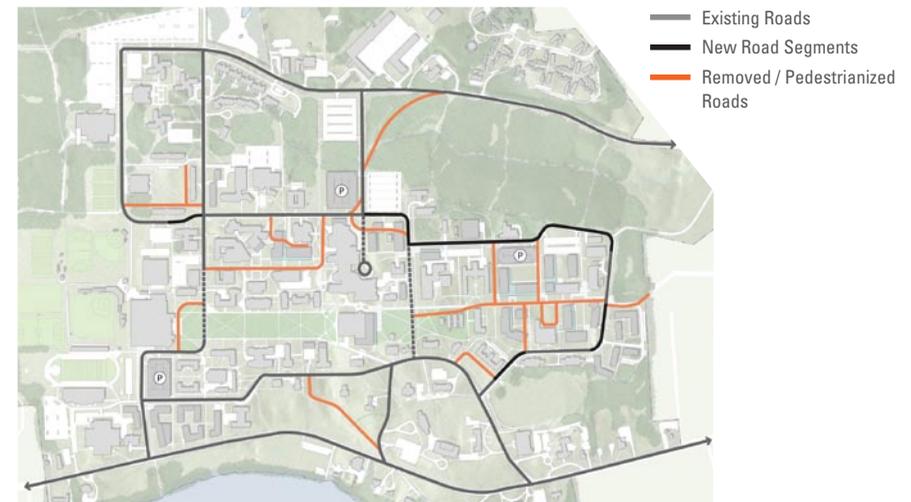
- Closure of Grove Street to extend the pedestrian network to the south (open to service and emergency vehicles).
- Removal of the Belgrade Spur—this road segment is removed to resolve circulation confusion and provide a more memorable gateway to the Collins Center for the Arts. Additionally the removal enables the restoration of the wetland that extends in a north/south direction through what is now the Collins Center Lot and the Belgrade Lot.
- Closure of Sebec Road—this original campus road is closed to vehicular traffic but maintained as a pedestrian/bike route.
- Campus Loop Road—the Loop Road utilizes existing roadways linked by new roadway segments. It is generally formed by: Long Road on the north, Flagstaff on the east, Allagash Road on the south, and Square Road and Munson Road on the west. The new segments of the Loop Road are as follows:
 - » Connection from Munson Road to Square Road (west of Estabrooke Hall)
 - » Connection from Square Road eastward to Allagash Road through the existing York Village area and the York Village parking lot.
 - » Connection from Allagash Road northward to Sebago Road through existing parking areas. A new road is required east of the Library Storage facility to connect with existing parking areas east of Nutting Hall.
 - » Reconfiguration of the Flagstaff Road/ Belgrade Road / Sebago Road intersection. The Flagstaff Road alignment is continued due south to connect with Sebago Road, thereby eliminating the existing curve.

- » Reconfiguration of the Flagstaff Road / Gannett Road intersection at Long Road
- » Formalization of Long Road as a “street” through the parking areas west of the Memorial Gymnasium.

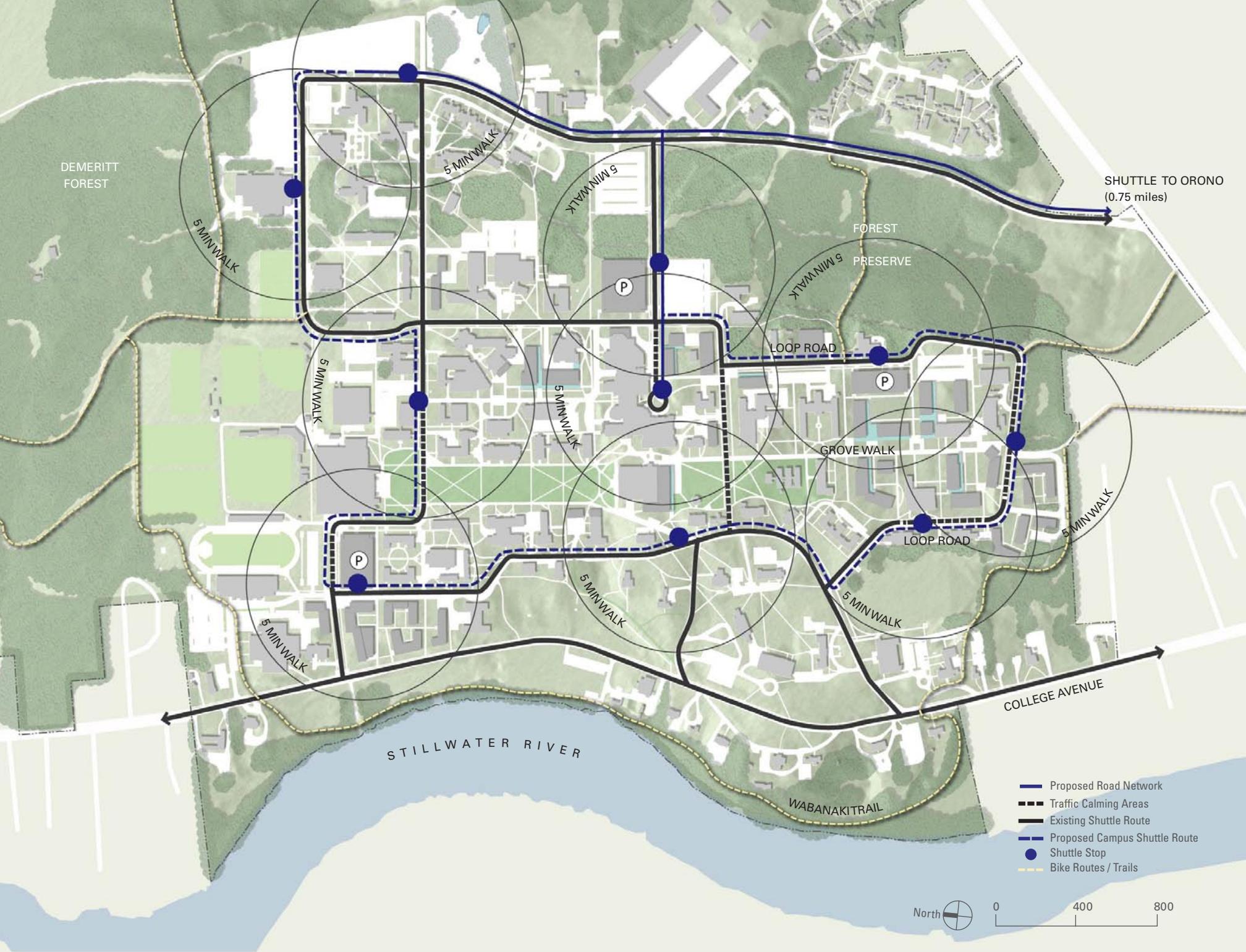
Traffic Calming

Several traffic calming strategies are proposed to provide safer pedestrian crossings. Potential strategies include differentiation in pavement material, narrowed road sections at crossing points, and raised crosswalks or speed tables. While specific design details will be the subject of future study, the proposed traffic calming locations are identified as follows:

- Gannett Road / Flagstaff Road / Long Road intersection – this intersection is reconfigured to align Gannett and Flagstaff Roads and simplify vehicular circulation and crossing points.
- Long Road at North Mall
- Long Road at Munson Road
- Sebago Road—between Grove Walk and West Walk
- Grove Walk—at the south end of the Loop Road
- Kennebec and Aroostook Halls on Square Road (a segment of Loop Road)



RECOMMENDED ROAD SYSTEM CHANGES



DEMERITT FOREST

SHUTTLE TO ORONO (0.75 miles)

FOREST PRESERVE

LOOP ROAD

GROVE WALK

LOOP ROAD

COLLEGE AVENUE

STILLWATER RIVER

WABANAKI TRAIL

5 MIN WALK

- Proposed Road Network
- - - Traffic Calming Areas
- Existing Shuttle Route
- - - Proposed Campus Shuttle Route
- Shuttle Stop
- - - Bike Routes / Trails



0 400 800

Parking

Recognizing the value of core campus land for academic, research and support uses, the Master Plan minimizes surface parking. The intent is to create a pedestrian oriented environment, concentrating all major campus academic and student support facilities within a 10 minute walking circle of the Fogler Library. It is therefore necessary to transition the parking supply into peripheral locations and garages over the long term. A transition to parking garages over the next twenty years or more offers the added benefits of reducing the total impervious area of the campus and reducing the snow plowing requirements.

The distribution of parking, in conjunction with the improved pedestrian network, is intended to encourage the campus population to “park once and walk”. The aim is to reduce vehicular traffic on campus and the associated emissions. Parking is located on the proposed Loop Road system and coordinated with the pedestrian network.

The Master Plan maintains a supply of approximately 7,400 spaces in a combination of surface and structured spaces, a number consistent with the estimated supply to support the proposed development and future enrollment of the University. Three potential parking garage sites are reserved in the Master Plan to be constructed only as required as a result of the proposed infill development / redevelopment of land within the core campus. Prior to constructing any of the garages, it is recommended that the University explore parking demand management and allocation strategies to make the best use of existing parking resources.

The following parking locations are reserved:

The South Garage: this garage will be required to implement the proposed infill development for future academic and research buildings and to implement the proposed landscape improvements.

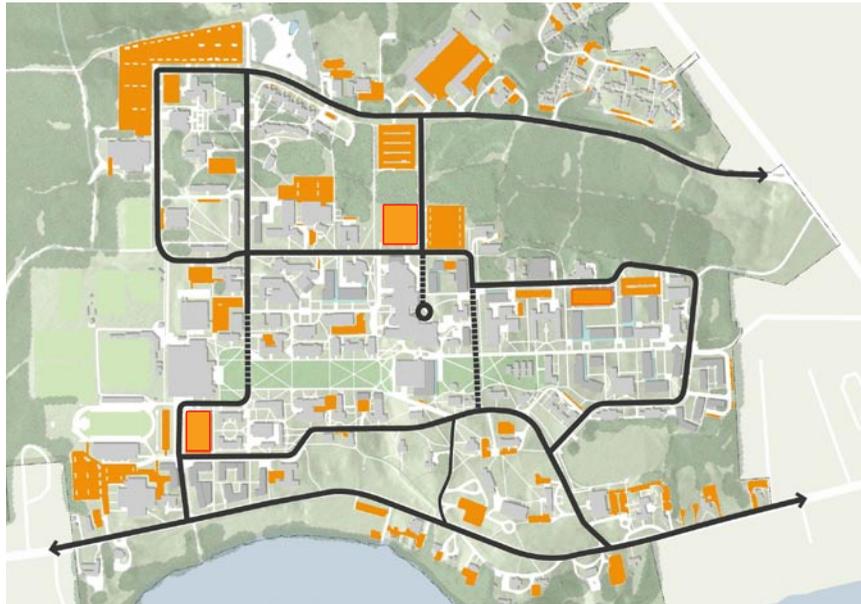
Long Road Garage: this garage will be required to remove parking from the Riverfront as per the Master Plan recommendation to re-establish the Olmsted Parade Grounds. It will also be necessary to implement the proposed Black Bear Village development at the corner of College Avenue and Long Road.

The Collins Center for the Arts Garage: this garage will be required to implement the proposed wetland restoration and campus gateway project east of the Collins Center.

Parking Displacement

As noted, some central core parking facilities may be removed over time as land becomes more valuable for academic, research and support purposes. Other surface parking areas are removed in the plan to address stormwater management and design quality considerations. These lots include:

- Removal of the steam plant lot—to remove parking from the Stillwater River Floodplain and return this land to the Parade Grounds as intended in the original Olmsted Master Plans.
- Removal of the eastern portions of the Collins Center for the Arts parking lot to reestablish the former wetland and woodland system in this area.



PARKING FRAMEWORK

- Roads
- Surface Parking
- Structured Parking

The key access and circulation recommendations of the Master Plan include:

- Reduce vehicular traffic and pedestrian / vehicular conflicts in the core by creating a perimeter Loop Road
- Enhance and extend the pedestrian network to facilitate pedestrian movement, provide better connectivity, and ensure safety and shelter. Coordinate interior movement patterns with external walks to provide sheltered routes during winter months
- Utilize traffic calming measures to facilitate pedestrian movement
- Designate streets for transit services and coordinate bus stops with major destinations
- Minimize the use of valuable campus land for parking and transition to a peripheral and potentially structured parking model over the long term
- Explore demand management strategies to minimize the need for parking





CULTURAL RESOURCES

The University of Maine campus has a unique planning legacy distinguished by the involvement of Frederick Law Olmsted Sr. and the Olmsted Brothers over a period of almost 85 years. Olmsted Sr. was the nineteenth-century landscape architect responsible for the design of Central Park in New York. The first plan for the campus was designed by Olmsted Sr. in 1867 (not officially adopted) and two subsequent plans were developed by the Olmsted firm in 1932 and 1948. The buildings and grounds today reflect the Olmsted influence.

The Historic Preservation Master Plan completed in March 2007 provides a detailed history of the campus landscape and buildings. The key recommendations of the Preservation Plan should be referenced for all matters related to the historic landscape and buildings.

◀ MID 19TH CENTURY PHOTO OF THE FRONT LAWN AREA

DEMERRIT FOREST

FOREST PRESERVE

HILLTOP ROAD

LONG ROAD

FLAGSTAFF ROAD

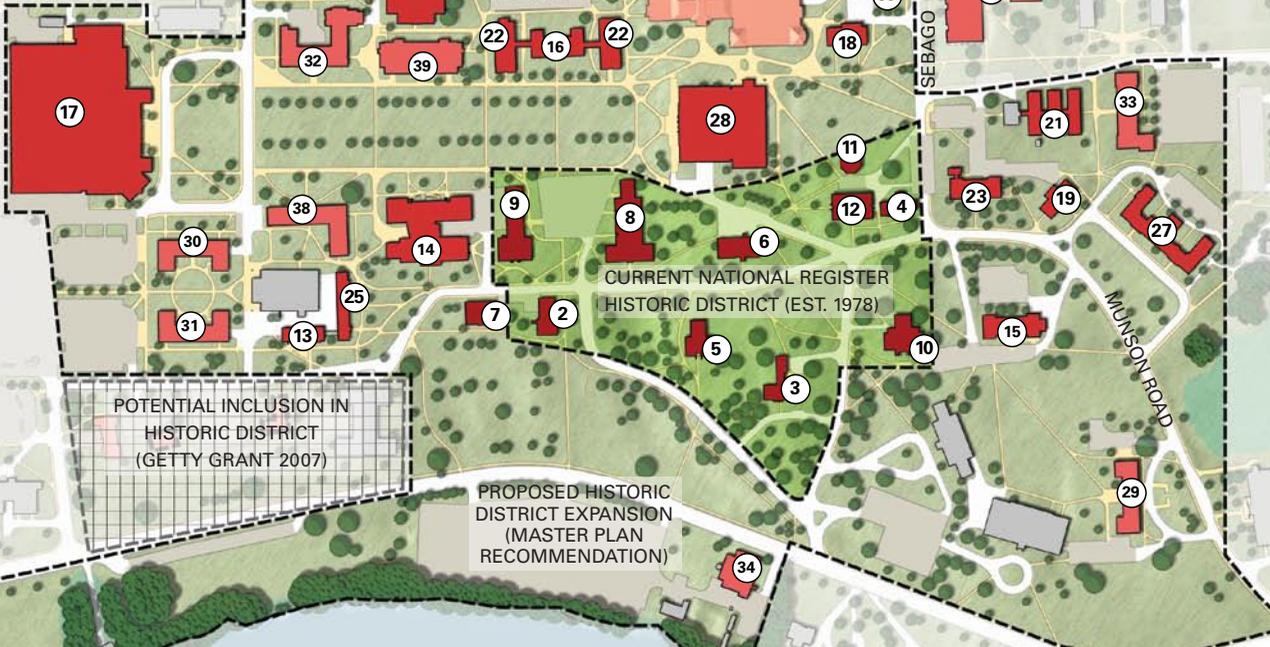
BELGRADE ROAD

SEBAGO ROAD

MUNSON ROAD

COLLEGE AVENUE

STILLWATER RIVER



17

24

26

32

39

22

16

22

37

20

18

35

1

30

38

14

9

8

6

12

4

23

19

33

27

31

13

25

7

2

5

3

10

15

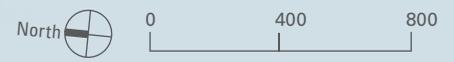
29

CURRENT NATIONAL REGISTER HISTORIC DISTRICT (EST. 1978)

POTENTIAL INCLUSION IN HISTORIC DISTRICT (GETTY GRANT 2007)

PROPOSED HISTORIC DISTRICT EXPANSION (MASTER PLAN RECOMMENDATION)

34



Tier 1—Heritage Period (1865-1910)

1. PAGE BARN (1833)
2. FERNALD HALL (1870)
3. PRESIDENT'S HOUSE (1873)
4. THE MAPLES (1877)
5. COBURN HALL (1888)
6. HOLMES HALL (1888)
7. WINGATE HALL (1892)
8. ALUMNI HALL (1901)
9. LORD HALL (1904)
10. CARNEGIE HALL (1907)
11. EDGAR ALLEN CYRUS PAVILION THEATRE (1908)
12. WINSLOW HALL (1909)

Tier 2—Growth Period (1911-1945)

13. HANNIBAL HAMLIN HALL (1911)
14. AUBERT HALL (1914)
15. BALENTINE HALL (1914)
16. STEVENS HALL – CENTER (1923)
17. MEMORIAL GYMNASIUM (1926)
18. ROGERS HALL (1928)
19. COLVIN HALL (1930)
20. NORMAN SMITH HALL (1930)
21. ROGER CLAPP GREENHOUSE (1930)
22. STEVENS HALL – NORTH & SOUTH (1930)
23. MERRILL HALL (1931)
24. MACHINE TOOL LABORATORY (1935)
25. OAK HALL (1937)
26. CROSBY HALL (1938)
27. ESTABROOKE HALL (1940)
28. RAYMOND H. FOGLE LIBRARY (1947, BEGUN IN 1941 AND DELAYED BY WWII)

Tier 3—Modern Era (1945-present)

29. CHADBOURNE HALL (1947)
30. CORBETT HALL (1947)
31. DUNN HALL (1947)
32. BOARDMAN HALL (1949)
33. DEERING HALL (1949)
34. HEATING PLANT (1910)
35. HITCHNER HALL (1949)
36. MAYNARD F. JORDAN OBSERVATORY (1930)
37. MEMORIAL UNION (1953)
38. HART HALL (1955)
39. LITTLE HALL (1965)

-  Tier One Building
-  Tier Two Building
-  Tier Three Building

 HISTORIC PRESERVATION MASTER PLAN ON EXISTING CAMPUS PLAN
(SOURCE: GETTY GRANT 2007)



CHADBOURNE HALL (1947)



STEVENS HALL (1923) NORTH AND SOUTH ADDITIONS (1930)



HOLMES HALL (1888)



PAVILION THEATRE (1908) WITH WINSLOW HALL (1909) IN BACKGROUND

The Preservation Plan identifies three periods of growth each characterized by a unique organizing principle for the campus.

University of Maine at Orono National Register Historic District

The National Register Historic District at the University of Maine was nominated to the National Register of Historic Places in 1978. Collectively, the Olmsted landscape and buildings of the District are one of the most intact on a land grant campus.

The 1978 District boundaries include the Tier One buildings. The Historic Preservation Master Plan contains recommendations for expanding the Historic District to include the Tier Two and Three buildings. The proposed land area to be included in the expanded Historic District as shown on the previous page.

Master Plan Proposals for Cultural Resources

The Master Plan incorporates the findings and adopts the landscape and architectural design recommendations of the Historic Preservation Master Plan. The 2008 Master Plan, however, recommends adjusting the northern boundary of the District Expansion to exclude the Alford Sports Arena / Walsh Center area and the Crossland, Sigma Nu and Beta Theata Pi area.

In order to provide land for a potential public / private development known as the Black Bear Village, it is proposed that the Crossland Hall (formerly the Frost farmhouse), Sigma Nu and Beta Theata Pi houses be relocated, potentially along the riverfront. This proposal will require further study given that Crossland Hall is identified as one of the University's Tier 1 buildings. Crossland, however, has not been added to the National Register due to extensive interior and exterior alteration.

Historic Buildings

Tier 1—Heritage Period (1865-1910)

The Heritage Period oriented campus buildings on the slopes toward the river in a picturesque landscape setting to form the Front Lawn. It was during this period that the ten designated buildings of the University of Maine at Orono National Register Historic District were constructed.

Additional buildings were added to the National Register after 1978 including the Maine Experiment Station Barn (Page Farm Barn—1833) in 1990 and the Edith Marion Patch House (1840) in 2001.

Tier 2—Growth Period (1911–1945)

The Growth Period buildings were constructed along the University Mall as well as other small open spaces. The Mall design was influenced by the Beaux-Arts movement, “with its grand axes, classical facades, and long alleys”. According to the Historic Preservation Master Plan, the creation of the Mall was “a deliberate act to provide a new organizing space for all future growth at the University”.

Tier 3— Modern Era (1945-present)

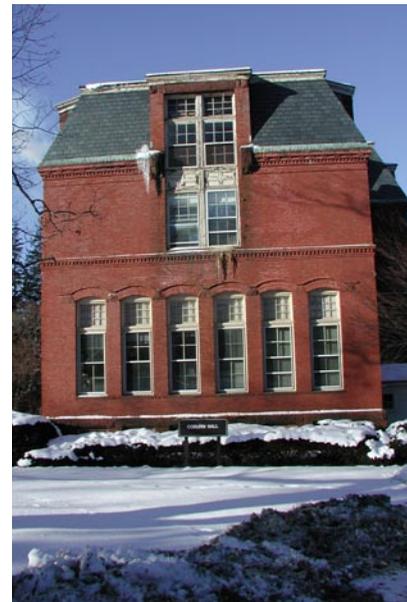
The Modern Era is characterized by buildings oriented toward the campus roadways. A majority of the buildings constructed during this period were located on the periphery of the University Mall.

Although the area extending from Long Road to Hancock Hall is not proposed for inclusion in the expanded Historic District, it is recommended that the landscape treatment along the College Avenue public edge be designed in a manner complementary to the riverfront and Front Lawn landscape recommendations of the Historic Preservation Master Plan.

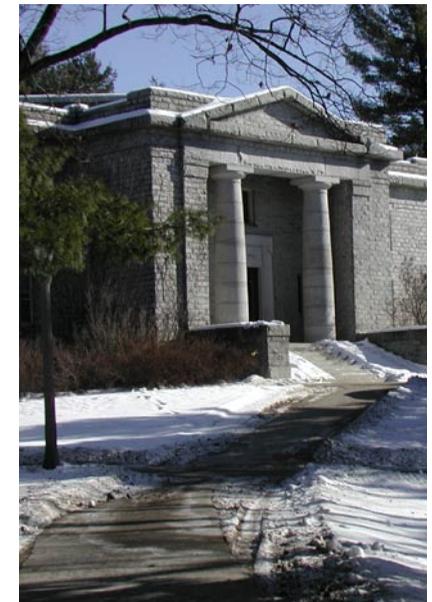
The Master Plan also departs from the Historic Preservation Master Plan on two circulation recommendations. First, Sebec Road is closed to vehicular traffic in the Master Plan rather than Schoodic Road. Sebec will remain open to pedestrian and bicycle circulation. Schoodic will remain open to vehicular traffic. Second, Munson Road is intended to function as part of a proposed Loop Road around the campus core. For that reason, it will remain open to two-way traffic. The Historic Preservation Plan proposed that Munson Road between Sebec and Long be limited to one way traffic to reduce the pavement width in front of Wingate and Fernald Halls.



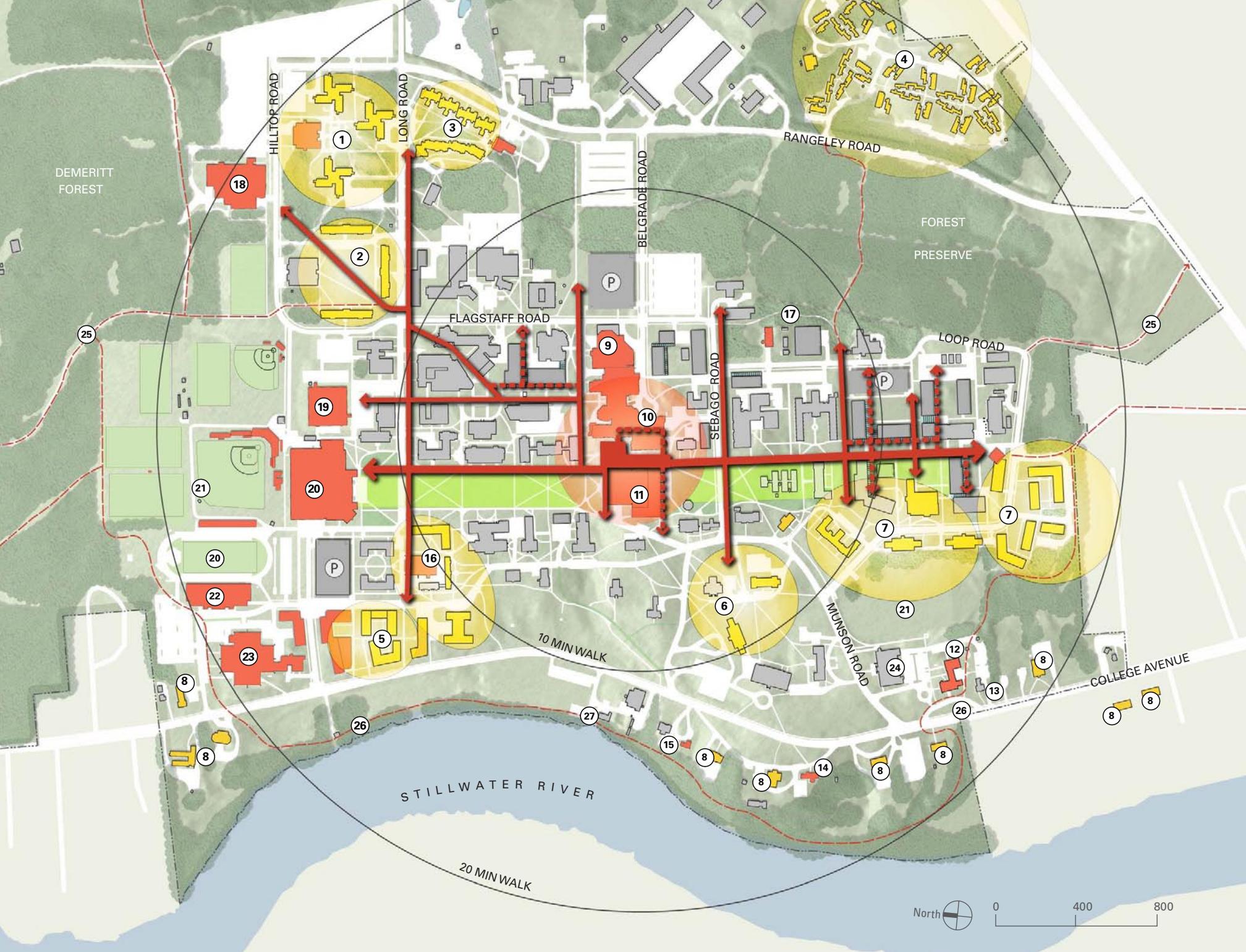
EARLY PHOTOGRAPH OF THE CAMPUS



COBURN HILL (1888)



CARNEGIE HALL (1906)



DEMERITT FOREST

FOREST PRESERVE

HILLTOP ROAD

LONG ROAD

BELGRADE ROAD

RANGELEY ROAD

FLAGSTAFF ROAD

SEBAGO ROAD

LOOP ROAD

10 MIN WALK

MUNSON ROAD

COLLEGE AVENUE

STILLWATER RIVER

20 MIN WALK



0 400 800

Residential

1. HILLTOP QUADRANGLE
2. DORIS TWITCHELL ALLEN VILLAGE (DTAV)
3. STEWART QUADRANGLE
4. TALMAR WOOD APARTMENTS (PRIVATE)
5. NORTHWEST RESIDENTIAL COMMUNITY AND BLACKBEAR VILLAGE
6. WEST RESIDENTIAL COMMUNITY
7. SOUTH RESIDENTIAL COMMUNITY
8. GREEK HOUSING

Student Life and Cultural Facilities

9. COLLINS CENTER FOR THE ARTS
10. MEMORIAL UNION
11. RAYMOND H. FOLGER LIBRARY
12. BUCHANAN ALUMNI HOUSE
13. CANADIAN AMERICAN CENTER
14. SIGMA CHI HERITAGE HOUSE
15. CHILDREN'S CENTER
16. WELLS CONFERENCE CENTER
17. PAGE FARM AND HOME MUSEUM

Recreation

18. STUDENT REC AND FITNESS CENTER
19. MAHANEY DOME (TENNIS)
20. MEMORIAL GYMNASIUM
21. ATHLETIC FIELDS
22. HAROLD ALFOND STADIUM
23. HAROLD ALFOND SPORTS ARENA
24. LENGYEL HALL
25. BIKE TRAILS
26. WABANAKI TRAIL
27. BOAT LAUNCH

-  Residential
-  Campus Community / Student Life Facilities
-  Exterior Main Pedestrian Route
-  Interior Main Pedestrian Route
-  Bike Routes / Trails

COMMUNITY RESOURCES

The Community Framework highlights the amenities, civic nodes and residential communities that contribute to the quality of life on the UMaine campus. The Community Framework encompasses the buildings, fields and landscape spaces that foster collegial interaction. This section focuses primarily on the building facilities; landscape elements are described in more detail in the Landscape and Open Space Framework.

The Master Plan supports a sense of community by creating and enhancing civic meeting points and by providing connectivity between these nodes. Community is addressed at the following levels: 1) campus-wide gathering and meeting spaces; 2) learning nodes; 3) residential communities; 4) dining and food services; 5) cultural amenities and athletics and recreation facilities. The nodes are intended to serve the various population groups that utilize the campus and address varying needs. The population groups include campus residents, commuter students, faculty, staff and the broader communities consisting of alumni, local residents and visitors.



STUDENTS GATHER OUTSIDE OF MEMORIAL UNION

Campus Community

The Olmsted plans for the campus called for the creation of a village center that included “a library, museum, lecture hall and a chapel.”¹ The Fogler Library remains an important element of the village center envisioned by Olmsted. A more modern evolution of the concept is represented in the adjacent Memorial Union. Together, the Fogler Library and Memorial Union function as the central gathering place for students, faculty, and staff, providing lounge spaces, meeting rooms, dining and food services, and the University bookstore.

Other facilities that serve the campus and broader communities include the Wells Conference Center, Buchanan Alumni House, and Canadian-American Center.

Learning Nodes

The proposed Library expansion provides the opportunity to introduce additional social learning spaces, group study areas and technology access points at the core of the campus. Coupled with the proposed South Mall, the Library expansion is envisioned as a major new learning center for resident and commuter students. Other learning nodes include the numerous labs and study spaces located throughout the academic core.

Residential Communities

Currently, UMaine provides on-campus housing for nearly 39% of all full-time equivalent students. With the goal of reducing transportation related carbon emissions and creating a more pedestrian friendly campus, the number of students living on campus is likely to increase in the future.

The Master Plan enhances the four existing residential communities of the campus by means of landscape and community facility improvements. Additional housing facilities are recommended within the context of two of the communities to provide options for increasing the overall resident population.

The four residential communities are as follows: 1) the North Residential Villages (Hilltop, Stewart Quadrangle and Doris Twitchell Allen Village; 2) the Northwest Residential Community consisting of Oak Hall, Hancock Hall, Hart Hall and potential residential in Black Bear Village; 3) the West Community (former Women’s Quad) consisting of Balentine, Penobscot and Stodder Halls and 4) the south community consisting of York, Estabrooke, Kennebec and Aroostook Halls, and the potential redevelopment of York Village over the long-term.

During the academic year 2007/2008, a total of 3,660 students lived on the UMaine campus including 1,470 freshmen, 1,042 sophomores, and 420 juniors. Upper division students are housed in Oak, DTAV, Estabrooke (graduate and non-traditional) and Honor’s College students in Balentine and Colvin.

The First Year Residence Experience (FYRE) program utilizes the following facilities: Androscoggin, Gannett, Cumberland, Knox, Oxford, Somerset, Colvin (Honors), and Penobscot (4th floor honors).

1. 2007 Historic Preservation Master Plan

Traditional Housing is provided for upper division students in Aroostook, Kennebec, Estabrooke, Hancock, Hart, York, Balentine (Honors), Penobscot (Honors), Doris Twitchell Allen Village (suite-style), Patch (suite-style) and Oak (all-singles). Graduate housing is provided in Stodder.

North Residential Community

The largest concentration of on-campus housing is the North Residential Community, which provides housing for 1,650 full time students. The Hilltop and Stewart quadrangle residence halls are utilized for the freshmen population. These residential communities are served by the dining hall at Hilltop Commons and the DTAV Community Center. The North Community residents benefit from the adjacency of the Student Recreation and Fitness Center.

Northwest Residential Community

The Northwest Community encompasses the existing Hart, Oak and Hancock Halls and provides housing for 429 students. Potentially, new residential facilities could be located in the Black Bear Village. This mixed use development may accommodate retail and other community support facilities. Social and dining facilities in this area are currently housed in the Wells Conference Center.

West Residential Community

The west residences along the Front Lawn accommodate 400 students and include the Honor's College at Colvin and Balentine. Collectively, Balentine, Stodder, and Penobscot accommodate 600 students. Dining and social facilities are provided on the ground floor of Stodder.

South Residential Community

The South Community includes York, Estabrooke, Kennebec and Aroostook Halls accommodating a population of 700. Dining services are provided in York Hall. The Master Plan calls for the redevelopment of York Village, which is in poor condition, to create a new residential area to form the southern terminus of Grove Walk. Approximately 400 beds could be accommodated in the new complex. Additional social, lounge and limited food services are proposed for the common building on the south end of Grove Walk (interim surface parking).

University Park Community

University Park located north of the campus is utilized for graduates and temporary housing for faculty and staff. The complex is identified in the Master



Plan for redevelopment either for housing or remote parking. Replacement of this housing offers potential opportunities with the private sector.

Greek Housing

Greek housing is provided in several buildings along the College Avenue corridor, some of which are historically and architecturally significant. The Master Plan leaves these facilities intact with the exception of Beta Theta Pi and Kappa Sigma, which may be relocated to make better use of the land and for redevelopment opportunities.

Dining and Food Services

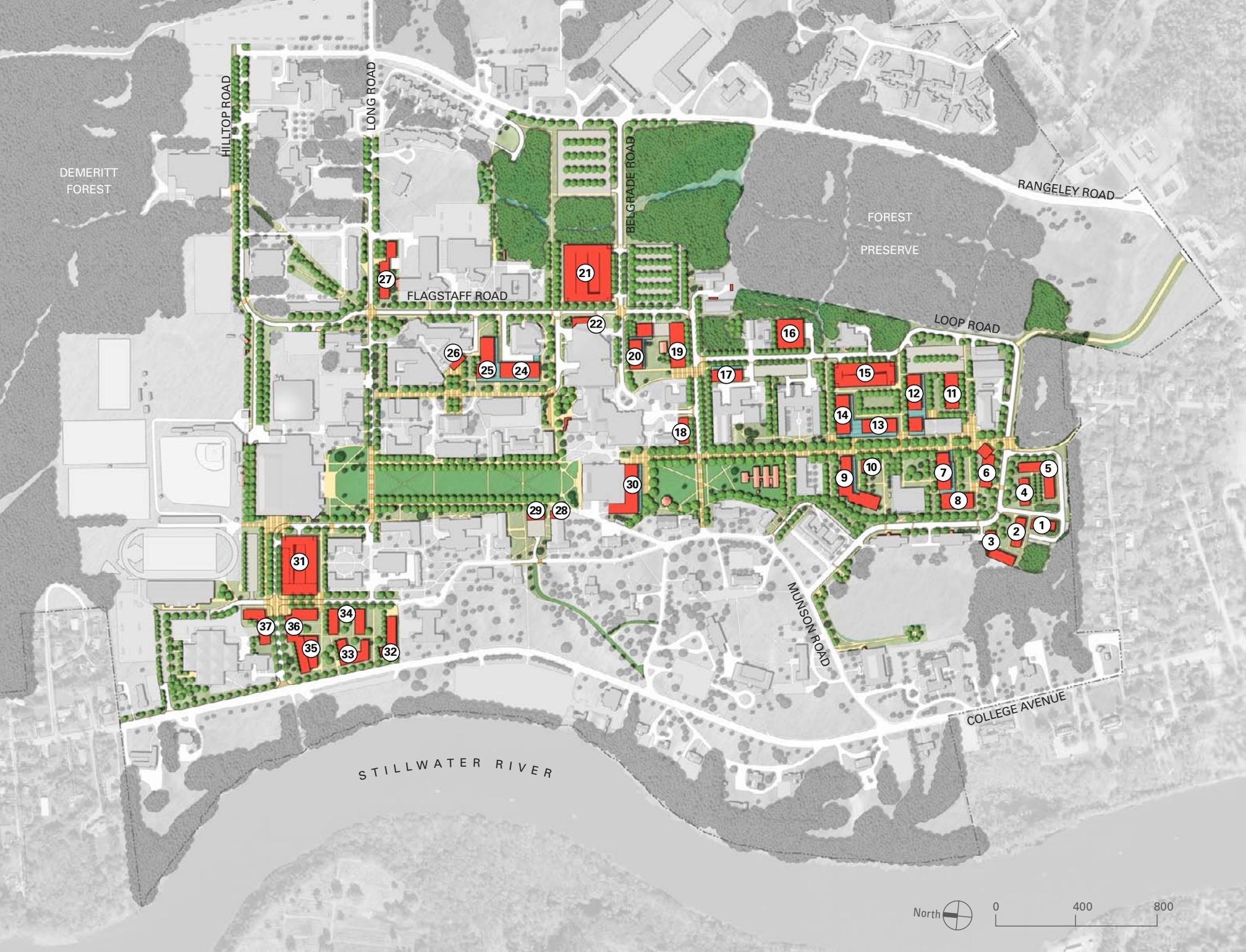
Dining and Food Services are provided at the following locations: 1) the Memorial Union; 2) York Commons; 3) Stodder; 4) Wells Conference Center; 5) Hilltop Commons; 6) Fogler Library (Oak Room). New facilities are proposed in a commons building at the south end of Grove Walk and a new facility in a building addition or new building at Cloke Plaza.

Cultural Facilities

Cultural facilities are provided in the Collins Center for the Arts, the Pavilion Theatre, the Page Farm Museum, the Minsky Recital Hall, and the Children's Center. A new planetarium to serve the school and regional communities is also proposed.

Sports and Recreation Facilities

Sports facilities serving the campus and broader community include the Alford Sports Arena, Morse Field, Mahaney Dome, north playing fields, tennis courts, the Memorial Gym, Lengyl Gym, and the Student Recreation and Fitness Center. The community is also served by the broader trail system and network.



DEMERRIT
FOREST

HILLTOP ROAD

LONG ROAD

FLAGSTAFF ROAD

BELGRADE ROAD

FOREST
PRESERVE

RANGELEY ROAD

LOOP ROAD

MUNSON ROAD

COLLEGE AVENUE

STILLWATER RIVER



0 400 800

South Campus District

1. South Residence Hall (24,415 gsf)
2. South Residence Hall (30,437 gsf)
3. South Residence Hall (47,067 gsf)
4. South Residence Hall (28,000 gsf)
5. South Residence Hall (63,469 gsf)
Total: 129,919 gsf
6. South Mall Student Life (52,843 gsf)
7. South Academic (74,400 gsf)
8. South Academic (52,800 gsf)
9. South Academic (108,677 gsf)
10. South Academic (12,600 gsf)
11. South Academic (50,402 gsf)
12. South Academic (107,924 gsf)
13. South Academic (63,000 gsf)
14. South Academic (93,600 gsf)
Total: 563,403 gsf
15. South Parking (563 spaces)
16. USDA Aquaculture Research (40,500 gsf)
17. Central South Academic (37,458 gsf)

Core Campus Infill District

18. Central South Academic (19,843 gsf)
19. Central South Academic (51,750 gsf)
20. Central South Academic (57,000 gsf)
Total: 128,593 gsf
21. Collins Center Parking (1,071 spaces)
22. Collins Center for the Arts Addition (13,142 gsf)
23. Memorial Union North Entrance (2,191 gsf)
24. Shibles/ East Annex Replacement (80,001)
25. Shibles/ East Annex Replacement (93,996 gsf)
26. Neville Expansion (9,030 gsf)
27. Core Campus Academic (41,848 gsf)

University Mall District

28. Alumni Hall Expansion (8,001 gsf)
29. East Mall Academic (13,500 gsf)
30. Fogler Library Expansion (103,009 gsf)

Black Bear Village

31. Structured Parking North (831 spaces)
32. Black Bear Village (46,760 gsf)
33. Black Bear Village (54,614 gsf)
34. Black Bear Village (64,600 gsf)
35. Black Bear Village (26,935 gsf)
36. Black Bear Village (96,129 gsf)
37. Black Bear Village (50,980 gsf)
Total: 341,019 gsf

DEVELOPMENT CAPACITY

Future academic, research and support facility development is located within the proposed Growth Boundary, the extent of which is loosely defined by current infrastructure and a 10-minute walk from the center of campus (Fogler Library). The Master Plan provides ample capacity to accommodate future facilities.

The following principles and strategies informed the estimated Development Capacity of the Master Plan:

- Forest and wetland resources should be preserved by containing sprawl within the Growth Boundary
- Important historic buildings should be renovated in accordance with the Historic Preservation Master Plan
- Buildings should be phased out that:
 - » do not contribute to the broader campus character
 - » are temporary in nature
 - » do not represent the highest and best utilization of land resources
- Infill development / redevelopment should be a priority.
- Compact and pedestrian-scale development should be facilitated.

Flexibility

The Master Plan provides a flexible framework to accommodate known facility needs as well as unforeseen opportunities. Adaptability is guided by the following precepts:

Preserve the Overall Vision While Serving Unique Academic Needs

The Master Plan provides a framework for accommodating current space needs and allows flexibility as the University grows and develops. It illustrates how potential building sites contribute to a larger design vision that builds community, fosters collaboration and preserves valuable natural resources. Within this vision, the Master Plan allows decision makers to choose future building locations that not only contribute to the overall vision but also best serve particular needs. The openspace and circulation frameworks provide the context for future development.

Illustrate Additional Growth Capacity

The University has averaged a growth of 74,000 asf per year since World War II.¹ Projecting this average growth rate forward another 20 to 25 years, substantial growth may occur, the purpose of which is not currently known. The Master Plan provides ample capacity to accommodate future space needs as well as a framework for building placement. The total estimated additional capacity illustrated in the Master Plan is 1.7 million gsf.

Phase Uses as Needs Arise

The Master Plan provides the flexibility to phase in projects incrementally over time. For instance, it identifies parking structure locations, which will be constructed as surface parking is displaced to construct new mission related academic, research and support facilities.

1. University of Maine

Building Demolition and Replacement

Several buildings are identified in the Master Plan as candidates for demolition/replacement. These buildings represent a considerable financial investment to address lagging deferred maintenance. Also, many of the smaller buildings, although not in poor condition, represent poor use of available land and do not contribute to a collegial environment. The following facilities (173,300 asf) are identified for possible demolition over the long-term to make better use of campus land and infrastructure:

- Agriculture Research Service Greenhouse (5,100 asf)
- Child Study Center (2,500 asf)
- East Annex (20,800 asf)
- Entomology Greenhouse (2,300 asf)
- Environmental Sciences Lab (7,200 asf)
- Forestry Greenhouse (3,500 asf)
- Libby Hall (24,200 asf)
- MacKay Archaeological Lab (4,350 asf)
- Sculpture Studio (6,650 asf)
- Shibles Hall (41,300 asf)
- Small Animal Research (4,300 asf)
- Social Work Building (4,100 asf)
- South Annexes (11,300 asf)
- York Village (35,700 asf)
- Instructional Technology (IT) & Computer Repair
- Safety and Environmental Management

Building Relocation

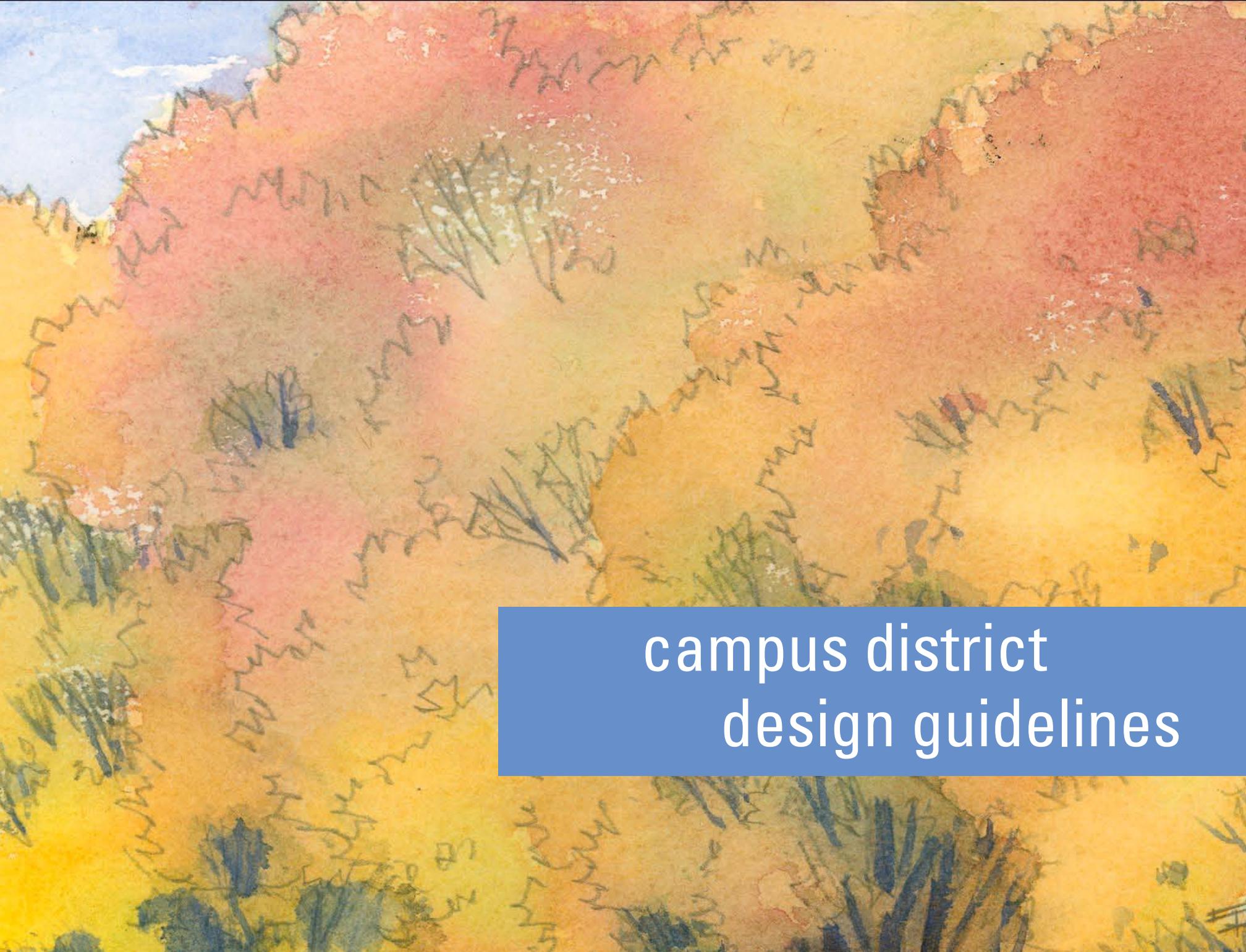
The following buildings are proposed for relocation in order to the respective building sites for more appropriate building program.

- Crossland Hall (15,973 asf)
- Sigma Nu (7,371 asf)
- Beta Theta Pi (8,076 asf)

Deferred Maintenance and Building Replacement or Renovation

The deferred maintenance study for the campus conducted by Sightlines reveals a need for significant investment in the historic and existing campus buildings. The recommendations of the Sightlines study should be referenced for more detail.





campus district
design guidelines

**NORTH
RESIDENTIAL
VILLAGES**

DEMERITT
FOREST

FOREST
PRESERVE

**CORE
CAMPUS
INFILL**

**NORTH
ATHLETICS**

**SOUTH
CAMPUS**

**UNIVERSITY
MALL**

**BLACK BEAR
VILLAGE**

**FRONT
LAWN**

RIVER FRONT

STILLWATER RIVER

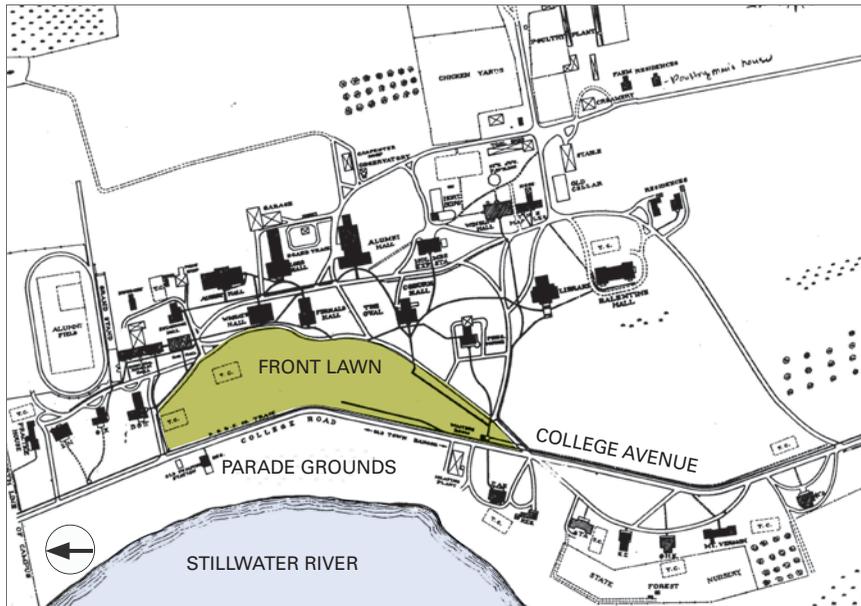
CAMPUS DISTRICT DESIGN GUIDELINES

This section describes the overall urban design vision of the Master Plan and offers more detailed guidance with regard to building and landscape treatment.

Within the campus Growth Boundary, the Campus Districts provide guidance for building placement and placemaking. The district plans establish a vision for full build-out with the open space and circulation proposed in the Master Plan.

The urban design vision and design guidance recommendations are divided into eight campus districts to more specifically address the particular conditions. They are intended to assist future designers as projects are implemented in each district. These districts are:

- Front Lawn
- River Front
- University Mall
- South Campus
- Core Campus Infill
- Black Bear Village
- North Athletic
- North Residential



1922 CAMPUS MASTER PLAN BY THE OLMSTED BROTHERS

FRONT LAWN DISTRICT RECOMMENDATIONS

- Remove vehicular traffic from Sebec Road
- Simplify treatment of picturesque landscape with large trees, lawn and pedestrian pathways
- Plant trees along the Munson Road Entrance Drive
- Construct sidewalks along south edge of Munson Road
- Shorten distance of pedestrian crossing at Munson and Schoodic Road
- Locate walkways further from building faces.

Front Lawn District

The Front Lawn District is characterized by sloping topography oriented toward the Stillwater River. It extends from the eastern edge of the University Mall to College Avenue. The district is bounded by Munson Road and Long Road to the north and south.

The Front Lawn encompasses the original buildings of the campus constructed from 1865 through 1910, generally in accordance with the Olmsted Master Plan of 1867. As a result of this distinction, a portion of the Front Lawn district and the associated buildings are included in the National Register Historic District designation. Per the recommendations of the 1867 master plan, buildings are oriented westward to provide views the Stillwater River. The landscape is picturesque in character, with informal plantings and mature trees in a park-like setting. In addition to the academic buildings, the residential facilities include Oak, Hart, Colvin, Balentine and Hancock Halls and a dining hall at Wells Conference Center.

Front Lawn Design Guidance

The Master Plan respects the historic character of the Front Lawn District, adopting many of the recommendations set forth in the Historic Preservation Master Plan (2007). The Master Plan calls for the expansion of the Historic District pursuant to the Historic Preservation Master Plan with modifications to the north boundary, the details of which are explained in the Cultural Resources Framework section of this report.

Given the historic and cultural relevance of the Front Lawn, no new development is proposed in the District; rather, landscape improvements are proposed in accordance with the recommendations of the Historic Preservation Master Plan.

The landscape character of the Front Lawn is enhanced in the Master Plan. The park-like setting of the Lawn is preserved along with the large trees which establish a unity of space. Mature evergreen trees in the area may be selectively limbed to open up views to the Stillwater River.

In order to simplify circulation, the Master Plan recommends consolidating the vehicular traffic on Munson Road. This entrance road takes advantage of the Front Lawn landscape as an iconic first view of the campus and provides a more gracious arrival route for campus visitors than Sebec Road. The Master Plan identifies Sebec Road as a redundant road, and recommends closing the street to vehicular traffic. The road surface may be restored to a perme-



MEMORIAL GYM

MEMORIAL UNION

UNIVERSITY MALL

FOGLER LIBRARY

SOUTH MALL

P

LOOP ROAD

SCHOODIC ROAD

SEBEC WALK

MUNSON ROAD

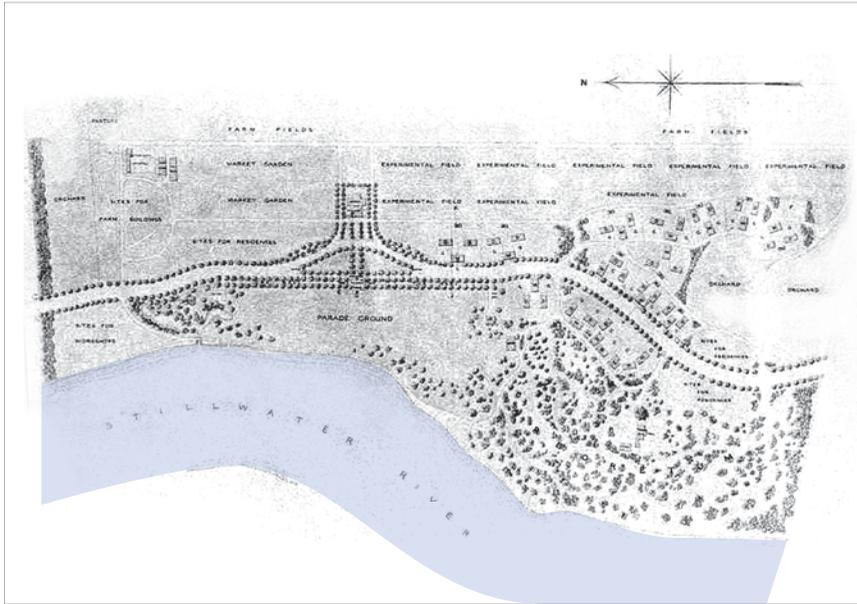
COLLEGE AVENUE

PARADE GROUNDS

STILLWATER RIVER



0 400 800



OLMSTED SENIOR DRAWING SHOWING PARADE GROUND ALONG THE RIVER

RIVERFRONT DISTRICT RECOMMENDATIONS

- Concentrate pedestrian crossings along College Avenue in one area
- Remove Steam Plant parking lot
- Create a river walk trail honoring the Wabanaki Tribe
- Reconstruct the wetland area along the riverfront for water retention and treatment
- Re-vegetate river edge environment

able material more typical of the original condition. Sebec Road will remain open to service vehicles, pedestrian and bike traffic. Pedestrian walkways are proposed along both sides of Munson Road. Other improvements include the reconfiguration of the extraordinarily long crosswalk at the intersection at Schoodic and Moosehead Roads to improve pedestrian safety.

Riverfront District

Closely associated with the Front Lawn, the Riverfront District includes the land between College Avenue and the Stillwater River. The northern, low lying portion of the District is located in the 100 year flood plain of the river. The southern section, situated on higher ground, is occupied by several fraternity houses, some of which are located on University land. A boat launch is located near the University Steam Plant and the expansive parking lot now located along the riverfront. In the 1867 Olmsted Master Plan, the Riverfront is illustrated as a Parade Ground, noting that the piece of land “slightly flooded in times of high freshet.” Despite the river front location, the area has low habitat values, likely due to the large parking area and adjacent roadway.¹

River District Design Guidance

In keeping with the stewardship goals established by the University, the Master Plan recommends removing or drastically reducing the Steam Plant and College Avenue North parking lots. The intent is to reintroduce the Parade Ground in conjunction with the existing Riverside Recreation Area. In support of this concept, the tree canopy will be extended along the riverfront to link with the Fay Hyland Botanical Garden. This will serve not only to restore historic relationship of the campus to the river, but also to increase habitat connectivity along the river. Removal of the existing parking will also reduce the need for pedestrian crossings along College Avenue.

The reclamation of natural areas along the river provides the opportunity for a river trail honoring the Wabanaki Tribe, who likely used the area as a fishing ground. The Wabanaki River Trail will be linked to the Demeritt Forest trail network and connect to the adjacent neighborhoods to the south, providing increased access to a major campus asset and unique community amenity.

1. United States Fish and Wildlife Resources: Forest 97 GIS Habitat Value Map (1999)



P

P

P

MEMORIAL GYM

UNIVERSITY MALL

MEMORIAL UNION

FOGLER LIBRARY

SOUTH MALL

FRONT LAWN

COLLEGE AVENUE

WABANAKI TRAIL

STEAM PLANT

MUNSON ROAD

BOAT LAUNCH

CHILDRENS CENTER

GREEK HOUSING

HERITAGE HOUSE

GREEK HOUSING

GREEK HOUSING

STILLWATER RIVER

FAY HAYLAND BOTANICAL GARDEN



0 400 800

UNIVERSITY MALL DISTRICT GUIDELINES

- Preserve Historic Tier I and II buildings in accordance with the recommendations of the Historic Preservation Master Plan
- Infill select sites on the southwestern edge of mall with appropriate new buildings
- Replace existing Ash Trees with double rows of maples along the north-south pathways

Along the southern section of the Riverfront District, the Master Plan recommends increased maintenance standards for the fraternities between Sebec Road and Munson Road due to the highly visible location. No major changes are proposed to the Greek Housing area other than general improvements to the landscape and the proposed improvement in maintenance standards.

University Mall North District

The University Mall is the iconic heart of the UMaine campus. The space is framed by notable academic buildings including Stevens Hall and Aubert Hall. The Fogler Library defines the south end of the Mall; the Memorial Gym defines the north end. A majority of the buildings along the Mall were constructed between 1911 and 1945, generally in accordance with the 1932 and 1948 Olmsted Brothers Master Plans.

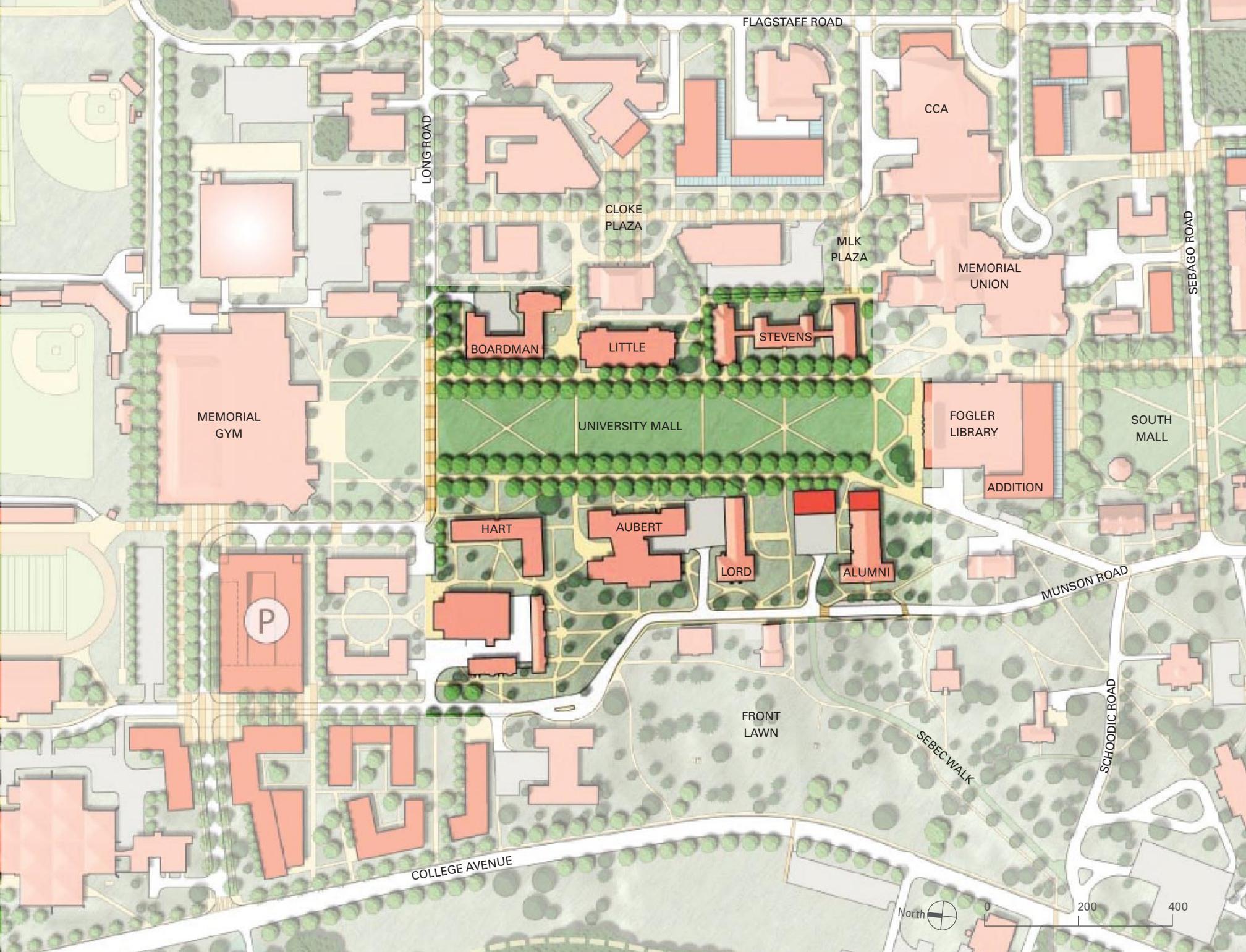
The Master Plan acknowledges the historic and cultural importance of the University Mall by adopting the guidance of the Historic Preservation Master Plan with regard to building renovation and new construction as well as improvements to the landscape.

Design Guidance and Building Recommendations

The Historic Preservation Master Plan establishes General Architectural Guidelines for “existing historic buildings, additions to historic buildings, new buildings constructed within historic contexts and site issues.” The Guidelines are based on The Secretary of the Interior Standards for the Treatment of Historic Properties With Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings and The Secretary of the Interior Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes.

Based on a rehabilitation philosophy, the Guidelines are intended “to protect the architectural integrity of the campus and promote the goal of historic preservation, while accommodating the diversity of site conditions and architectural styles.”¹ The General Architectural Guidelines of the Historic Preservation Master Plan are adopted in the Master Plan. They should be referenced when renovating or altering any designated historic building or when proposing new buildings in the expanded historic district as delineated in the Master Plan.

¹ P. IV.E-1. Historic Preservation Master Plan



FLAGSTAFF ROAD

LONG ROAD

SEBAGO ROAD

CCA

CLOKE PLAZA

MLK PLAZA

MEMORIAL UNION

BOARDMAN

LITTLE

STEVENS

MEMORIAL GYM

UNIVERSITY MALL

FOGLER LIBRARY

SOUTH MALL

ADDITION

HART

AUBERT

LORD

ALUMNI

P

MUNSON ROAD

FRONT LAWN

SEBEC WALK

SCHOODIC ROAD

COLLEGE AVENUE



0 200 400



INFORMAL PEDESTRIAN PATHWAYS DEMONSTRATE NEED FOR
DIAGONAL WALKWAYS ACROSS THE MALL

The architectural guidelines encourage the preservation of the core campus Heritage Period Buildings. Detailed recommendations are provided for the Tier One Buildings (1865-1910) and the Tier Two Buildings (1911-1945) in the Historic Preservation Master Plan. The guidelines should be referenced prior to any alternation of these buildings or their surrounding landscape context.

Design guidance is also provided for new construction in the Historic District or adjacent to a historic building and is included in the Master Plan for ease of reference (See section IV.E. General Architectural Guidelines of the 2007 Historic Preservation Master Plan for more details):

A new building being constructed in the Historic District or adjacent to a historic building should adhere to the following Guidelines:

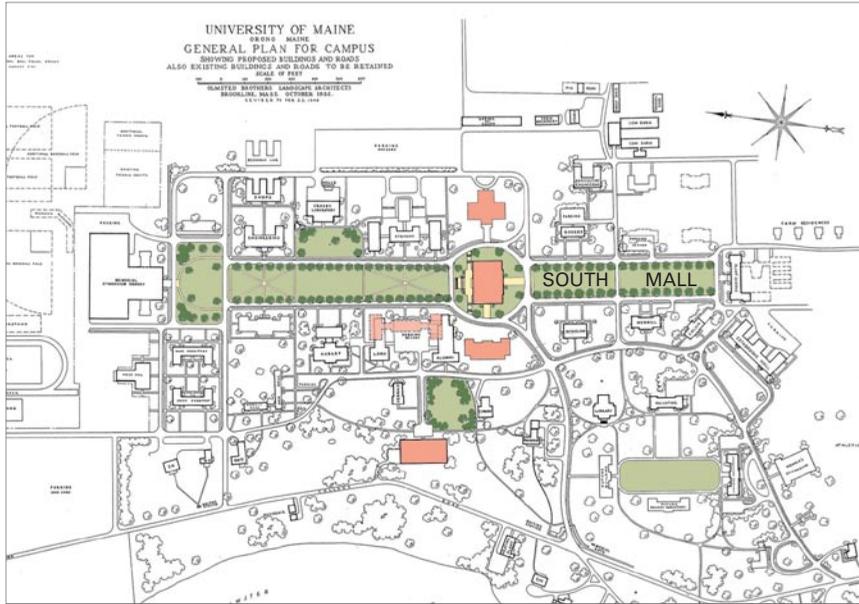
- The new building's scale and massing should not overwhelm the scale and massing of its neighbors.
- The new building should incorporate at least some of the materials used in the construction of the buildings that surround it.
- The new building should respect the context of the site and its historic neighbors.
- Textures and details of the new buildings should complement those of the historic buildings nearby.
- New buildings should be representative of their own time, differentiated from but respectful of historic context.
- New additions and adjacent or related new construction should be undertaken in such a manner that if the new work were removed in the future, the essential form and integrity of the historic property and its environment would exist unimpaired.
- Site planning for new development projects should incorporate appropriate plant materials, sensitive placement of utilities, and accessibility.
- New construction should be situated in areas where it will have a minimal impact on the historic setting of the campus. New construction should sensitively incorporate historic components such as circulation patterns, vegetation, and the views and vistas to preserve the historic integrity of both the landscape and the built resources of the campus.
- New construction or additions should maintain existing spatial configurations and layouts within the campus, especially if historic landscape features are present. Development projects should be designed to improve and recapture connections to adjacent landscapes such as views to the river.

The Master Plan identifies one potential development site on the University Mall, between Lord and Alumni Hall. An appropriate building in this location could serve to strengthen and define the western perimeter of the Mall and should be designed in accordance with the above noted guidelines.

Landscape Design Guidance

The University Mall landscape intent is maintained in the Master Plan. The existing ash trees along the north south walkways are in acceptable condition but will need to be replaced at some point in the future. At this time, it is recommended that a second row of trees be added on the outside of each walkway to better frame the space. Replacement trees should be planted closer to the walkways in accordance with the Historic Preservation Master Plan.

The Master Plan also recommends creating additional diagonal pathways crossing the Mall to enhance pedestrian circulation. The proposed pathways reflect existing desire lines and create more direct circulation routes for the winter months.



1948 MASTER PLAN UPDATE SHOWS SOUTH MALL AS ORGANIZING ELEMENT

SOUTH CAMPUS DISTRICT GUIDELINES

- Transform Grove Street into Grove Walk, a pedestrian corridor extending from the University Mall
- Create new campus gathering space framed by the Library addition to the North, Grove Walk to the east, and to the west, Winslow Hall, Maple Hall and Merrill Hall
- Articulate the western edge of the mall with a curving walkway shaded by maple trees (West Walk)
- Form east-west windbreaks to shelter pedestrian areas and buildings
- Orient buildings along the east-west axis to maximize solar gain
- Accommodate future growth of academic, research and core support facilities

South Campus District

The South Campus District is defined as the area south of the Fogler Library, between Lengyel Fields on the west and the University Forest Preserve on the east. Given the existing low density development of the South Campus, this area provides significant opportunities for accommodating the growth needs of the University over the next 20 to 30 years, especially in the sciences and research. At present, the South District land use pattern significantly underutilizes the land resource. A number of temporary and one-story facilities and surface parking lots occupy valuable land.

The South Campus District is structured by the conceptual continuation of the University Mall via two major north south pedestrian routes and a series of east-west walkways that connect across the campus.

South Mall Design Guidance

The South Mall is envisioned as a new campus gathering space framed by a proposed expansion of the Fogler Library. This framework recalls the idea of the South Mall as illustrated in the 1932 and 1948 master plans by the Olmsted Brothers. The South Mall is framed on the north by the Library addition, on the south by Deering Hall and on the east and west by Grove Walk and West Walk.

The South Mall is envisioned as an uncluttered expanse of lawn, with informal tree planting and detention areas for storm events. The South Mall area is well protected from north winter winds by a proposed addition to the Fogler Library building. The segment of Sebago Road which bisects the South Mall will feature pavement and edge features distinguishing this area as part of the Pedestrian Priority Zone.

The Fogler Library addition should include public space at the ground level to take advantage of low winter sun and activate the space during colder months. The Historic Preservation Guidelines apply to the Library addition and to a new building proposed directly to the south of Rogers Hall. The Roger Clapp Greenhouse will remain in the Mall.



FOREST
PRESERVE

BELGRADE ROAD

LOOP ROAD

CCA

MEMORIAL
UNION

SEBAGO ROAD

P

GROVE WALK

FOGLER
LIBRARY

SOUTH
MALL

ADDITION

MUNSON ROAD

LENGYEL
FIELDS



0 200 400

Grove Walk Design Guidance

Grove Walk extends from the Library addition southward to link with the proposed Loop Road and provide pedestrian connectivity with the neighborhoods south of campus. The walk will be defined by formal alley of trees and new paving materials. It will serve to link the major academic facilities of the University Mall to potential new academic facilities on the south. It will serve as the armature for major new academic facilities proposed on existing surface parking lots.

The pedestrianization of Grove Street requires the completion of the proposed Loop Road located on the periphery of the South Campus. Parking access is provided from the Loop Road including a new parking garage and surface parking.

Proposed South Campus Facilities include:

- Fogler Library addition (100,000 gsf),
- USDA / UMaine Aquaculture Lab (40,500 gsf), located east of Nutting Hall on the Loop Road)
- New housing complex south of the Loop Road (595 beds)
- Parking garage on the east Loop Road (563 spaces)

The following facilities are displaced from the South Campus:

- Libby Hall
- ARS and Forestry Greenhouses
- Temporary facilities east of Byrand Global Sciences Center
- York Village
- Surface parking

West Walk Design Guidance

WestWalk forms an undulating path linking the Library addition to the southern terminus of the South Mall. It provides a pedestrian link between the resident halls and the academic core.

Pedestrian connectivity is enhanced in the South Campus by a series of east west pedestrian routes coordinated with a series of windbreaks. The east west routes are located north of the Sawyer Environmental Research Center, to the north of Byrand Global Sciences Center, and to the south of Nutting Hall.

East / West Corridors Design Guidance

The development pattern of the South Campus orients a majority of the proposed buildings on an east/west axis in conjunction with the landscape windbreaks. The buildings and windbreaks together are intended to mitigate northern winter winds and create sheltered areas on the south side of the buildings. The buildings, which define south facing quadrangles, are limited to three-to-four stories in height to ensure maximum solar access to adjacent buildings. The proposed building orientation is optimal for passive solar and potentially for active solar technologies.

Within the South Campus District, a total of 1.1 million gsf can be accommodated on identified infill and redevelopment sites. The majority of the sites are reserved for future academic, research and core support facilities, though precise building programs have not been identified at this time. The buildings and plaza space at the southern terminus of Grove Walk are envisioned as a student community area incorporating food or other student services.

Guidelines for New Buildings in the South District

New construction to the south of Deering Hall is viewed as the opportunity to create a contemporary architectural expression—an expression that will permit high-performance academic, research and support facilities. The intent is to locate buildings with solar access and wind protection as key drivers. This represents a departure for the University of Maine campus which has been previously organized on formal landscape principles which, for the most part, ignore the climate conditions in Orono. For example, the north / south orientation of the University Mall funnels winter winds, creating unpleasant conditions for pedestrians. Further, the north / south orientation of buildings along the Mall is not optimal for passive solar gain. The South District provides the opportunity to create high-performance green buildings. To that end, the guidance provided promotes solar access and wind protection. With regard to style, the south campus provides an excellent opportunity to encourage contemporary architectural expression without having a negative impact on the Historic District of the campus.

The following guidelines apply to new construction south of Deering Hall:

East / West Orientation—buildings, where possible, are to be elongated on the east / west axis to facilitate passive solar access and, potentially, active solar systems. (Note: while it may not be economical to include active photovoltaic or thermal storage systems presently, future buildings should be oriented to ensure that such systems can be incorporated when costs are favorable). Quadrangles are located on the south side of the buildings to establish sheltered microclimates and extend the outdoor season for campus activities.



PROPOSED VIEW OF GROVE WALK THROUGH THE SOUTH CAMPUS DISTRICT

North / South Orientation—Façades of buildings elongated on the north / south axis in response to urban design considerations should be designed to minimize summer heat gain and glare. External shading devices will be required.

Building Heights—Buildings in the South District are to be a maximum of 3-4 stories in height provided they do not hinder solar access for adjacent buildings. All future buildings should be modeled to determine the shadow impact on adjacent buildings and spaces.

Building Placement—The placement and height of proposed buildings should be studied relative to solar access to adjacent buildings.

Façades—All façades are to be designed in response to orientation with daylighting of interior spaces as a key consideration. Atrium-like circulation spaces may provide opportunities to promote passive solar gain (on east/west oriented buildings), incorporate social and informal learning space, and place circulation on the periphery of buildings with the aim of “activating” exterior spaces.

Interior / Exterior Pedestrian Connectivity—The placement of interior circulation routes through proposed buildings should be coordinated with exterior circulation between buildings. The intent is to provide conditioned space for pedestrians to circulate around the south campus during the winter months. The Master Plan includes a notional concept for how such a system could be developed.

Parking Garage—The proposed parking garage in the South District is oriented on the north/south axis. The ramp should be located on the east side in order that a horizontal expression can be designed on the west façade.



PROPOSED VIEW OF GROVE WALK THROUGH THE SOUTH CAMPUS DISTRICT



PROPOSED VIEW OF SOUTH MALL

CORE CAMPUS INFILL DISTRICT GUIDELINES

- Redevelop at the Shibles Hall and East Annex sites
- Design replacement buildings to provide legible interior public circulation that will serve as winter-time alternatives to exterior walkways
- Transform Cloke Plaza into an iconic meeting and gathering space for the Engineering community
- Consolidate surface parking lots along Belgrade Road into a parking structure to conserve core campus land and serve the Collins Center for the Arts
- Extend eastward the pedestrian walk anchored by the MLK plaza to accommodate foot traffic from parking areas
- Reconfigure the intersection of Flagstaff and Sebago Roads to create an additional development site

Core Campus Infill District

The Core Campus Infill District is defined as the developed area east of the University Mall, south of Long Road and north of Sebago Road. Within the district there are three distinct areas; the engineering sub-district north of the Memorial Union, the buildings along Flagstaff Road, and the area south of the Memorial Union.

Engineering Sub-District Design Guidance

The Engineering Sub-District is characterized by a mixture of historic buildings, recently constructed academic buildings and older deteriorating facilities. The Master Plan identifies Shibles Hall and the East Annex sites as opportunities for redevelopment, potentially as an expansion of the business school. The proposed buildings should include internal circulation along the western façade to provide opportunities for sheltered winter circulation.

The Sub-District lies along one of the major campus circulation routes for students moving from the north residential area to the main academic area. This route, known as Diagonal Walk, and the Beddington Road alignment, are reconfigured in the Master Plan as a pedestrian walkways.

Between Crosby Hall and Barrows Hall, Cloke Plaza will feature art work sponsored by the Maine Percent for Art program. The potential for including a new food service / coffee shop is indicated in conjunction with the walkway. Cloke Plaza, named after the founding dean of Engineering, will function as an informal meeting space for students walking along the Diagonal as well as an outdoor gathering place specifically for the Engineering community.

A second pedestrian route runs north of the Memorial Union to the proposed garage and parking lots east of Flagstaff Road. This is a major pedestrian corridor for commuter students who will park in the garage east of the Union and for students walking west from the DTAV Village. The corridor is anchored by a Plaza area just north of the Union, dedicated to Martin Luther King Jr. and Coretta Scott King.



HILLTOP ROAD

LONG ROAD

RANGELEY ROAD

BELGRADE ROAD

FOREST PRESERVE

FLAGSTAFF ROAD

P

LOOP ROAD

BARROWS HALL

CCA

CROSBY HALL

BEDDINGTON WALK

MLK PLAZA

MEMORIAL UNION

SEBAGO ROAD



GYM

0 400 800

Flagstaff Road Design Guidance

The Master Plan proposes the removal of the large surface parking lots along Flagstaff and Belgrade Roads over the long-term. A parking structure in this location will consolidate parking and provide a more efficient use of campus land. The proposed restoration of the wetland across Belgrade Road is emblematic of the University's goals to promote environmental stewardship.

Flagstaff Road is planted with street trees to provide habitat and promote a unified campus identity. One new building is identified at the northern edge of Flagstaff Road.

Sebago Road Design Guidance

South of the Memorial Union, and along Sebago Road, the Master Plan identifies infill sites to the east of Smith Hall. The reconfiguration of the intersection of Flagstaff and Sebago Roads creates a larger parcel for redevelopment. In general, this site provides the opportunity for contemporary design expression.

East/West Orientation—the proposed buildings are to be elongated on the east/west axis to facilitate passive solar access and, potentially, active solar systems. A quadrangle is also proposed incorporating the Maine Bound Barn.

Belgrade/Flagstaff corner—the corner at Belgrade and Flagstaff should be designed as an entry and landmark feature of the building. This entry should take into consideration the entry to the Collins Center for the Arts located directly to the north.

Parking Garage—the garage is proposed east of the Collins Center for the Arts (CCA) as part of a parking consolidation plan and strategy to improve the Belgrade Road gateway to the campus. Given the proximity, the garage should not exceed the height of the CCA and should feature a brick façade. The ramps for the garage should not be expressed on the facades.



FUTURE
BUILDING

COLLINS CENTER
FOR THE ARTS

MEMORIAL
UNION

FOGLER
LIBRARY

P



BIRDS EYE VIEW OF PROPOSED BLACK BEAR VILLAGE FROM THE STILLWATER RIVER

BLACK BEAR VILLAGE DISTRICT GUIDELINES

- Create a mixed-use district to service both the University and the local community
- Capitalize on river views
- Articulate buildings to respect the adjacent historical district, maintain a similar scale and material palette
- Define the district edge and consolidate surface parking in a garage structure along Long Road

Black Bear Village District

The Master Plan identifies a new mixed-use district at the Long Road entrance to the campus. While the program elements have not been determined, the goal is to create a public / private partnership development opportunity that will potentially include retail space and amenities for the University and broader communities. It could be developed as a mixed-use facility incorporating ground floor retail, restaurants, and services with housing on the upper levels. A parking garage is also proposed. The exact program elements will be the subject of further study.

Given that the program elements are yet to be determined, general design guidance is provided for this important gateway to the campus:

River Views—the site offers excellent views of the Stillwater River which should be acknowledged in building placement and in the layout of quadrangles, terraces or other landscape spaces. The river views will be enhanced with the removal of the riverfront parking lot (the Steam Lot).

Slope Conditions—the steep slopes in the area will require buildings that architecturally transition the slopes without crowding the College Avenue corridor.

Historic District—although the site is outside the proposed Historic District, the buildings should be designed with materials and proportions that are complementary to the adjacent Front Lawn buildings. Buildings should not exceed three stories in height and should feature the red brick and sloped roof details that distinguish the Front Lawn buildings.

Gateway—the proposed buildings will frame an important public gateway to the campus and should be designed to establish a sense of arrival. The intersection of Long and Munson Roads should be designed as a gateway node. Public uses including potential retail and amenities should be concentrated at the intersection of Long Road and Munson Road.

Parking Garage—a parking garage is proposed directly north of Dunn and Corbett Halls. The garage will help “formalize” the character of Long Road by defining the edge condition. The garage will need to be designed with consideration to the height and architectural features of the adjacent buildings. To that end, it should incorporate brick detailing with no ramps expressed on the facades and should be no more than 4 levels (3 floors plus the roof).



MEMORIAL GYM

UNIVERSITY MALL

LONG ROAD

BLACK BEAR WAY

P

MUNSON ROAD

FRONT LAWN

ALFOND ARENA

COLLEGE AVENUE



0 200 400

North Athletic District

The North Athletic District encompasses the main varsity athletics facilities of the campus including:

- Alfond Sports Arena (Hockey and Basketball)
- The Shawn Walsh Center
- Alfond Stadium and Morse /Beckett Track and Field
- Mahaney Diamond and clubhouse (baseball)
- Memorial Gym (Field House and Wallace Pool)
- Kessock Stadium (softball)
- Mahaney Dome (indoor field turf)
- Tennis courts (former Stewart Parking Lot)
- North Athletic Fields

Bike and walking trails link the North Athletic District with the broader recreational opportunities of the Demeritt Forest, to University Park, to the Witter Research Farm and to OldTown. The trails provide opportunities for walking / running, horseback riding, cycling and cross country skiing.

North Athletic District Design Guidance

The Master Plan maintains and links the existing facilities of the North Athletic District. The Master Plan reinforces the improvement plans under consideration by the Athletics Director and links the proposals with the broader campus-wide concepts.

The Master Plan links the facilities of the North Athletic District by means of a new pedestrian walkway. Known as Black Bear Way, the new route connects the Alfond Arena to the Student Recreation and Fitness Center. Black Bear Way is limited to pedestrian traffic and service vehicles from Gannett Road westward to the Alfond Arena. It is envisioned as a combination walkway and windbreak featuring conifer trees on the north side. Black Bear Way is the northernmost of ten (10) windbreaks planned from north to south on the campus.

NORTH ATHLETIC DISTRICT GUIDELINES

- Simplify pedestrian circulation routes
- Incorporate canopy trees and open lawn areas, avoid excessive shrubbery or horticultural plantings
- Facilitate diagonal movement across Stewart Commons, create a simple and elegant landscape
- Shelter pedestrian pathways and gathering areas with evergreen plantings to buffer outdoor spaces from winter winds
- Utilize selected groupings of evergreens to provide additional wind breaks
- Create a paved plaza gathering space adjacent to Hilltop Commons
- Extend bike paths northward to Gannett Road and Hilltop Lot

Programmatic Need

The following program needs were identified in the planning process and have been incorporated in the Master Plan:

- **Memorial Gym**—the Gym is scheduled for upgrades to the offices, lockers and training areas. In the future, the “pit” will be modernized and renovated for basketball.
- **Alfond Football Stadium**—aesthetic improvements are under consideration including an infill structure under the stands.
- **Morse Field**—new turf was installed in the summer of 2008.
- **Field Hockey Field**—new artificial turf field was created north of Kessock Stadium (softball field) during the summer of 2008.

DEMERRITT FOREST

STUDENT RECREATION CENTER

BRIDGE TENNIS COURTS

NORTH ATHLETIC FIELDS

FIELD HOCKEY

KESOCK SOFTBALL

MAHANEY DOME

MAHANEY BASEBALL STADIUM

MEMORIAL GYM

UNIVERSITY MALL

MORSE / BECKETT TRACK AND FIELD

ALFOND STADIUM

ALFOND ARENA

LONG ROAD

P

P



North Residential District

Design Guidance Framework

The design framework for the North Villages enhances and improves the landscape structure to provide gathering spaces, shade, and wind protection. The proposed enhancements draw from the Guidelines for Residence Hall Landscape. Specifically, the following goals established in Guidelines are referenced in the Master Plan:

- **Clarity**—distinction between pedestrian and vehicular ways; easy identification of entry
- **Simplicity**—application of a simple palette of lawn, trees and paved areas
- **Safe**—minimization of pedestrian / vehicular conflicts; provision of separate pedestrian ways
- **Community-Supportive**—creation of spaces that help orchestrate and support social interaction
- **Unified**—application of standard elements and treatments to strengthen campus image
- **Lower Maintenance**—simplification of the landscape elements to reduce costs for routine care.

In accordance with the Guidelines, the landscape is simplified in the Master Plan to incorporate canopy trees, lawn areas and a pedestrian walkway network based on desire lines.

Evergreen trees are proposed to provide winter color and windbreaks on Hilltop Road and Long Road. Interstitial forest areas will further mitigate the northern winds. The wetland/reforestation project proposed on the east side of campus extends from the existing wooded area west of the DTAV where the Foster Student Innovation Center is located. When completed, this woodland and wetland corridor will provide connectivity between the Demeritt Forest and the Forest Preserve to the south.

Specific improvements are proposed for the following areas:

Hilltop Commons Design Guidance

Proposed improvements to the Hilltop area include the creation of a gathering space south of the Commons dining hall. The gathering space is envisioned as a paved plaza with a canopy of trees planted in a grid pattern. The plaza will include outdoor dining and seating. Gathering spaces are also proposed at the entrances to each of the residence halls.

Stewart Commons Design Guidance

The Stewart Commons quadrangle is redesigned in the Master Plan to facilitate a diagonal pattern of pedestrian movement between the Student Recreation and Fitness Center and the intersection of Long Road and Gannett Road. This pedestrian route emerged as a desire line following the completion of the Recreation Center as more students from the core campus sought access to the new facility. Parking is removed from the quadrangle to enhance the pedestrian experience and improve the overall appearance of the area. Landscaped gathering spaces are proposed at the entrances to each of the existing residence halls.

DTAV Design Guidance

The DTAV open space is linked with the academic core via a new circulation / windbreak corridor extending westward from the community center to Cloke Plaza. No major changes are proposed in the DTAV Area.

Connectivity

The North Residential Villages are connected to the broader context via several existing and proposed pedestrian / bicycle routes. These include:

- **Hilltop Walk**—linking the Student Recreation and Fitness Center with the athletic facilities to the west.
- **Long Road**—envisioned to include walkway and planting improvements
- **Stewart Quadrangle Diagonal**—linking the Student Recreation and Fitness Center to the core campus via the Long Road / Gannett intersection
- **Bike Paths**— extending northward from Gannett Road and the Hilltop Lot.



HILLTOP QUADRANGLE

DTAV VILLAGE

STEWART QUADRANGLE

STUDENT RECREATION CENTER

RANGELEY ROAD

BELGRADE ROAD

FLAGSTAFF ROAD

CCA

UNION

DEMERRITT FOREST

HILLTOP ROAD

LONG ROAD



0

400

800





sustainability
indicators





The Master Plan is based on a number of sustainable design principles. This section provides an overview of the “performance” of the Master Plan relative to the following sustainable indicators: 1) natural systems and habitats; 2) water resources; and 3) energy and emissions.

NATURAL SYSTEMS AND HABITATS

Predevelopment Conditions

Prior to European settlement Marsh Island was a northern hardwood forest. Given the confluence of rivers which provided excellent fishing, it was likely home to a high concentration of Native American sites.

Europeans first settled the Bangor region in the 1770s. The river and surrounding forests provided important resources. Settlements and logging operations expanded rapidly. By the 1850s white pine and spruce had been heavily logged. Subsequently, through the late 19th and early 20th centuries, the northeast was dominated by young forest stands, a legacy of extensive logging, land clearing, fuel wood utilization and widespread farm abandonment.¹

1. Wilson, J.S. 2005. Nineteenth century lumber surveys for Bangor, Maine; Implications for pre-European settlement forest characteristics in Northern and Eastern Maine, USA. *Journal of Forestry*. 103(5):218-223.

In the 1920s and 1930s the University Forestry Department began to utilize a portion of the campus land for research and demonstration. At this time the forest consisted of mature pine with mixed undergrowth. The University planted 70 acres for forest development.¹ Since the 1930s, the University Forest has been managed through cuttings, plantings, and brush removal. While not 'natural' per se, the forest and remaining fields function to provide habitat and retain stormwater in ways that closely approximate natural conditions.

Natural Systems and Habitats: Existing Conditions

Although 90 percent of Maine is forested, long term commitments to preserve habitat areas will be progressively more important in the coming decades. According to the USDA Forest Service, substantial increases in high-density housing development are projected in much of the western and central portion of the Lower Penobscot watershed. The Maine Audubon Society recommends prioritizing the protection of large land parcels, such as the Demeritt Forests.²

Today, the University of Maine has approximately 775 acres of forested land surrounding the core campus area. The land continues to be utilized as a field laboratory, a demonstration forest and for recreational enjoyment of the University and surrounding communities.

The core developed area of campus lies south of the Demeritt Forest and encompass 521 acres. This landscape is characterized by maintained lawns, roads, walkways, campus buildings, hardscape plazas and surface parking. Throughout the campus there are a number of mature trees, especially along the western slope which overlooks the river. The southern most portion of the core campus is dominated by a haphazard collection of buildings and large parking lots that provide little habitat value.

The eastern edge of the campus is buffered by the Forest Preserve, a 28 acre area that provides a small amount of interior habitat. At the eastern entrance to campus, two large parking lots flanking Belgrade Road bisect a wetland area that flows into the Forest Preserve.

1. Lorimer, Craig G. and Alan S. White. 2003. Scale and frequency of natural disturbances in the northeastern US: implications for early successional forest habitats and regional age distributions. *Journal of Forest Ecology and Management*. 185 (1-2): 41-64.

2. Demeritt, Dwight. 1972. Background and History of the University of Maine Forest. Life Sciences and Agriculture Experiment Station Bulletin. Orono, Maine: University of Maine, Bulletin 696.

3. Charry, Barbara. 2000. Conserving Wildlife in Maine's Developing Landscape. Maine Audubon Society Fact Sheet. <http://www.maineaudubon.org/resource/documents/MAS.ConservingWildlife.pdf>

Demeritt Forest Tree Species Composition⁽²⁾:

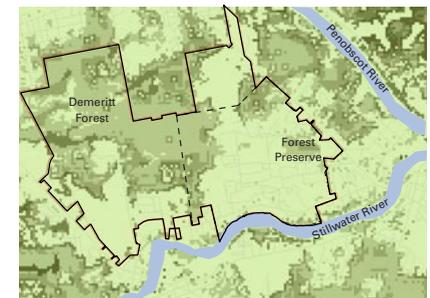
29%	Spruce
27%	White Pine
18%	Red Maple
14%	Balsam Fir
10%	Hemlock
11%	Aspen
7%	Paper Birch
6%	Other

Campus Land Use:

685 acres	Demeritt Forest
380 acres	Developed
254 acres	Wetland
197 acres	Farmland
30 acres	Forest Preserve

Low Habitat Value

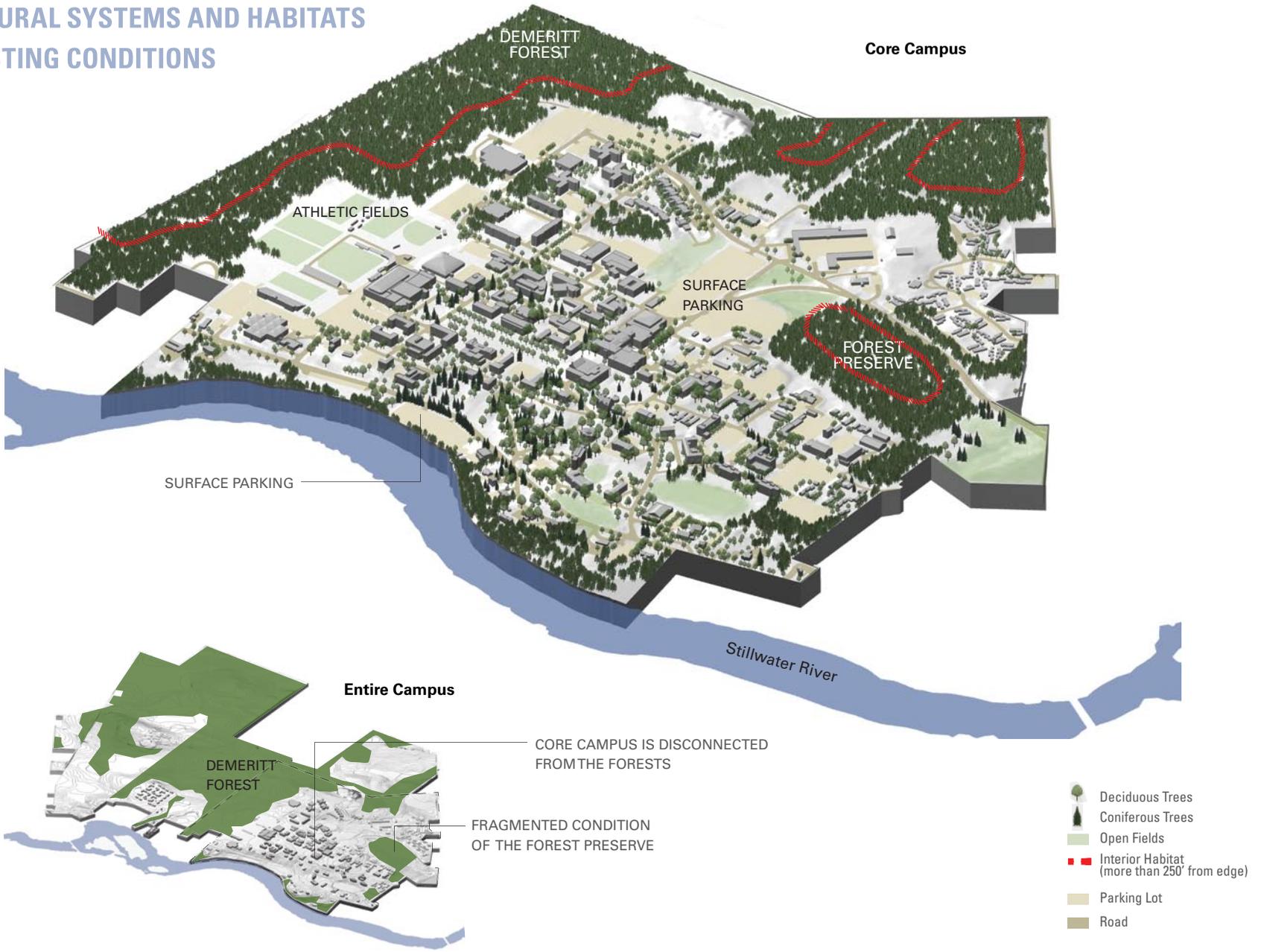
High Habitat Value



HABITAT VALUES ⁽¹⁾

Along the western property boundary the campus has over a mile of river front property along the Stillwater River. The river front area has a low habitat value classification compared to the land on the opposite bank. This is likely due to the river side parking and habitat disturbance in the area. The Stillwater River is classified by the Department of Inland Fisheries and Wildlife as "significant wildlife habitat for water fowl and wading birds." The area is subject to regulations that aim to "minimize the adverse impacts of development," administered by the Town of Orono and State Department of Inland Fisheries and Wildlife.

NATURAL SYSTEMS AND HABITATS EXISTING CONDITIONS



Natural Systems and Habitats: Proposed Conditions

The Master Plan links future development to previously disturbed areas to avoid further loss of wooded areas, reconnects natural systems, and develops multi-faceted habitat corridors that engage the built campus landscape. Specific proposals include:

1. Growth Boundary

The Growth Boundary is a critical commitment by the University to preserve existing campus forest and to increase density within the existing core academic area. The boundary places a moratorium on new roads and development in the forested areas, with the exception of research-related projects. The compact development plan for the core area is achieved through strategic infill and consolidation of surface parking lots in garages.

2. Reconnecting the Forest Preserve

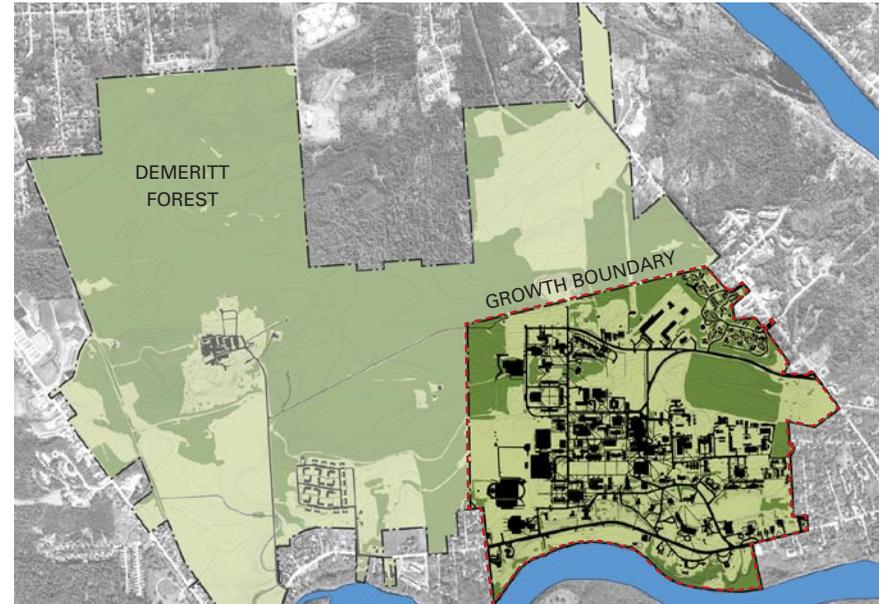
The forest patches surrounding the core campus are reconnected to establish a nearly continuous corridor that runs from the southeastern edge of the Demeritt Forest to the Forest Preserve, along the southern edge of the campus, across College Avenue, along the edge of the Stillwater River, returning to the southwestern edge of the Demeritt Forest. The framework reestablishes both vegetation and hydrological connection across Belgrade Road. The forested connector corridors provide wildlife with increased opportunities to move between existing forest patches. The proposed connections also create the opportunity for an expanded trail network and increased recreational access to the forests, an amenity enjoyed by both students and the community.

3. Campus Tree Corridors / Windbreaks

A goal of the Master Plan is to enhance the connections between the developed areas of campus and the surrounding natural systems. The Master Plan achieves this through a series of tree corridors / windbreaks. These east west connections extend from the natural "frame" to the core.

4. River Corridor

The Master Plan envisions a restored riparian buffer that removes parking from the flood plain area to restore Olmsted's Parade Ground and reestablish natural vegetation along the Stillwater River. The Orono Town regulations require set-backs of 75 feet from the shoreline and removal of invasive vegetation. Recreation access to the river is preserved in the Master Plan.



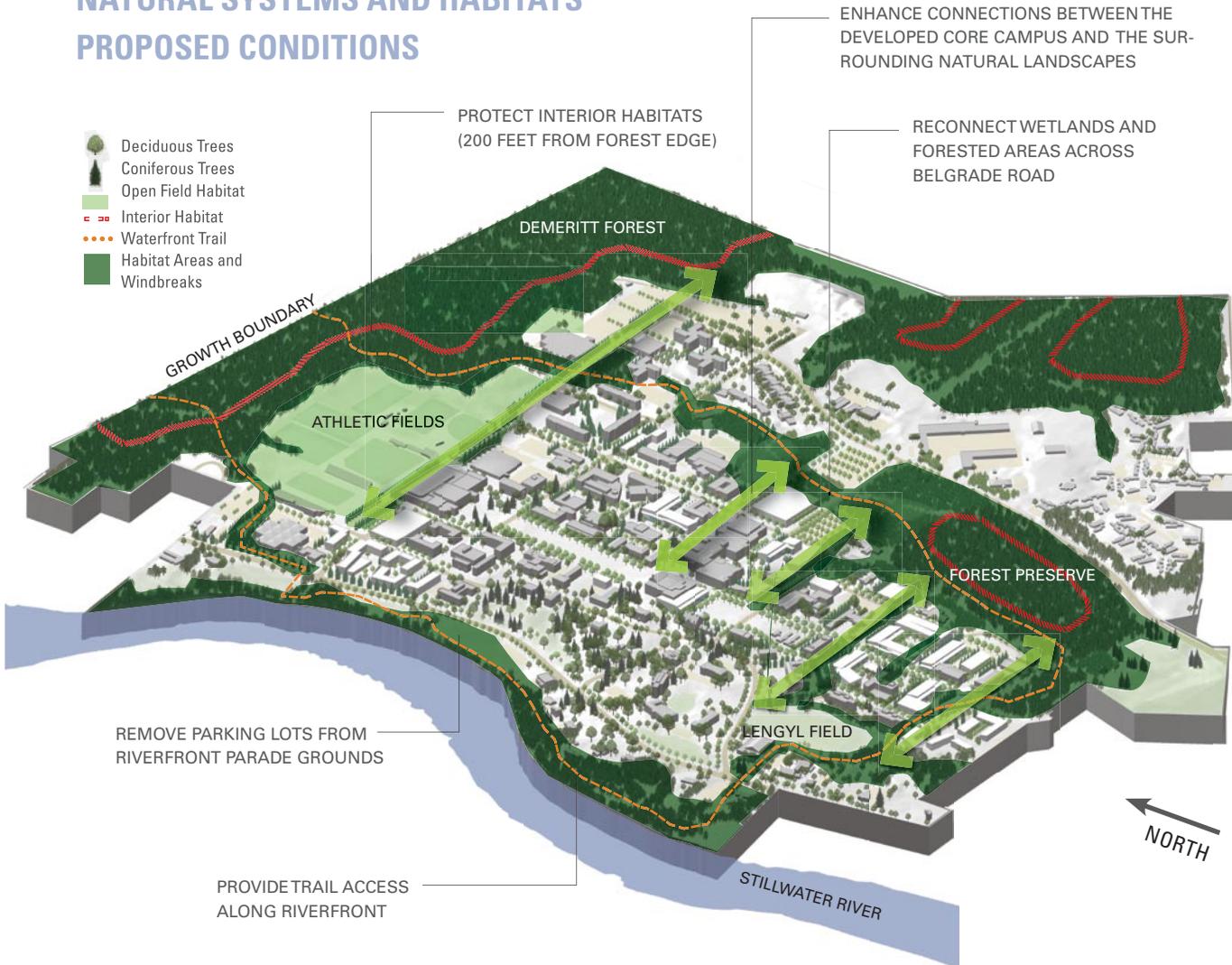
PROPOSED GROWTH BOUNDARY.



VIEW OF THE SOUTH CAMPUS DISTRICT HIGHLIGHTING THE SOUTH MALL AND EAST/WEST CONNECTORS WHICH LINK THE FOREST AND CAMPUS LANDSCAPES

NATURAL SYSTEMS AND HABITATS PROPOSED CONDITIONS

-  Deciduous Trees
-  Coniferous Trees
-  Open Field Habitat
-  Interior Habitat
-  Waterfront Trail
-  Habitat Areas and Windbreaks



Goals:

Preserve existing natural areas for habitat and recreation

Create habitat corridors that link campus to surrounding natural framework

Improve river corridor

Provide access to natural areas

Acknowledge value of natural lands for education, research, habitat, water quality, air quality and carbon sequestration

Strategies:

Establish Growth Boundary to densify core campus and preserve habitat and recreation areas

Restore natural area framework connections by linking wetlands and forested areas

Restore riparian environment along riverfront, link to natural framework

Create habitat corridors that link campus core to natural framework





WATER RESOURCES

Campus Watershed Context

The University of Maine at Orono is located in the Lower Penobscot River Basin, the second largest river basin in New England. The Penobscot is the largest river in Maine and the second largest in New England (after the Connecticut). The river drains an 8,592 square-mile (22,252 km²) watershed, roughly one-quarter of the state's land area.

The main stem of the Penobscot River begins at the confluence of the East and West Branches at Medway. It follows a southerly course to Bangor, a distance of 74 miles and continues on to Stockton Springs/Castine, where it opens up into Penobscot Bay. The West Branch originates on the Maine-Quebec border near Sandy Bay Township and Penobscot Lake, in mountainous terrain 1,700-1,800 feet above sea level. The East Branch begins at East Branch Pond, northwest of Baxter State Park, in a lake-filled region 980 feet above sea level. The Penobscot drains most of the slopes of massive Mount Katahdin, the northern end of the 2100-mile Appalachian Trail.

With a surface area of over 23,000 acres, the Penobscot River estuary is the largest in Maine and part of one of the largest embayments on the East Coast. The Penobscot is also a significant freshwater inflow to the Gulf of Maine, discharging 10 billion gallons per day.¹

1. Hasbrouck, 1995

Campus Stormwater: Existing Conditions

The site surface cover of the campus includes forested areas, wetlands, waterways open spaces and urban conditions containing roof tops, streets and parking areas. Eleven percent (176 acres) of the total campus area is considered highly developed. Environmental degradation generally occurs in watersheds with greater than ten percent impervious surface area; some aspects of degradation are reversible.

A stormwater analysis was performed during the planning process on the existing campus conditions to inform the Master Plan and identify existing problem areas. The analysis was based on site topography and surface cover. The land in the campus boundary breaks down into twelve different watersheds, seven of which drain into the Stillwater River. The remaining five drain to various points along the east perimeter. Soils on campus are hydraulic, with slow infiltration rates and high runoff potential. These soil types are a result of dense glacial till, deposited on coastal lowlands and valleys. Two types are present on the campus:

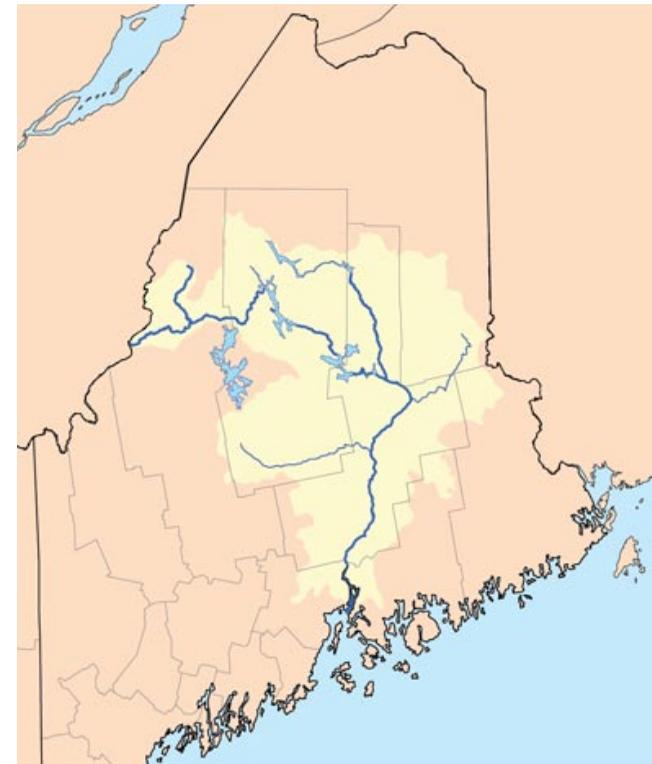
- **Type C Soils:** moderately fine to fine textures and layers which can impede the downward movement of water.
- **Type D Soils:** characterized by permanently high water tables or near surface clay layers and high clay content.

In the developed campus core, impervious surface ranges from 26 percent to 48.5 percent. The chief concerns in this developed section of campus area are water quality, peak run off volume and total run-off volume. Maine's Site Law requires that the University develop strategies for addressing these issues. Since most of the area discharges directly to the Stillwater River, addressing water quality is an important issue. The initial inch of rain and subsequent stormwater runoff is known to contain the majority of stormwater pollutants, thus addressing the initial run-off can greatly improve water quality.

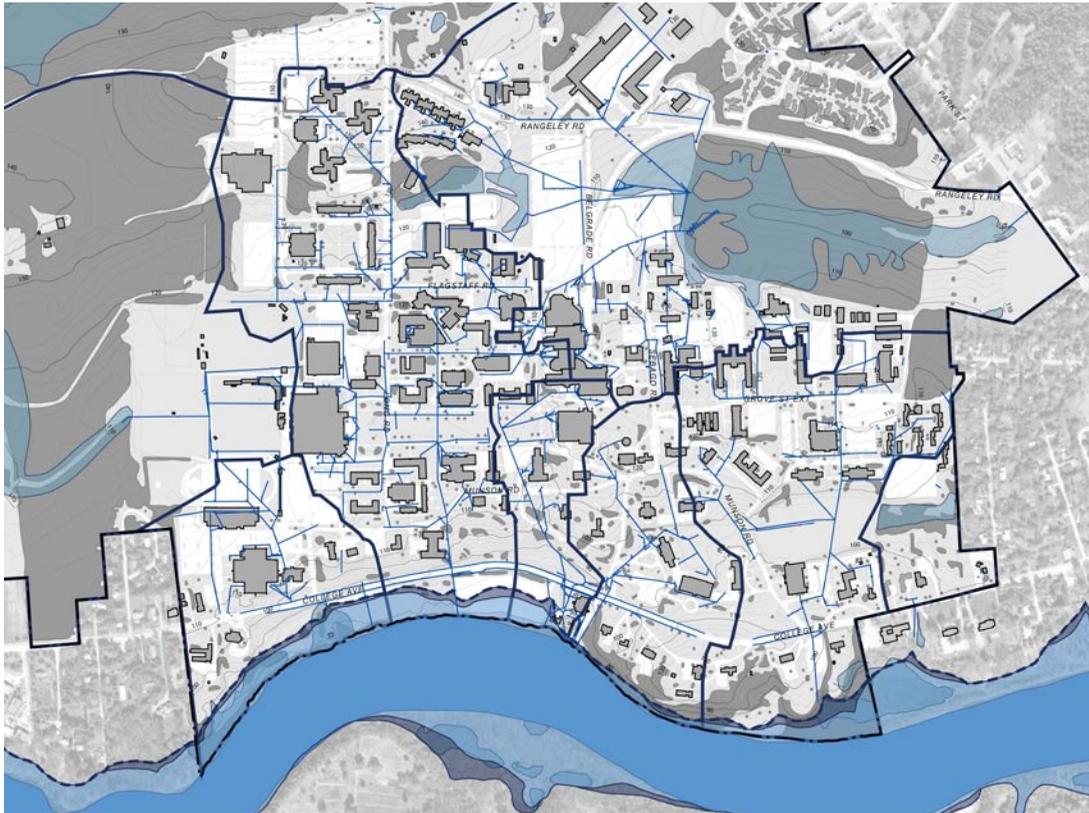
1. Booth, Derek, David Hartley, and Rhett Jackson. 'Forest Cover, Impervious Surface Area and the Mitigation of Stormwater Impacts.' Journal of the American Water Resources Association, v. 38: 835-845 (2002) <http://depts.washington.edu/cwws/Research/Reports/impervious-surface.pdf>

Impervious Land Cover

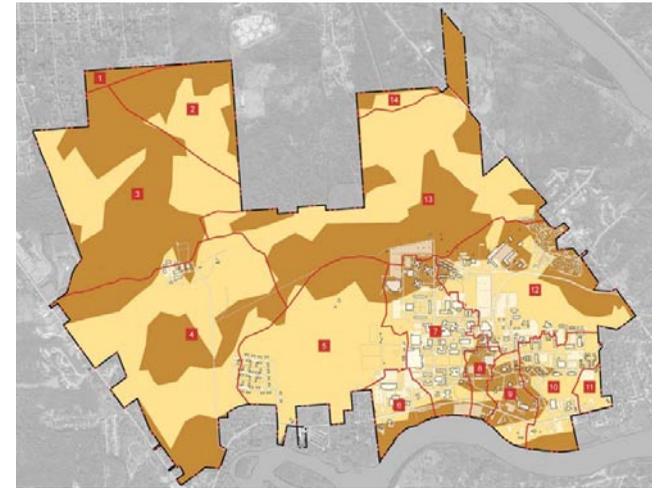
Buildings	54.5 acres	3.41 %
Roads	54.8 acres	3.43 %
Pedestrian	20.1 acres	1.28 %
Parking	60.1 acres	3.76 %
Total:	189.5 acres	11.86%



PENOBSCOT RIVER WATERSHED DRAINS 8,592 SQUARE MILES

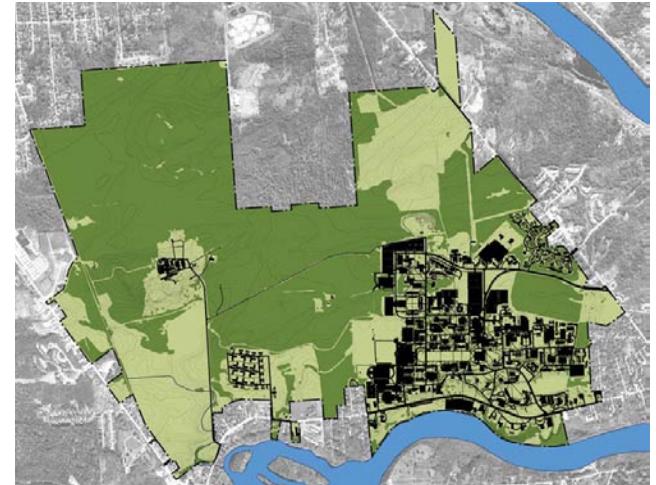


STORMWATER ANALYSIS SHOWING WATERSHEDS, UTILITY LINES, FLOOD ZONES AND WETLANDS



SOILS ANALYSIS

- Low Infiltration Soil (type C)
- High Run off Soil (type D)



IMPERVIOUS SURFACE ANALYSIS

- Impervious Surface
- Pervious Surfaces

Campus Stormwater: Proposed Conditions

The Master Plan minimizes the impact of future expansion by limiting disturbance in the existing natural areas. The Growth Boundary is a key strategy for managing runoff quality and quantity. The majority of new buildings are located on sites currently used as surface parking or for existing structures. Concentrating development in the core campus area maintains fields and forests as buffers which offer natural control of stormwater run-off and quality.

The Master Plan proposes reforestation along the river edge and the eastern boundary. Wetland restoration is proposed to the east of the academic core.

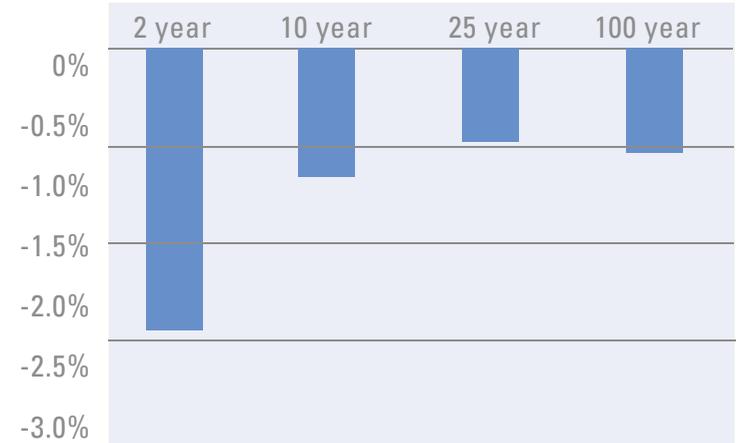
A stormwater analysis of the Master Plan shows that the proposed plan reduces the peak runoff rate in six of twelve watersheds. Five watersheds maintain the existing peak run off rate and one watershed shows a slight net increase. In the core campus area impervious surface area is reduced in all but one watershed area.

Interventions in the core campus area include reduced impervious surface areas and disconnected impervious areas which encourage water retention throughout the campus. Low impact development recommends managing rainwater at its source, before it becomes storm water run off. The University should investigate options for green roofs and storm water collection for re-use on-site or as non-potable water in buildings.

Potable Water

The University of Maine at Orono receives potable water from the Orono Veazie Water District. The University's annual water consumption has averaged 25,732,200 cubic feet in the last five years.¹ The university does currently track potable water used for irrigation purposes.

Orono has experienced several significant droughts in the past thirty years, the most severe being in 2001-2002. Many public water systems were forced to implement water use restrictions and tap into back-up supplies.² The severity of these droughts indicates a need for the University of Maine to be proactive in its freshwater and potable water management. The University should investigate strategies to conserve and reuse potable water on campus.



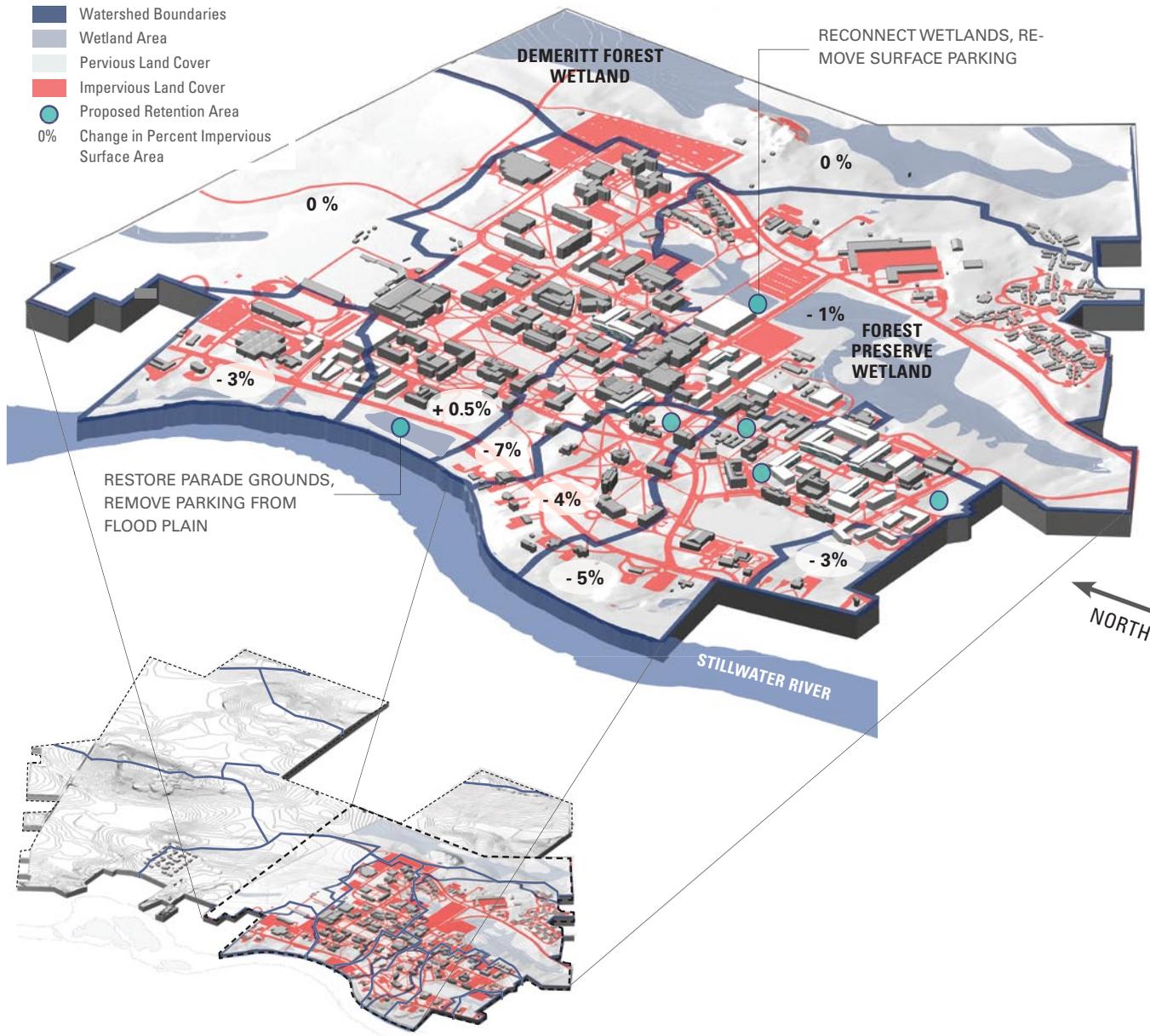
Overall Percent Reduction in Stormwater Runoff for Proposed Conditions (24 hour rainfall)

1. University of Maine Database

2. Senator George J. Mitchell Center, University of Maine.

The Effects of the 2001-2002 Drought on Maine Drinking Water Supplies, http://www.umaine.edu/WaterResearch/outreach/drought_digest.htm#summary

STORMWATER PROPOSED CONDITIONS



Specific Recommendations:

Narrow roads, reduce pavement

Remove parking along the river-front

Convert hardscape to softscape

Consolidate surface parking to structured or remote parking

Increase tree planting and constructed wetlands

Disconnect impervious areas and direct run-off to small scale detention areas such as swales and greenways

Create localized retention areas through-out campus

Reconnect wetlands along the eastern edge of campus across Belgrade Road

Consider green roofs on future buildings

Investigate opportunities for rain water harvesting

Specify efficient water fixtures in new and renovated buildings

Educate the student population about water conservation





ENERGY AND EMISSIONS

As a signatory of the American College and University Presidents' Climate Commitment (ACUPCC), the University of Maine is working toward the goal of climate neutrality. The ACUPCC requires the University to adopt several immediate or tangible actions to reduce emissions of the six greenhouse gases addressed under the Kyoto Protocol, the most significant of which is carbon dioxide (CO₂). The ACUPCC also requires the University to develop a Climate Action Plan (CAP). The CAP will establish a target date for achieving climate neutrality; identify interim milestones; provide strategies for fulfilling the educational and research aspects of the ACUPCC including descriptions of current education and research activities related to climate change and sustainability; and set out actions to make climate change and sustainability part of the curriculum and research agenda.

In planning for climate neutrality, energy and emissions are key areas of focus. For the purposes of analysis and planning, energy is considered at two levels: 1) supply and 2) demand. The supply level includes the energy purchased for on-site generation purposes (fuel oil, natural gas, propane, etc.) and renewable electricity purchased from public utility companies. The demand level addresses energy consumed in campus facilities (buildings and otherwise), as well as the cultural aspects of energy use. Cultural uses include the choices and habits people exhibit with regard to energy use.

Energy and Emissions: Existing Conditions

The climate in Orono greatly affects energy use and therefore total greenhouse gas emissions at the University of Maine. Orono experiences relatively mild summer conditions with an average temperature of 68.4 degrees in July, the warmest month of the year. Winters are cold with an average temperature of 17.9 degrees in January, the coldest month of the year. Precipitation is about 40.27 inches per year with September typically the wettest month.

Orono is primarily a heating climate with 1666 heating degree days and 666 cooling degree days. Peak operations are underway at the University during the most energy intensive periods of the year in Orono. A focus on winter heating efficiency, therefore, is a major consideration for energy and emissions planning.

Existing Energy Consumption and Emissions

Carbon emissions at the University can be traced to electricity generation; steam production; transportation (university fleets, air travel and individual commuters); heating, cooking, and cooling in campus buildings; agriculture; waste disposal; and refrigerants.

A preliminary student initiated inventory developed utilizing the Clean Air–Cool Planet carbon calculator was utilized during the planning process to estimate emissions. The University will need to complete a full greenhouse gas inventory as per the requirements of the ACUPCC.

The following chart summarizes energy consumption and the related greenhouse gas emissions reported in carbon dioxide equivalents (eCO₂). In total, the University is estimated to have emitted 70,000 tonnes of carbon dioxide equivalents in 2005 (most recent data at time of calculation). It should be noted that a detailed analysis of emissions will be necessary with more emphasis placed on calculating the transportation element. At present, sufficient data is not available on the local addresses of students, vehicle types, distance and frequency of commutes to the campus.

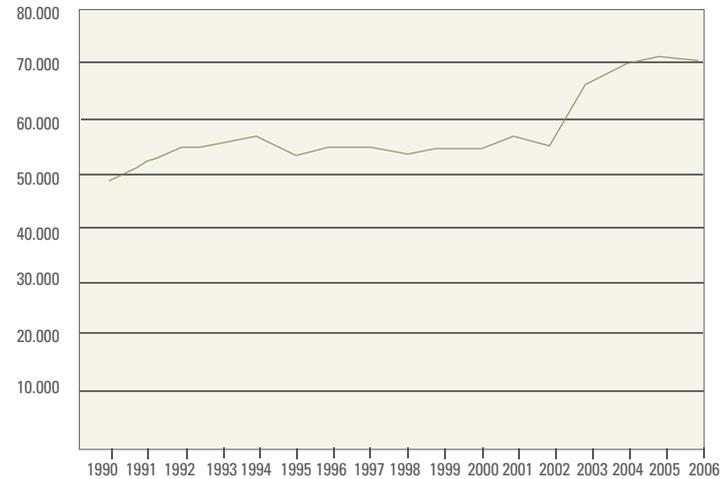
Per Capita Emissions Summary

Based on the preliminary Clean Air–Cool Planet estimates, the per capita emissions for the University have also been calculated for the period from 2002 to 2005. Emissions have steadily risen from 4.94 tonnes to 6.02 tonnes per capita reflecting increases in population and total square footage.

Total Building Area by Year



CO₂ Emissions per Year



Per Square Foot Emissions Summary

Relating generation and building emissions (excluding transportation) to the space conditioned and occupied on the campus reveals emissions increases from 2002 to 2005. In 2005, the University occupied approximately four million square feet. Total building related emissions in 2005 totaled 0.015 tonnes per square foot. From 2002 to 2005 the total square footage of the campus increased by 1.7 percent while emissions increased 24 percent. (2002: 46,754 tonnes; 2005: 62,005 tonnes). For comparison, CO₂ emissions per square foot (annual) at Bowdoin College, were 0.009 tonnes in 2005.¹

1. Bowdoin College, Emissions per Square Foot (2005) <http://www.bowdoin.edu/sustainablebowdoin/pdf/fall2006.pdf>

Energy Emissions (2002 - 2005)

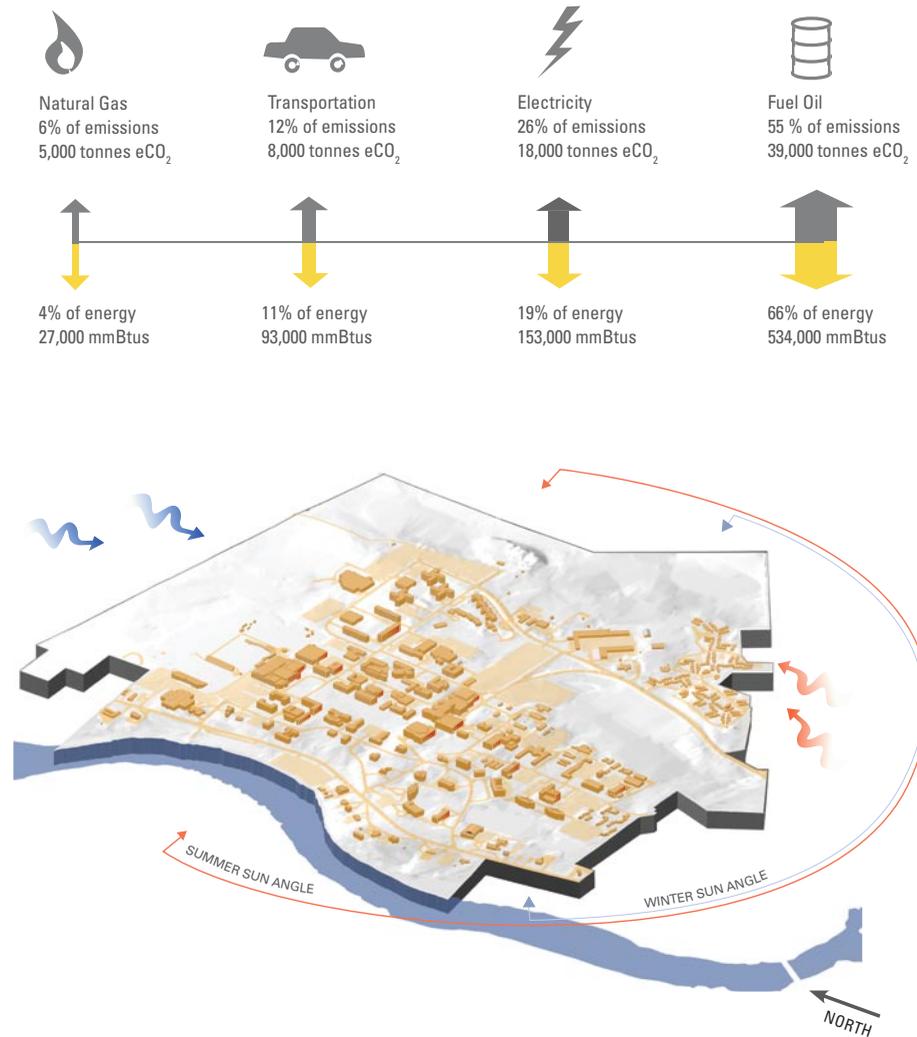
FISCAL YEAR	NET EMISSION (TONNES eCO ₂)	PER CAPITA NET EMISSIONS (TONNES eCO ₂)
2002	54,421	4.94
2003	65,597	5.70
2004	68,899	5.90
2005	70,251	6.02

FISCAL YEAR	TOTAL BUILDING SPACE (SQ.FT.)	EMISSIONS / SF (TONNES)
2002	3,996,513	0.012
2003	4,029,572	0.014
2004	4,033,617	0.015
2005	4,063,901	0.015

Total Energy Consumption & Emissions (2005)

	ELECTRICITY* (BTU)	NATURAL GAS (MMBTU)	FUEL OIL (MMBTU)	TRANSPORT (MMBTU)	TOTAL
Consumption	153,488,748,348	27,070	533,830		
Emissions (eCO ₂) tonnes	18,443*	4,592	38,970	8,246	70,251

*does not include the 30 percent renewable power purchased by the University



Per Capita Emissions Summary

Based on the preliminary Clean Air–Cool Planet estimates, the per capita emissions for the University have also been calculated for the period from 2002 to 2005. Emissions have steadily risen from 4.94 tonnes to 6.02 tonnes per capita reflecting increases in population and total square footage.

Existing Energy Demand

In 2008, the University occupied 4.46 million square feet of space. University buildings range in age from 168 years to the recently completed Campus Recreation and Fitness Center. Many of the existing buildings have significant deferred maintenance issues. Energy performance of older buildings is a major consideration that must be addressed as renovation projects are undertaken.

Energy and Emissions: Proposed Conditions

Although the ACUPCC requirements will be addressed by the forthcoming Climate Action Plan (CAP), the Master Plan provides physical design strategies and recommendations for assisting the University in reducing carbon emissions.

Energy Supply

As part of the overall strategy to reduce eCO₂ emissions, the energy sources of the University will need to be transitioned to renewable sources. In 2005, the University used almost 500,000 MMBTUs of Fuel Oil. This translates to the emissions of approximately 38,970 tonnes of eCO₂ (while total emissions are 70,251 tonnes). The University is considering a combined heat and power plant (CHP) commonly referred to as a cogeneration facility to reduce emissions. Cogeneration is a more efficient method of generating power and thermal energy from a single fuel source. Potential options include a cogeneration facility utilizing biomass or natural gas.

In 2005, the University purchased 30 percent of its energy from renewable sources. This resulted in a savings of approximately 5,500 tonnes of carbon dioxide in that year alone. Maine state law stipulates that 30 percent of electricity be generated from renewable sources. It should be noted that the preliminary carbon calculations developed by the University do not account for the 30 percent renewable power.

Energy Demand

The performance of existing buildings is a key consideration on the energy demand side and should be reviewed as the University moves forward with the development of a Climate Action Plan. As buildings are renovated, emphasis should be placed on the overall energy performance and energy usage intensity of the buildings with a goal of reducing energy consumption.

In order to reduce energy demand, the University will need to address the cultural aspects of energy use through education and changes in operational procedures and policies. The University community will need to accept responsibility for energy use and the associated emissions. It will also be important that the connection between space, energy and emissions is more widely understood and that energy be recognized as a significant cost to the University.

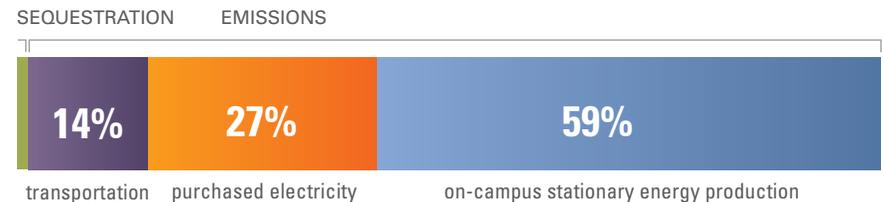
Emissions Reductions Targets

Strategies for climate neutrality will be developed as part of the University’s Climate Action Plan (CAP). The University will need to reduce emissions in the context of increases in total square footage as well as potential increases in enrollment.

The timeline for achieving climate neutrality will be determined during the development of the CAP. For planning purposes, the timeline established for campuses by the National Wildlife Federation¹ has been utilized to illustrate targets for overall emissions reduction:

- 30% reduction by 2030 to 49,000 tonnes
- 80% reduction by 2050 to 14,000 tonnes

1. Eagan, David J.; Keniry, Julian; & Schott, Justin. Higher education in a warming world: the business case for climate leadership on campus (National Wildlife Federation: Reston, VA. 2008).



Source: University of Maine at Orono Utilities Data (2005)

UMaine Emissions Reduction Targets

The chart below is a summary of Total Annual Emissions for the baseline year, 1990, and for 2005 as estimated utilizing the Clean Air-Cool Planet Campus Carbon Calculator. The chart shows eCO₂ Emissions Reductions Targets if the University eliminates use of Fuel Oil by 2015, achieves a 30% reduction in emissions by 2030, and achieves an 80% reduction by 2050.

The chart also shows the possible reduction in Total Annual Per Capita emissions if reduction targets are achieved and the campus population (number of students and faculty) remains constant.

FISCAL YEAR	NET EMISSIONS TONNES eCO ₂	PER CAPITA NET EMISSIONS TONNES eCO ₂
1990	48,145	4.02
2005	70,251	6.02
2015	60,342	5.17
2030	49,176	4.21
2050	14,050	1.20

The below chart is a summary of Total Annual Emissions per Square Foot at the University. This accounts for all buildings for the baseline year, 1990, and for 2005 as measured by the Clean Air-Cool Planet Campus Carbon Calculator. The chart shows CO₂ Emissions Reductions Targets provided that the University of Maine eliminates use of Fuel Oil by 2015, achieves a 30% reduction by 2030, and achieves an 80% reduction by 2050.

The below chart is a hypothetical example of the reductions that could be realized if the Total Square Footage of Building Space remained constant; that is, if the University of Maine met all future academic needs using existing

FISCAL YEAR	TOTAL SQUARE FOOT OF BUILDING SPACE	TOTAL EMISSIONS PER SQ FT BUILDING SPACE (TONNES)
1990	3,539,708	0.014
2005	4,063,901	0.015
2015	4,063,901	0.015
2030	4,063,901	0.012
2050	4,063,901	0.004

space rather than constructing new buildings. The chart shows the possible reduction in Total Annual per Square Foot emissions if reduction targets are achieved and the square footage remains constant through the year 2050.

Growth and increases in square footage are anticipated in the Master Plan, which identifies opportunities for additional development totaling approximately 1.7 million net gsf on the campus. Assuming existing average emissions per square foot (0.015 tonnes/sf), the potential outcome is an estimated additional 25,829 tonnes of eCO₂ released into the atmosphere. This illustrates the importance of a Climate Action Plan that addresses energy supply; emissions from existing buildings; and the need for high-performance buildings.

Building Energy Usage Intensity—Architecture 2030

In addition to transitioning toward renewable energy, the University will need to establish targets for reducing energy demand in existing and proposed buildings. The EPA's Energy Star program and Architecture 2030 offer guidance on energy planning both of which must be considered in conjunction with changes to the energy supply.

Architecture 2030, a non-profit, non-partisan and independent organization, was established in 2002 to address the greenhouse gas emissions associated with buildings. Endorsed by the American Institute of Architects, 2030's mission is to transform the Building Sector from the major contributor of greenhouse gas emissions to a central part of the solution to the global-warming crisis. The goal is to achieve a dramatic reduction in greenhouse gas (GHG) emissions by changing the way buildings and developments are planned, designed and constructed. All new buildings and major renovations should reduce their fossil-fuel GHG-emitting consumption by 50% by 2010, incrementally increasing the reduction for new buildings to carbon neutral by 2030 (see www.architecture2030.com for more details).

The 2030 Challenge suggests the following targets:

- All new buildings, developments and major renovations should be designed to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 50% of the regional (or country) average for that building type. (The national average Source Energy Usage Intensity (EUI) and Site EUI for academic buildings (campus level) in the United States is 280 kBtu /sf/ year and 120 kBtu / sf / year respectively (63 percent electric load) according to the U.S. Department of Energy (DOE) Energy Information Agency's 2003 Commercial Buildings Energy Consumption Survey (CBECS).

- At a minimum, an equal amount of existing building area should be renovated annually to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 50% of the regional (or country) average for that building type.

The fossil fuel reduction targets established by Architecture 2030 for all new buildings are as follows:

- 50% prior to 2010 (buildings should use 50% of average building type in the region)
- 60% in 2010
- 70% in 2015
- 80% in 2020
- 90% in 2025

The goal is to build only carbon-neutral buildings in 2030 (using no fossil fuel GHG emitting energy to operate). According to Architecture 2030, these targets may be accomplished by implementing innovative sustainable design strategies, generating on-site renewable power and/or purchasing (20% maximum) renewable energy and/or certified renewable energy credits.

Energy and Emissions Recommendations

The following recommendations are provided for consideration as the University develops its Climate Action Plan:

Energy Supply Recommendations

Eliminate the Use of Fuel Oil

As noted, heating is a major source of campus emissions. Transitioning to a less carbon intensive fuel source is critical to reducing overall emissions.

Eliminate Purchase of Non-renewable Electricity

In 2005, the University of Maine emitted approximately 13,000 tonnes of eCO₂ from electricity alone. Thirty percent of electricity, by state law, is sourced from renewable electricity sources. In 1999, the State of Maine enacted a Renewable Portfolio Standard requiring 30% by 2000; and 10% new resources by 2017 (and for each year thereafter).¹ The emissions for Maine are calculated using state-level electricity emission factors which represent average emissions per kwh generated by the utility providers in the state of Maine.² While these factors provide reasonably accurate default values for electricity distributed in Maine, the University is currently saving 30% on emissions from electricity through utility contracts as required by the State. Without state standards, electricity-related emissions at the University of Maine campus would be higher—the regulation decreases annual CO₂ emissions by approximately 18,400 tonnes each year, equal to 8% of the total annual CO₂ emissions.

Using the electricity demand for the year 2005 as a hypothetical test, the University could achieve the following savings by purchasing 100 percent of renewable electricity.

- 2005 Electricity Emissions accounting for 30% from Renewable Sources = 12,910 tonnes
- 2005 Total Net Emissions = 64,718 tonnes
- Potential Reduction if all electricity purchased is from renewable sources = 12,910 / 64,718 or = a 20% reduction

1. U.S. Department of Energy, Energy Efficiency and Renewable Energy, State Activities and Partnerships, http://www.eere.energy.gov/states/maps/renewable_portfolio_states.cfm, Updated June 2007.

2. Energy Information Administration, Updated State- and Regional-level Greenhouse Gas Emission Factors for Electricity (March 2002), <http://www.eia.doe.gov/oiaf/1605/e-factor.html>.

Buildings Recommendations

Utilize Existing Building Space Efficiently

Recognize the connection between space, energy and emissions. Before constructing new non-specialized space, make sure existing space is utilized as intensely as possible. It will be important to stress that ALL campus space consumes energy and therefore has an emissions component. This requires a new mindset with regard to the true cost of space.

Improve the Energy Performance of Existing Buildings

Reduce energy consumption as deferred maintenance and building renovation projects are carried out. The energy usage intensity of (EUI) of existing buildings will need to be decreased, stabilized or minimalized as existing buildings and systems are remodeled—a significant challenge. The University has over 4.46 million ASF in existing building space, which will need to be improved in terms of performance.

Establish Target EUI for New Construction

Utilizing data compiled by the Environmental Protection Agency's Target Finder tool (Target Finder assists architects and building owners in setting aggressive, realistic energy targets and rate a building design's estimated energy use) and the emissions reduction targets suggested by Architecture 2030, establish EUI targets for all proposed new buildings on the campus. This will help the University with energy and emissions planning and help with the new "accounting" procedures for emissions.

Utilize Building Integrated Renewable Energy

- **Passive Solar:** Orient buildings for passive solar to the greatest extent possible. Utilizing *Ecotect* software, the solar potential of various building orientation options have been examined. Buildings with good southern exposure (building elongated on the east/west axis) have a higher solar gain in the winter and a lower solar gain in the summer as opposed to buildings elongated on the north/south axis as expressed in wh/m^2 . To that end, proposed buildings have been oriented on an east / west axis where possible and spaced to ensure maximum solar access on the winter solstice, December 21. Where east/west orientation is not possible due to site constraints or urban design considerations, solar shading will need to be incorporated on building façades.

- **Solar Hot Water and Photovoltaics (PV) :** Plan to incorporate solar hot water technology and photovoltaic technology in proposed buildings and existing building retrofits (with the assumption that costs and technological developments will become more favorable in the future). This requires that building orientation be a major consideration for future facilities favoring southern exposure. To that end, significant new buildings in the plan are oriented on an east/west axis.

Landscape Recommendations

Landscape and Building Placement Framework—The Master Plan includes a series of east/west windbreaks consisting of consistent rows of evergreen trees. Over time the trees will assist in mitigating winter winds and reducing infiltration on the north sides of buildings. The building placement strategy provides sheltered outdoor spaces on the south side of proposed buildings and ensures maximum solar access for passive solar heating of the buildings.

Transportation Recommendations

Work with BAT over time to improve service and increase transit access. Develop parking policies on campus that encourage campus users to "park once and walk." The Master Plan calls for the pedestrianization of the campus core and enhancements to the overall pedestrian network. The goal is to increase alternative transportation options.





implementation and
governance

Landscape and Circulation Implementation Projects

1. RECONFIGURE INTERSECTION OF LONG ROAD AND FLAGSTAFF ROAD
2. STREETScape IMPROVEMENTS TO FLAGSTAFF ROAD
3. CLOKE PLAZA
4. PEDESTRIANIZATION OF BEDDINGTON ROAD
5. MLK PLAZA
6. IMPROVEMENTS TO MLK EAST / WEST CONNECTOR
7. RECONFIGURE INTERSECTION OF FLAGSTAFF AND BELGRADE ROADS
8. RECONFIGURE SEGMENT OF SEBAGO ROAD
9. STREETScape IMPROVEMENTS TO SEBAGO ROAD
10. TRAFFIC CALMING ON SEBAGO ROAD ALONG SOUTH MALL
11. SOUTH MALL LANDSCAPE IMPROVEMENTS
12. CONSTRUCT “MISSING” SEGMENTS OF THE PROPOSED LOOP ROAD
13. CONVERT GROVE STREET TO PEDESTRIANIZED GROVEWALK
14. BEGIN TO REPLACE SURFACE PARKING IN SOUTH CAMPUS WITH ACADEMIC BUILDINGS AS NEEDED

IMPLEMENTATION AND GOVERNANCE

Implementation

The Master Plan provides a framework of open space, circulation and site development opportunities to guide the incremental transformation of the campus over next 20 years or more. The framework is intended to be flexible and will require periodic updates and district studies in response to the changing development needs and other circumstances that affect project implementation on the campus.

The illustrative nature of the Master Plan is provided to indicate one potential development outcome that responds to the goals and principles of the Plan. The building sites identified will be developed in response to programmatic need, as will infrastructure upgrades and other factors that arise in the ongoing evolution of a campus environment. While the development sites provide flexibility in terms of use and phasing, the open space and circulation framework provides an overlay to enable the University to move forward with improvements to the campus landscape, pedestrian realm and vehicular circulation systems, independent of major building projects. This framework serves as the armature for building placement and for creating a well connected and coordinated campus environment.

Implementation of the Master Plan can begin with the major landscape and circulation projects with the aim of improving the campus environment and the pedestrian experience in the short term. The Landscape and Circulation Frameworks have been designed to enable the University to maintain major facilities and parking areas (with minor modifications) while moving forward with these improvements as illustrated in the graphic on the adjacent page.

As with all districts of the campus, detailed precinct studies will be required in conjunction with landscape, circulation and parking improvements and prior to major facility construction projects. Looking ahead, the major phasing and implementation considerations for the Master Plan include:

South Campus

The South District landscape and circulation improvements can proceed while maintaining the existing parking areas and many of the existing facilities until such time that the parking areas are required for development. The South Mall, Grove Walk, West Walk and the Loop Road have been designed around existing parking areas and buildings to facilitate implementation. As parking lots are identified for future development, a garage will most likely be required to ensure the highest and best use of land for academic, research and support functions. As development in this district moves forward, a more detailed analysis of parking demand should be conducted with the aim of identifying strategies for postponing the need for structured parking. In general, the aim should be to concentrate new development in the parking areas along Grove Walk and potentially utilize peripheral areas for parking

East Campus

Recommendations in the East Campus area focus on landscape, pedestrian and vehicular route improvements and new construction, including the replacement of Shibles Hall. The proposed circulation and landscape improvements can be implemented independently of the new construction. Pedestrian route improvements include the creation of MLK Plaza and Walk, Cloke Plaza, the pedestrianization of Beddington Road, and changes to the diagonal walk leading to the northeast campus area. Roadway improvements include alternations to the intersections of Long Road / Flagstaff Road and Belgrade/Flagstaff to resolve vehicular movement patterns and pedestrian / vehicular conflicts. The proposed consolidation of parking east of the Collins Center for the Arts and the wetland restoration project are coordinated with the proposed parking garage and can be implemented on an independent timeline.

West Campus

The proposed changes at the Long Road entrance to the campus include Black Bear Village, a parking garage and the removal of the riverfront parking lot to re-establish Olmsted's Parade Grounds. These projects are interrelated and will need to be coordinated to ensure that parking is in place to serve current demand associated with the sports facilities as well as potential demand resulting from Black Bear Village.

Parking

In addition to identifying buildings sites, three garage locations are reserved in the Master Plan: South District; Collins Center for the Arts; and Long Road. The garages are intended to facilitate the consolidation of parking and thereby enable the University to utilize existing surface parking areas for mission-related academic, research and support functions as well as to remove parking from sensitive wetland and riverfront areas. It should be noted that the decision to construct the garages raises financial and parking allocation issues that will require further study and analysis, including a focus on demand management strategies that could reduce the need for parking. Of the three, the South Garage is viewed to be the most critical in that it will be required to develop future academic and research facilities in the South District. The Collins Center Lot will be required if the University elects to move forward with the wetlands restoration project to the east, and the Long Road Garage will be required if the University moves forward with the recreation of the Parade Grounds on the Riverfront or with the construction of Black Bear Village. Depending on the priorities established by the University, the Collins Center Garage and the North Garage may be optional; however, without them, the environmental goals of the Plan cannot be fully realized.

Governance

The Campus Master Plan is a dynamic tool which shapes campus community, campus development, planning, and space management. To fulfill the charge, the following recommendations describe general procedures for administration and maintenance of the Master Plan and for the design review process intended to make the Plan a continuing, renewable endeavor. Additionally, these recommendations ensure that environmental sustainability is an institutionalized goal in campus planning and space management.

These recommendations will need to be considered by the University in the context of the UMaine organizational and administrative structure. The following sections describe the recommended policies, principles, and procedures for two ongoing processes:

- **Administration and Maintenance of the Master Plan:** Establishes the procedures for carrying out and updating the Plan, implementing the Plan and reviewing projects and changes in the context of the Plan.
- **Design Review Procedures:** Sets forth a process for review of the design of projects under an advisory committee to be called the Campus Planning and Design Review Committee. The Design Review Procedures describe goals and objectives, project review criteria, composition of the Committee, and administrative procedures. They describe coordination of the review process with the existing University administrative procedures in order to ensure that the recommendations of the Campus Master Plan are carried out faithfully.

The Office of Administration and Finance will be responsible for the implementation of the Master Plan. The office will report directly to the President and will have the authority to advise the President on matters related to implementation of the Plan including architectural, landscape and planning projects. The Office will advise the President based on the Master Plan, technical and design review, and a consultation process.

Administration and Maintenance of the Master Plan

The following Advisory committees and procedures are recommended to administer and implement the Master Plan:

- Campus Planning Committee (CPC)
- Design Review Committee (DRC)
- Sustainability Committee
- Historic Preservation Committee (HPC)

The Campus Planning Committee

The University will establish the Campus Planning Committee as either a freestanding body or a subgroup of an existing University body vested with the authority to review and advise on facilities and property planning and site development activities. The CPC should consist of senior representatives from the University's academic, facilities, development and student life bodies, and may call for representation from the broader community. The fundamental charge of the CPC will be to oversee the continuing administration, maintenance and implementation of the Master Plan.

Advisory members of the CPC should be identified from the following academic, administrative and operational units:

- Engineering
- Facilities
- Sustainability Office
- Space Management
- Energy Management
- External Design or Planning professional
- College of Natural Sciences, Forestry and Agriculture

Campus Master Plan Review and Updates

The CPC will periodically review the status of land and facilities program development on the campus. The charge will be to identify trends or the need to change use patterns, density, program affinities or relationships to open space, circulation and utility patterns that might affect the land use plan, and to determine whether such circumstances should be corrected to maintain the integrity of the land use plan or cause the Master Plan to be altered or amended to reflect valid needs.

The University will undertake an annual review of the schedule of capital improvements to ensure that the capital improvements are consistent with the land use, density and development factors as described in the Master Plan, and that such improvements are acknowledged in the periodic review of the Master Plan.

The CPC will advise the University on facilities space planning, space needs analyses, and campus-wide space allocation. This function will be coordinated with other functions of the CPC to ensure that there is a rigorous connection between space allocation, facilities location, and land use/density patterns, and natural resource/infrastructure needs.

The CPC will advise the University on the siting of proposed projects by comparing them with the land uses, densities and open space provisions of the Master Plan, verifying the appropriateness of their location and consistency with land use and density provisions. It will be important to coordinate with the Design Review Committee, the Historic Preservation Committee and the Sustainability Committee.

The University may direct staff and/or consultants to assess proposed projects in a comprehensive manner taking into account the suitability of the site and the cumulative consequences of development with regard to on-campus and off-campus development constraints, conflicts or limits vis-à-vis traffic, infrastructure and drainage. Site suitability will address topography, soils conditions, drainage, utilities and infrastructure, vehicular and service access, and program affinities. Site suitability shall also be determined through coordination with the Sustainability Committee in order to ensure optimum energy efficiency, appropriate orientation, and minimal impacts to natural resources.

The University will consider land management measures necessary to guide the careful use of the University's existing land resources and infrastructure.

The University will coordinate the Master Plan with plans and studies for acquisition, disposition and leasing of property within and contiguous to the campus.

Periodic Plan Updates and Sub-Studies

The Campus Master Plan may be periodically updated to reflect internal and external changes that occur in the life of a dynamic institution such as the University of Maine.

Because the total land area of the campus is extensive and is differentiated in its environments, more detailed area plans may be necessary from time to time to provide a basis for facilities accommodation and campus improvements appropriate to the particular circumstances of each area. The determination of priorities for district or sub-district planning will be based on considerations, including:

- Identification of areas of the campus subject to imminent or substantial changes such as major facilities expansion or alteration, new program initiatives or circulation/ infrastructure improvements.
- Identification of areas where land use, density, open space, circulation and civic design factors may have an impact on (or be impacted by) impending external factors such as public infrastructure projects, on-campus real estate initiatives or adjacent neighborhood land use changes.
- Identification of areas where it is deemed suitable or necessary to make area-wide site improvements such as streets, streetscapes, connecting or redefining open spaces, etc.
- Identification of areas for which a district or sub-district plan does not exist or is more than ten years old. This provision applies in particular where a singular project is contemplated, but lacks a contextual framework or guidelines for development due to the lack of a district or sub-district plan.

Design Review Committee

In order to ensure project development to the highest design standards, the design review process will be enhanced under the auspices of the proposed Design Review Committee (DRC). The charge to the DRC is to review project design in conjunction with the Office of Administration and Finance and in accordance with the Master Plan.

The DRC's review responsibility is the "civic" mission of a project, not its "private" or functional one. This includes review of the project in light of the Master Plan, with emphasis on sustainability, the quality of public open space and landscape, on architectural form and exterior appearance, on the design of primary interior public spaces, and the relationship and contribution of the project to its immediate surroundings and to the larger campus context. The DRC will seek advice from the Sustainability Committee on issues of sustainability.

Project Review Criteria

A review is triggered by any new architectural and/or site development project or any project that affects or changes the public spaces of the University or a building appearance through replacement, repair or restoration. All major landscape projects with a construction cost of over \$100,000 and building projects with a construction cost of over \$500,000 will be reviewed. Smaller projects will also be considered for review, although an abbreviated administrative process may be employed. In some cases, these projects may create opportunities to initiate a transformation in the design character of the campus, and should always be evaluated for that potential. The primary criterion that triggers review by the DRC is whether the project affects or changes the public spaces and skyline of the University, including building lobbies.

Design Review Committee Membership

The Design Review Committee will be appointed by the President and will be made up of members of the University community and selected design professionals who have a demonstrated interest and sensibility to the coherent development of the campus and quality of campus design.

It is recommended that the DRC include a President's representative and a representative each from the academic community and the Campus Planning Committee. There should also be two outside professionals on the Committee and a representative of the Facilities Division. Consideration needs to be given to filling one of the outside professional positions with a nationally or regionally recognized architect, landscape architect or planner with a strong background in campus planning and design. Design professionals should be precluded from working for the University at a project level during their term on the DRC.

Appointed members will have staggered terms of three years to ensure incremental turnover. To ensure the participation of the entire DRC, membership will be linked to reasonable attendance at meetings. The President will appoint as Chair a person of judgment, diplomacy and conviction as these qualities relate to the larger interests of the University as a whole.

The DRC is primarily a review body, not an action body. Its role is as an advisor to the President's office and the Office of Administration and Finance concerning the direction of ongoing campus projects. The DRC may also have secondary, more proactive roles, including making recommendations regarding the need for revisions and refinements of the Master Plan.

At least once a year, the DRC should facilitate a walking tour of the campus, tendering invitations to the President and others, for the purpose of observing progress and change in campus design character.

Design Review Procedures

The DRC will have regularly scheduled meetings with set procedures and an agenda. Additional meetings should be scheduled as demanded by project volume and schedule. Projects will be presented to the DRC by the participating Users Committee and the project design team, which might include architects, landscape architects, engineers or other professional consultants. After every project review, clear instructions to the project design team will be provided for review to the President's office. Subsequently, those instructions will be conveyed to the Project Committee and its consultants in writing in a timely manner. The sequence of actions/ reviews will include, but not be limited to, the following:

- Make available to each design team a complete copy of the Campus Master Plan, including relevant design principles and guidance.
- Require an initial meeting with the architect or designer to clarify the University's intent.
- Require formal intermediate and final reviews of the schematic design phase.
- Require formal intermediate and final reviews of the project by the Sustainability Committee and the HPC, if located within or adjacent to the Historic District.
- Require a review near the end of the design phase and, if there are significant changes, there should be equivalent reviews for construction documents.
- Conduct a post-construction project assessment.

A determination may be made at the outset of the review process that fewer review steps may be undertaken if the scale or impact of the project is clearly not so significant as to require extensive review.

Administrative Integration of Design Review

The success of the DRC and the design review process is predicated on the careful integration of the DRC into the existing University administration, especially as it relates to campus development and project initiation. The entire development process involves many different individuals and departments whose contributions will be more significant with clear delineation of appropriate roles, responsibilities and interrelationships. It is expected that the University will define the specific roles and relationships of the following parties in the administration of the design review process:

- Design Review Committee (DRC)
- Facilities Division
- Sustainability Committee
- Users Committee
- Architect Selection Committees
- Project Design Consultants
- Campus Planning Committee (CPC)

Relationship of the Campus Master Plan to Project Programming, Planning, Design and Implementation

The process is conceived to integrate academic, fiscal and physical planning as a comprehensive means of making sound decisions on the development of campus facilities and improvements. The Campus Master Plan is a contributing resource to University-wide planning, programming and design processes. In summary, the relationship to such processes is as follows:

- For Space and Facility Management, which is the University project needs assessment phase, the Plan provides a framework for assessing space and facility needs in a comprehensive sense. Plan elements defining land use, development capacity and organization of the campus can, for example, influence the determination of priorities and sequencing in the identification of needs. The Campus Planning Committee may be a suitable arbiter in discussions about project needs and general space needs.
- For Conceptual Feasibility, which is primarily the project planning phase, the Master Plan provides data and contextual information that contribute to objective analysis of location and impact factors to be considered in

determining conceptual feasibility. Such factors include land use suitability and compatibility with other uses, program capacity and density, access characteristics, utility characteristics, and other location circumstances particular to given areas of the campus. The Campus Planning Committee should monitor projects at the conceptual feasibility level.

- For Project Feasibility, which is typically the design phase, the Master Plan provides information with respect to specific site factors such as building placement, massing, service access, pedestrian and open relationships, and other particular circumstances that bear on site planning and design alternatives undertaken to determine project feasibility. Design guidelines similarly inform the investigation of site and design alternatives. Early dialog with the Design Review Committee and Sustainability Committee may be useful in strengthening the feasibility assessment of projects likely to have a significant impact on (or contribution to) the campus as a whole. Such review may also define the “civic domain” to be encompassed in the project, which will bear on its feasibility.
- For Project Implementation, the Master Plan provides practical guidance as to the form, massing and site relationships to be incorporated in the specific design of the project. The formal procedure of review by the Design Review Committee applies both the monitoring process and the requisite dialog to ensure design quality and civic contribution to the campus environment through the project implementation phase.





appendices

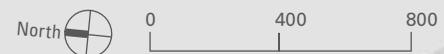


DEMERITT
FOREST

FOREST
PRESERVE

STILLWATER RIVER

- 1. Wetland Restoration
- 2. Reforestation
- 3. Stillwater River Flood Plain
- 4. Front Lawn
- 5. University Mall
- 6. South Mall
- 7. South Academic Quadrangle
- 8. Beddington Walk
- 9. Grove Walk
- 10. Windbreaks/Connectors
- 11. MLK Plaza
- 12. Cloke Plaza
- 13. Athletic Fields
- 14. Lengyel Fields
- 15. Bike Paths
- 16. Wabanaki Trail
- 17. Fay Hyland Botanical Garden
- 18. Littlefield Ornamental Garden



APPENDIX A: LANDSCAPE DESIGN GUIDANCE

The design guidelines are developed to offer the University with more specific direction for rehabilitation, new construction and maintenance of the campus landscape consistent with the environmental, economic, and aesthetic objectives of the Campus Master Plan. These guidelines build upon those established in the 2007 Historic Preservation Master Plan to promote consistency and efficiency in establishing an aesthetic rationale to aid in unifying the campus landscape.

The landscape guidelines are subdivided into four major components that detail the campus landscape:

- Circulation
- Landscaping: plantings, lawns, and natural areas (including rehabilitated and reforestation)
- Lighting
- Furnishings

Circulation Design Guidance

The circulation system on campus consists of roads, parking lots, bikeways, pathways and plazas/gathering areas. Each of these has individual design components that address adherence to overall goals of sustainability, costs (life cycle and routine maintenance) and appearance to promote a comprehensible and rational campus aesthetic.

Campus Drives

Roadways through campus should be designed to keep vehicle speeds at a minimum and acknowledge pedestrian movements along and across the drives. For cost considerations and ease of maintenance, plowing and repair, surfacing should be bituminous concrete, using recycled asphalt wherever possible. Drive width should not exceed 22 feet. Pedestrian crossings should be clearly noted. In areas of heavy use, unit pavers should be considered to demarcate crosswalks and aid in slowing traffic through campus.

- » Munson Road
- » Loop Road
- » Sabago Road
- » Flagstaff Road
- » Long Road
- » Hilltop Road

Pedestrianized Drives

Pedestrianized drives are roads whose locations require them to support both heavy pedestrian use and routine cross-campus vehicular traffic. The shared nature of these drives and their key locations necessitates design solutions that reduce traffic speed and provide readable connections to the campus walkway system.

These roads should be twenty feet in width, and surfaced with asphalt. Use of recycled asphalt is encouraged where technically feasible and appropriate. Unit pavers should be used for crosswalks which should be set as close to the adjoining walkway as possible. Curbing should be avoided for these roads.

- » Grove Walk
- » Beddington Walkway
- » Access roads in Residential areas
- » Entry Service area north of the Union



CAMPUS DRIVES - FLAGSTAFF ROAD

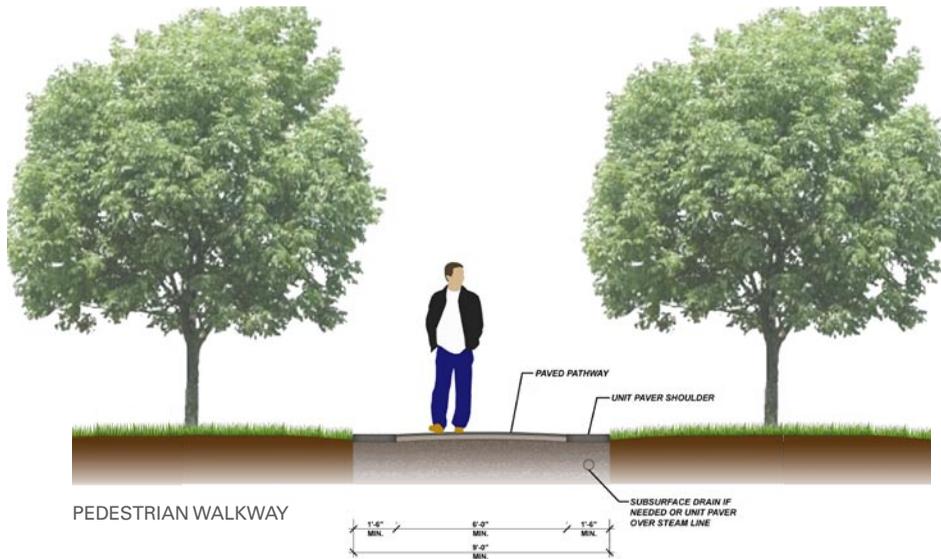
Pedestrian Walkways

Walkways should be located to recognize desired pedestrian routes to the greatest extent possible. They should be designed to be continuous, enabling barrier free, obvious connections through campus. All pathways should be designed to meet current accessibility standards for outdoor use areas. A standard for new and rebuilt campus walkways, all pedestrian ways should have a minimum surfaced width of eight (8) feet. As it is most cost efficient and practical to clear walkways of snow by truck or tractor, the eight (8) foot width is the minimum needed to avoid impacting the adjacent landscape.

The recommend nine (9) foot wide pathway section illustrates a combination of materials to provide a durable and attractive pathway surfacing. Asphalt (or related material) is the most cost effective, durable material on a per unit basis and should form the internal walkway corridor with a minimum paved width of six feet. Recycled asphalt aggregate may be used, but care should be taken in specifying aggregate size as often binder and base are mixed in recycled material, resulting in a courser mixture than the B-type typically used in sidewalk applications. Similarly, use of porous asphalt paving is limited by the application of fine aggregates in sand/salt mixtures during winter months.

A two percent crown on the asphalt surface will promote drainage toward the eighteen (18) inch permeable shoulders that flank the central ribbon of paving. Comprised of concrete unit pavers set in aggregate drainage medium, these bands will armor the edge of the walks to protect the adjacent landscape, aid in reducing the scale of the walkways, and will provide a visual

The design guidelines are developed to offer UMaine with more specific direction for rehabilitation, new construction and maintenance of the campus landscape that is consistent with the environmental, economic, and aesthetic objectives of the Campus Master Plan.



PEDESTRIANIZED DRIVES - GROVE WALK

connection to the surfacing of plazas and gathering areas located along the walks. Subsurface perforated drain lines may be embedded in the aggregate base of the shoulders and connect to bio-infiltration cells if needed to address storm water requirements.

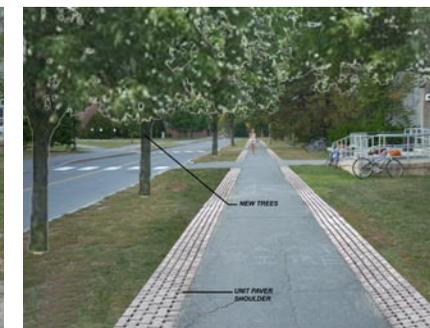
Walk alignments should avoid tight turns and ninety degree corners for ease of snow removal and minimizing impacts to the landscape. To the greatest extent possible walkways should be placed over steam lines.

Bike-Paths and Trails

New trails and pathways, particularly those that will serve multiple purposes and receive heavy use should be developed with good internal drainage and stable surfacing. The base should have a minimum of fourteen inches of MDOT Type D and four inches of Type C aggregate material with a surface mix of the following gradation. All surfaces should be crowned to promote drainage.

Currently, recreation trails and non-paved surfaces in outlying areas are re-surfaced with sweepings from winter sanding. This is an economic re-use of waste material, but care should be taken in the application of this material on newly constructed trails so as to not reduce surface porosity.

SIEVE DESIGNATION	PERCENT PASSING (BY WEIGHT)
1/2"	100%
3/8"	90-100%
No. 4	60-81%
No. 8	44-60%
No. 40	20-33%
No. 200	12-16%



WALKWAY WIDTH SHOULD BE A MINIMUM OF EIGHT FEET TO ALLOW FOR SNOW PLOWING AND MINIMIZE IMPACTS TO ADJACENT LANDSCAPES

Plazas and Courtyards

Plazas and courtyards are important spaces with the framework of the campus landscape, providing opportunities for pedestrian movement, social interaction, gathering and quiet relaxation. These spaces often combine both hardscaping (paved surfaces) with softscape (landscaped areas). Although the design of plazas, gathering areas and feature locations will be driven by the location, program and requirements of the individual spaces, a palette of materials is recommended to promote a degree of consistency and connection between the spaces.

- **Surfacing**—These spaces should be surfaced with unit pavers. These pavers should be either an interlocking concrete unit or clay brick pavers with a minimum depth of two and half inches. (Clay should be used only if necessitated by design objectives/requirements due to expense). Concrete unit pavers should have integral color to avoid loss of surface color over time. Units should be set on an asphalt base (over a minimum of 18" of compacted MDOT specified aggregate) with a one-inch sand-mortar (6:1 ratio) setting bed. Where service lanes are required within a plaza area, unit pavers with pores for turf growth set on a minimum eighteen inch aggregate base should be used to minimize impervious surfaces and improve aesthetics.
- **Drainage**—Stormwater should be treated locally to the greatest extent possible, incorporating bio-retention cells into the landscape design of the plaza. These can provide visual interest and educational / interpretive opportunities.



BIRDS EYE VIEW OF THE CLOKE PLAZA AND MLK PLAZA AREAS

- **Seating Areas**—Plazas and courtyards should include adequate areas for seating. These are best incorporated into landscape components of the space and oriented to observe activity and movement. Seating should be provided through benches, low retaining/planter walls, landscape stones and granite blocks. Use of concrete masonry unit (CMU) walls should be avoided.

Surface Parking Lots

The design of new and rehabilitated parking lots should seek to meet multiple design goals:

Address quality and quality of stormwater run-off.

To meet regulatory requirements as well as overarching campus goals of environmental stewardship, the design of individual parking lots must collect and treat stormwater in a manner consistent with the Best Management Practices (BMP) and campus stormwater plan. Solutions that combine stormwater mitigation with infiltration and/or landscape treatments are encouraged. In conditions where opportunities to treat runoff are limited and visual appearance of the lot is important, consider use of porous unit pavers for parking bays.

Efficiently accommodate vehicle access and parking needs.

Parking lots should be clearly designed, allowing for ease of access and circulation. Internal plantings should be located so as to not reduce driving and turning visibility.



PLAZAS AND COURTYARDS SHOULD PROVIDE ADEQUATE AREAS FOR SEATING

Allow for efficient snow removal operations.

Snow removal represents a significant expense to University operations. Parking lot layout should allow for the moving and storage of snow without removal of snow to an offsite location. Snow storage must be separate from landscape areas dedicated to stormwater treatment.

Clearly connect to pedestrian pathway system.

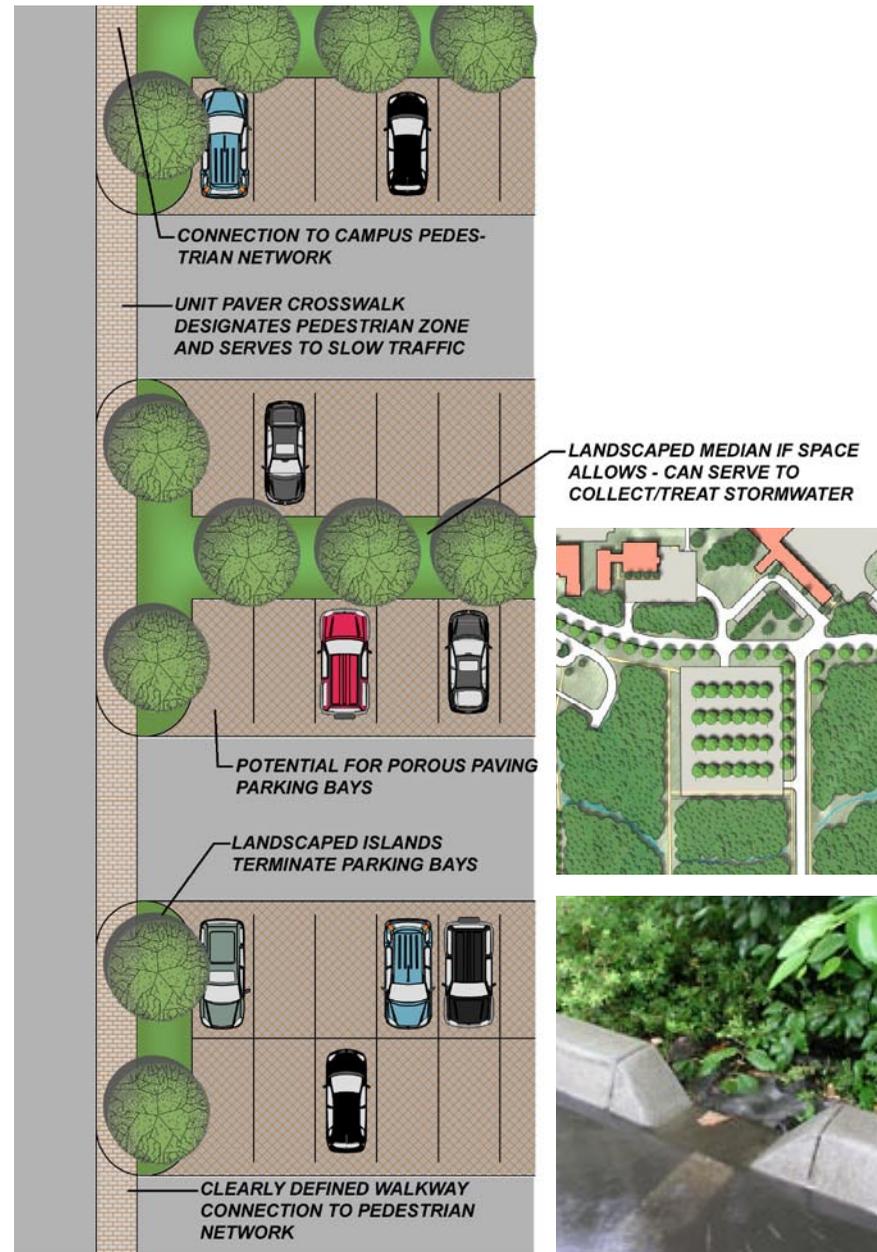
Gateways to pedestrian pathway system at parking lots should be easily accessible, clearly marked and well lighted. Where possible, locate connections to encourage walking down parking isles rather than across them. Where crossing isles is needed, provide designated walkway connections. Where possible, use unit pavers to designate walkways. These may double as rumble strips or speed tables to slow traffic within lots.

Reduce visual impacts of lots.

Parking lots cannot be totally hidden, but effective landscape treatments at the edges of the lots as well as internally will help soften the visual impact of the lot. To the greatest extent possible, parking lots should be screened with continuous hedge plantings that take into the account snow removal/storage needs. Internal parking lot islands should be a minimum of twelve (12) feet in width and configured so as to not impede efficient snow removal. To reduce the heat island effect of the lot, provide some shade for vehicles and improve the aesthetics of the parking lot, islands should be planted with drought tolerant trees and shrubs (see plant list).

Service Areas

Existing dumpsters, recycling, and temporary trash storage should be consolidated into an area with serviceable access and be oriented away from major view corridors, focal points and axis of pedestrian routes. Service areas either adjacent to buildings or activity areas should be screened by a masonry wall, at a minimum height of 6 feet. Design plans for new construction or renovations of existing buildings should include enclosed areas with operable gates for trash and recycling. Isolated dumpsters outside of designated service areas should be eliminated.



PARKING LOT DESIGN

CURB CUTS DRAIN RAINWATER TO SWALE

Landscape and Plantings Design Guidance

The vegetative features of the landscape—the trees, shrubs, groundcovers and lawns are an essential and defining part of the University of Maine campus. This green infrastructure plays an essential role not only in creating an attractive, livable campus, but also in fostering the long term goals of sustainability adopted by the University. From the earliest history of the campus, as depicted in the 2007 Historic Preservation Master Plan, the micro-climate benefits of vegetation were recognized as plantings were designed to create shade, establish windbreaks and aid in the delineation of exterior spaces.

As part of the implementation of the Master Plan, new plantings should reinforce established landscape patterns and strengthen the connections between the historic and modern landscapes. As with all campuses, landscape improvements are implemented in sections, typically on a project by project basis associated with circulation or building improvements. It is the purpose of this plan to set basic parameters for plantings to ensure that as the landscape components are implemented gradually, the pieces will unite into a rational whole. In the broadest sense, new landscape improvements should serve to improve the livability of the campus while minimizing demands placed on campus resources. Considerations of durability, maintenance, and requirements for care should factor into future planting and landscape design of exterior spaces.

As a general guideline, use of native plants is encouraged throughout the campus in new installations and rehabilitations. Native plants that are adapted to the climate and environmental conditions in Orono should form the overall structure of the campus landscape. However, in keeping with the landscape horticulture traditions of the campus, the use of non-native plants, those that have historical or customary uses and are found to be appropriate by contemporary standards (i.e. low maintenance, non-invasive, non-toxic, etc.) should be used in select locations. The ongoing effort to beautify the landscape by designating the UMaine campus as an arboretum is an opportunity to comprehensively integrate the native plant framework with non-native feature species. It is recommended that this effort should be coordinated through the development of a campus wide Planting Master Plan to direct future plant selection, location and maintenance. This plan would assist future designers and facilities staff in ensuring that the overall arching goals of the sustainability, functionality, and beautification as they relate to landscape improvements are closely integrated.



INFORMAL TREE PLANTING

Plantings on campus are recognized to serve a host of environmental purposes—from influencing the microclimates around buildings and pedestrian zones to humanizing the scale of exterior spaces. These function and values of plants within the campus landscape can be summarized in the following categories. Recommended species for specific purposes can be found in the Plant List.

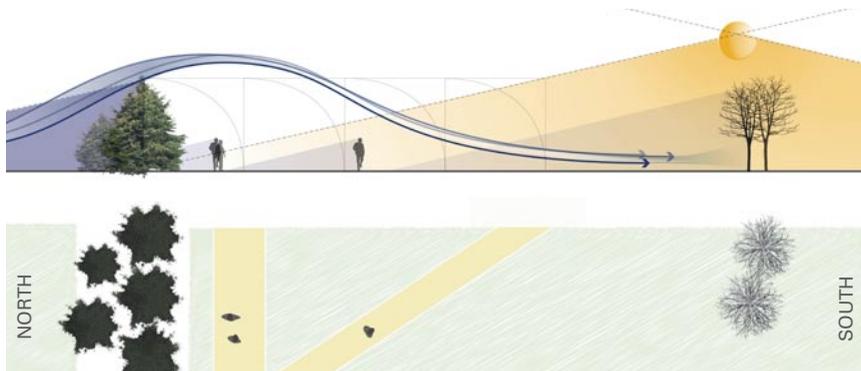
Shelter, Shade and Windbreaks

Strategic placement of selected trees and shrubs can be effectively used to offer shelter from prevailing winds, reduce snow accumulation and reinforce circulation patterns. The strengthening of the east/west connections envisioned by the plan allows for the development of vegetated corridors that can help mitigate the impact of prevailing winter winds and promote the cooling effects of summer breezes. Proper plant selection and location can aid in climate/lighting control in buildings by buffering northerly winter winds, promoting southerly winter light and shading in the summer.

Windbreaks

Vegetation can create effective windbreaks for pedestrian movements through campus. Properly located and sized vegetation will reduce the strength of winds and filter them rather than deflect them elsewhere, as with the eddie effect caused by buildings and solid barriers. The general principle for planting a windbreak is to establish a row of evergreen trees with smaller plantings on both the windward and leeward sides. This will allow for filtering of winds both at and above the pedestrian level, reducing the velocity in the leeward direction of the windbreak. Typically, the effectiveness of an established windbreak extends approximately four to six times the height of the trees leeward of the vegetated line.

Where east-west walkways pass along the southern edge of open spaces, a continuous planting of coniferous vegetation with a minimum height of twelve (12) feet should be installed approximately ten to twelve feet from the edge of pavement. Where space permits understory plantings should front the evergreens to provide additional buffering.



WINDBREAKS



PEDESTRIAN WALKWAYS

Shade and Sun Control

Plantings can be used to provide shade and cooling for buildings, the campus circulation system and open spaces. Proper location of shading deciduous vegetation adjacent to south and west facing building exposures can significantly lower summer cooling loads while allowing penetration of winter sunlight. Typically, deciduous trees with higher canopies and denser foliage provide more effective shading and cooling for buildings and walkways than those with lighter, less dense canopies. While deciduous trees provide effective summer shading, they also create some shade in winter. The year round shading effects should be considered in landscape design strategies.

Evergreen tree plantings should be kept at a sufficient distance from south facing building exposure to ensure low angle winter sun is not obstructed. Proper selection (species characteristics such as form, height, density, and growth rate) and placement (quantity, distance from building) of vegetation for shading will be dependent upon the location, orientation, height and design of the building.

In general, the optimal relationship of the tree height to building for maximum shade effect can be summarized as a constant 0.4 (based on a co-efficient of the Orono's latitude) times the difference between the design height of the tree canopy (expected mature height for species in that location) and the maximum height of area to be shaded. For instance, a red maple with a mature (design) height of 50 feet should be planted a minimum of 9 ft. from a building with a glazed height of 27 feet: $<(.4)(50-27)= 9.2$ feet.

Focal Points, Space and Corridor Definition, and Screening

As detailed in the Historic Preservation Master Plan, vegetation has been used since the founding of the institution to define spaces (as opposed to filling them), serve as focal points (Campana Elm), and distinguish circulation routes. As a twenty first century initiative, the Master Plan envisions a more compact pattern of development that emphasizes connectivity through pedestrian and vehicular corridors and a well defined series of interconnected open spaces. As a departure from the picturesque and informal plantings along road and pathways (with the notable exception of the mall) that historically developed on campus, new plantings should serve to both reinforce these linkages while at the same time, when appropriate, offer environmental benefits of shade, solar access, wind mitigation and storm water treatment.

Corridor plantings should be consistent with standards set forth in earlier landscape recommendations: prevalent use of native species, broad canopy as opposed to narrow growth habit (unless otherwise dictated by space limitations), avoidance of monoculture plantings and use of differing species to define nodes and intersections. As in previous recommendations, care should be taken in the selection and placement of shrubs in proximity to both pedestrian and vehicular intersections. As line of sight and visibility are key design parameters in these locations, shrubs should not exceed three feet height within eight feet of an intersection.

The amount of soil available for root growth has a direct relationship to the size, health and growth rate of trees. To optimize available root growth areas, corridor tree plantings should be installed in continuous soil beds with a preferred soil volume of 1,000 cubic feet per tree. Where practical, trees should be not placed in landscaped medians between roads and walkways, unless medians are a minimum of ten feet wide and avoid being placed within the temperature gradient of underground steam lines.

A mixed planting of evergreen trees and deciduous and evergreen shrubs should be used for screening of parking lots and service areas. Plantings should be informal and nonlinear to de-emphasize the size and regularity of the object being screened. As noted above, plantings within parking lots are intended to provide shade, reduce the visual impacts and aid in design and organization of the lot. Species should be selected for durability, drought and salt tolerance, and ability to form a shading canopy.

Restoration, Revegetation, and Reforestation

The Master Plan identifies a number of degraded landscapes that can be restored as part of the consolidation of developed footprint of the campus. These projects, aimed at reconnecting fragmented natural systems on campus include restoration of wetlands, re-vegetation of impervious areas and reforestation of disturbed or grassed areas to re-unite blocks of existing forest. These efforts should seek to restore the integrity and natural function of the ecosystem and should do so in a way that is self-sustaining, requiring minimal intervention after installation and allowing for natural succession. These efforts should be used as an educational tool, engaging successive classes of students in the design, installation and monitoring of the restoration process. As a variety of natural systems will be created through these efforts, restoration plans will need to take into account the hydrologic regime, soil characteristics (existing and amended), availability of sunlight, exposure and orientation of the sites.

Reforestation of disturbed areas will improve habitat for native flora and fauna, increase opportunities for limited on-campus carbon sequestration and enhance recreational opportunities. As envisioned in the Master Plan, the reorganization of the entrance off Rangeley Road and consolidation of parking at the east side of campus will allow for a significant northward expansion of the Forest Preserve. This reforestation will allow for a green linkage through the northeast quadrant of campus, connecting the Forest Preserve to the Demeritt University Forest. As with restoration, the reforestation effort presents a dynamic learning opportunity and should engage students in the design, installation and monitoring process, coordinated through the School of Forest Resources.



WETLAND RESTORATION AND REFORESTATION ALONG BELGRADE ROAD

Wetland Reclamation and Restoration

The restoration of wetland systems is a complex process, the design for which will be based on numerous factors including hydrologic, topographic and soil characteristics. As envisioned in the Master Plan, the wetland complex off Rangeley Road currently fragmented by parking lots and roadways and degraded by a managed stormwater system will be largely reclaimed, and reconnected to the wetland complex within the Forest Preserve. The stormwater functions of the existing wetland will be enhanced by the introduction of sub-watershed treatment, removal of grassed retention areas, and the integration into a restored native habitat. The design for the restoration will be highly dependent upon the planned hydrologic regimes and topographic characteristics of the system: lowland wet areas, those subject to frequent flooding and slow surface drainage will have differing plant species than those of lowland wet–mesic zones which are characterized by more pronounced cycles of flood and drought. A multidisciplinary team of wetland scientists, stormwater design professionals and landscape architects should be retained to design the system.

Stormwater Mitigation

Addressing stormwater needs on a local level will reduce investment in infrastructure and downstream environmental effects of large scale stormwater treatment. Within sub-watersheds, local treatment of stormwater can often be integrated into or combined with landscape features. Rain gardens and bioretention cells offer opportunities to store, treat and slowly release stormwater. These Low Impact Development (LID's) practices are an integral part of the Best Management Practices (BMP's) developed by the Bureau of Land and Water Quality, Maine Department of Environmental Protection, the agency charged with regulating stormwater management.



VEGETATED SWALES WITH GRASSES CAN PROVIDE LOCALIZED TREATMENT

It is recommended that landscape design solutions be developed for treatment of stormwater on a site specific basis. The size, shape, location and exposure of the treatment area are important determinants in the selection and function of vegetation for stormwater mitigation. The Plant List identifies plants suitable for these purposes.

As envisioned in the Master Plan, the east-west landscaped corridors linking the Forest Preserve and the wetland complex to the east with the campus core can accommodate locations for stormwater treatment and serve as conduits for discharge. Within the corridors, the zone of canopy vegetation can serve to delay and partially absorb stormwater, directing it to landscape bio-retention cells free of deep root structures for infiltration, treatment and slow discharge. These cells should be positioned to accept both general site run-off and drainage from structures adjacent to the corridors.



UMAINE CAMPUS LAWN

Lawns

Lawns play a key role in the social and recreational function of campus. On account of the University of Maine's agrarian roots and the relatively low installation cost, lawns have evolved to form the dominant ground cover type on campus. As a result, a significant amount of resources (energy, time and money) are spent in maintaining lawns. In many areas compaction, lack of water and the effects of winter plowing leave turf areas bare, promoting erosion and unsightly conditions.

As part of a more sustainable approach to the design and maintenance of the campus landscape, maintained lawns should be limited to those areas used for recreation, activities and functions, and areas of historic/visual significance. Background, interstices, and un-programmed spaces could be converted to more sustainable ground cover types. These include:

Unit Pavers—Small areas where lawns are difficult to keep established due to heavy foot traffic, underground steam lines and other mechanical damage should be surfaced with a more durable, porous cover such as unit pavers set on an aggregate base. Use of asphalt and impervious materials should be avoided. Unit pavers should be set on a minimum 18" aggregate.

Vegetation—Smaller lawn areas that are not activity centers or informal gathering areas (such as lawn panels between buildings and walkways) or are difficult to mow (embankments, small areas with access issues, etc.) are candidates for conversion to shrub and trees plantings. Where feasible, these beds

can be designed to serve as rain gardens or localized storm water treatment areas. As lawns are relatively sterile environments, removal of turf grass in favor of plantings will help promote overall campus goals of biodiversity.

Alternative grasses—Larger areas that do not serve a social, cultural or recreational function on campus and need to remain open are candidates for conversion to a lower maintenance meadow grass. These grasses require far less mowing, usually one to three times a growing season, as opposed to the weekly mowings typical of campus maintenance today.

Grasses recommended for this purpose are slow growing, hardy fescue mixes which grow to form a dense turf, suitable for sun and partial shade, and resistant to weed growth. These clump grasses take some time to get established, but once in place can thrive in a variety of moisture and exposure regimes. The University of Maine Cooperative Extension Service has experimented with a number of these mixes and has found No-Mow Lawn Mix (sown at 5 lb/1000 sq ft) to yield the best results:

- » 24.5% SR5100 Chewings Fescue
- » 24.5% Azay Sheep Fescue
- » 12.25% SR3100 Hard Fescue
- » 12.25% Scaldis Hard Fescue
- » 12.25% Creeping Red Fescue
- » 12.25% Dawson Red Fescue

Source: Prairie Nursery, PO Box 306., Westfield, WI 53964
1-800-476-9453 / www.prairienursery.com

A comprehensive review of campus lawns should be conducted to determine the best approach to reducing maintenance needs. Consultation between the facilities division and university departments and affiliates with expertise in turf grass management will aid in developing a viable strategy for reducing high maintenance turf grasses.

Plant Recommendations

The following is a list of primarily native and commonly used species hardy in USDA Zone 4b–5a, for Orono, Maine. This is a partial list of species appropriate to various uses and conditions addressed in the design guidelines. Additional species may be considered when developing detailed plans for specific areas on campus.

LATIN NAME	COMMON NAME	NATIVE	REMARKS	USES
DECIDUOUS CANOPY TREES				
<i>Acer rubrum</i>	Red Maple	Y	Several varieties available. Durable, drought tolerant and attractive.	P&D, S, L, R
<i>Acer saccharum</i>	Sugar Maple	Y	“Green Mountain” and “Legacey” common varieties. Drought tolerant but cannot withstand winter salting.	P&D, S, L
<i>Betula nigra</i>	River Birch	N	Native to So. New England. “Heritage” most common variety. More resistant to pests than native Paper Birch	P&D, L
<i>Betula alleghaniensis</i>	Yellow Birch	Y	Light shade, beautiful bark	L, R
<i>Betula populifolia</i>	Gray Birch	Y	Good for difficult sites	R
<i>Carpinus betulus</i>	European Hornbeam	N	“Fastigiata” most common variety in commerce- good for confined spaces drought tolerant	P&D, S, L
<i>Fraxinus americana</i>	White ash	Y	“Summit” common variety. Limit extent of planting due disease susceptibility	S, L, R
<i>Fraxinus pennsylvanica</i>	Green ash	Y	“Marshall’s Seedless” common variety. Limit extent of planting due disease susceptibility	P&D, R
<i>Ostrya virginiana</i>	American Hophornbeam	Y	Good medium size tree. Can be difficult to establish	P&D, S, L
<i>Quercus alba</i>	White Oak	Y	Slow growing and long lived, good for areas where space is not limited.	S
<i>Quercus rubra</i>	Red Oak	Y	Long lived, good for areas where space is not limited.	P&D, S
<i>Quercus palustris</i>	Pin Oak	N	Native to So. New England. Drought tolerant, not good for confined spaces due to branching pattern	P&D, L
<i>Tilia americana</i>	Basswood	Y	Tolerant of poor soils, suckering tendency. “Boulevard” and “Redmond” common varieties	P&D, S, L
<i>Tilia cordata</i>	Littleleaf Linden	N	Traditional street tree with regular, pyramidal form. Variety “Greenspire” most common	P&D, S, L
<i>Ulmus americana</i>	American Elm	Y	Several varieties (“Valley Forge”, “Princeton”) show good resistance to Dutch Elm Disease.	P&D
EVERGREEN TREES				
<i>Abies balsamea</i>	Balsam Fir	Y	Open, sunny locations, not choice for continuous windbreaks	W
<i>Abies concolor</i>	White Fir	N	Blueish color	W
<i>Juniperus virginiana</i>	Eastern Redcedar	Y	Forms dense edge, susceptible to several pests, attractive to deer	W, L, R
<i>Juniperus chinensis</i> var. “Hetzii Columnaris”	Chinese Juniper	N	Good hedge for tighter spaces, deer resistant.	W
<i>Picea glauca</i>	White Spruce	Y	Most commonly used for wind screens. Retains lower branches	W, R
<i>Picea abies</i>	Norway Spruce	N	Pendulous, retains lower branches. Large tree needs adequate space.	W, L
<i>Picea mariana</i>	Black Spruce	Y	Tolerates wet sites	We, R
<i>Pinus strobus</i>	White Pine	Y	State tree of Maine. Good in youth for windbreak. Can be trimmed to remain dense.	W, L, R
<i>Pinus resinosa</i>	Red Pine	Y	Not dense, loses lower branches over time. Attractive	W, L, R
<i>Pinus sylvestris</i>	Scotch Pine	N	Good in youth for windbreak. Best planted in masses.	W
<i>Tsuga canadensis</i>	Eastern Hemlock	Y	Graceful, slow growing. Potential pest problems.	L, R
<i>Thuja occidentalis</i>	Northern white cedar	Y	Forms dense edge, susceptible to several pests, attractive to deer	W, R
UNDERSTORY / SMALL TREES AND SHRUBS				
<i>Amelanchier canadensis</i>	Shadblow	Y	Good for shade locations, early spring bloom	L, We, S, R
<i>Amelanchier laevis</i>	Alleghany Serviceberry	Y	Fall color, wet sites	L, We,

LATIN NAME	COMMON NAME	NATIVE	REMARKS	USES
UNDERSTORY / SMALL TREES AND SHRUBS				
<i>Cornus alternifolia</i>	Pagoda Dogwood	Y	Good for shade locations	L,
<i>Cornus sericea</i>	Redtwig Dogwood	Y	Winter interest	We, L, S, R
<i>Cornus racemosa</i>	Gray Dogwood	Y	Adaptable, good for difficult sites	We, L
<i>Clethra alnifolia</i>	Sweet Pepperbush	Y	Fragrant midsummer blooms, shade tolerant	We, S, L
<i>Dirca palustris</i>	Leatherwood	Y	Good in mass plantings, wet sites	We, L, S
<i>Hamamelis virginiana</i>	Common Witchhazel	Y	Fall flowering, shade location	We, L
<i>Ilex verticillata</i>	Winterberry	Y	Good for wet sites male needed for berry set	We, L, S, R
<i>Fothergilla gardenii</i>	Dwarf Fothergilla	N	Good landscape plant in groupings	L
<i>Kalmia angustifolia</i>	Lambkill	Y	Good for naturalizing, best in very acid soil	L, R
<i>Myrica gale</i>	Sweetgale	Y	Bushy; dark green, aromatic foliage	L
<i>Rhododendron canadense</i>	Rhodora	Y		W, S, R, L
<i>Rhododendron sp</i>	Rhododendron	Y, N	Acidic soils, light shade, protected sites	L
<i>Taxus x media,</i>	Yew cultivars	N	Selected cultivar for screen, windbreaks. <i>Taxus canadensis</i> is species	W, L
<i>Vaccinium corymbosum</i>	Highbush blueberry	Y	Wildlife and landscape value	L, R
<i>Viburnum acerifolium</i>	Mapleleaf viburnum	Y	Suckering; good for mass plantings in shady sites.	R, L
<i>Viburnum lantanoides</i>	Hobblebush	Y	Open shrub; good for naturalized landscape	R,L
<i>Viburnum dentatum var. lucidum</i>	Arrowwood viburnum	Y	Durable; good for hedges; tolerates alkaline soil	W, R, L
<i>Viburnum lentago</i>	Nannyberry	Y	Good for wildlife and naturalized landscapes	R, L
<i>Viburnum opulus</i>	Highbush cranberry	Y	Screening; good for wildlife landscapes	W, R, L, We
PERENNIALS AND FERNS				
<i>Adiantum pedatum</i>	Maidenhair Fern			We, S
<i>Athyrium filix-femina</i>	Lady Fern			
<i>Caltha palustris</i>	Marsh marigold	Y		We, S
<i>Campanula rotundifolia</i>	Harebell	Y		We, S
<i>Eupatorium maculatum</i>	Joe-pye weed	Y		We, S
<i>Eupatorium perfoliatum</i>	Boneset	Y		We, S
<i>Iris versicolor</i>	Blue flag	Y		We, S
<i>Onoclea sensibilis</i>	Sensitive Fern	Y		We, S

Legend

P& D—suitable for use in parking lots and drives – generally tolerant of reflected heat and drought

S—suitable for shading buildings and landscapes

L—general landscape use

R—Reforestation and rehabilitation

We—Wetland applications

S—Stormwater mitigation/ rain gardens

Lighting

Currently there are a variety of pedestrian, roadway and parking lot lighting types on campus. In recent projects UMaine has sought to standardize pedestrian and roadway lighting by adopting an energy efficient, full cut-off light standard from the Promenade Series® manufactured by Architectural Area Lighting (AAL). (light photo) Preferred height for fixtures along pedestrian ways is fourteen feet, spacing commensurate with level of lighting desired. A minimum of one foot candle is recommended for lighting levels along pathways. The range of fixture types available in Promenade Series allows for flexibility in the selection of lighting for various purposes while maintaining the integrity of an overall campus lighting design standard. The selection of fixture style, heights and lamping in special areas such as plazas and courtyards should be differentiated from corridor (pathway and roadway) lighting. Bollard and low level lighting should be avoided due to potential damage caused by snow plowing.

Lighting for campus should be provided in the amounts needed for safety and visibility and that consume the minimum amount of energy possible. All campus lighting should be IES (Illuminating Engineering Society) designated "full cut-off" fixtures (Dark Sky Friendly) that ensure that no light is emitted above the lowest part of the fixture. Lamps should be color corrected High Pressure Sodium (unless used for motion sensing), wattage determined by the specific application. A lighting designer with Dark Sky experience should be retained for projects in excess of 10,000 lumens.





Furnishing

Exterior campus furnishings include benches and seating surfaces, trash receptacles, ash bins and bicycle racks. The styles, materials, finishes, and colors should be coordinated to lend consistency to overall level of finish in the campus landscape. Products need not be selected from the same manufacturer so long as the individual elements correspond.

Benches and Seating Surfaces

Seating should be comfortable, durable and attractive. Manufactured benches should have a wood seating surface (wood from FSC certificated source) and metal frame (recycled content preferred). As with lighting, a consistent style should be used throughout campus. Variations within this style can be used to distinguish areas or uses on campus.

Other materials used for seating surfaces such as stone, concrete or masonry should be designed to be comfortable for seating with a height of 18 to 20 inches and a minimum of 15 inches deep. Edges should be rounded and seating surfaces smooth (thermal finish on granite is acceptable). Use of precast concrete block walls for seating should be avoided due to instability.

Trash and Recycling Receptacles, Ash Bins

Trash receptacles should be attractive, easy to empty and have a fixed cover for moisture protection. The campus has adopted a commonly available trash receptacle that meets these standards. Recycling bins and ash urns are available in styles similar to the trash receptacles.

Bicycle Racks

Bicycle racks should be functional, durable, and unobtrusive. They should be in-ground mounted on a concrete pad, located out of the path of pedestrian movement and allow for locking of bikes. The U Series from Madrax (used at Oak Hall) (photo) have proven to be a durable and attractive product. The quantity, size, and finish should be determined by the site specific application.



NO PARKING
VIOLATORS WILL BE
TOWED
AT OWNER'S EXPENSE





◀ DOWNTOWN ORONO

APPENDIX B: COMMUNITY COLLABORATION OPPORTUNITIES

The following community collaboration opportunities paper was created during the planning process to review and assess potential options for partnering with the municipalities of Orono and Old Town on social and economic development initiatives. It is included in the Master Plan to facilitate future planning discussions with the host communities.

A recurrent theme among UMaine’s strategic priorities is to develop more robust economic, social and cultural collaborations with the University’s immediate host communities. That theme is expressed as an important campus planning goal, as well.

The following summarizes potential options for campus initiatives that could be undertaken in and with the communities off-campus, as direct investment or as collaborative public/private investments. The options discussed herein are independent of the planning concepts for on-campus development outlined in the Master Plan, and are not contingent on either the sequencing of campus development proposals or the land use patterns embodied in the Master Plan. Rather, the off-campus options are contingent on the University’s strategic interests in pursuing such options at any point in the future. Consequently, several possible rationales for the pursuit of off-campus development options, as well as potential opportunities and constraints to be considered in debating the merit of the options are considered in this paper.

Town Center Revitalization Strategies

The University and the communities of Orono and OldTown have a mutual stake in the vitality of the centers in each community. For the University, the stake is to have thriving downtowns that are appealing to students, staff and faculty and visitors. The quality of the town and city center environments bears not just on recruiting of students, faculty and staff, but on the basic sense of amenity, interest and choice that sustains the quality of life for members the University community. Clearly, it is in the interest of the towns to have thriving centers that provide jobs and tax base, and the same quality of life factors for town citizens as would be sought by the University. A broadening of the town center use and the economic mix provides diversity and stability.

The institutional reasons for the University to have a role in community economic development have been articulated in UMaine's strategic documents. The practical reasons are that the University, as the principal economic entity in the area, has the civic leverage to contribute to a town center revitalization role in concert with the municipalities.

The precursor to such a role is to establish a dialogue with either or both municipalities to determine mutual interests in town center revitalization and improvement. It is reasonable to anticipate that any endeavor should be approached strategically and in concert with mutually identified interests. Following are possible development options in which the University could be a partner or initiator:

Adaptive Re-Use

Either "Storefront" or new construction of University-related facilities blended into the fabric of the town center(s)

- University office space for operations that do not have to be located on campus. This option would add working population and use diversity to the town center(s)
- Cultural use (gallery, exhibition space, cultural event space)
- Institutional outreach uses (extension or local focus programs, educational programs, meeting spaces)

Opportunities/Benefits

- Enhance/diversify town center activities
- Demonstrate institutional commitment by bringing campus use to the town center(s)
- Increases exposure of the University community to town life

Constraints/Cautions

- Process of finding location and establish compatible use acceptable to community
- Need to rigorously validate the economics of the venture relative to institutional priorities
- Ensure that separation from campus doesn't compromise institutional priorities
- Need to ensure reliable transportation connections with campus to mitigate physical separation

Mixed Use Development

Participation in mixed-use development with private sector developers and town(s) that could include any of the above uses as well as commercial and residential uses.

This option is a more ambitious endeavor than the University-related options, both in its impact on the town center and the complexities of organizing the endeavor. It would depend on a prior concurrence with the community that a substantial initiative is desirable and appropriate for both parties.

Opportunities/Benefits

- Significantly expands, enhances and diversifies town center activities.
- Demonstrates institutional commitment to town center economic development
- Builds on established business center base rather than competing with it
- Expands tax base, working populations, living population in town center
- Potential source of income to University, depending on financial relationship with developer

Constraints/Cautions

- Need to undertake market study to determine feasibility of development program
- Complexity of formulating financial and operating agreements with town(s) and developers
- Complexity of identifying suitable sites and agreeing on project scale and uses compatible with town needs and interests
- Need to establish rigorous quality control measures to protect University and community interests

In-town University-oriented housing with private sector developers.*

This option is predicated on the notion that off-campus housing in or near a town center would offer broader choices for mature (staff/faculty and or graduate students) members of the campus community. It could be accommodated through adaptive reuse of existing buildings or new construction.

*A development partnership could entail a substantial level of University investment or subsidy to ensure affordable housing, with a guarantee provision for occupancy during amortization. This will be a consideration given the age and condition of University Park, the existing housing available for families, graduate students and visiting faculty / staff.

Opportunities/Benefits

- Adds a resident population to the town center, supporting local businesses
- Adds to tax base (assuming market-based development)
- Possible recruiting tool, particularly for young faculty/staff needing reliable housing until settling into locality

Constraints/Cautions

- Complexity of formulating financial and operating agreements with developer
- Complexity of site selection, project compatibility and town approvals
- Need to ensure reliable transportation connections with campus
- Community concerns about student resident behavior (principal reason that student housing should be oriented to a "mature" population of staff/faculty and/or graduate students)

Industrial Park Partnership

Participation in future development of proposed industrial park site on Old Town property east of campus.

The goal of such participation could be two-fold: (1) to support industrial-type R&D/technology transfer activities directly or indirectly associated with campus research on a location proximate to campus; (2) to set a "tone" for the character of business enterprises locating in the industrial park while helping to spur such development. This option has complexities, as noted below, but also interesting opportunities to the extent that it could complement the ambitious research goals of the University. This endeavor would have to be based on deliberate, strategic decisions by the University to embark on a technology transfer initiative. The nature of the participation could be either to lease or to purchase lots on a portion of the site or secure a "first right" option to lease or purchase. Either approach would have to be presaged on a defined strategy for future development of University uses and/or business alliances actively marketed by the University.

Opportunities/Benefits

- Provides proximate environment for applied research and technology transfer to complement University activities and creation of potential business alliances
- Assists Old Town in generating business activity and jobs in the industrial park
- Potentially redefines character of Old Town's development model for the property in terms of quality and sustainability (this infers an active role by the University in planning the development layout or a part thereof.)

Constraints/Cautions

- Potential competition with Maine Technology Center (although Old Town site lacks the proximity to I-95 that is a primary attribute of the Technology Center.)
- Involves the University in forest removal, which is counter to goals set for the campus Master Plan
- Reinforces the need for a road connection between the Old Town property and the campus, raising issues of further forest fragmentation and inducing non-campus traffic through the University.

- Uncertainty of R&D market creates potential risk to University investment commitments
- Complexity of financial, operating, land planning and quality control relationships with the town

Retirement Community

This option is put forth as a “generic” opportunity that is being seized by numerous institutions around the country to take advantage of alumni interest in returning to college community for retirement. The attraction for older adults/retirees is the opportunity to live in small town setting that has the rich educational, cultural, and recreational resources of a university. For the University, the attraction is to strengthen alumni relationships and provide educational and cultural offerings to a mature population that broadens the University’s demographic profile. The degree to which formal educational relationships are offered varies substantially in such endeavors around the country, depending on the strategic goals of the institutions. So, too, does the degree to which retirement communities are physically integrated with campuses. Physical integration is usually tied to the institution’s need or desire to generate income by real estate development. The inclusion of this option does not include any site recommendations. It is intended solely for consideration as a potential off-campus venture should the University see merit in sponsoring or participating in such a development. The appendix to this brief includes reference articles discussing University-related retirement communities.

Programmatic Participation in Community Development

The University’s goal for community development doesn’t necessarily have to focus on physical development options, as suggested above. Programmatic measures to support community development can include measures ranging from local purchase policies to collaboration with public and non-profit organizations in local business development strategies and training for local enterprise development, researching and developing strategies for import replacement renewing local housing, or upgrading educational resources. Institutions such as Trinity in Hartford, CT and Clark in Worcester, MA stand out among New England colleges that have been proactive in community development.

A regional source for more information on programmatic relationships with communities is the Training and Development Corporation, a non-profit organization located in Bucksport, Maine (www.tdc-usa.org/about-us). Michael Shuman, Vice President for Enterprise Development at TDC, is a frequent speaker and writer on community-based development, including university-government-business collaborations.



CAMPUS FARMERS' MARKET



MONDRAK FOGLER LIBRARY





APPENDIX C: ACADEMIC PROGRAMS AND SPACE PLANNING ISSUES

Programmatic Needs

Surveys were conducted during the master planning process to identify specific concerns and foreseeable programmatic needs for each of the Colleges. On-line resources available from the Office of Institutional Studies were also referenced to estimate the space needs for the College of Business, Public Policy and Health.¹

The space standards referenced in the development of the space programmatic needs list include the Rickes Associates study of instructional space. As detailed programming was not part of the master planning scope of work, it is recommended that an additional study be conducted to understand specific research lab, office, student service and athletic space needs.

1. Office of Institutional Studies. (<http://www.umaine.edu/ois/index.htm>: June 12, 2008).

Classroom Space

The instructional space study by Rickes Associates, Inc. categorized classroom space into three classifications for analysis: computer labs, lecture halls and general classrooms. The overall findings reveal a shortage of space on a per student basis and classroom sizes that are often too small to accommodate teaching demands. Since overall classroom utilization falls below recommended levels, the study suggests reducing the number of classrooms while increasing the space per room. Likewise, in the case of large lecture halls, space could be used much more appropriately. Updating general classrooms with special audio-visual equipment could reduce inefficiencies observed in lecture room scheduling.

Space Needs by College

Several significant space needs were identified during the planning process:

College of Business, Public Policy & Health

The College of Business, Public Policy and Health currently resides in four buildings in various areas of the campus.

- Address Business School expansion
- Provide space for growth of the School of Nursing

College of Education & Human Development

The four buildings that house the College of Education and Human Development are spread out across the campus. One of the College's expressed goals is to consolidate its facilities.

- Create New Assessment Center for Education and Human Development
- Add graduate assistant office space
- Replace Shibles Hall (63,500 to 80,000 gsf)

College of Engineering

The College of Engineering enjoys a compact configuration of buildings; however, Engineering needs larger classrooms to seat 100 to 150 students and additional laboratory space. Engineering expects continued growth and will need to identify new expansion options.

- Expand to accommodate increasing enrollment

College of Liberal Arts & Sciences

The College of Liberal Arts and Sciences is the largest college with over 30% of the University's enrollment and 20 departments. It occupies 26 buildings with the highest concentrations in Aubert Hall and the Class of 1944 Hall.

- Add studio space for the Art Department (currently planned for Alumni Hall Renovation and Expansion)
- Expand or relocate Maynard F. Jordan Planetarium and Observatory for Physics
- Modernize and add new research and teaching labs for Chemistry and New Media
- Add psychology research labs
- Relocate Hitchner Animal Diagnostic Labs (potentially off-campus)

College of Natural Science, Forestry & Agriculture

The College of Natural Sciences, Forestry and Agriculture is spread across 28 buildings and is responsible for managing the Demeritt Forest and other forest and farm land beyond the campus core.

- Consolidate Marine Sciences program in a new building
- Add joint USDA/UMaine Aquaculture lab facility (40,000 gsf)
- Renovate/Replace:
 - » Deering Hall Life Science labs
 - » Rogers Hall labs
 - » Murray Hall
 - » Nutting Hall
 - » Older section of Hitchner Hall
 - » Holmes Hall

Honors College

The Honors College is experiencing increased demand for Honors Housing and continued growth.

- Utilize Colvin as residence hall
- Renovate remainder of Balentine for Honors Staff

Other Space Needs:

In addition to the programmatic needs identified in surveys, several additional needs were noted:

- Larger class/lecture hall space
- Flexible, multi-use spaces
- Research facilities:
 - » More laboratory space is needed
 - » Need 2,000–3,000 s.f. modules for labs
 - » Utilization of Maine Technology Center—20,000 s.f. incubator facility
 - » Incubator space location options: on-campus or Orono/Old Town
 - » Interdisciplinary research—70% of research is conducted in institutes and centers
- Library addition and interior renovation
- Joint Public Works Facility (requires access from campus)
- Athletics Needs:
 - » Basketball Arena (currently planned as renovation to Memorial Gym)
 - » Improvements to Alford Sports Arena

ACKNOWLEDGEMENTS

University, Faculty, Staff, Students, Alumni

Andrea Ahearn, Alumnus

Andrei Alyokhin, Associate Professor of Applied Entomology and Faculty Senate Member

Edward Ashworth, Dean of the College of Natural Sciences, Forestry & Agriculture

Brianna Barton, Student

Bonnie Bates, Student

David Batusky, Professor of Physics

Barbara Beers, Senior Philanthropic Advisor (former Vice President for Development)

Kathleen Bell, Associate Professor of Resource Economics & Policy and Campus Planning Committee Member

William Biberstein, Associate Athletics Director for Internal Operations and Campus Planning Committee Member

Joline Blais, Assistant Professor of New Media

Richard Blanke, Professor of History and Faculty Senate Member

Emmanuel Boss, Associate Professor of Oceanography and Faculty Senate Member

Karen Boucias, Director of International Programs

Gustavo Burkett, Director of Campus Activities and Events

Christopher Campbell, Professor of Plant Systematics and former Campus Arboretum & Beautification Committee Chair

Joseph Carr, Director of University Relations

William Charland, Associate Executive Director of Facilities Management for Construction Administration

Elaine Clark, Executive Director of Facilities, Real Estate and Planning and Campus Planning Committee Member

Robert Cobb, former Dean of the College of Education & Human Development

Steven Cohn, Professor of Sociology and Faculty Senate Member

Theodore Coladarci, Director of Institutional Studies

Morgan Cooper, Student

George Criner, Professor of Resource Economics & Policy and Campus Planning Committee Member

Dorothy Croall, Professor of Biochemistry and Faculty Senate Member

Harold Dall, Facilities Management Grounds Supervisor

Gail Dana-Sacco, Director of the Wabanaki Center

Robert Dana, Vice President for Student Affairs & Dean of Students

Harold Daniel, Director of the Center for Tourism Research and Outreach (CentRO)

Alan Davenport, Planetarium Director/Observatory Coordinator

Michael Eckardt, Vice President for Research

Catherine Elliott, Associate Cooperative Extension Professor and Faculty Senate Member

Suzanne Estler, former Faculty Senate Finance and Institution Planning Committee Chair

Alaric Faulkner, Professor Emeritus of Anthropology and former Faculty Senate member

Jacques Ferland, Associate Professor of History and Faculty Senate Member

Brian Foley, Manager of Facilities Management Engineering Center

Per Garder, Professor of Civil Engineering and Parking and Transportation Committee Member

Thomas Gasaway, Facilities Management Landscape Supervisor

James Gilbert, Chair of Wildlife Ecology and former President of Faculty Senate

Maria Girouard, Graduate Student

Qkisedtanamoogk, Part-time Faculty and Elder of the Wampanoag Tribe

John Gregory, Executive Director of Information Technologies

Bonita Grindle, Associate Director of Equal Opportunity & Diversity and Campus Planning Committee Member

William Halteman, Professor of Mathematics and Faculty Senate Member

Stewart Harvey, Associate Executive Director of Facilities Management for Maintenance & Services

Jeffrey Hecker, Dean of the College of Liberal Arts and Sciences

Michael Hermann, former campus Cartographer and Campus Planning Committee Member

Dianne Hoff, former Associate Professor of Educational Leadership and Faculty Senate President-Elect

Dana Humphrey, Dean of the College of Engineering

Susan Hunter, Vice President for Academic Affairs & Provost

Blake James, Director of Athletics

Melvin Johnson, Social Sciences/Humanities Reference Librarian and Campus Planning Committee Member
Claude Junkins, Director of Facilities Management Engineering Support Services
Susan Kaspari, Graduate Student
Leonard Kass, Associate Professor of Biological Sciences and Special Assistant for the NEASC Accreditation
Karen Kemble, Director of Equal Opportunity
Tyler Keniston, Student
Robert Kennedy, President
Alan Kezis, Chair of the Parking & Transportation Committee
Alan Kimball, Woodlands Manager
Michael Kinnison, Associate Professor of Biological Sciences and Faculty Senate Member
Eric Landis, Professor of Civil Engineering and Campus Planning Committee Member
Laurence Latour, Associate Professor of Computer Science and Faculty Senate Member
Ann Leffler, former Dean of the College of Liberal Arts and Sciences
Jeremy Logan, Graduate Student
Angel Loreda, Associate Dean of Students and Campus Planning Committee Member
Donna Loring, Part-time Faculty and the Penobscot Nation's Representative in the Maine Legislature
William Lovejoy, former Energy Manager
Jean MacRae, Associate Professor of Civil Engineering
John Mahon, Dean of the College of Business, Public Policy & Health
Wayne Maines, Director of Safety & Environmental Management and Campus Planning Committee Member
Chief Noel March, Director of Public Safety, Parking & Transportation Services
Kathleen March, Professor of Spanish and Faculty Senate Secretary
Emily Markides, Part-time Faculty
Owen McCarthy, Student and former 2010 Class Officer
James McClymer, Associate Professor of Physics and Faculty Senate Member
Colin McGovern, Student

Kathleen McIntyre, Assistant to the VP for Admin/Finance and Campus Planning Committee Support Staff and Alumna
Brigham McNaughton, former Student
Derek Mitchell, former Student
John Bear Mitchell, Associate Director of the Wabanaki Center
Gordon Nelson, Director of Property Management for Auxiliary Services
Harlan Onsrud, Professor of Spatial Information and Faculty Senate Member
Michael Parker, Graduate Student
Tina Passman, Associate Professor of Classical Language and Literature and Faculty Senate Member
Micah Pawling, Part-time Faculty and Graduate Student
Scott Peterson, Faculty and Campus Planning Committee Member
Anne Pooler, Dean of the College of Education & Human Development
John Rebar, Executive Director of Cooperative Extension
Stephen Reiling, Interim Director of the School of Forest Resources
Robert Rice, Professor of Wood Science and Faculty Senate Member
Joyce Rumery, Dean of Libraries
Daniel Sandweiss, Dean & Associate Provost for Graduate Studies
Gimbala Sankare, Student
Misa Saros, Conservation and Energy Compliance Specialist
Marianne Sarrantonio, Coordinator of Sustainable Agriculture Program
Kenda Scheele, Senior Associate Dean of Students
Christa Schwintzer, Professor of Botany and Campus Planning Committee Member
Charles Slavin, Dean of the Honors College
Kathryn Slott, Associate Professor of French and Faculty Senate Member
Touradj Solouki, Associate Professor of Chemistry and Faculty Senate Member
Thomas Spitz, Chemical Hygiene/Facility Emergency Officer and Orono Town Councilor
Leigh Stearns, Graduate Student
Alan Stormann Sr., Assistant Director for Parking & Transportation
Daniel Sturup, Director of Finance & Administration for Auxiliary Services
Edna Szymanski, former Senior Vice President for Academic Affairs & Provost

Robin Toderian, Assistant Vice President for Auxiliary Services and Campus Planning Committee Member

Janet Waldron, Vice President for Administration and Finance and Chair of the Campus Planning Committee

James Ward, Assistant Vice President of Research, Economic Development & Governmental Relations

Steven Weinberger, Assistant Vice President for Human Resources

Stephanie Welcomer, Associate Professor of Management and former Faculty Senate University Environment Committee Chair

Robert White, Associate Provost and Dean of Lifelong Learning

Beth Wiemann, Chair and Associate Professor of Music and Faculty Senate Member

Anita Wihry, former Executive Director of Facilities Management

David Wihry, Associate Professor Emeritus of Economics and Public Administration and Faculty Senate Member

Scott Wilkerson, Facilities Management Sustainability Officer

Mohamad Musavi, Professor of Electrical & Computer Engineering

Friends of UMaine

John Bradson, Orono Town Councilor

Harold Brown (Brownie), Retiree and Alumnus

Joe Cloutier, Realty Resources Group

Catherine Conlow, Orono Town Manager

Jill Conover, Niemann Capital

Margaret Daigle, Old Town City Manager

Christopher Dorion, Orono Land Trust member

Allen Fernald, Alumnus and Chairman of Down East Enterprise

Bion Foster, Innovative Solutions Now, LLC , Real Estate Developer and Alumnus

James Francis, Penobscot Nation Historian

Geoff Gordon, Orono Town Councilor

Mark Haggerty, Orono Town Councilor

Lianne Harris, Orono Town Councilor

Terri Hutchinson, Orono Town Councilor

Sally Jacobs, Instructor Emerita in Biochemistry and Founder of Orono Land Trust

Shawn Lewin, ESTIA (Eco-Peace, Sustainability, Training, International Affiliations)

Claudia Lowd, ESTIA(Eco-Peace, Sustainability, Training, International Affiliations)

Michael Lynch, Realty Resources Group

Pasquale (Pat) Maiorino, Alumnus and Attorney at Law

Al McNeilly, Class of 1944 Alumnus

Miigam'agan, Elder of the Mi'kmaq Nation

Valerie Mitchell, UMaine Alumni Association, Class Advisor and Alumna

Peter Moore, Corporate Finance Associates

Amos Orcutt, University of Maine Foundation President/CEO and Alumnus

Bucky Owen, Orono Land Trust Member

Tom Perry, Orono Town Councilor

Evan Rickert, Town of Orono Town Planner

John Rohman, WBRC Associates CEO and Alumnus

Kevin Mahany's Representative from Olympia Companies

George Sakellaris, Alumnus and Founder of Ameresco, Inc

Todd Saucier, UMaine Alumni Association President & Executive Director and Alumnus

John Simpson, Innovative Solutions Now, LLC, Founder and Alumnus

Shawn Small, Co-founder CES, Inc

Donald Soctomah, Passamaquoddy Tribal Historic Preservation Officer

Terry Turner, Realty Resources Group

Gail White, Orono Land Trust Member

David Wight, Old Town Public Works Director

Charles Yelton, renowned Permaculture expert and Still Water Fellow

Julia Yelton, renowned Permaculture expert and Still Water Fellow

Committees and Interest Groups

Campus Planning Committee
City of Old Town Administration
Faculty Senate
Greek Housing Committee
Green Campus Initiative
Native American Group
Orono Land Trust
Parking & Transportation Committee
Provost's Council
Public Private Partnership Group
Town of Orono Administration
University of Maine Sustainability Alliance

Consultant Team

Sasaki Associates, Inc *Watertown, MA*

Gregory Havens, Principal In Charge
Janne Corneil, Design Principal
Perry Chapman, Participating Principal
Beth Foster, Project Manager
Matt Brownell, Project Manager / Planner
Adalie Pierce-McManamon, Urban Designer / Planner
Richard York, CAD and 3D
Neda Movaghar, Graphic Designer
Tyler Brooks, Graphic Designer

Coplon Associates *Bar Harbor, ME*

Sam Coplon, Landscape Architect
Rob Krieg, Landscape Architect

Anderson Illustration Associates *Madison, WI*

BIBLIOGRAPHY

- Booth, Derek, David Hartley, and Rhett Jackson. 2002. Forest Cover, Impervious Surface Area and the Mitigation of Stormwater Impacts. *Journal of the American Water Resources Association*, v. 38: 835-845. <http://depts.washington.edu/cwws/Research/Reports/impervious-surface.pdf>
- Charry, Barbara. 2000. Conserving Wildlife in Maine's Developing Landscape. Maine Audubon Society Fact Sheet. <http://www.maineaudubon.org/resource/documents/MAS.ConservingWildlife.pdf> (accessed November 2008)
- Demeritt, Dwight. 1972. Background and History of the University of Maine Forest. *Life Sciences and Agriculture Experiment Station Bulletin*. Orono, Maine: University of Maine, Bulletin 696.
- Dines, Nicholas and Kyle Frown. 2001. *Landscape Architects Portable Handbook*. New York: McGraw-Hill.
- Eagan, David J.; Keniry, Julian; & Schott, Justin. 2008. Higher education in a warming world: The business case for climate leadership on campus National Wildlife Federation Campus Ecology Program. Reston, Virginia.
- Energy Information Administration, Updated State and Regional-level Greenhouse Gas Emission Factors for Electricity. <http://www.eia.doe.gov/oiaf/1605/ee-factors.html> (accessed March 2002)
- Hasbrouck, Sherman. 1995. Maine Rivers and Streams. *Geographical Digest Series #6*. Orono, Maine: University of Maine Water Resources Program.
- Lorimer, Craig G. and Alan S. White. 2003. Scale and frequency of natural disturbances in the northeastern US: Implications for early successional forest habitats and regional age distributions. *Journal of Forest Ecology and Management*. 185 (1-2): 41-64.
- Melby, Pete and Tom Cathcart. 2002. *Regenerative Design Techniques: Practical Applications in Landscape Design*. New York: John Wiley & Sons, Inc.
- Payson, Keisha. 2006. Bowdoin Reaches Greenhouse Gas Emissions Target in Carbon Challenge and becomes EPA Power Partner. Sustainable Bowdoin. <http://www.bowdoin.edu/sustainability/campus-involvement/pdf/fall2006.pdf>
- Schmitt, Catherine. 2005. The Effects of the 2001-2002 Drought on Maine Drinking Water Supplies. Senator George J. Mitchell Center, University of Maine. http://www.umaine.edu/WaterResearch/outreach/drought_digest.htm#summary
- Soil Survey of Penobscot South County. 1963. National Resource Conservation Service Interim, United States Department of Agriculture.

- University of Maine Building Conditions Assessment. Prepared by Sightlines.
- University of Maine Guidelines for the Residence Hall Landscape. May 2006. Prepared by Carol R. Johnson Associates, Inc.
- University of Maine Historic Preservation Master Plan. March 2007. Prepared by SMRT Architects Engineers Planners, Carol R. Johnson & Associates Landscape Architects, Turk Tracy & Larry Architects.
- University of Maine, Instructional Space Utilization Analysis. September 2007. Prepared by Rickes Associates, Inc.
- University of Maine Parking and Transit Study Update. 2007. Prepared by Gorrill-Palmer.
- University of Maine, Office of Institutional Studies. <http://www.umaine.edu/ois/index.htm> (accessed June 12, 2008)
- University of Maine Recreation Trails. 2005. <http://www.umaine.edu/canam/pdf/%20%20Trail%20Map.pdf> (accessed June 2007)
- University of Maine Strategic Plan 2006-2011. May 15, 2006.
- University of Maine Strategic Implementation Plan for Enhancement of Research, Scholarship and Creative Activity. December 9, 2005.
- University of Maine. 2005. Utilities Data.
- Energy Efficiency and Renewable Energy, State Activities and Partnerships, U.S. Department of Energy. 2007. http://www.eere.energy.gov/states/maps/renewable_portfolio_states.cfm (accessed June 2007)
- Wilson, J.S. 2005. Nineteenth century lumber surveys for Bangor, Maine; implications for pre-European settlement forest characteristics in Northern and Eastern Maine, USA. *Journal of Forestry*. 103(5):218-223.

All historic photographs are from the collection of the Special Collections Department at Raymond H. Fogler Library, University of Maine, Orono. These images appeared in *The First Century: A History of the University of Maine, 1865-1965* by David C. Smith (Orono, ME: University of Maine at Orono Press, 1979).



DEMERRITT
FOREST

HILLTOP ROAD

LONG ROAD

FLAGSTAFF ROAD

BEDDINGTON ROAD

BELGRADE ROAD

SEBAGO ROAD

SEBEC ROAD

MUNSON ROAD

GROVE STREET

SQUARE ROAD

ALLAGASH ROAD

RANGELEY ROAD

FOREST
PRESERVE

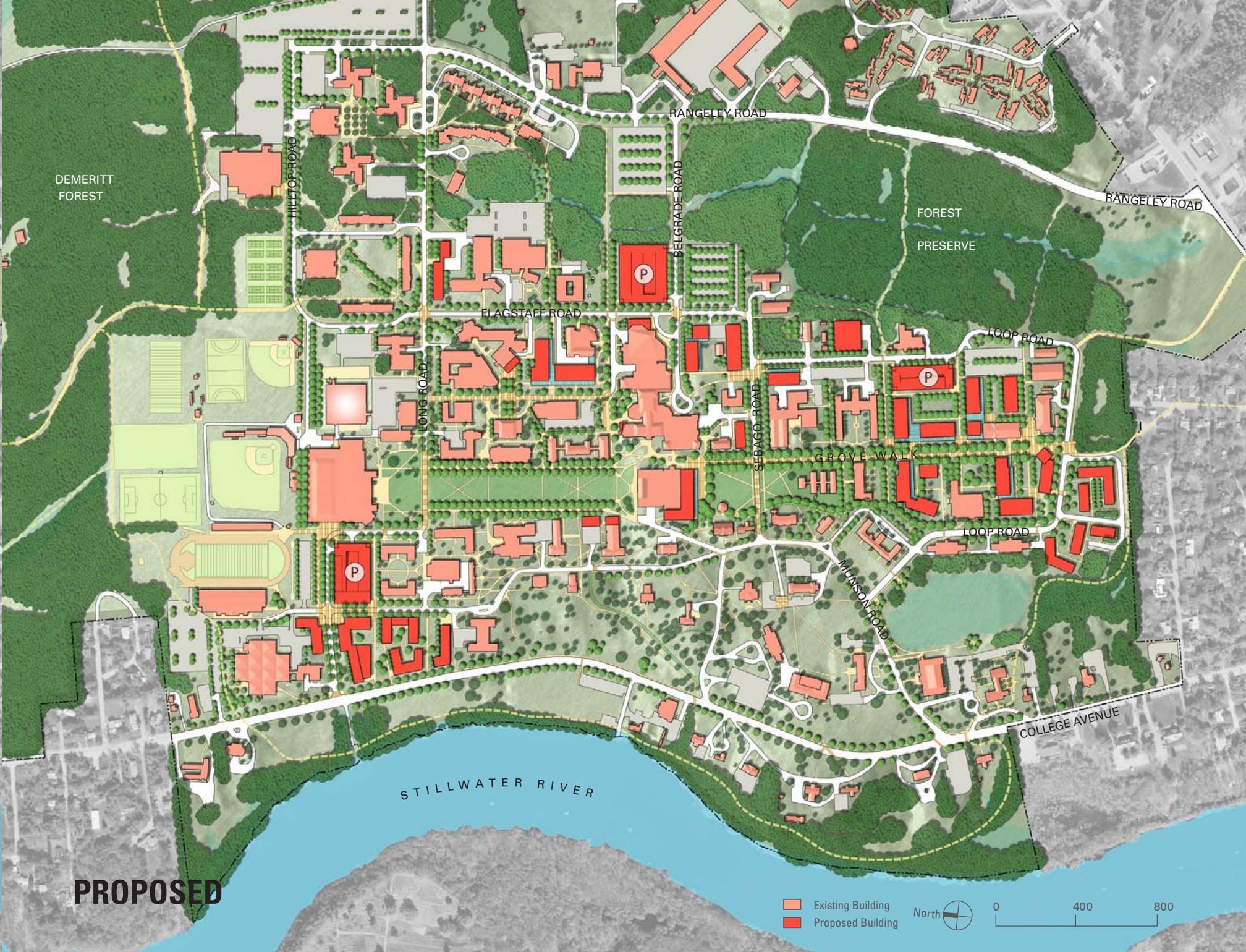
STILLWATER RIVER

COLLEGE AVENUE

EXISTING

- Existing Building
- Building to Be Removed





DEMERITT
FOREST

HILLTOP ROAD

RANGELEY ROAD

BELGRADE ROAD

FOREST
PRESERVE

RANGELEY ROAD

FLAGSTAFF ROAD

LONG ROAD

P

LOOP ROAD

P

GROVE WALK

LOOP ROAD

P

MUNSON ROAD

COLLEGE AVENUE

STILLWATER RIVER

PROPOSED

Existing Building
Proposed Building



0 400 800

S A S A K I
C O P L O N A S S O C I A T E S