University of Minnesota-Morris

campus master plan 2008

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EXECUTIVE SUMMARY

Because master planning is a specialty at oslund.**and**.assoc. (OAA), we are intimately familiar with the best methodologies and how those can be joined with campus goals and an overall vision to create a dynamic master plan. We passionately advocate to our clients the critical importance of the master plan as an “organic, living document,” one that must be relevant immediately and remain so for years to come. This is not a “New Master Plan — it is an evolution of the 1995 Master Plan, which Tom Oslund helped to develop while working at Hammel Green and Abramson, Inc. It has been updated to account for changes that have occured on campus since 1995, and it has been modernized to reflect current campus needs, and ideals of today. The 2008 Master Plan is designed to be future-focused, flexible, phased for implementation.

At OAA, the idea of shaping a campus space for current and future generations entails not only providing places for social, physical, and intellectual interaction, but it is also about sculpting these same open spaces into artful forms that act as a breath within their given context. We feel that through design, there exists the possibility of discovery - a discovery that comes from gracefully combining an attuned observation of contextual considerations, cultural understandings and economic realities within a deliberate programmatic focus. This is the basis for all creative expression, and the cornerstone of our design philosophy.

OAA, working in concert with Kandiyohi Development Partners (KDP) and Elert & Associates, crafted a master plan document that is far-reaching and comprehensive in nature. Analysis was completed by all the team members at the outset of the project, studying environmental influences, building siting, traffic flow, parking, solar orientation, and many more elements. This information was compiled and synthesized and prepared for presentation. Next, an on-site design charrette and initial review of master plan guidelines and principles was held in Morris with members of the campus master planning committee. At this charrette, committee members were asked to “design the campus”, as well as consider how the guidelines and principles should affect their designs. 3 groups were created and assigned to draft their respective plans. Each group then assigned a spokesperson that presented their thoughts and perspectives on how they would shape the master plan.

OAA then synthesized all this information, including the analysis done by KDP, to offer the committee 3 distinct schemes for consideration. The analyses, a review of the charrette process, goals and principles, and the 3 initial schemes were presented to the master planning committee and representatives from the State Historic Preservation Office in December 2007. Taking the feedback from these presentations, OAA started refining the plans into a hybrid scheme, while KDP began creating GIS maps and studying their analysis to interpret and reveal the best sustainability recommendations for the Morris campus. The first hybrid scheme was presented in January 2008. Again, taking feedback from the committee, the hybrid was further refined.

At this point in the process we began to integrate the Historic Preservation plan directives into the master plan, ensuring that we adhered to the recommendations of the previously created document. In late March 2008 we brought a second hybrid to Morris for discussion with the Historic Preservationists, as well as the master planning committee. After this meeting we refined the hybrid into its final master plan form. We also presented a review of the technology analysis that was being completed by Elert & Associates.

Additional comments were taken and used to refine small pieces of the master plan. Drafts of KDP’s portion of the master plan, as well as Elert’s full analysis and recommendations were sent to Morris for review at the beginning of April 2008. Following the receipt of comments on the aforementioned components, a final comprehensive draft was crafted for review and edited into what is now before you.

We feel this master plan will offer the University of Minnesota Morris a clear guide to its future development, its decisive and precedent-setting move towards self-sufficiency and sustainability, and if stewarded with deep conviction, will create a campus rooted in the DNA of it’s place.

Tom Oslund, FAAR, FASLA
Principal

David Motzenbecker
Associate

Sandra Rolph
Associate

Michael Krause
Principal

Craig Wilson
Principal

oslund.**and**.assoc.

kandiyohi development partners

PROCESS OVERVIEW

Each master plan begins with the exploratory process of analysis, interpretation, and synthesis of the gathered information. At the University of Minnesota Morris (UMM) we began with a macro view, zooming in over time to look at smaller and more detailed views and influences on and surrounding campus. These analyses were conducted by both oslund.**and**.assoc. (OAA), Kandiyohi Development Partners (KDP), and Elert & Associates. Each consultant was charged with the study of a specific realm - site, environment, and technology - and all the interlocking and overlapping instances that came along with those studies. OAA looked at the campus as an entity that stands within the borders of a small Midwestern town. OAA also evaluated how various influences affected the campus within this context - where the edges of campus are perceived to be, traffic patterns in and around campus, impervious surface, open space, historic influences, and a photo analysis of campus spaces - to name but a few.

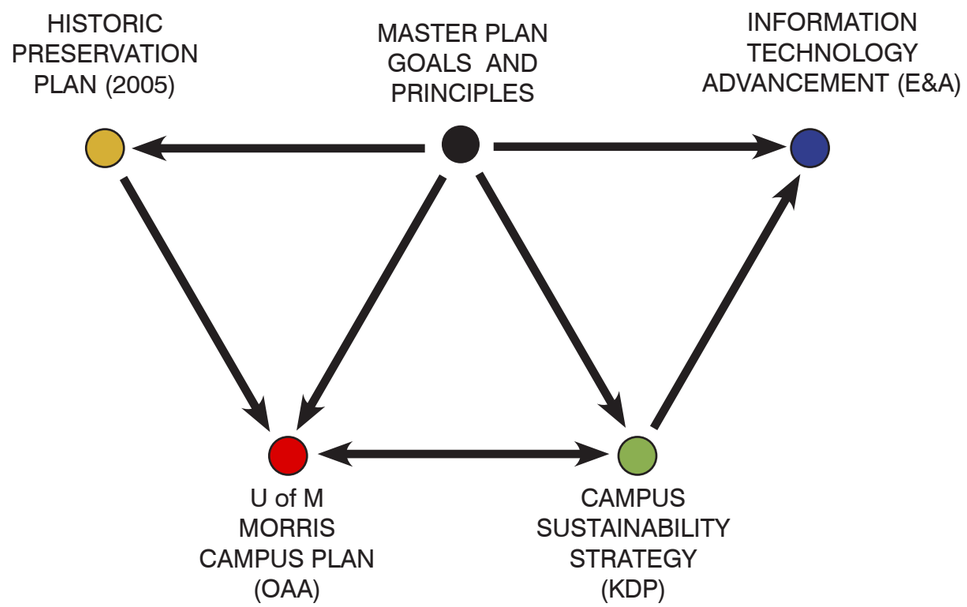
KDP began exploring more data-intensive influences that related to sustainability and how that can be integrated into the future long-range plan for UMM. Elements such as geology, solar insolation, drainage, depth to bedrock, land cover, wind direction, and watersheds; among others, were compiled into GIS maps that allowed for detailed interpretation. Elert began comparing technology across peer institutions in the areas of infrastructure cabling, data centers, LAN, wireless LAN, phone systems, and AV/Multimedia.

After analysis is complete, the process moves into schematic design. Schematic design involves the synthesis of information gathered in the previous phase with new understandings gained from steering committee meetings, on-campus charrettes and general observation into schematic ideas for how the campus might be shaped. Three distinct options were presented at the conclusion of this phase for comment and refinement.

The Design Development phase takes the favored concept or ideas from multiple concepts and generates a single, refined plan for review and commentary. During this phase, more and more detail is added to the plan so that it addresses specific needs identified during earlier phases.

As the process wraps up, a final master plan design is reviewed and agreed upon and then the crafting of this document begins. The process closes out with the submittal of this document for reveiw and refinement, and finally the presentation of the final document to the Steering Committee and the Chancellor.

The process diagram (below) was developed to help readers understand the complex interrelationships that were present during this master plan update, and how they work together and influence each other. Everything in the master plan was driven by the Goals & Principles that were agreed upon by the master planning committee at the outset. With this understanding, it can be seen diagrammatically, that all things move outward from the Goals & Principles circle.



The surrounding circles are placed in order from left to right in order of spatial magnitude. For instance, the Historic Preservation Plan is incredibly spatial in its recommendations and desires, as is the Campus Plan. the Sustainability Strategy, while influencing spatial decisions, is inherently less spatial as a singular entity. The same can be said for the Information Technology Advancement category.

As the reader moves through the document, this diagram will be seen in the lower corner of certain pages. It can be seen in these instances as a reference point, telling the reader which component of the plan is being discussed and the reader can also determine which other factors influenced the particular component they are reading about.

Also, the colored dots are used, singularly, as reference points throughout the Recommendations section of the master plan. For example, in the Sustainability Recommendations the dots are green, but where there are instances of the Sustainability Recommendations referencing a Campus Planning/Spatial strategy, a red dot is added and that section has bold type - making it easier to cross-reference. The same technique holds true in the other Recommendations sections.

2008 MASTER PLAN GOALS AND PRINCIPLES

The following goals and principles● were defined by the campus planning committee during the initial stages of the master planning process. The integration of recommendations related to Campus Planning●, Historic Preservation●, Sustainability●, and Technology Advancement● objectives directed the evolution of a plan for Morris' future that also reflects the history of Morel & Nichols' Garden Campus.

● MASTER PLAN GOALS

- Establish and craft campus gateways. Create a sense of arrival.●●
- Build a clear system for self-orientation and navigation on campus that extends beyond the edges of campus and into the greater Morris community.●
- Facilitate and encourage multimodal transportation on campus and throughout the surrounding neighborhood.●●
- Address the best solution for parking and building accessibility.●●●
- Define and Activate a Sustainable Campus Management System to help achieve campus sustainability goals by 2010.●
- Visually showcase UMM's green strategy, efforts, and accomplishments.●●●
- Continuously advance communications and technology resources.●
- Honor Miller Field and other historically significant sites on campus in accordance with the Historic Preservation Plan.●●
- Identify opportunities and constraints to future growth and expansion.●●●●
- Improve the student residential experience on campus, including day and night-time programming and circulation.●●

● GUIDING PRINCIPLES

ARRIVAL and CONNECTION:

- Clearly defined campus edges, visual cues, and entry points will be built into the new UMM Master Plan, setting the stage for campus arrival from all directions and instilling a feeling of transition from community to campus.
- A safe, multimodal transportation system, including pedestrian, cycle, automobile and bus networks will traverse campus and pass through the gateways into the neighboring community, pushing sustainable transportation ideals beyond the campus edge.

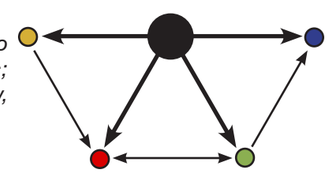
CAMPUS TRANSPARENCY and ORIENTATION:

- Opportunities to open clean, aesthetic view sheds will be paired with visual cues, systematic signage plans, and simplified circulation networks throughout campus, improving orientation and way-finding.

PERPETUATE A SUSTAINABLE STRATEGY:

- A sustainable strategy will be initiated by establishing initial goals; such as energy self sufficiency by 2010, the development of a more localized food system, and improved storm water management.
- The strategy will also include procedures for identifying new sustainability goals and tracking the campus' progress towards them. This may be directed with reference to a structured environmental management system (EMS), such as those prescribed by the International Standards Organization (e.g., ISO 14001).
- GIS will be continually supplemented and enhanced as a living, organic assessment tool, helping to a) identify opportunities for environmental action, b) set optimum sustainability objectives, c) monitor and assess the campus landscape structure and health, and d) record the progress of UMM's Environmental Management System (EMS).

The Goals and Guiding Principles point to all four aspects of the Master Plan Process; Historic Preservation, Planning, Sustainability, and Technology Advancement.



2008 CAMPUS PLAN

The final master plan for the University of Minnesota Morris is a very strong representation of the collaborative nature that this planning process offered. Many thoughts from multiple constituencies found their way into this final design.

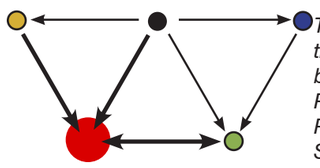
We feel that this plan offers the University a strong roadmap for a sustainable and forward-thinking, precedent-setting future. By reducing the campus entry points and enhancing those remaining, by clarifying the loop road circulation system, and by introducing roundabouts at key decision points, and by adding clear signage at these points of reference; campus wayfinding will certainly be improved.

A new quad space, surrounded by uses that reflect the campus commitment to sustainability and the 21st century, creates a new gateway and front door to the campus. The new green residence hall is a focal point, visually showcasing the green commitment to prospective students.

Campus walkability and connection to the town beyond has been improved and focused. Parking has been reconfigured, as has been access to the RFC. The re-alignment of 2nd Street is a strong move towards integrating both sides of the campus into one contiguous whole. This also helps reduce campus through-traffic and offers a place for stormwater gardens - another locale to showcase the sustainability practices in place on campus.

Wetlands have been recreated. Facilities services have been concentrated. Jewel box greenhouses line the new quad and offer iconic focal points near the entry roundabout.

We feel this plan will offer Morris a clear framework for expansion and growth during the next 20 years. As with any master plan, the document is to be considered organic and flexible to change along with the evolution of the campus.



The spatial organization of the Campus Plan was driven by Master Plan Goals and Principles, Historic Preservation Plan Recommendations and Sustainability Strategies.

2008 CAMPUS PLAN - PHASE 1

Phase 1 focuses on the development of the new Highway 59 Entry Drive and a new 'Green Quad', both of which are surrounded by uses that reflect the campus commitment to sustainability.

Highway 59 Entry Drive:

- Re-alignment and extension of Prairie Lane to the new Green Quad.
- Construction of a new campus entry gate on Highway 59 and the traffic circle welcome point.
- Restore the wetland to the north of the baseball diamonds. Design and construct a series of swales to drain into the restored wetland, and create new wetlands north of the east parking lots.
- Establish trees and plantings along the new entry drive following sustainability guidelines and recommendations in the Historic Preservation Plan.

New Green Quad

- Renovate existing roads/paved surfaces and construct new road segments to complete a one-way loop around the quad. This includes street parking areas along the south edge of the quad.
- Construct the new Green Dormitory at the east end of the quad.
- Re-locate the transportation garage and facilities storage buildings from the north parking lot to a new facilities buildings area adjacent to the practice field.
- Construct the new anaerobic digester and compost facilities in the new facilities buildings area.
- Remove the central parking lot and expand the north parking lot. Construct planted infiltration basins in the islands of the new lot to infiltrate storm water.
- Construct a row of 'jewel box' conservatory greenhouses along the north edge of the new quad to house campus food production programs.

Pedestrian Circulation

- Remove the north segment of Martin Luther King Jr. Drive and close the 7th Street Entry to vehicular traffic. Restore the north and west windbreaks.
- Re-establish the northern segment of the historic North-South Axis as a pedestrian and bike route to the center of campus. Include orientation signage at the new entry point.

2008 CAMPUS PLAN - PHASE 2

Phase 2 focuses on the re-alignment of 2nd Street towards the establishment of a loop road around campus. This will foster a more pedestrian-oriented campus environment and build safer connections to the RFC for both community and campus users.

Parking and Vehicular Circulation:

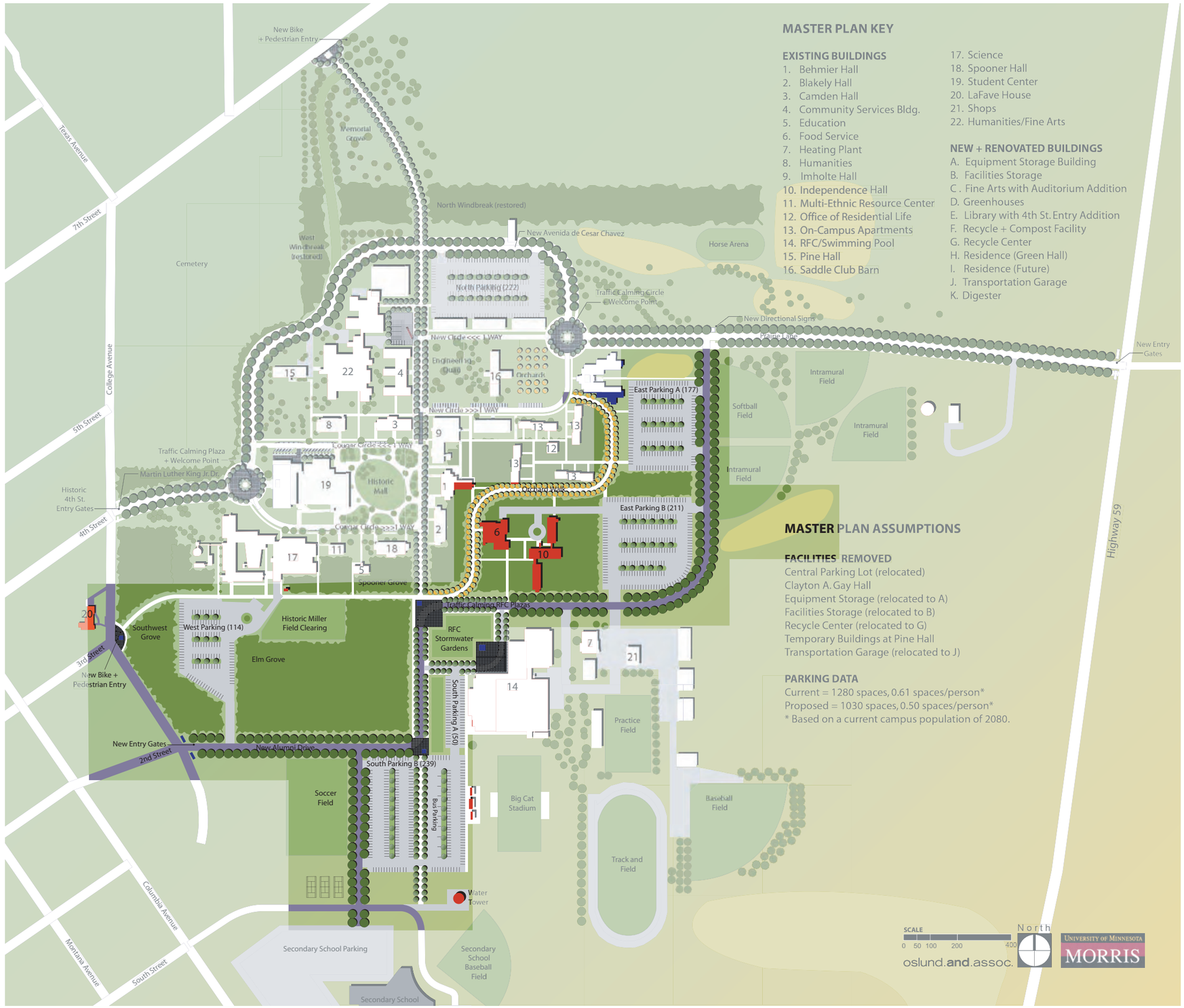
- Re-align 2nd Street to connect to the new Highway 59 Entry Drive. Establish a new entry gate with orientation signage at College Avenue.
- Construct the new drop off loop and South Parking 'A' lot to accommodate parking for accessibility to the RFC.
- Expand the South Parking Lot, including the bus loading zone. Construct planted infiltration basins in the islands of the new lot to infiltrate storm water.
- Extend a new road from the loop drive southwards to connect to the parking areas at the secondary school. Establish a system for sharing parking and athletic facilities (e.g. new tennis courts) between UMM and the secondary school.
- Expand and divide the east parking lots. Construct planted infiltration basins in the islands of the new lot to infiltrate storm water.

Pedestrian Circulation

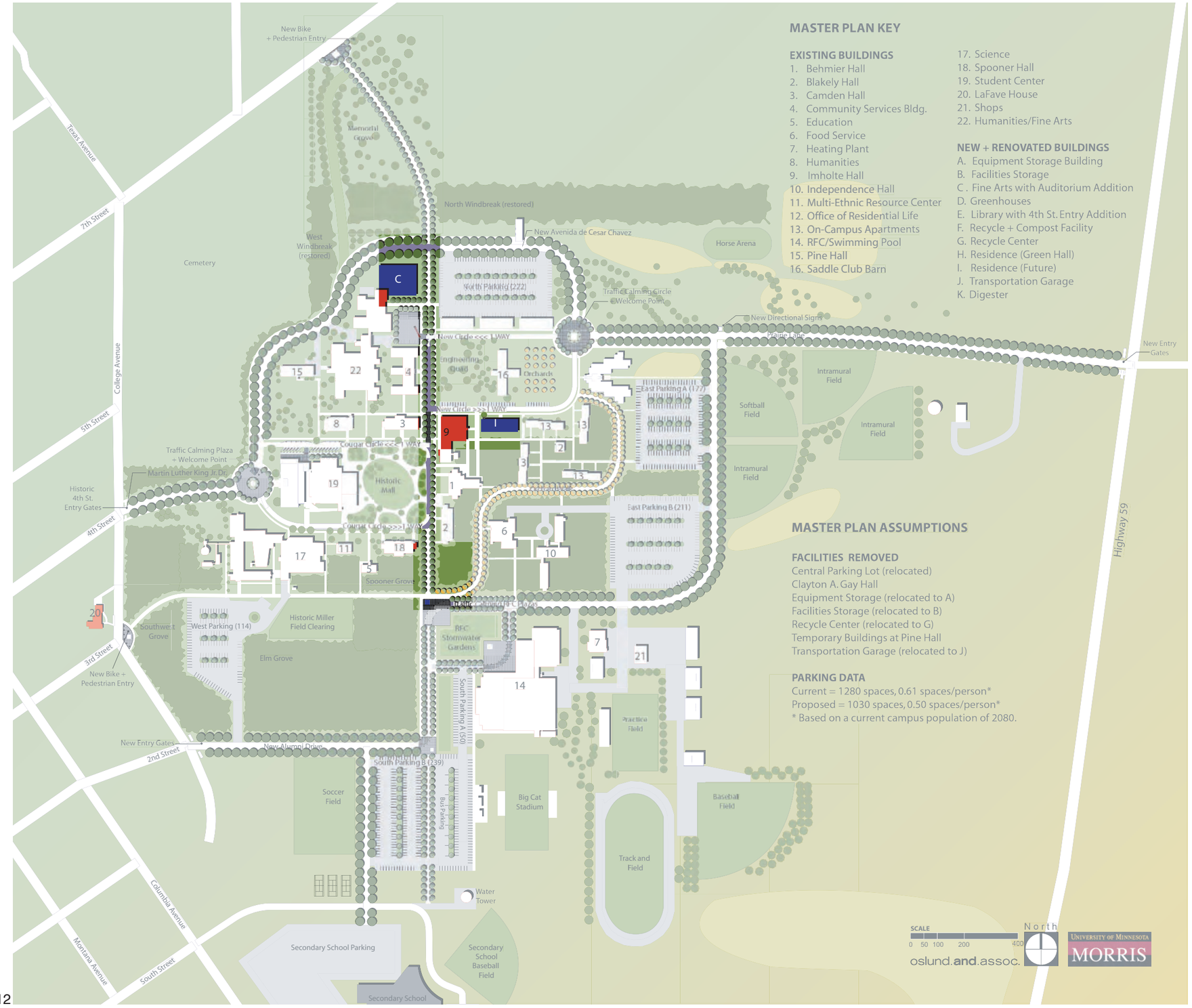
- Construct the RFC entry plazas to calm traffic and orient pedestrians travelling between the campus and the RFC
- Connect pedestrians from the North-South Axis at the RFC to the campus residence halls and the new dormitory via the new Orchard Walk.
- Connect the pedestrian walkways through the Southwest Grove, along the north edge of Miller Field, and through Spooner Grove to the Orchard Walk at the intersection with the North-South Axis.
- Establish a new pedestrian entrance plaza, including orientation signage, at 3rd Street and College Avenue.

Stormwater and the Environment

- Construct a new wetland for storm water retention and filtration south of the baseball diamonds.
- Build the RFC Stormwater Gardens to infiltrate stormwater and increase the visibility UMM's commitment to environmental sustainability.
- Restore the Elm Grove and plant boulevard trees along the new Alumni Drive loop road following the recommendations outlined in the Historic Preservation Plan.



2008 CAMPUS PLAN - PHASE 3



Phase 3 focuses on the restoration of the Historic North-South Axis and the completion of a campus-wide pedestrian/bike circulation system.

Pedestrian Circulation

- Restore the North-South Axis through central campus. The north and south portions of the axis are pedestrian/bike paths. The character of the axis should follow historic streetscape patterns where vehicular traffic is permitted through the historic district.

- Construct a driveable plaza that maintains ties to the historic streetscape character between Camden and Social Science. Design this space to calm traffic and promote a safe, pedestrian-oriented environment.

New Facilities

- Remove Gay Hall to re-open the North-South Axis.

- Construct a new residence hall (to replace Gay Hall) on the south edge of the Green Quad. Green building principles, should be employed, similar to the design principles in the new dormitory at the East end of the Quad.

- Construct the new Fine Arts Auditorium Addition.

2008 CAMPUS PLAN - PHASE 4

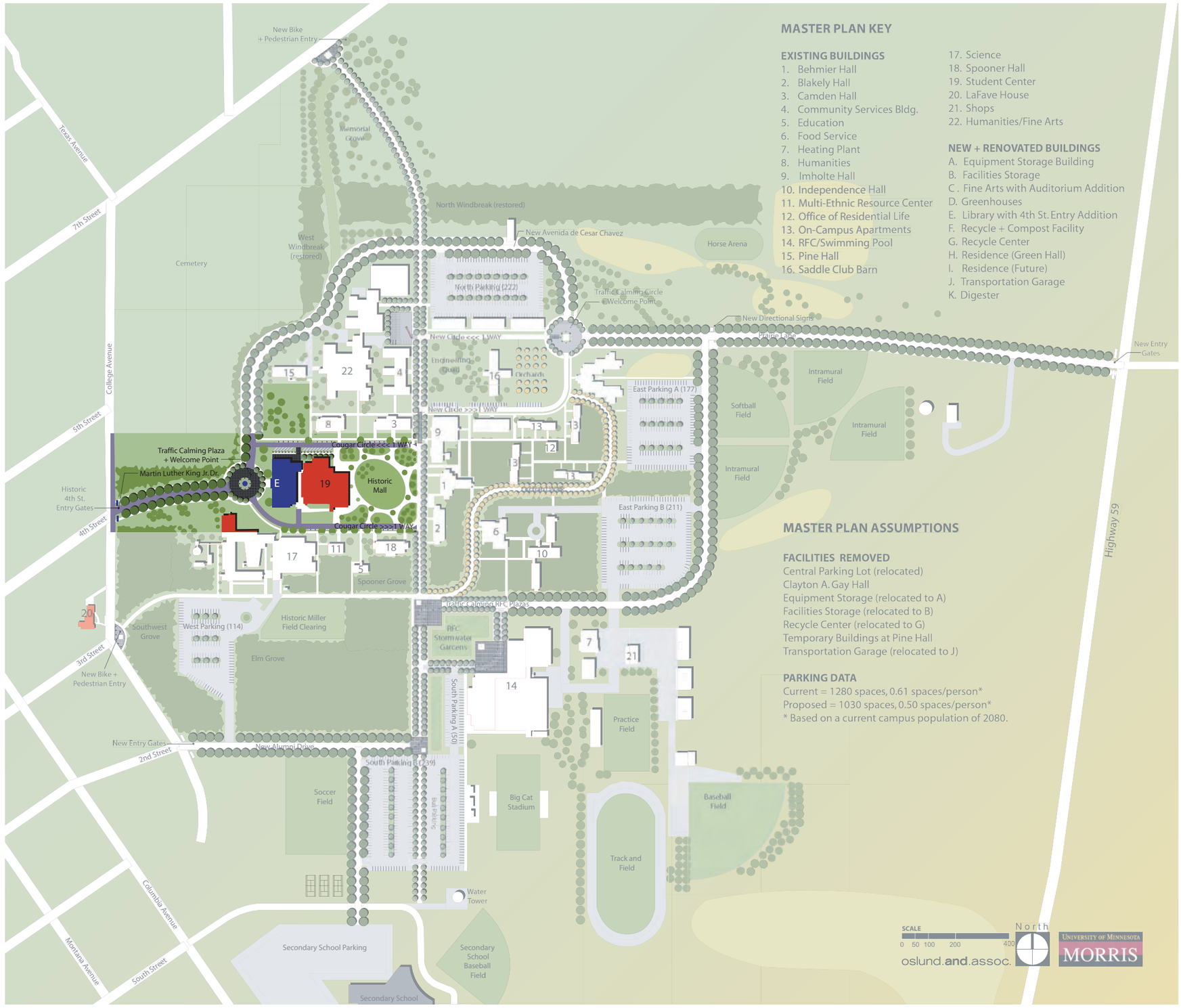
Phase 4 focuses on the expansion of the Library and the development of a 4th Street Entry welcome point to enhance the arrival experience on the West side of campus.

Parking and Vehicular Circulation:

- Construct a welcome plaza loop in front of Briggs Library to calm traffic and orient visitors arriving from the West.
- Convert Cougar Circle to a one-way loop to improve pedestrian safety. Maintain and restore the historic character of the streetscape.
- Add street-angled parking spaces to the north side of Briggs Library for accessibility.

New Facilities

- Design and build an addition to Briggs Library to enhance the arrival experience to campus from the 4th Street Entry (i.e., a new 'front door').
- Remove the temporary buildings on the north side of Cougar Circle and restore the historic nature of the Pine Hill Glen open space.

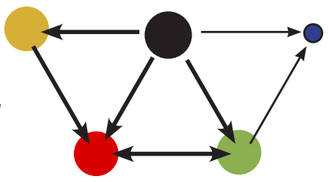


SPATIAL INTEGRATION MATRIX

The Spatial Integration Matrix identifies the goals and recommendations of the Master Plan, Sustainability Plan, and Historic Preservation Plan that are spatially oriented, and links them to their incorporation into the 2008 Campus Plan.

	GOALS, STRATEGIES and RECOMMENDATIONS	CAMPUS PLAN INCORPORATION
CAMPUS PLAN GOALS	ARRIVAL: Establish and craft campus gateways. Create a sense of arrival.	Main vehicular entry points are defined with new entry gates. Curving drives from the 4th Street and Highway 59 entrances lead to traffic calming circles/welcome points that direct traffic. North and South Loop roads concentrate traffic flow around the campus to perimeter parking lots. Vehicular access and parking in the central quads is limited to accessibility or short term parking and passenger drop off, thereby maintaining a pedestrian-oriented campus core.
	NAVIGATION: Build a clear system for self-orientation and navigation on campus that extends beyond the edges of campus and into the greater Morris community.	
	TRANSPORTATION ALTERNATIVES: Facilitate and encourage multimodal transportation on campus and throughout the surrounding neighborhood.	A new bike and pedestrian circulation system crosses the Morris Campus. Bike and Pedestrian entry points are enhanced with signage and campus-community transition plazas at the 7th and 3rd Street entrances.
	SUSTAINABLE PARKING AND ACCESSIBILITY: Address the best solution for parking and building accessibility.	The Campus Plan focuses on a balance between the improved sustainably and appearance of perimeter parking lots and handicapped accessibility parking near buildings with the greatest community use. This includes the Library, Student Center, RFC, Fine Arts Addition, and Community Services Building.
	VISIBLE SUSTAINABILITY: Visually showcase UMM's green strategy, efforts, and accomplishments.	The Highway 59 entrance drive passes through storm water swales and restored wetlands to a new Campus Quad that features a Green Dormitory. Central orchard/garden plots and a row of conservatory greenhouses along the North edge of the quad exhibit Morris' sustainable food production strategy.
	RESIDENTIAL LIFE: Improve the student residential experience on campus, including day and night-time programming and circulation.	The North-South Axis and Orchard Walk pathways give priority to safe bicycle and pedestrian circulation between campus residence halls, the RFC, parking lots, classroom buildings, and the neighboring community.
	SUSTAINAIBILITY GOALS: Activate a sustainable campus management system.	See Sustainability Strategies, below.
	HISTORIC PRESERVATION: Honor historically significant sites in accordance with the Historic Preservation Plan.	See Historic Preservation Plan recommendations, below.
SUSTAINABILITY STRATEGY	SLOPE STABILITY, NATIVE PLANT COMMUNITIES and BIODIVERSITY: Re-forest upland areas and restore lowland grass and pasture to native prairie.	The Campus Plan illustrates the proposed restoration of the historic North-West windbreaks, The Southwest Grove, Elm Grove, Spooner Grove and Hillside, and the East Terrace.
	STORM WATER MANAGEMENT: Restore the wetland to the North of the baseball diamonds. Design and construct a series of swales to drain into the restored wetland (above). Create new wetlands North of the East Parking Lots and South of the Baseball Diamonds. Maintain the existing NWI emergent marsh/wet prairie along Highway 59.	These areas are included and reserved on the Campus Plan as part of an effort to implement sustainable storm water best management practices (BMPs) recommended in the sustainability strategies.
	WINDBREAKS: enhance coniferous plantings on the North and West sides of buildings.	The Campus Plan illustrates the proposed restoration of the historic North-West windbreaks and conifer groves.
	SUSTAINABLE TRAVEL: Create a hierarchy of roads, bike trails, pedestrian walkways, and campus entrances that enhance the walking / biking experience.	The North-South Axis and Orchard Walk pathways give priority to safe bicycle and pedestrian circulation between campus residence halls, the RFC, central campus, and the community.
	LOCAL FOOD SYSTEM: Integrate on-campus greenhouses into the campus food system.	Conservatory-like greenhouses line the North edge of the new campus quad (D).
	WASTE REDUCTION and RENEWABLE ENERGY: Construct a covered, open-air compost facility and an anaerobic digester facility into the campus waste system to dispose of organic waste and produce renewable energy.	The compost facility (F) is located in the South facilities area to minimize odor in the central campus area. The digester is also located in the Southeast facilities area near the existing heating plant (K).

Master Plan Goals, and the recommendations of the Historic Preservation and Sustainability Plans have a direct influence on the spatial organization of the Campus Plan.

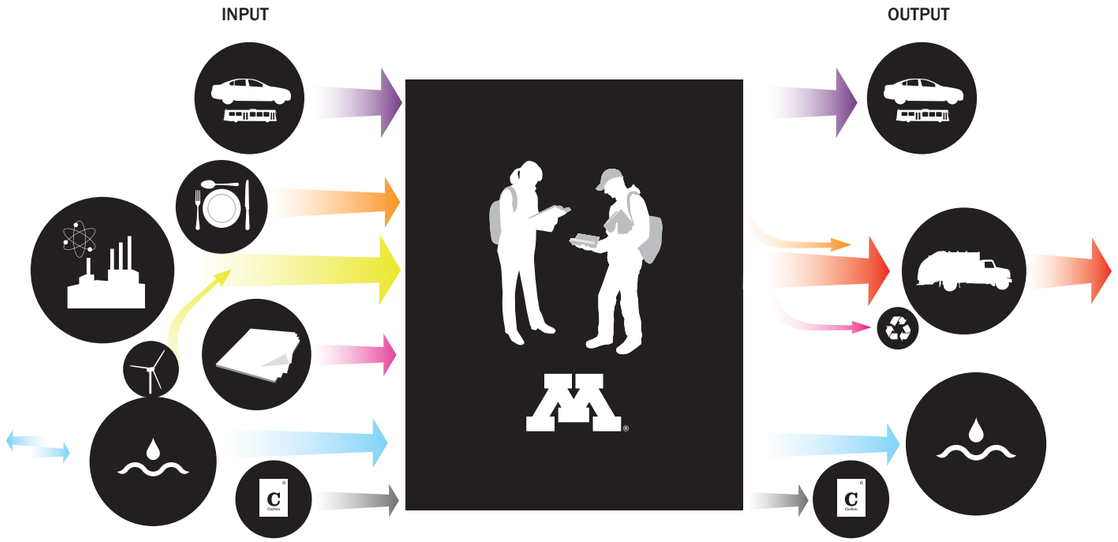


HISTORIC PRESERVATION PLAN RECOMMENDATIONS

GOALS, STRATEGIES and RECOMMENDATIONS	CAMPUS PLAN INCORPORATION
SPATIAL ORGANIZATION: Preserve the historic open spaces within the historic district and use an orthogonal approach to planning.	Where practical, historic spaces were retained and, in some cases, enhanced. The removal of two temporary buildings rejuvenates the Pine Hill Glen area, Miller field is defined as a clearing in a restored Elm Grove, The Engineering Quad remains as open space – creating a mirror image of the Historic Mall in the New Quad.
VEGETATION: Restore historic windbreaks. Retain and replace street trees and historic plantings in accordance with historic patterns.	The north and west windbreaks have been restored. Historic boulevard patterns were retained and extended where new street trees and sidewalks were added.
CIRCULATION: Keep existing roads, sidewalks, curbing, and boulevards at their historic form whenever possible. Restore roadways that have been altered or lost, when feasible. Provide a clear public vehicular route around and through campus.	The path of the historic North-South axis was restored as a primary bike and pedestrian access route – this fosters the historic aesthetic while advancing Morris' sustainability strategy and circulation goals. The tree-lined Highway 59 entrance drive gently curves through fields and restored wetlands – a complement to the 4th Street drive on the West side of campus. 2nd Street was re-aligned to yield an orthogonal spatial organization, and to slow traffic around the RFC. The perimeter drive defines a new edge to the expanding campus, and separates the major vehicular paths from a pedestrian-oriented environment at the campus core.
PARKING: Provide parking in perimeter lots rather than near the center of the historic district and its most important spaces. Design parking to be parallel to adjacent buildings, roads, or walkways. Add landscaping and islands.	Parking in perimeter lots was enhanced with islands for storm water infiltration and screening. Handicapped accessibility parking was added near buildings that are frequented by the community, such as the Library, Student Center, RCF, Fine Arts Addition, and Community Service Building.
4TH STREET ENTRY: Retain the configuration, scale, dimensions, and alignment of the road, sidewalk, grass areas, and tree structure. Restore the shape of the symmetrical entry drive as it divides west of Briggs Library.	The configuration and design of the 4th Street entrance drive was maintained to a new traffic circle. Building additions and the extension of Martin Luther King Jr. Drive limit the feasibility of restoring the roadway to its historic form. The traffic circle brings the continuity of the drive into the Mall area re-introduces symmetry to the present-day 3-way intersection.
MILLER FIELD and SPOONER GROVE: Retain what remains of the flat open plane, with no additional intrusions. Re-establish boulevard trees along 2nd Street. Maintain and rejuvenate existing pines, spruce, and crabapples.	The historic clearing of Miller field is defined and visually strengthened with restored Elm Grove and Spooner grove plantings. Boulevard trees are planned for the 2nd Street re-alignment. The East-West pedestrian-bike way passes through the restored plantings of the historic campus, and transitions to the new 'Orchard Walk' at the North-South Axis. Lined with apple trees, this part of the walkway exhibits Morris' localized food production strategy and the University's progress in fruit breeding and research.
NORTH-SOUTH AXIS: Should Gay Hall be removed in the future, reconstruct the street to 2nd Street. Retain the opening in the North Windbreak. Restore the character of the axis between Camden and Social Science, including essential elements of historic streetscape patterns	The South portion of the axis is restored to a pedestrian-bike path that connects the athletic facilities to central campus. The historic alignment of the axis extends through the North Windbreak and Memorial Grove to the original 7th Street Entry. The historic streetscape is restored at Camden Hall, where limited vehicular traffic is controlled and calmed with roadway paving and bollards.
ENGINEERING QUAD: Retain the quad as open space. Extend the Highway 59 entrance drive along the northern edge of the Quad. This will require removal of some of the spruce in the north windrow. Reconfigure the Central Parking Lot and eliminate elements that visually distract from the barn's distinctive appearance when approached from Highway 59.	The Engineering quad is retained as an open space that mirrors the Historic Mall. Additional improvements to this area, such as spruce grove remediation and Saddle Club barn restoration, will help to enhance this expanding part of campus while preserving its historic aesthetic. The central parking lot was replaced with orchards/gardens for campus food production, with limited parking along the south edge for short-term parking and handicapped accessibility. This quad exhibits a progressive green strategy in a historic context.
FARM BUILDINGS AREA: Remove the Transportation Garage, shifting major service functions to the Heating Plant area of campus. Use its site for open space, part of the North Windbreak, and/or part of a new North Parking Lot.	Major service buildings were re-located to the South facilities area. The historic seed house is retained along the north edge of the new Avenida de Cesar Chavez within the extended windbreak and boulevard trees.
PINE HILL GLEN: Retain the zone's open lawn and ground plane to retain its traditional functions.	The removal of the temporary science buildings restores this open space and its function for campus events.

SUSTAINABILITY STRATEGY

CAMPUS METABOLISM
Before



Reduction of Process of Environmental Footprint

CAMPUS METABOLISM
After

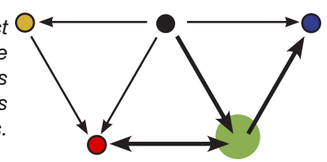
CAMPUS METABOLISM ANALYSIS

Any college campus is very much like a self-contained organism, with the movement in and out of large volumes of material and energy inputs, internal processes and by-product generation. In that sense, it is like the metabolism of an individual organism, but aggregated across all of the metabolisms within it, with metabolism defined as the series of reactions to various nutrients and stimuli that result in the sustaining of the organism over multiple generations. College campuses also need to sustain themselves, and they do that by reacting to the characteristics of their campus site, inputs of materials, energy and human intellect in ways that are designed to meet their institutional mission and perpetuate their existence.

The Metabolism Diagrams (left) provide an illustrative comparison of the Morris Campus Metabolism before (top) and after (bottom) implementing sustainable management strategies described in this plan (following pages). The size of the arrows represents the relative size of the material or energy flow through campus. Traffic will decrease as alternatives to personal vehicles increase (purple arrows). The input of food from external sources (orange inputs) decreases as food is procured locally and grown on campus. Food waste (orange outputs) decreases with the implementation of compost and hog facilities. Commercial waste reductions (red outputs) will also follow effective implementation and promotion of recycling programs and sustainable resource use. Energy from fossil fuels (yellow) decreases with additional renewable energy projects, such as the implementation of additional wind turbines, solar panels, and geothermal heat pump systems. Wasted stormwater will be reduced with the implementation of stormwater Best Management Practices (BMPs). These efforts combined will lead to a decrease in the overall carbon footprint of the Morris campus (grey arrows).

Recommended sustainability strategies are summarized on the following pages. These strategies follow a careful analysis the Morris Campus Metabolism using Geographic Information System technology (GIS) and available campus data. Red dots and bold type indicate strategies that are spatial in nature and relate to the campus plan from a sustainability perspective.

New Sustainability Strategies will affect the Campus Plan, as green infrastructure is proposed for the future. These initiatives will also drive the advancements of campus technology resources.



SUSTAINABILITY RECOMMENDATIONS

Elevation and Slope

- **Decrease erosion on areas with steep slopes by planting specially adapted native species** as suggested in Appendix 6: Species List of the U.S. Fish & Wildlife Service Morris Wetland Management District Comprehensive Conservation Plan and Environmental Assessment.

- The general slope of the campus to the east and south creates eastern and southern aspects which present opportunities for solar thermal or solar electric generation. (Refer to the Solar Insolation Analysis section later in this document).

- Much of the campus landscape is relatively steep (up to 12%), therefore, it is important to implement stormwater best management practices in order to increase infiltration, improve water quality and decrease water velocity before water reaches the Pomme de Terre River. (Refer to the Stormwater Analysis section later in this document).

- While slope analysis using the 1 to 24,000 scale 30m resolution DEM is useful for regional planning it is less useful for planning at a local scale. It is recommended that two foot contours be surveyed and stored digitally for the UM-Morris campus and surrounding land owned by the Regents of the University of Minnesota. This will be useful for many future environmental and physical planning endeavors.

Land Use-Land Cover, Natural Resources and Habitat.

- Existing native plant communities of moderate biological significance along the Pomme de Terre River present an opportunity to further augment the corridor of biological diversity between campus and the river. **Upland areas could be reforested and lowland grass and pasture land converted to native prairie.** We recommend that the UMM community initiate the development of this corridor and lead the Morris community in its implementation.

- Increasing biodiversity from the boundary of the City of Morris through campus to the Pomme de Terre River offers a design opportunity to transition from an urban, formal aesthetic to a natural, informal aesthetic. This differentiation would help emphasize the West side of campus as the “front door” of campus.

- Prioritize the planting of vegetation that provides food and habitat for wildlife as suggested in Appendix 6: Species List of the U.S. Fish & Wildlife Service Morris Wetland Management District Comprehensive Conservation Plan and Environmental Assessment.

- Update the campus tree survey for completeness.

- There is a large area of moderately significant plant biodiversity immediately adjacent to the campus where it is likely to experience impacts from campus activities. The University should consider “adopting” this natural area for ongoing study, perhaps benchmarking the area’s health as a biodiversity resource with other smaller, adjacent areas of moderate biodiversity value.

Geo-tech Analysis

- Stormwater should be managed to ensure that stormwater contaminants do not reach the shallow aquifer. The university should also have a hazard mitigation strategy for spills or leaks that may occur in areas with a shallow depth to the surficial aquifer, especially since parts of campus are overlain by porous soils and glacial deposits.

- While the underlying surficial geology of the Morris campus appears well suited for geothermal heat pumps, it is recommended that the University maximize use of its combined heat and power (CHP) system (also known as cogeneration). CHP systems generate electricity and thermal energy in an integrated system–in Morris’ case, from biomass, a renewable energy resource. To increase efficiency and reduce costs, the entire campus should maximize use of thermal energy recovered from the CHP system for its heating and cooling needs. Should the campus maximize its thermal energy efficiency (depending on the drain of the parasitic load on energy production), it is recommended that the University consider either expanding its CHP system or explore other options such as geothermal heat pumps.

Stormwater Analysis.

- **Restore the wetland north of the baseball diamonds**. It appears from the National Wetlands Inventory (NWI) that the wetland was likely an emergent marsh, however, a professional restoration ecologist should be consulted to determine the original wetland type and hydrologic regime, as well as for assistance in plant selection and maintenance. A study should be completed prior to restoration of this wetland, or other infrastructure creation described below, that identifies all subsurface drainage, specifically agricultural drain tile.

- **Create a series of dry to wet swales from west to east that drain to the restored wetland.** Swales consist of open vegetated channels and filter and slow stormwater (Shaw and Schmidt 2003). See Shaw and Schmidt (2003) for a list of native plants best suited for each type of swale and other BMPs discussed below. These swales would move from high to moderate slopes, and from well drained to poorly drained soils. The swales should have mild longitudinal and side slopes, or check dams where necessary.

- Although no major flooding has been observed near the storm sewer outlet near the baseball diamonds (R. Thompson 2007, pers. comm., Dec 11), it is recommended to move the outlet back across the road into the swale/wetland complex. This will prevent possible flooding, reduce pollutants, and better attenuate flows. Consulting with a licensed professional civil engineer and licensed professional ecologist will be necessary.

- **Creating a wet prairie or an emergent wetland to the west of the baseball diamonds** could provide substantial attenuation of stormwater runoff peak flow rates prior to stormwater discharge into the existing stormwater management system. Further site investigation would be necessary to validate this recommendation.

- **An existing drainage area south of the baseball diamonds would be well suited for the creation of a wet prairie or emergent marsh.** This would reduce contaminants, create habitat, and attenuate stormwater runoff.

- **An existing NWI emergent marsh/wet prairie along the western edge of Highway 59 could benefit from enhancement through native plantings and proper maintenance** to ensure success of native plants. It is likely that it is dominated by invasive plants and may not function optimally for habitat, water attenuation, and pollutant remediation due to the agricultural and urban land uses surrounding it. This area has a shallow depth to groundwater. Restoring natural ecological function is important to limit contamination from stormwater runoff.

- Evaluate the volumes and water quality of water being discharged into the Pomme de Terre from the campus and analyze the discharge in the context of the larger area, including any discharge into the river by the City of Morris.

- The large volumes produced by the sump pump in the Central Heating Facility could be treated and considered for cooling at the biomass gasifier cooling tower. The sump pump water may have to be treated, but additional research and testing would have to occur to determine the feasibility.

SUSTAINABILITY RECOMMENDATIONS

- A distributed system of harvested gray water integrated into the various campus buildings and sites would be the preferred source for water irrigation services. Over time, the systems can become self managing through the use of water/rain/moisture sensors, and solar pumps.
- The campus should adopt stormwater policies and best management practices (BMPs) as outlined in the Metropolitan Council's Urban Small Sites Best Management Practice Manual. It is available online at: http://www.metrocouncil.org/environment/Watershed/bmp/manual.htm. The manual consists of 40 BMPs that are aimed at managing stormwater pollution for small urban sites in a cold-climate setting and is divided into the following sections:

Runoff Pollution Prevention
Impervious Surface Reduction
- Street Design
- Cul-de-Sac Design
- Parking Lot Design
- Turf Pavers
- Green Rooftops

Housekeeping
- Pavement Management
- BMP Maintenance
- Landscape Design and Maintenance
- Animal Management

Construction Practices
- Grading
- Sequencing
- Vehicle Tracking Pad

Soil Erosion Control
- Mulches, Blankets, and Mats
- Vegetative Methods
- Structural Methods
- Sediment Control
- Silt Fences
- Inlet Protection
- Temporary Sedimentation Basins/Traps
- Check Dams

Stormwater Treatment BMPs
Infiltration Systems
- On-Lot Infiltration
- Infiltration Basins
- Infiltration Trenches

Filtration Systems
- Bioretention Systems
- Surface Sand Filters
- Underground Filters
- Filter Strips

Constructed Wetlands
- BMPs in Series
- Stormwater Wetlands
- Wet Swales

Retention Systems
- Wet Ponds
- Extended Storage Ponds
- Wet Vaults

Detention Systems
- Dry Ponds
- Oversized Pipes
- Oil/Grit Separators
- Dry Swales

Flow Control Structures
- Permeable Weirs
- Flow Splitters
- Proprietary Flow Control Devices

Regulation of Water Quality

Wind Analysis

- Evaluate the potential for existing and future buildings to use natural ventilation systems based on prevailing winds; this strategy could be particularly useful for reducing summer peak electrical loads to cool buildings when activity levels on campus are relatively low. The strategy includes focusing on placement of air intake systems and operable windows on the side of buildings facing the prevailing winds and creating corresponding outlets for ventilation on the opposite side. With new construction, natural ventilation can be incorporated into mechanical systems to supplement their air flow and reduce the need for energy.

- November through February wind roses should inform tree planting, including dense coniferous trees as a wind break as a suggested species choice.

- Temporary or permanent meteorological towers should be erected to evaluate sites proposed for future wind turbines. While turbines have anemometers on the leeward side of the nacelle, the wind speed data are often significantly affected by the turbulence created from the turbine blades. Accurate wind data is essential for validating and predicting energy production estimates.

- Develop a site-specific wind resource grid for use in optimizing the placement of future wind turbines.

Solar Insolation Analysis

- Create a solar strategy that new or remodeled buildings be outfitted to be "solar ready". That means structures are built with the capacity to carry the additional weight of a solar thermal or electrical system and electrical designs are installed that will facilitate bringing electrical power into the interior of the structure for use. This could be phased with buildings that are in high solar area zones, such as Gay Hall, the Science building and the M, L, K dormitories adjacent to the east parking lot.

- Solar thermal or solar electric installed in strategic locations can reduce energy costs, the campus carbon footprint, and provide demonstration, learning, and research opportunities for staff and students.

- Solar lighting or signage is an opportunity at the gateway, or throughout the campus landscape.

- Deciduous trees planted along the southern facades of buildings will help decrease solar gain in summer months. When leaves drop in fall, light and thermal energy passes through the tree canopy to increase solar insolation.

Food Service Analysis

- Include in the next food service contract a requirement that the contractor must provide data on procurement and carbon footprinting to the best extent possible.

- Develop an ongoing research project on the details of the carbon footprint for the campus food system by looking at the carbon footprint of specific food items.

- Set targets for increasing the overall percentage of organic and locally-sourced food in the campus food system. UMM should target 50 percent by 2013.

- Review menu planning to establish a more seasonal menu plan based on the seasonal availability of local ingredients.

- Identify a source of local, grass-fed beef as the top priority, followed by organic pork and chicken, as well as vegetables, as an initial step toward more local sourcing of food supplies.

- **Conduct a study on the cost-effectiveness of an on-campus greenhouse system.**

SUSTAINABILITY RECOMMENDATIONS

- Evaluate a shift to a made-to-order food ordering system.

Travel Analysis

- Campus vehicle fleet should continue to be gradually converted to alternative fuel based and hybrid technologies.
- Purchase a “green” bus which uses hybrid technology, alternative fuels or both for campus purposes and look at ways to reduce private vehicle miles by using the bus for coordinated trips and links to regional transit systems, such as the North Star Corridor train.
- Diesel fueled vehicles should be outfitted with diesel particulate filters to reduce emissions.
- Preferential parking should be provided for hybrid, alternative fuel, or carpool vehicles. The preferential parking areas should be in existing parking areas, but closest to classrooms, dorms and other campus buildings and signed appropriately.
- Financial incentives for students living on campus for choosing not to bring their car to campus (i.e., reduced residential fees)
- Implement a shared vehicle system, such as the Hour Car program in the Twin Cities. (www.hourcar.org)
- Evaluate travel patterns for opportunities to create carpooling opportunities. One option would be to provide “Park and Ride” lots in strategic locations for carpools.
- Convert excess existing parking to green spaces or other uses over time.
- **Create a hierarchy of roads, bike trails, pedestrian walkways, and campus entrances that enhance the walking / biking experience in order to encourage less intra-campus automobile use.** This will clarify that, as a policy matter, the safe movement of pedestrians and bicyclists on campus is the top transportation priority and not the movement of vehicles. This principle should be held in mind for future campus planning that impacts the movement of people and vehicles.

Waste Management

- **Of the aforementioned strategies, UMM should focus initially on the feasibility of an industrial composting system**, which should include capital costs, procurement, etc. The major advantage of this system is its ability to accept paper and meat-based waste for its composting process.
- Complete a thorough waste analysis and composition study for the campus.
- Conduct a cost benefit analysis of an industrial composting system.
- Expand educational efforts related to recycling and waste reduction with students and staff.

Utility Infrastructure

- We concur with the recommendations put forth in the McKinstry study, which are listed in their report.
- Further evaluate opportunities for solar lighting on campus along pathways and on the exterior of buildings were the costs of connection to the electrical grid system tends to be higher and offsets the costs of the solar lighting application.

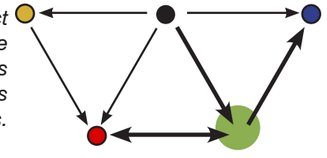
US Green Building Council LEED® Certification

- Designation of a LEED project area that will be the future reference point for density and community connectivity calculations.
- Designation of preferred parking areas to be located in close proximity to building entrances and other desirable locations for alternative fuel and commuter/car pool vehicles.
- Integration of a campus wide stormwater management plan using distributed technologies.
- Exterior lighting plan, which can be included in energy modeling and renewable energy calculations. Note: we did not see any reference to solar exterior lighting in the McKinstry report and recommend that these lighting systems be evaluated for exterior applications.

Developing a Carbon Footprint for UM-Morris

- Define the methodology. The best tools for methodology are the GHG (Green House Gases) Protocol tool from the World Resources Institute and the World Business Council for Sustainable Development (www.ghgprotocol.org). There is another format that has been developed as an ISO standard, ISO 14064 and available at www.iso.org.
- Specify the boundary and scope. In instances where a large institution such as UM-Morris wishes to understand its carbon footprint, we believe it is essential to include in the analysis indirect sources that contribute significantly to an overall carbon footprint, including the campus food service, transportation to and from campus by students and staff, material procurement, and events sponsored by the campus. Campus stakeholders should have a discussion of what might be the appropriate boundary for future LEED purposes. This will be a useful segue into the broader discussion of LEED issues.
- Collect data and calculate the footprint. The primary data sources are onsite fuel consumption, campus transportation use, any on-campus processes that generate emissions, electrical consumption, student and staff travel in vehicles not owned by the University. A secondary set of data and calculations need to be done for supply chain emissions, including primarily the campus food system and more general materials procurement on campus.
- Independent Review. It is often recommended that the campus footprint analysis be verified or reviewed by an outside entity, although this is not generally necessary if the program is to be used primarily as in internal management tool. This capacity is best developed as an internal function, although it may be desirable to have an outside entity assist the campus with establishing its structure and operating procedures.

New Sustainability Strategies will affect the Campus Plan, as green infrastructure is proposed for the future. These initiatives will also drive the advancements of campus technology resources.



TECHNOLOGY ASSESMENT RECOMMENDATIONS

oslund.**and**.assoc. retained Elert & Associates to assess the status of the UM-Morris's technology systems and compare their status with other Elert & Associates higher ed clients. Elert & Associates reviewed UM-Morris data network, wireless data network, phone system, cabling infrastructure, and AV-multimedia systems. The following section provides recommendations to close the technological gap with other colleges and universities.

Technology Cabling Infrastructure

Elert & Associates recommends that UMM replace the cabling in the wiring closets where Category 5 cabling is installed and terminated on 110 blocks. UMM should strive to maintain at least Category 5e for horizontal copper distribution. This will allow for Gigabit Ethernet transmission to the desktop as required. The cost estimate to upgrade the horizontal cabling at UMM is **$1,750,000**.

Elert & Associates recommends that when cabling upgrades or building renovations take place that UMM install 50 micron fiber for internal building fiber backbones.

After touring a handful of wiring closets on the campus and with the help of Morris IT personnel it was deemed that 19 of the 51 wiring closets on campus are unacceptable for housing cabling and data electronics. Elert & Associates recommends that these spaces be modified to allow for better ventilation, cooling, and dedicated power. In spaces where the wiring closet is purposed for another function (janitor's closet, etc.), a new space near the existing space should be created. Some of these situations could be solved by installing either a floor-standing cabinet or wall-mount cabinet in a space that has better environmental conditions.

Wide Area Network

Since every college and university connects to their own WAN in their own way, it is hard to reach a consensus on which is the correct way of connecting to a WAN. Elert & Associates feels that UMM has an adequate amount of bandwidth in connecting to the MNET. However, since most of UMM's services are now accessed via the WAN they should look to making this connection redundant in the case of outages due to cut links or periodic maintenance. The connection coming into the City of Morris is redundant to the State but the connection between campus and the POP in Morris is not redundant. Another connection between the campus and the POP should be installed to provide redundancy. This link should enter the campus on a different path than the current link possibly connecting to a second core site on campus for even more redundancy.

Data Center/Servers

Elert & Associates recommends the following recommendations:

Phase I

- Move the existing Cisco chassis into the data center and out of the switch room.
- Make the existing data center the primary data center on campus and re-route fiber currently in the switch room to the data center.
- Remove the shelves in the data center and move to server cabinets with rack-mounted servers. This will create more space in the data center and will also improve security and air handling within the room.
- Install an IP KVM to access individual servers. This will eliminate the abundance of keyboards, mice, and monitors from the data center allowing authorized IT personnel to access servers across the network.
- Remove any unnecessary storage in the data center (ex: old HP switches, etc.)

Phase II

- Establish a second data center on campus with another Cisco chassis that has an identical configuration (Gigabit ports may vary).
- The second data center should have a UPS system, backup power, and its own air conditioning system.
- Install a card access system for each data center. This allows for better security allowing UMM to keep better control of access to the data centers and also to track entry into the data centers.
- Move a portion of the buildings on campus onto the second data core. It is common to divide the buildings up geographically on campus with half on one core and the other half on the other core.

Phase III

- Create dual fiber connections from each building to the data cores. Ideally having separate fiber paths to each core would offer the most redundancy. However, if funding is limited, fiber can be routed between the two cores so that each building will connect to each core but not be on redundant fiber paths. This would provide redundancy in case one of the two chassis was to fail. This also allows UMM to more easily perform periodic maintenance on each chassis without having to bring the campus network down.

More information is needed to provide estimates for the technology aspects of these recommendations. Elert & Associates cannot provide architectural, mechanical, or electrical cost estimates for any new spaces.

Local Area Network (LAN)

Elert & Associates recommends that UMM continue to replace its HP switches with Cisco switches installing the same models where possible. UMM should also consider installing one (or greater in TRs with more PoE devices) PoE switch in every telecommunications room to supply power for devices requiring PoE. Based on the current switch information that was provided, the following cost estimates are for replacing the remaining HP switches with Cisco switches: 10/100 Mbps: **$72,000**
10/100/1000 Mbps: **$108,000**

Wireless Data Network

Elert & Associates recommends that UMM develop a campus-wide deployment plan for wireless networking. Currently they have access points deployed throughout campus but no overall vision as far as a campus-wide system. At the time of deployment of a campus-wide system, UMM should strongly consider 802.11n as most manufacturers offer pre-draft equipment both on the network and end user sides. The following are estimates for a campus-wide wireless network for UMM:

802.11a/g system: **$280,000**
802.11a/n system: **$350,000**

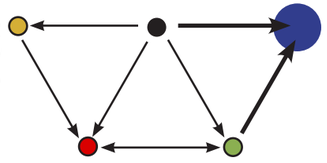
Phone System

Based on the current evaluation of the phone system at UMM, the campus is in fairly good shape. Their existing phone system has been updated to the latest version of software while their voice mail (NuPoint) needs to be upgraded.

AV-Multimedia Systems

Elert & Associates recommends that UMM budget for placing projectors in all of their classrooms. Typically the cost of a dedicated AV system for a classroom is **$12,000 - $15,000** for a projector, mechanical, wall-mount screen, network AV control system, DVD/VCR player, sound system, and a document camera. The instructor work area which houses the equipment is not included in the total because the work area can vary greatly in cost based on matching the aesthetics of the room, size, mobility, etc.
A room response ("clicker") system can range from **$5,000 - $20,000** for a 100-student room. The cost for these systems can vary based on whether the system is portable or fixed and how many features the university would like implemented.

Information technology advancement is integral to the future environmental and economic sustainability of the University of Minnesota Morris campus.



Analysis I: UMM Campus

campus master plan 2008

CAMPUS EDGES AND WALKING DISTANCES

EDGES

The study of where the existing, and sometimes more importantly, the perceived edges of campus are is one of the first analyses to be completed. This helps set the stage for how we interpret the transitions to and from the “place” that is the campus grounds. One of the more interesting interpretations of this diagram is how the campus is nearly divided into 4 equal parts at present, in some cases by use, in others, by topography, and still others, by the transportation network.

In the easternmost quarter of the campus, the eastern edge is perceived to be Alumni Drive, which creates a large “front door” district that is comprised of open space and parking lots, with the athletic fields and the campus entry seemingly floating ambiguously to the east. The western edge is the base of the hill that moves up towards the second quarter. The second quarter holds mostly residential buildings, with a smattering of academic and administrative buildings. The perceived edge of this space is also separated from the first quarter by topography, being uphill and to the west. The third quarter is mainly comprised of academic buildings, it’s eastern edge is perceived to be the conjunction of Avenida de Cesar Chavez paired with Cougar Circle - the east edge of the central quad. The western edge of this quarter seems logically to fall at MLK Drive and the entry to the central quad. The last quarter seems to be the ambiguous other “front door”, edged by College Avenue on the west. In this quarter there are only a portion of academic buildings, parking and MLK Drive.

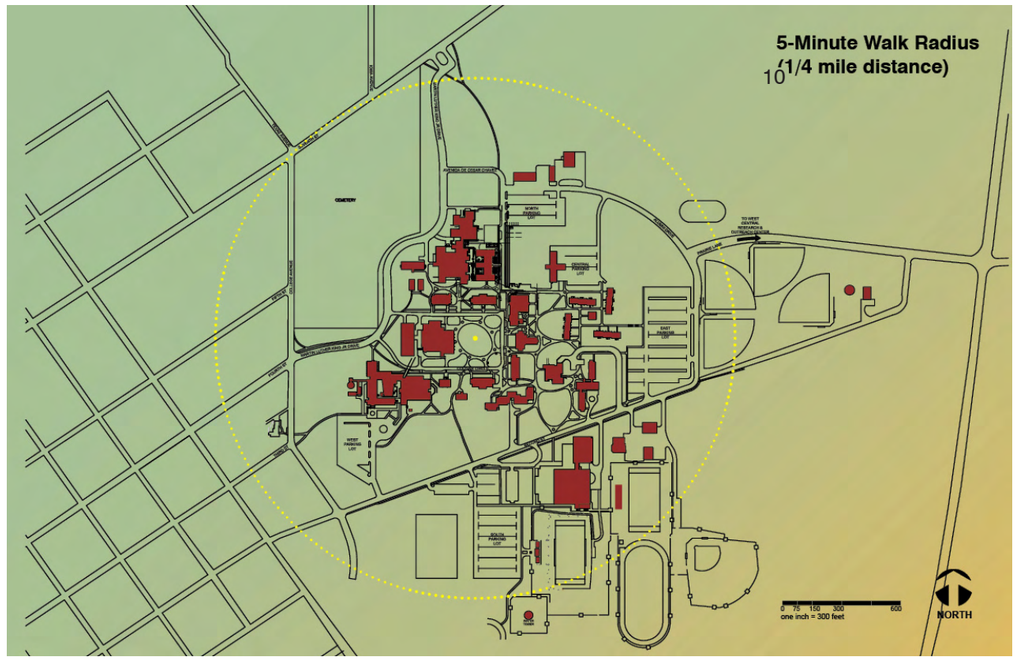
The north/south edges are a bit more distinct - the northernmost is most definitely set by the historic windbreak, despite the fact that the northern entry to campus is considerably farther away. Second Street is the strongest divisive edge on campus. It creates a visual, concrete, topographic, and perceptual break across what should be the middle of campus. Lastly, the southern-most edge could be seen as the end of the athletic district.

10-MINUTE WALK

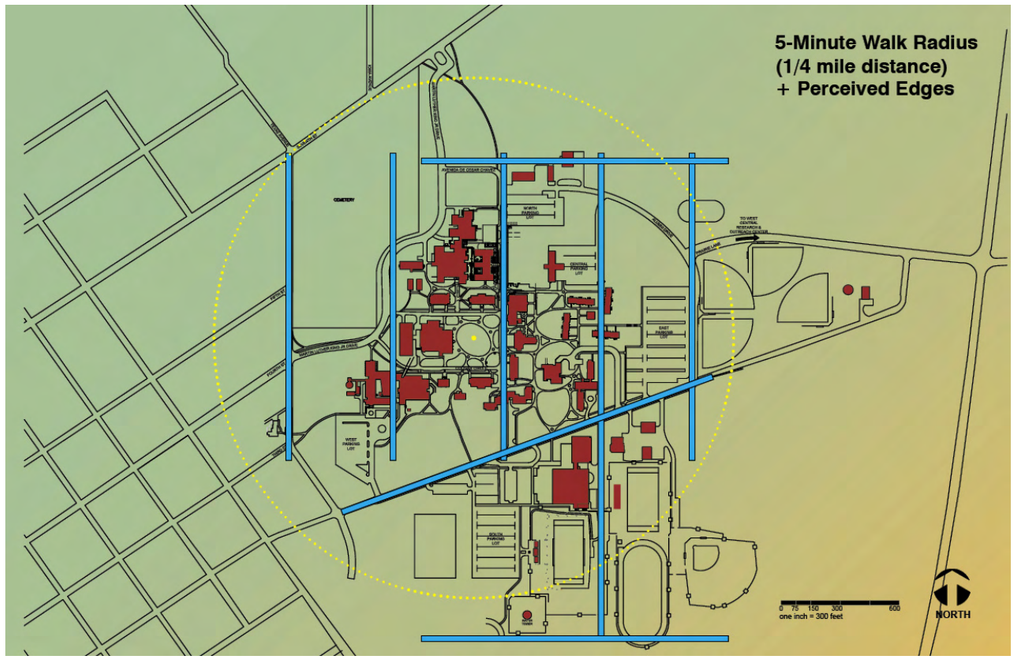
Walkability is an interesting study in any master plan - and it plays various roles in influencing future design decisions. How far is a student willing to walk? How far is a faculty member? On a small, tightly-knit campus, should cars be the focus? How far can one walk in 10 minutes?

As can be seen in the accompanying diagram, taking Cougar Circle as the campus center point, one can reach nearly the entire campus in 10 minutes. If one wanted to walk from one end to the other, 20 minutes.

This analysis helps us to understand potential gateway spaces, and when paired with other analyses, begins to offer unique insights into how the campus should be formed.



CAMPUS EDGES AND ENTRY POINTS



EDGES + 10-MINUTE WALK

Pairing the previous two analyses together provides an interesting glimpse into where perceived edges clash with or reinforce existing campus edges. For instance - walking 10 minutes north to 7th Street seems to be the logical northern edge to the campus, but during that walk, the perceived edge is the windbreak. The memorial grove beyond almost feels as if it is not a part of the campus. Another example - walking south, after about 5 minutes the barrier of 2nd Street presents itself, making the pedestrian feel as if the other side of the road is not truly included within the campus boundaries.

ENTRY POINTS

This analysis looked at existing entry points and their hierarchy.
Primary entry points are green stars, while secondary entry points are orange stars.
The most distinct entry points to campus occur at the easternmost and western most edges. On the east, a primary entry occurs at Highway 59 and Prairie Lane. On the west the entry occurs at MLK Drive and College Avenue.
There are smaller primary entries as well, occurring on the outer edges of campus - to the north off of 7th Street, and to the south at College and 2nd Street.

Secondary entry points seem to occur at street intersections within the campus borders - at Prairie Lane & Alumni Drive, at Alumni Drive & Avenida de Cesar Chavez, and at MLK Drive and Cougar Circle.

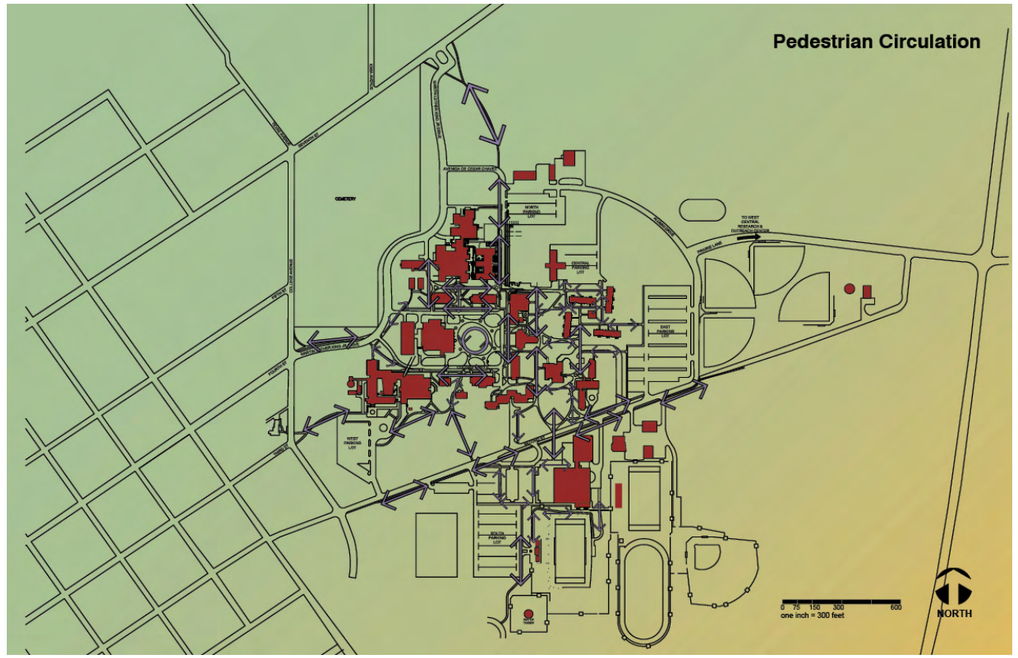
A campus survey was done on Survey Monkey and two questions focused specifically on the defining the entry points to campus. One question: “Where do you think the main entry exists today? Why?” and “Where do you think the main entry should be? Why?”

Interestingly, responses were split on the first question with some debate between Rte. 59 and 4th Street as the main entry. The answer to the second question was more in favor of Rte. 59 as the main entrance, but 4th Street retained a healthy showing.
This led us to realize that there are too many access points to the campus, both primary and secondary, that are contributing to confusion as to where the “front door” of campus is to be found.

PEDESTRIAN AND VEHICULAR CIRCULATION

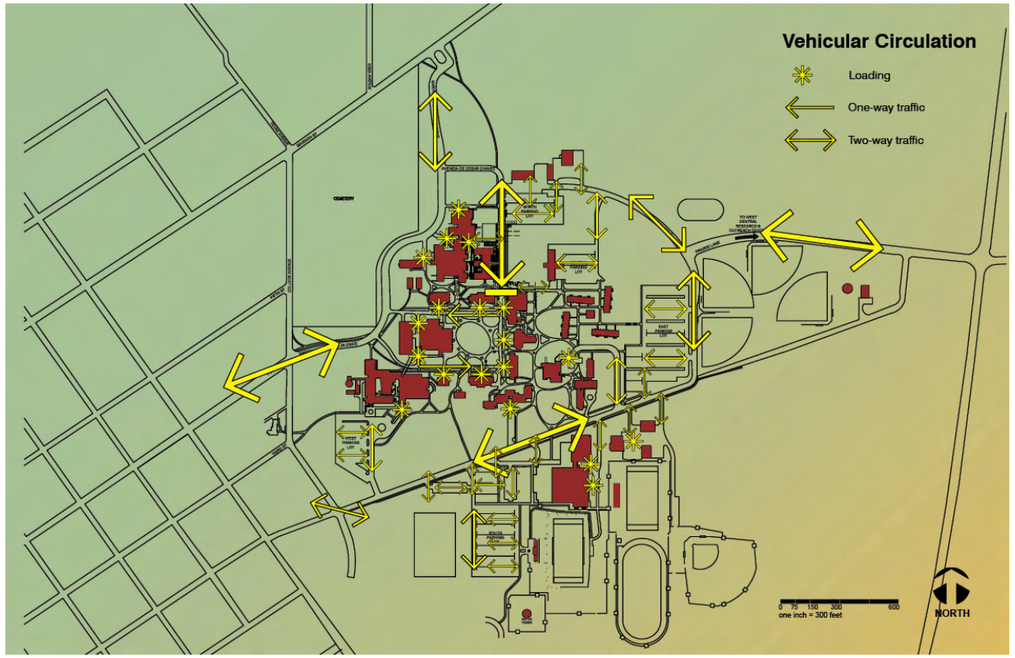
PEDESTRIAN CIRCULATION

This analysis looks at where pedestrians are walking about campus: the main pathways & the minor pathways.
Mapping this circulation out is a first step in a comparative synthesis of information that will eventually determine conflict points and places where paths should be located, and in some instances, where paths should be removed.
In this diagram, larger arrows indicate stronger perceived pathways, smaller arrows indicate lesser pathways.

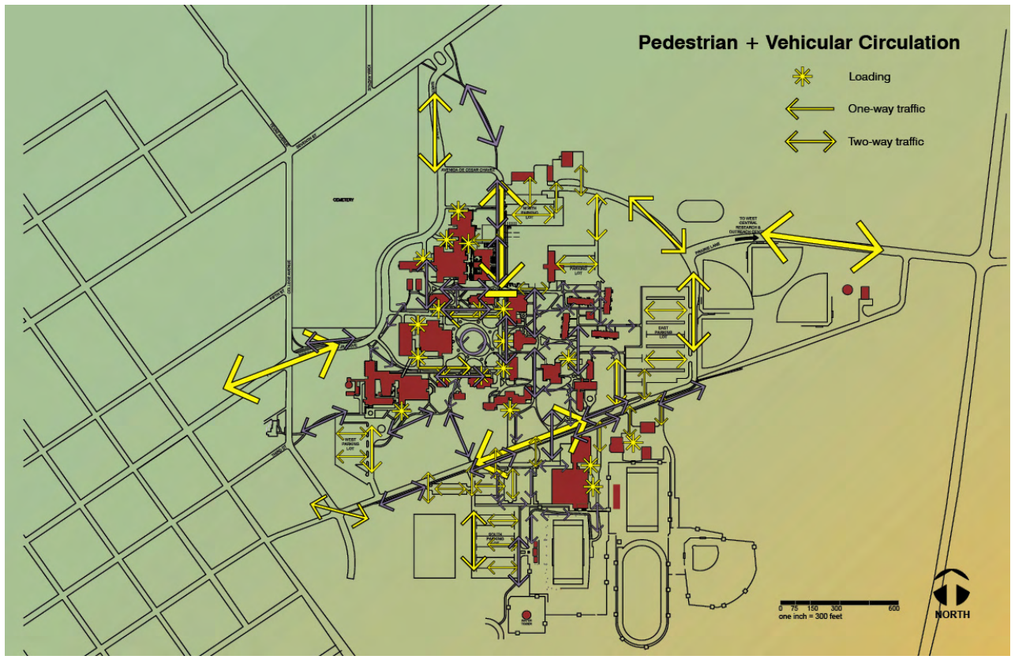


VEHICULAR CIRCULATION

Analyzing vehicular circulation is incredibly important for any campus. For Morris, having large portions of its campus historically designated, vehicles and where they are allowed becomes even more important.
Functionality is also a critical ingredient to any campus organism - how does loading and service occur when looking at these buildings and pathways? By looking at where loading can occur, paired with where vehicles are currently circulating and the volumes of traffic, we can begin to see where conflicts might occur and what ideas surface to resolve the conflicts.



CIRCULATION AND PARKING



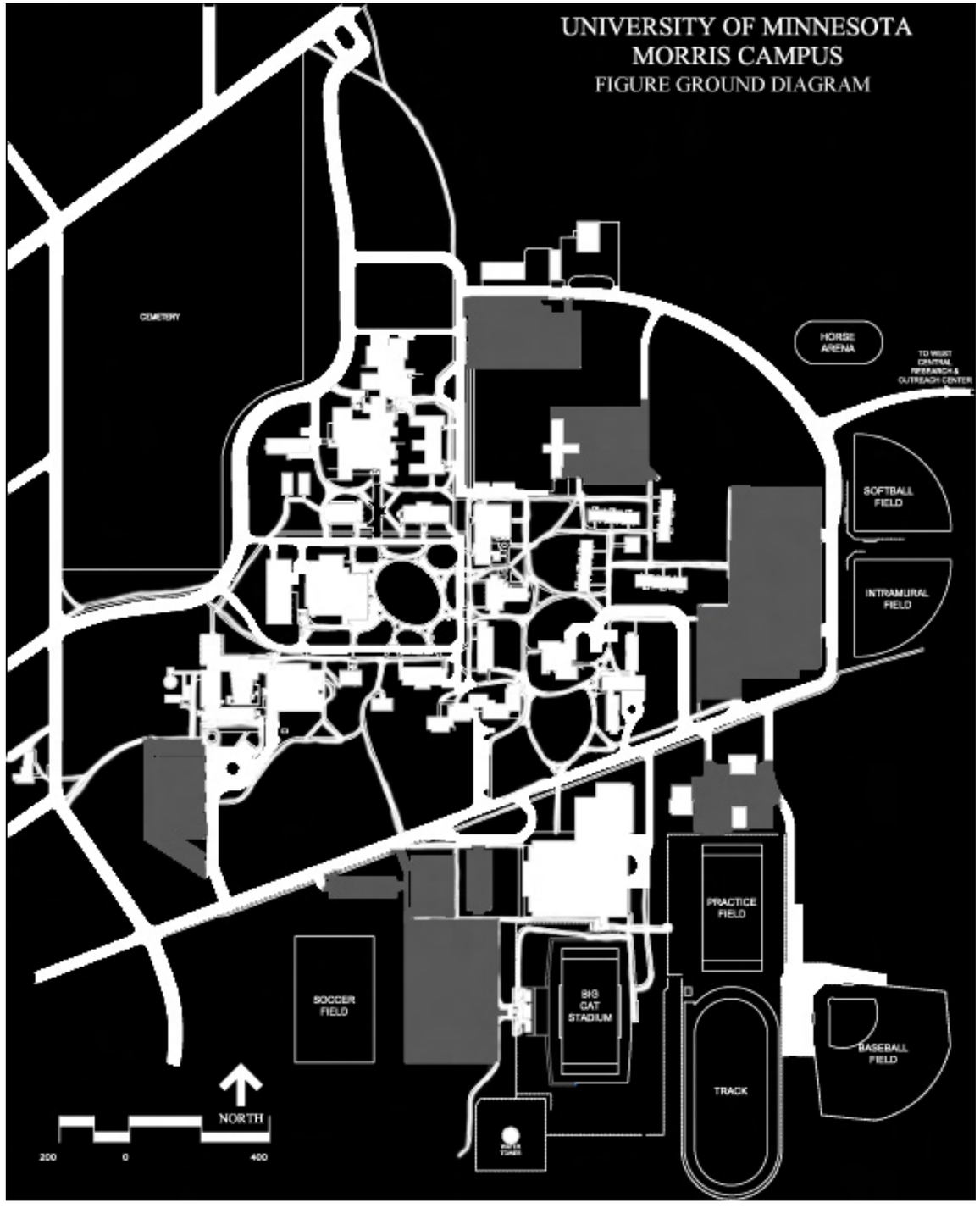
PEDESTRIAN + VEHICULAR CIRCULATION

Overlaying the previous two analyses we can see the major conflict points that are occurring on the Morris campus at present. A few of the main vehicular throughways are also main crossing points for pedestrians. For example, 2nd Street is considered by many to be a shortcut for townspeople to reach Hwy. 59, as well as a route around the southern edge of campus. There is also considerable pedestrian traffic across 2nd Street, as people move to and from the athletic district.

PARKING LOTS

Parking is in abundance on the Morris campus. It is felt that in some instances it is too far away from certain buildings. By comparing this diagram with the 10-minute walk diagram, one can see that almost every parking spot is within 10 minutes of the center of campus. According to the steering committee the east lot is rarely at capacity.
Pairing this with circulation analyses gives us insights into how we craft a master plan diagram to address some of the general perceptions of how parking should occur on campus.

IMPERVIOUS SURFACE



Impervious Surface = 32% of Total Area

- Roads and Paths = 18%
- Parking Lots = 8.4%
- Buildings = 5.6%

Analysis II: Campus Comparisons

campus master plan 2008

UMM VS. UNIVERSITY OF ST. THOMAS

UNIVERSITY OF MINNESOTA MORRIS

Founded: 1960
Undergraduate Students: 1690
Graduate Students: 0
Total Student Population: 1690
Faculty/Staff Population: 390
Total Campus Population: 2080
Buildings: 33
Gross Square Footage of Land: 164 acres/7,200,000 square feet

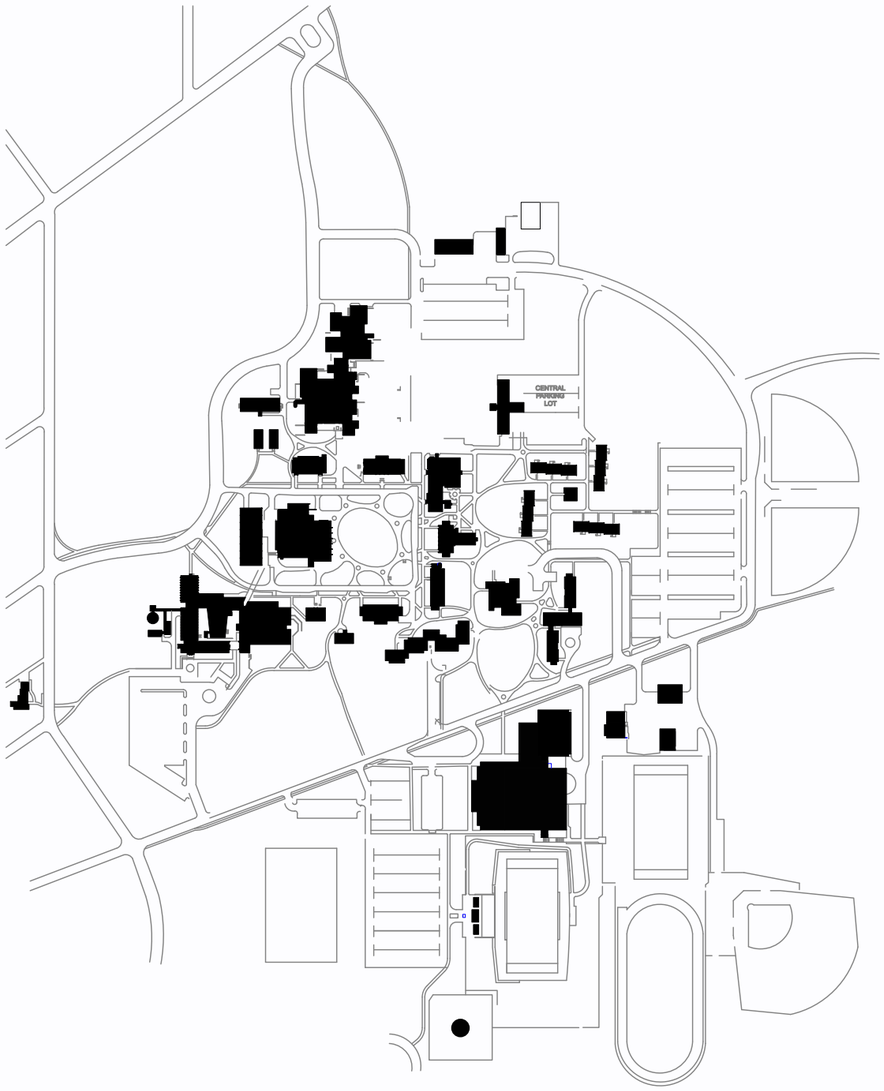
Parking Spaces: 1280
Parking Acreage: 11.1 acres
Parking Spaces/Person: 0.62
Average Sq. ft. per Person: 3462

UNIVERSITY OF ST. THOMAS

Founded: 1885
Undergraduate Students: 4490
Graduate Students: 2993
Total Student Population: 7483
Faculty/Staff Population: 1176
Total Campus Population: 8659
Buildings: 92
Gross Square Footage of Land: 78 acres/3,397,680 square feet

Parking Spaces: 2249
Parking Acreage: 8.93 acres
Parking Spaces/Person: 0.26
Average Sq. ft. per Person: 392

UMM VS. DRAKE UNIVERSITY



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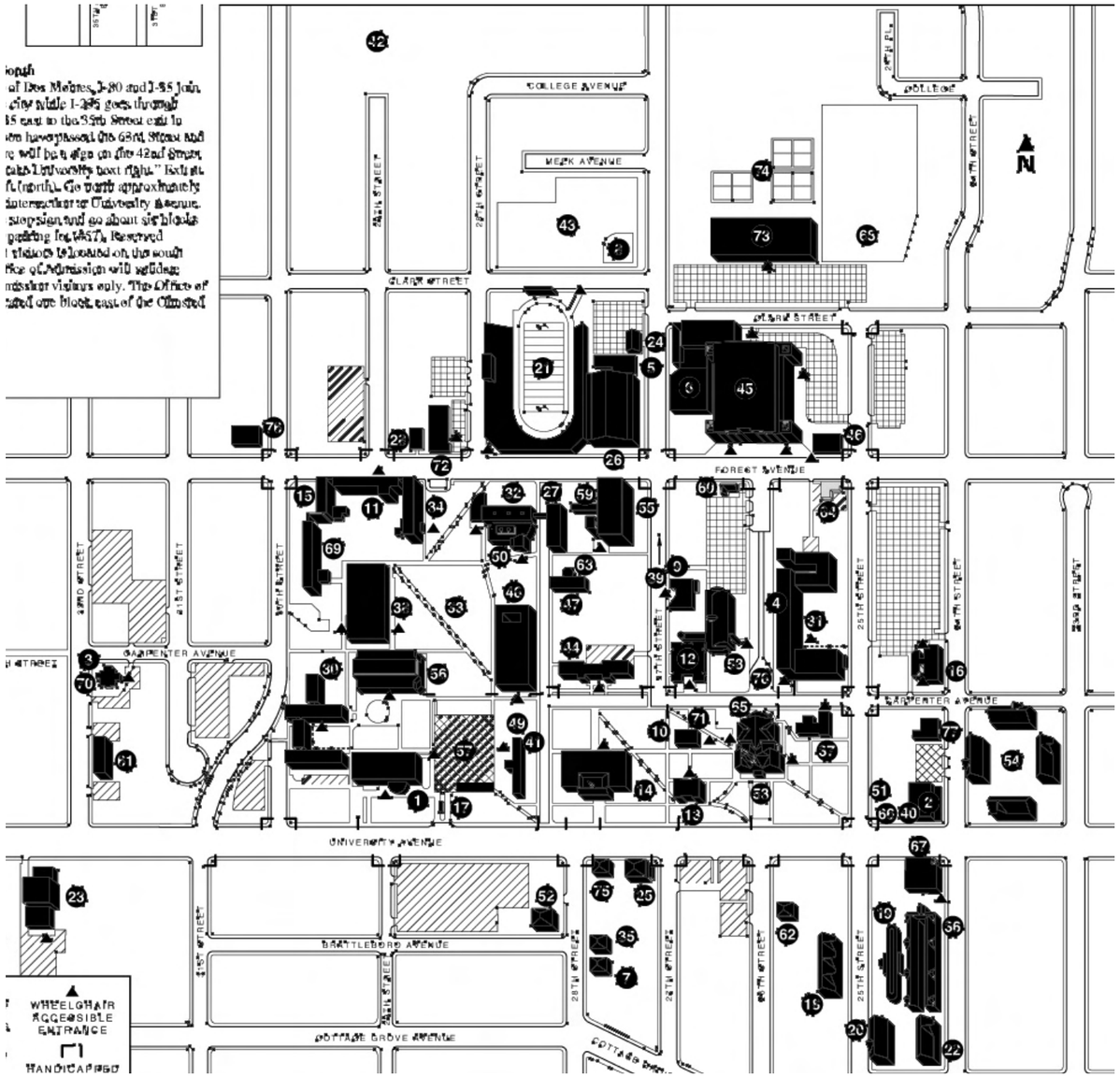
Total Student Population: 1690
Faculty/Staff Population: 390
Total Campus Population: 2080
Buildings: 33
Gross Square Footage of Land: 164 acres/7,200,000 square feet

Parking Spaces: 1280
Parking Acreage: 11.1 acres
Parking Spaces/Person: 0.62
Average Sq. ft. per Person: 3462

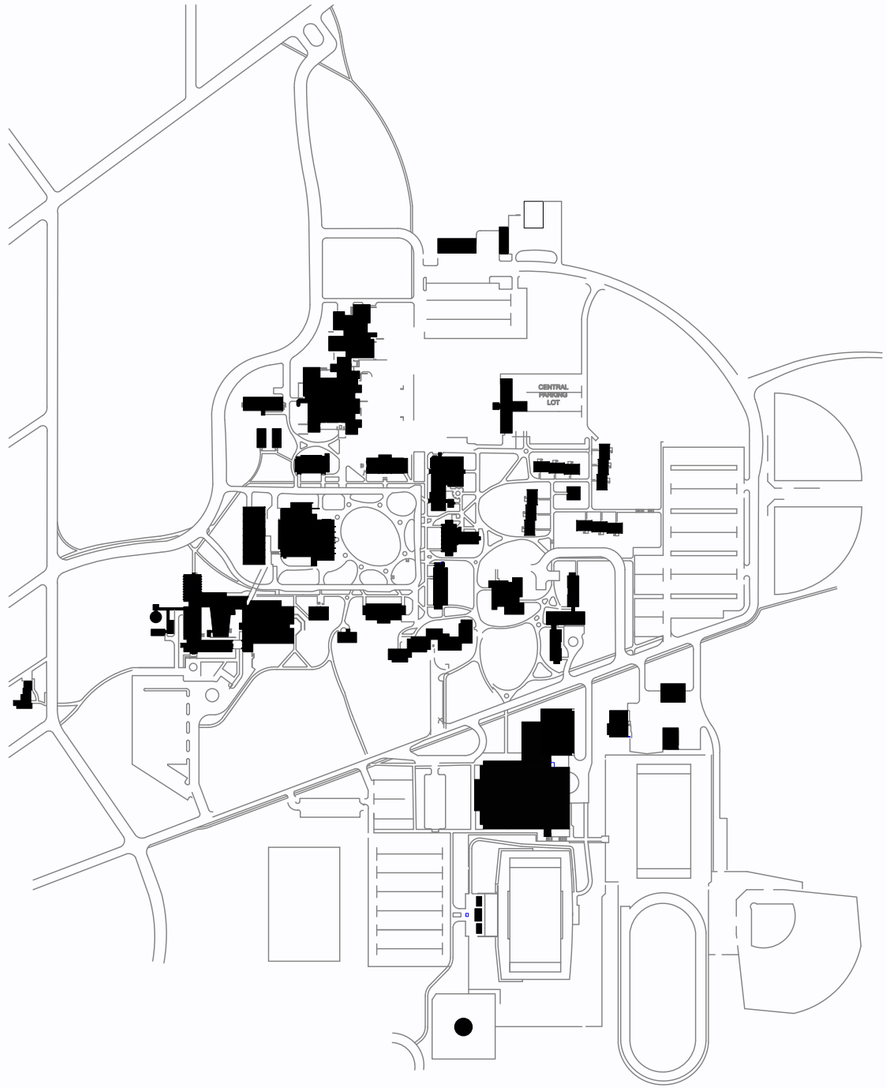


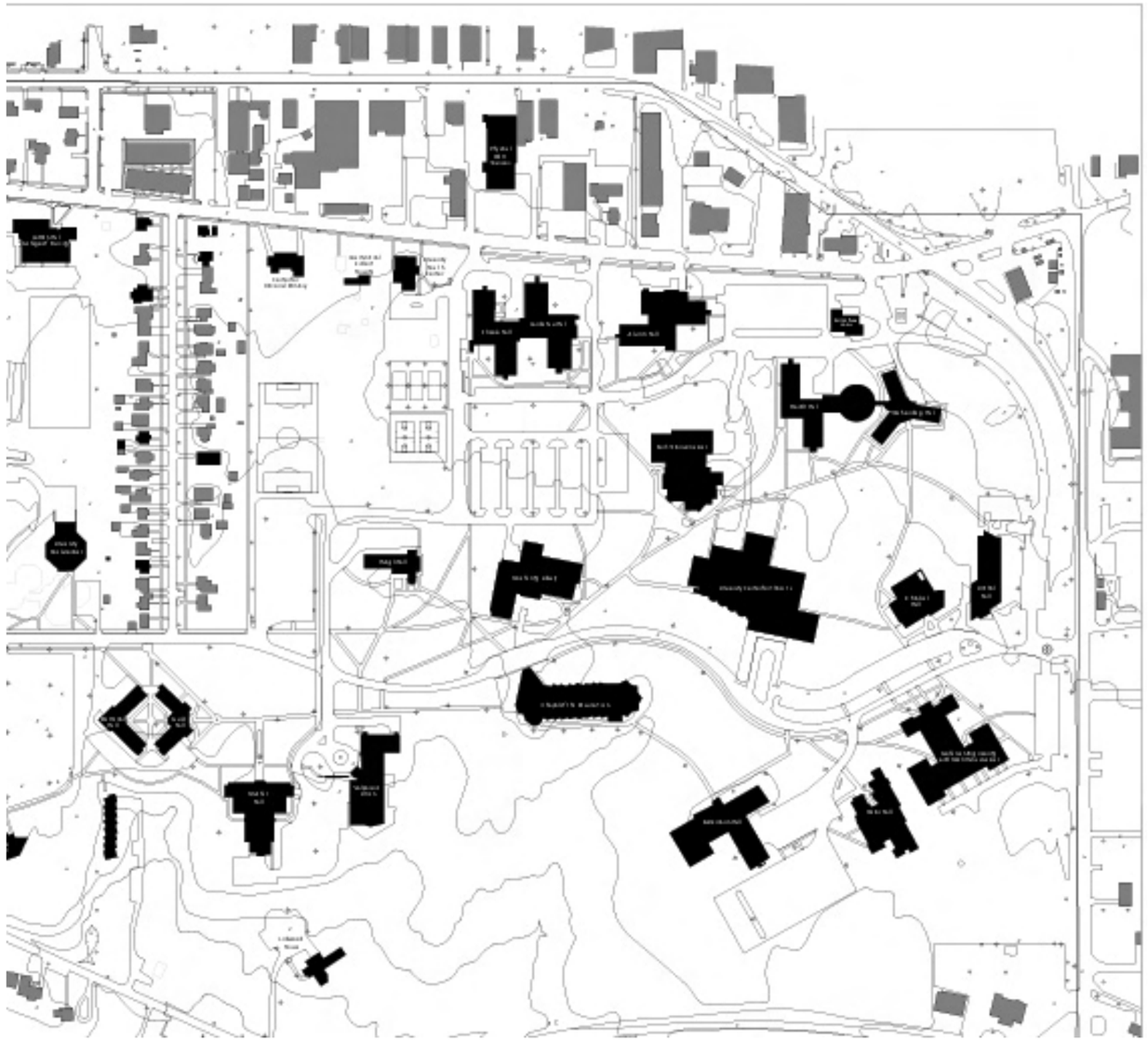
DRAKE UNIVERSITY

Founded: 1881
Undergraduate Students: 3577
Graduate Students: 1573
Total Student Population: 5150
Faculty/Staff Population: 1017
Total Campus Population: 6167
Buildings: 73
Gross Square Footage of Land: 120 acres/5,227,200 square feet

Parking Spaces: 2375
Parking Acreage: 8.83 acres
Parking Spaces/Person: 0.39
Average Sq. ft. per Person: 848

UMM VS. VALPARAISO UNIVERSITY





UNIVERSITY OF MINNESOTA MORRIS

Founded: 1960
Undergraduate Students: 1690
Graduate Students: 0
Total Student Population: 1690
Faculty/Staff Population: 390
Total Campus Population: 2080
Buildings: 33
Gross Square Footage of Land: 164 acres/7,200,000 square feet

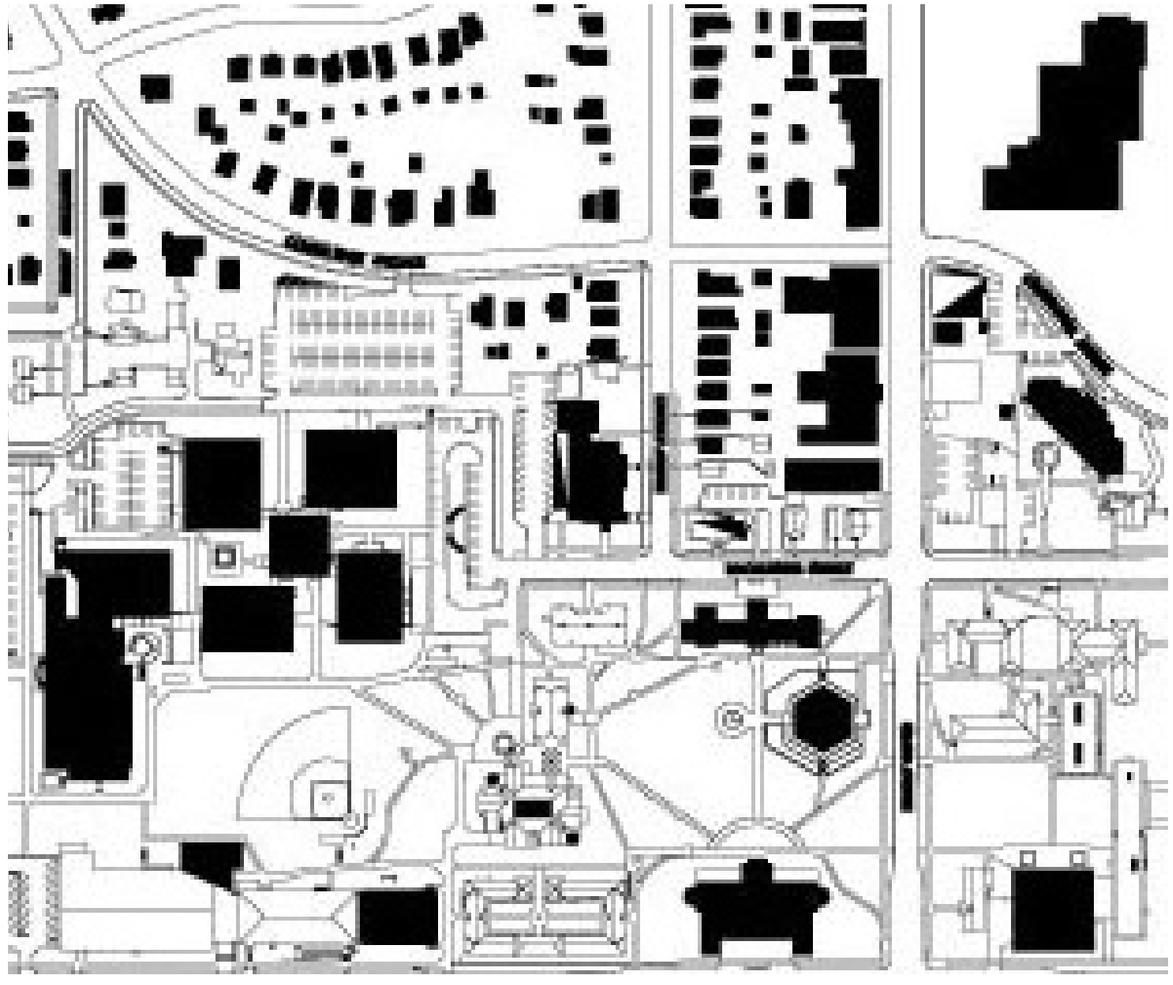
Parking Spaces: 1280
Parking Acreage: 11.1 acres
Parking Spaces/Person: 0.62
Average Sq. ft. per Person: 3462

VALPARAISO UNIVERSITY

Founded: 1859
Undergraduate Students: 3000
Graduate Students: 700
Total Student Population: 3700
Faculty/Staff Population: 1000
Total Campus Population: 4700
Buildings: 60
Gross Square Footage of Land: 310 acres/13,503,600 square feet

Parking Spaces: 2400
Parking Acreage: 8.93 acres
Parking Spaces/Person: 0.51
Average Sq. ft. per Person: 2873

UMM VS. MACALESTER COLLEGE



UNIVERSITY OF MINNESOTA MORRIS

Founded: 1960
Undergraduate Students: 1690
Graduate Students: 0
Total Student Population: 1690
Faculty/Staff Population: 390
Total Campus Population: 2080
Buildings: 33
Gross Square Footage of Land: 164 acres/7,200,000 square feet

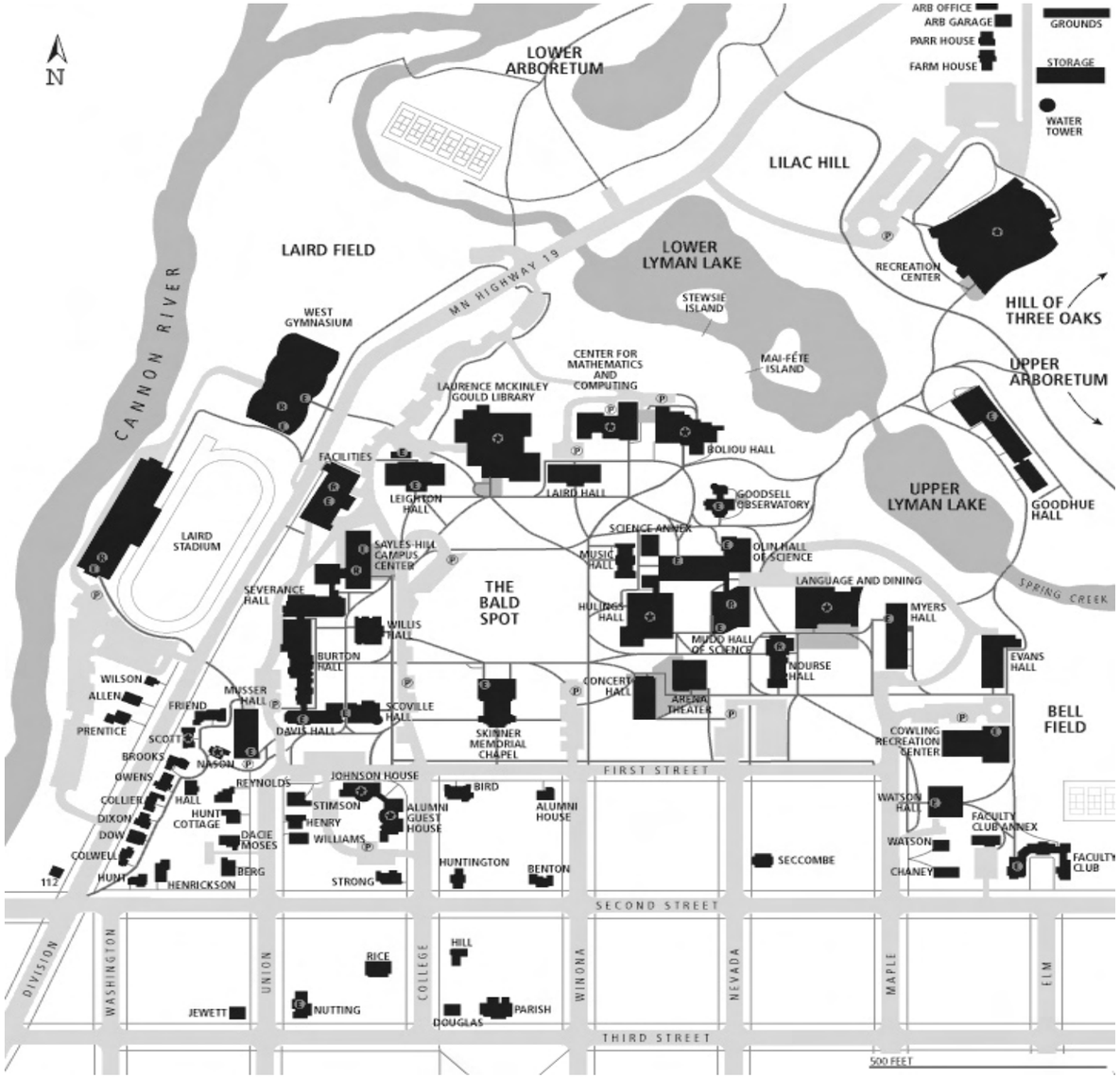
Parking Spaces: 1280
Parking Acreage: 11.1 acres
Parking Spaces/Person: 0.62
Average Sq. ft. per Person: 3462

MACALESTER COLLEGE

Founded: 1874
Undergraduate Students: 1787
Graduate Students: 0
Total Student Population: 1787
Faculty/Staff Population: 548
Total Campus Population: 2335
Buildings: 36
Gross Square Footage of Land: 53 acres/2,308,680 square feet

Parking Spaces: 554
Parking Acreage: 2.06 acres
Parking Spaces/Person: 0.24
Average Sq. ft. per Person: 989

UMM VS. CARLETON COLLEGE



UNIVERSITY OF MINNESOTA MORRIS

Founded: 1960
Undergraduate Students: 1690
Graduate Students: 0
Total Student Population: 1690
Faculty/Staff Population: 390
Total Campus Population: 2080
Buildings: 33
Gross Square Footage of Land: 164 acres/7,200,000 square feet

Parking Spaces: 1280
Parking Acreage: 11.1 acres
Parking Spaces/Person: 0.62
Average Sq. ft. per Person: 3462

CARLETON COLLEGE

Founded: 1886
Undergraduate Students: 1922
Graduate Students: 0
Total Student Population: 1922
Faculty/Staff Population: 698
Total Campus Population: 2620
Buildings: 97
Gross Square Footage of Land: 90 acres/3,920,400 square feet

Parking Spaces: 895
Parking Acreage: 3.07 acres
Parking Spaces/Person: 0.34
Average Sq. ft. per Person: 1496

Analysis III: UMM GIS

campus master plan 2008

INTRODUCTION: MORRIS CAMPUS METABOLISM

1. INTRODUCTION

Any college campus is very much like a self-contained organism, with the movement in and out of large volumes of material and energy inputs, internal processes and byproduct generation. In that sense, it is like the metabolism of an individual organism, but aggregated across all of the metabolisms within it, with metabolism defined as the series of reactions to various nutrients and stimuli that result in the sustaining of the organism over multiple generations. College campuses also need to sustain themselves and they do that by reacting to the characteristics of their campus site, inputs of materials, energy and human intellect in ways that are designed to meet their institutional mission and perpetuate their existence.

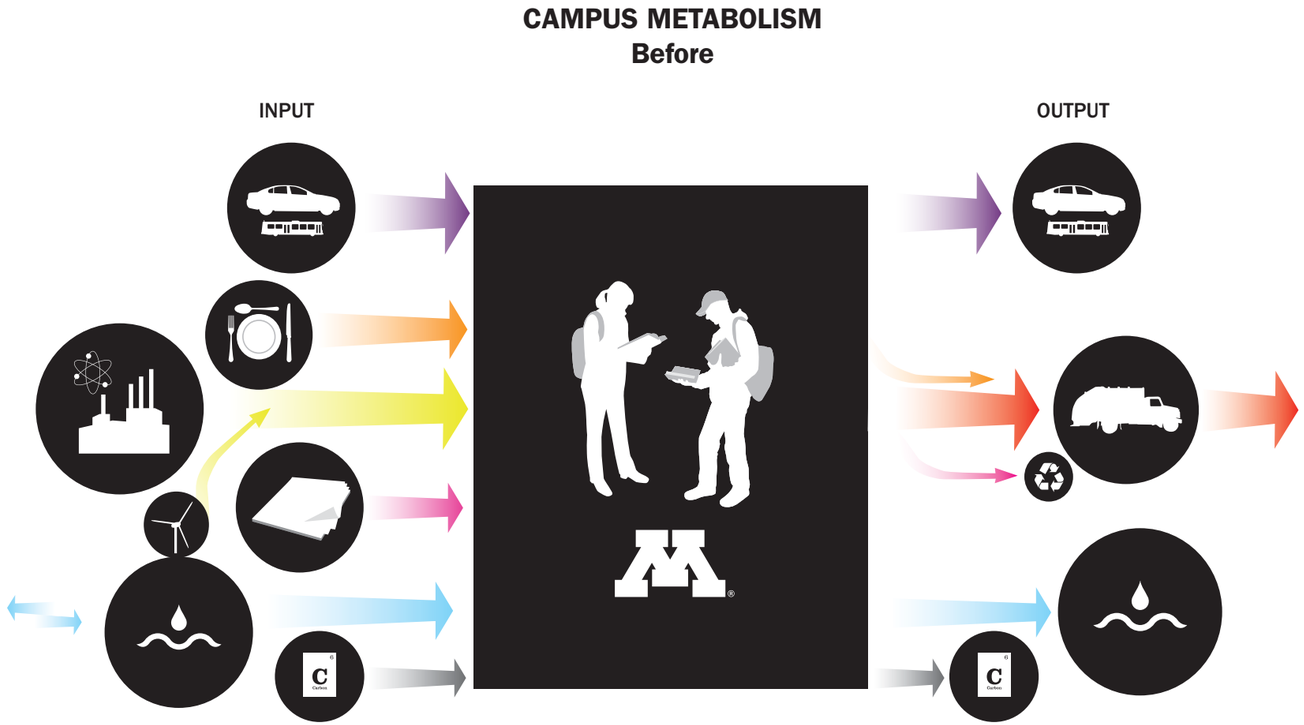
In recent years, the University of Minnesota Morris has made an institutional commitment to greater sustainability in the way that it functions internally and how it achieves a right balance with the ecosystems surrounding it and of which it is a part. This strong cultural focus on sustainability, sometimes also defined as “self-sufficiency” has been reflected, to date, in the campus’ commitment to renewable energy and energy efficiency. In many ways, the focus on direct energy use on campus was the best choice for an initial effort because of the energy system’s substantial impact on long term sustainability and the relative ease with which it can be quantified and its impacts measured over time.

In moving forward last fall with an update of the campus master plan for the UM-Morris campus, there was recognition by campus stakeholders that a deeper level of thinking about sustainability and the total environmental footprint of the college and its operations would broaden the campus dialogue about sustainability to the next level. There was strong interest in developing the context for the campus and its activities within the regional and global economies and ecosystems. While there was a general recognition that activities such as the campus’ food system and transportation system were a very large part of the campus’ overall environmental footprint, there were just a handful of tools and initial strategies directed at these areas. There was also the realization that the hundreds if not thousands of decisions over time that will be based on the updated campus master plan should be made in the context of a more conscious recognition of Morris’ commitment to broad-based sustainability principles.

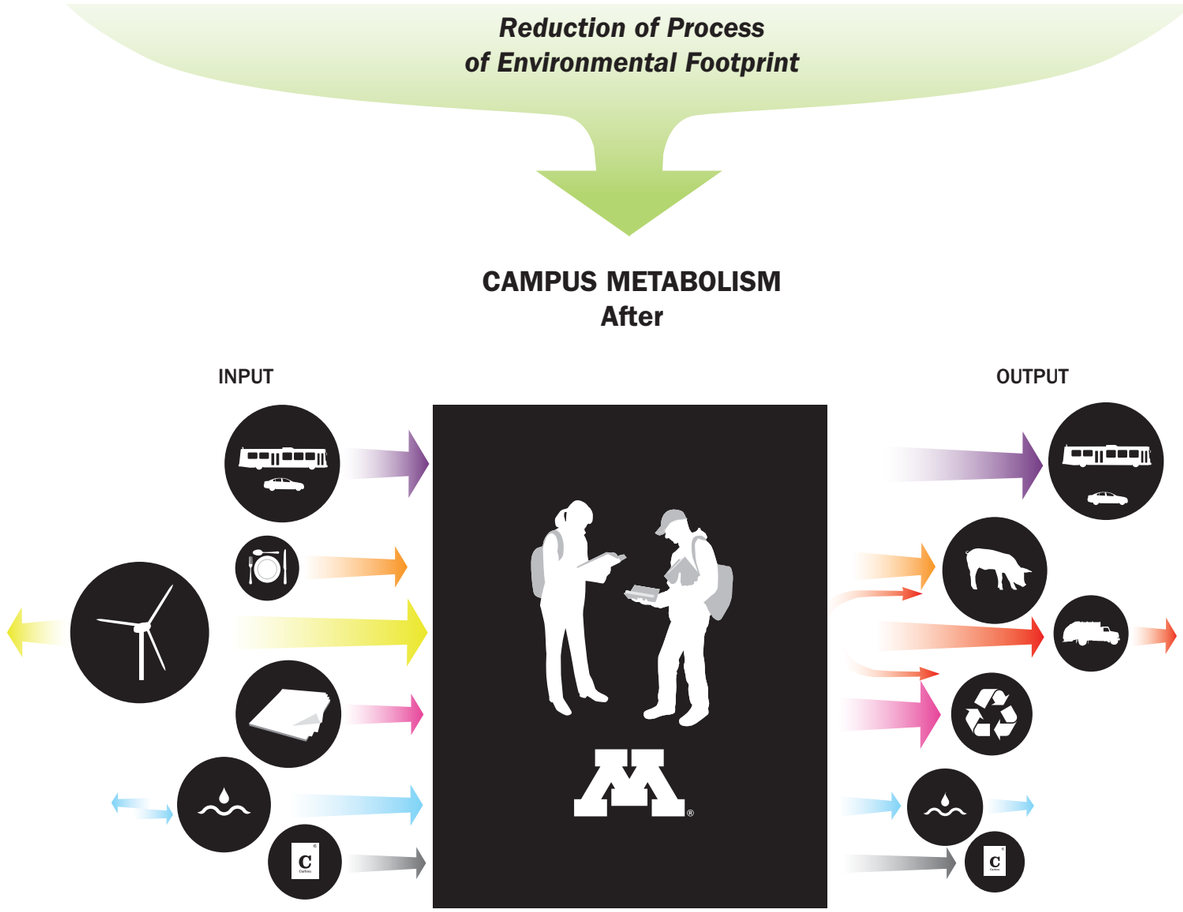
For purposes of the role that has been played by Kandiyohi Development Partners (KDP) in this project, sustainability will often be referred to as a general concept that seeks to put the campus and its whole range of activities into better balance with the larger natural world. That does not mean that no inputs of energy or materials can come from outside of the campus, but it does mean that the campus will seek to understand its “metabolism” and its overall environmental footprint in such a way that it can reduce the levels of “embodied” and natural resources needed to sustain it for future generations. In other words, every decision about the campus and how it will function will present an opportunity for the campus to become more sustainable over time. We have relied on scholarly research on “eco-cities” from individuals such as Thomas Graedel at Yale University to adapt the larger system metabolisms into a set of sustainability goals for a college campus:

- The campus must be environmentally, ecologically, environmentally and socially sustainable over time;
- Campus leaders must use a systems approach to decision making that incorporates an understanding of environmental interactions;
- Campus design and facilities must be flexible enough to evolve naturally in response to growth and other internal and external changes;
- Open space and new facilities will be designed to serve multiple functions;
- The campus needs to understand and be aware of its relationships with regional and global economies and eco-systems;
- The campus must be attractive and functional on a human scale.

The goal for this portion of the master plan is to fully integrate these sustainability goals and principles with the master planning work to the greatest possible extent. We hope to offer campus leaders, now and in the future, a framework and an understanding that will help them make the best possible decisions about campus operations, investments in facilities and infrastructure, and the overall mission of the institution.



INTRODUCTION: MORRIS CAMPUS METABOLISM



1.1. PROPOSED STATEMENT OF PRINCIPLES

- UMM will use a holistic, systems approach to understanding its environmental footprint and campus systems will be designed to be sustainable over the long term.
- UMM will seek to understand its relationship to local, regional and global economies and will emphasize its relationships within the local and regional economy.
- The UMM campus must be attractive and functional and be flexible enough to adapt over time to growth and other needs.
- As part of its educational mission, systems and structures on campus will be as transparent as possible in communicating their energy use and environmental functionality.
- The indoor environments at UMM will be healthy and productive and open space on campus will serve multiple functions.
- UMM will develop systems of measurement and verification that can track UMM's total carbon footprint and will help it to reduce its greenhouse gas emissions over time to a level of zero net impact.

2. INTEGRATED TECHNOLOGY PLATFORM

Universities must continually invest in their technology infrastructure in order to provide progressive communications and research resources to staff, student, and faculty. A comprehensive technology platform will have a number of applications to the built environment and campus livability by collecting real time information on energy and water use, material flows, and the quality of all indoor environments on campus. What is measured and tracked becomes the basis for improving systems efficiencies, lowering costs and improving livability factors such as air quality, lighting and temperatures that drive productivity and quality of life.

An integrated technology platform that includes measurement and management tools will be directed at key livability issues, particularly in indoor environments. Academic life in Minnesota is largely an indoor activity, yet most indoor environments on the Morris campus have poor air quality and limited natural light. Classroom acoustics and aesthetics, and functionality must be conducive to learning in a comfortable space. A focus on the quality of the indoor environment will provide a basis for future facilities improvements that contribute to student and staff well-being.

3. FOUNDATIONAL AND CONTEXTUAL INFORMATION

Our initial research builds a foundational understanding of the physical campus system by evaluating the following site and contextual characteristics:

- Elevations and slopes;
- Surrounding land uses and natural resources and critical habitat areas;
- Soils and geo-technical conditions;
- Geologic conditions and watershed context;
- Watersheds and stormwater infrastructure;
- Seasonal wind speeds and direction;
- Solar orientation on a seasonal basis;
- Regional food system;
- Transportation infrastructure.

4. GIS ANALYSIS OF EXISTING CAMPUS CONDITIONS

KDP conducted a comprehensive survey of geospatial data in order to assemble Geographic Information Systems (GIS) for the UMM campus. Analysis of campus GIS will provide an understanding of the spatial relations between the campus and its contextual environments that drive spatial organization on campus, and between the UMM campus and the surrounding local biome. Recommendations based on the regional and local analyses will lead to a blueprint for the identification, prioritization, and implementation of sustainability programs and actions across campus.

5. CAMPUS CARRYING CAPACITY

Campus carrying capacity–the capacity of the campus to metabolize, or create and consume inputs and outputs 'on site'–is prioritized throughout the Morris Campus Metabolism analysis. The campus metabolic system is inherently more efficient, with a lessened environmental footprint, when campus carrying capacity is maximized.

ELEVATION AND SLOPE

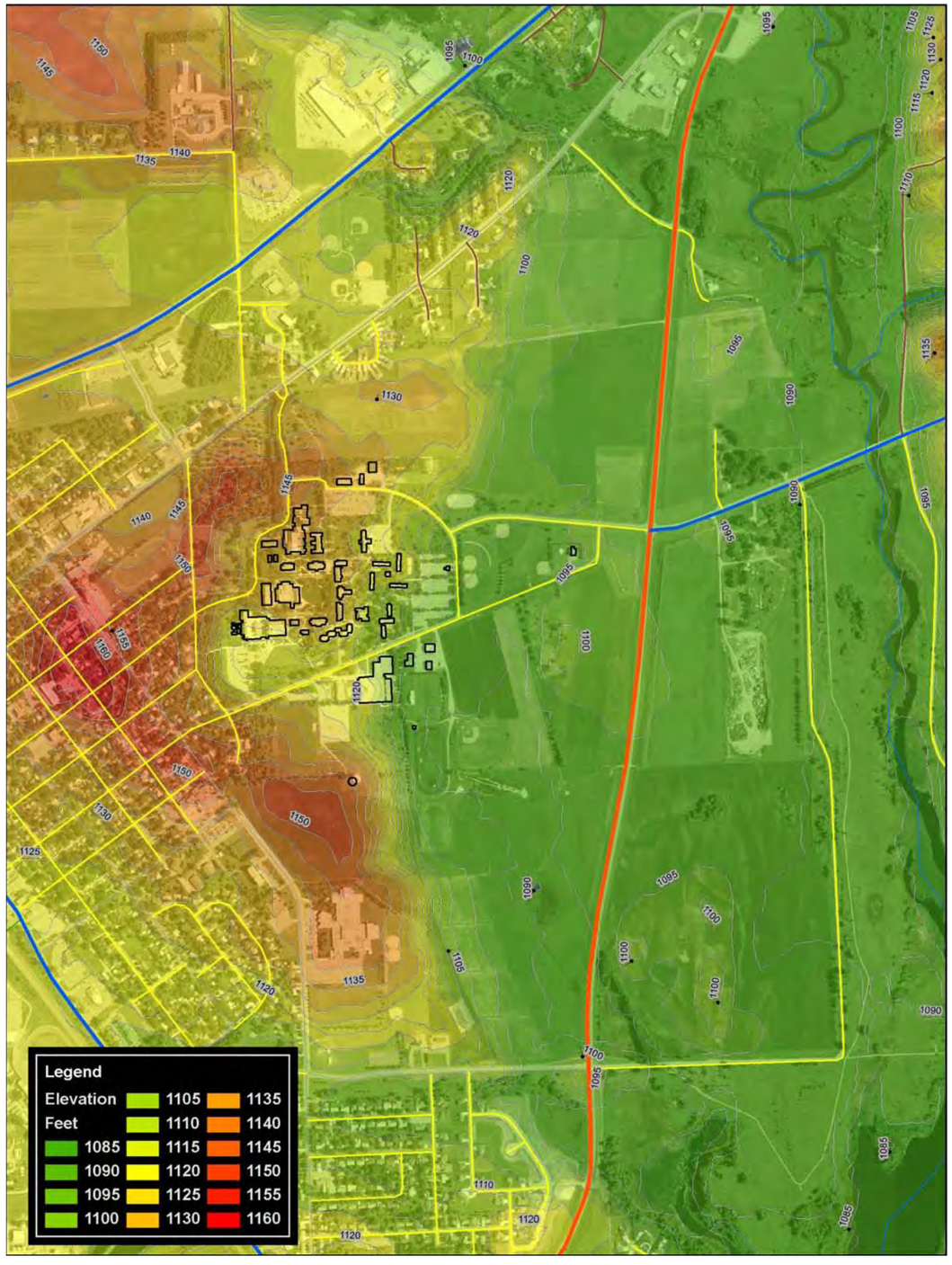


Figure 4.1a: Elevation of the UM-Morris Area

Figure 4.1b (top) Landscape Surrounding UMM Vertically Exaggerated 5-times. Figure 4.1c (bottom) UMM Campus Vertically Exaggerated 5-times.

ELEVATION AND SLOPE

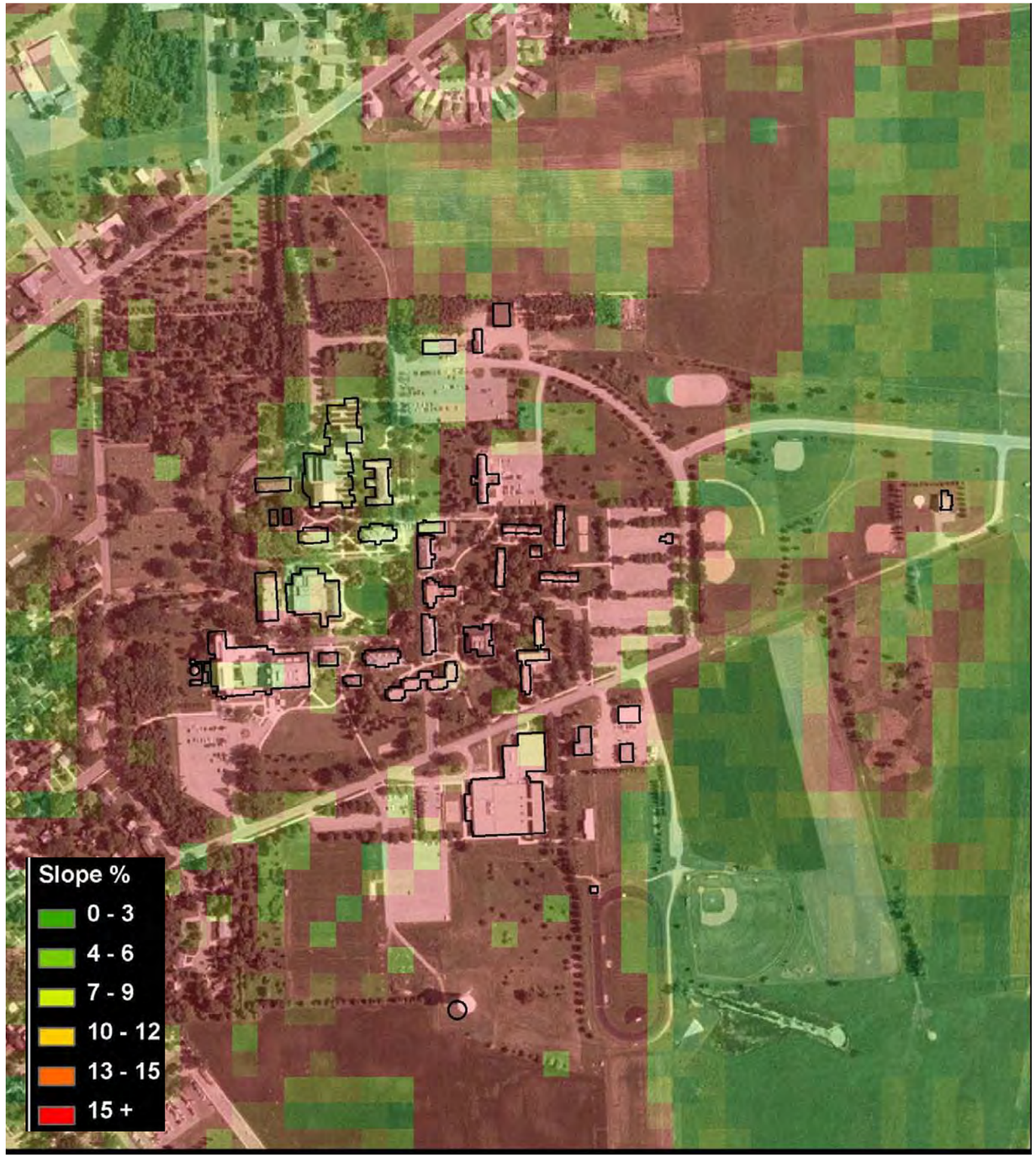


Figure 4.1d Slope of the Morris Region and the UM-Morris Campus

4.1 ELEVATION AND SLOPE

Elevation was mapped using the United States Geologic Survey (USGS) 24k 30m Digital Elevation Model (DEM). The topographical landscape near the University of Minnesota-Morris is influenced primarily by the Pomme de Terre River. The elevation rises relatively quickly from the river – at approximately 1085 feet above sea level (asl) – westward to the UM-Morris campus center – roughly 1125 feet asl – over approximately three-quarters of a mile distance. Elevation in the area reaches its highest point to the west of campus at 1160 feet asl. (Figure 4.1a).

Three dimensional representations of the UM-Morris region and campus are illustrated in Figures 4.1b and 4.1c, respectively. The representations have been exaggerated vertically by a factor of five to illustrate the areas of greatest slope. The pronounced change in slope immediately west of the track and baseball diamonds demarcates the probable historic floodplain of the Pomme de Terre River.

Figure 4.1d shows that much of the landscape surrounding campus has relatively high slopes for the area. Central campus has slopes from 0 to 8 percent and is surrounded by 15 percent and greater slopes until reaching the Pomme de Terre floodplain near the track and baseball diamonds.

RECOMMENDATIONS:

- **Decrease erosion on areas with steep slopes by planting specially adapted native species as suggested in Appendix 6: Species List of the U.S. Fish & Wildlife Service Morris Wetland Management District Comprehensive Conservation Plan and Environmental Assessment.**

- **The general slope of the campus to the east and south creates eastern and southern aspects which present opportunities for solar thermal or solar electric generation. (Refer to the Solar Insolation Analysis section later in this document).**

- **Much of the campus landscape is relatively steep (up to 12%), therefore, it is important to implement stormwater best management practices in order to increase infiltration, improve water quality and decrease water velocity before water reaches the Pomme de Terre River. (Refer to the Stormwater Analysis section later in this document).**

- **While slope analysis using the 1 to 24,000 scale 30m resolution DEM is useful for regional planning it is less useful for planning at a local scale,. It is recommended that two foot contours be surveyed and stored digitally for the UM-Morris campus and surrounding land owned by the Regents of the University of Minnesota. This will be useful for many future environmental and physical planning endeavors.**

LAND USE-LAND COVER (LULC), NATURAL RESOURCES, AND HABITAT

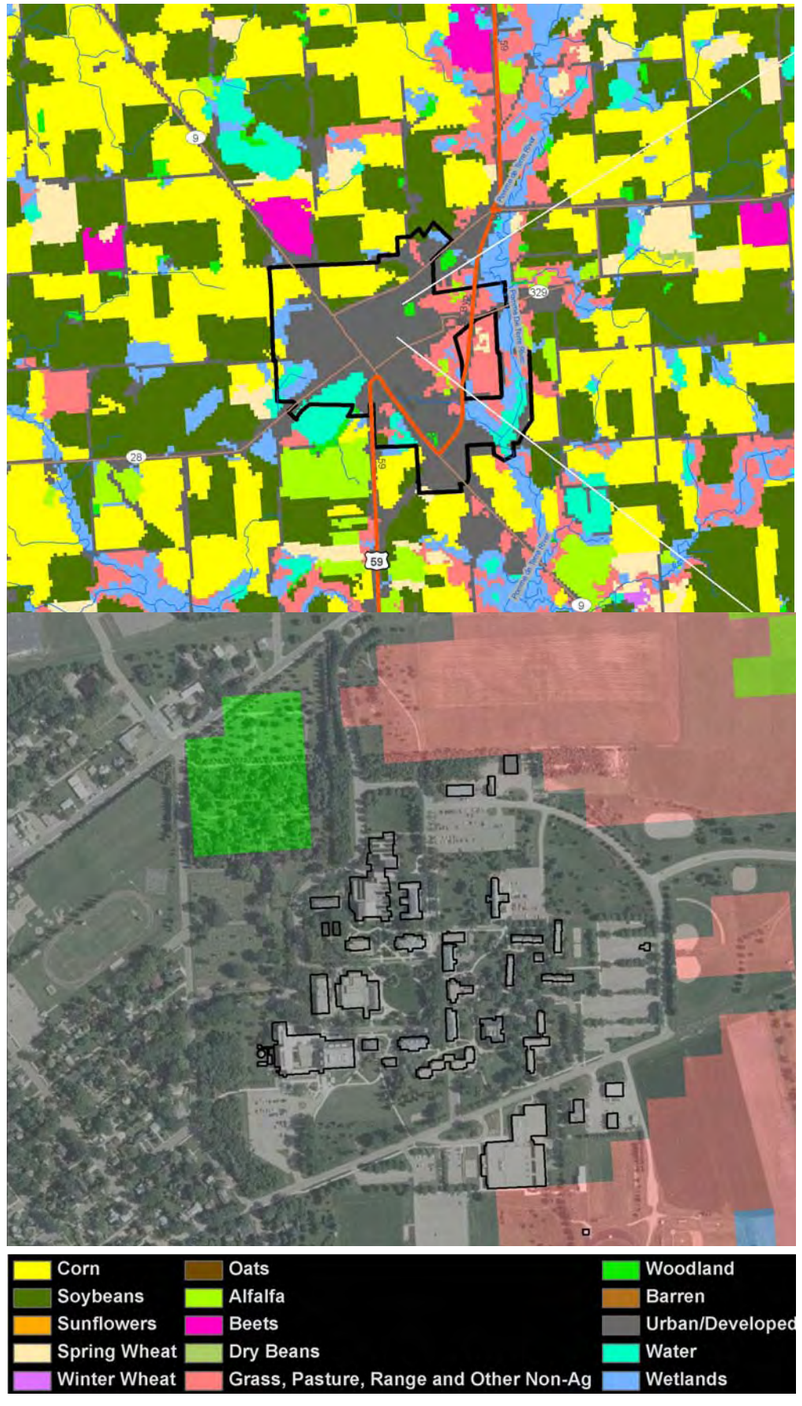


Figure 4.2a: LULC of the Morris Region and UMM Campus.

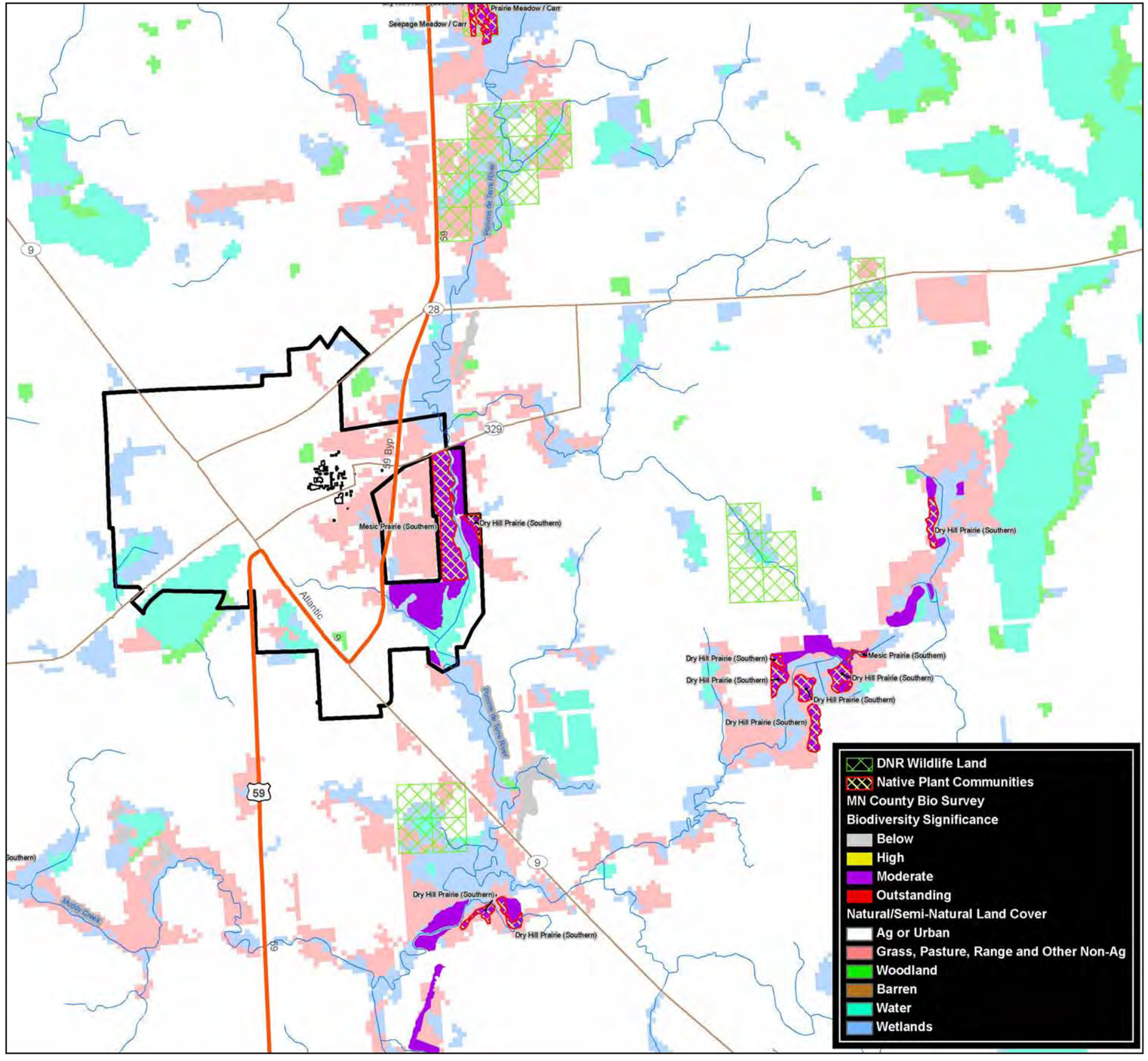


Figure 4.2b: Important Habitat Areas and Natural or Semi-Natural Land Covers in the Morris Region.

LAND USE-LAND COVER(LULC), NATURAL RESOURCES, AND HABITAT

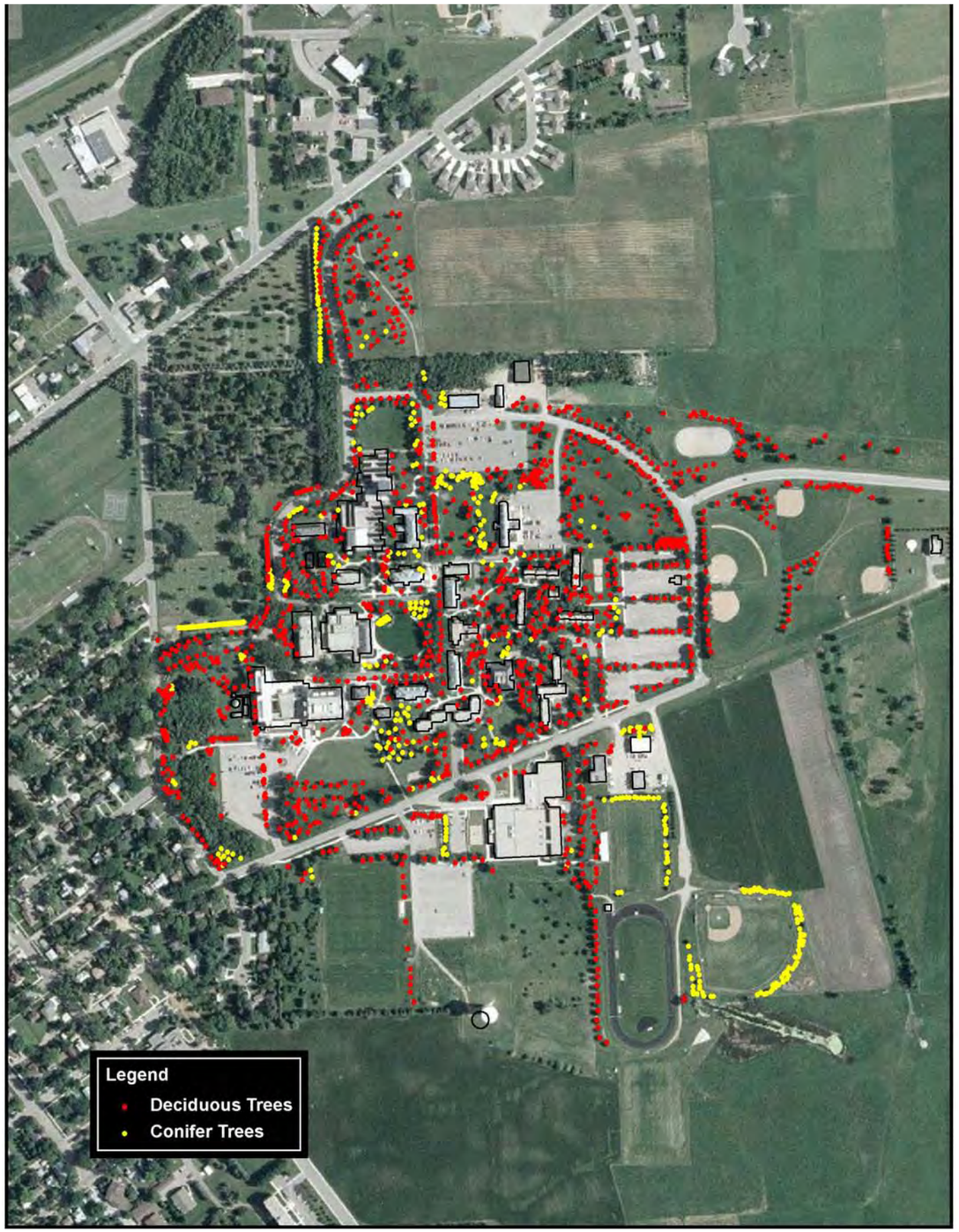


Figure 4.2c: Tree Survey of the UMM Campus.

4.2 LULC, NATURAL RESOURCES AND HABITAT.

The United States Department of Agriculture – National Agriculture Statistics Service (USDA-NASS) Cropland Data Layer was used as the data source for Land Use/Land Cover (LULC) mapping . Cropland data was derived from satellite imagery flown in 2006. Non-agricultural LULC is from the 2001 United States Geologic Survey's (USGS) National Land Cover Dataset (NLCD). Agriculture dominates the LULC of Stevens County with corn and soybeans in rotation being the dominant crops (Figure 4.2a).

Minnesota Department of Natural Resources' (MNDNR) native plant communities and Sites of Biodiversity Significance are mapped in Figure 4.2b (Minnesota Counties Biological Survey - MCBS, reference date). There are areas of moderate biological significance to the east of UM-Morris along the Pomme de Terre River; a southern type mesic prairie on the west bank, and southern type dry hill prairie on the east bank. From the edge of the UM-Morris campus to these sites the LULC is predominantly non-native grasslands, wetland and alfalfa.

In 2003-2004 the UM-Morris conducted a survey of trees on campus. (Figure 4.2c) The survey does not appear entirely complete. However, it does provide a detailed assessment of those trees included including species, condition, height and diameter breast height (DBH).

RECOMMENDATIONS:

- **Existing native plant communities of moderate biological significance along the Pomme de Terre River present an opportunity to further augment the corridor of biological diversity between campus and the river. Upland areas could be reforested and lowland grass and pasture land converted to native prairie. We recommend that the UMM community initiate the development of this corridor and lead the Morris community in its implementation.**
- **Increasing biodiversity from the boundary of the City of Morris through campus to the Pomme de Terre River offers a design opportunity to transition from an urban, formal aesthetic to a natural, informal aesthetic. This differentiation would help emphasize the West side of campus as the "front door" of campus.**
- **Prioritize the planting of vegetation that provides food and habitat for wildlife as suggested in Appendix 6: Species List of the U.S. Fish & Wildlife Service Morris Wetland Management District Comprehensive Conservation Plan and Environmental Assessment.**
- **Update the campus tree survey for completeness.**
- **As indicated in Figure 4.2b, there is a large area of moderately significant plant biodiversity immediately adjacent to the campus where it is likely to experience impacts from campus activities. The University should consider "adopting" this natural area for ongoing study, perhaps benchmarking the area's health as a biodiversity resource with other smaller, adjacent areas of moderate biodiversity value.**

GEOTECHNICAL ANALYSIS

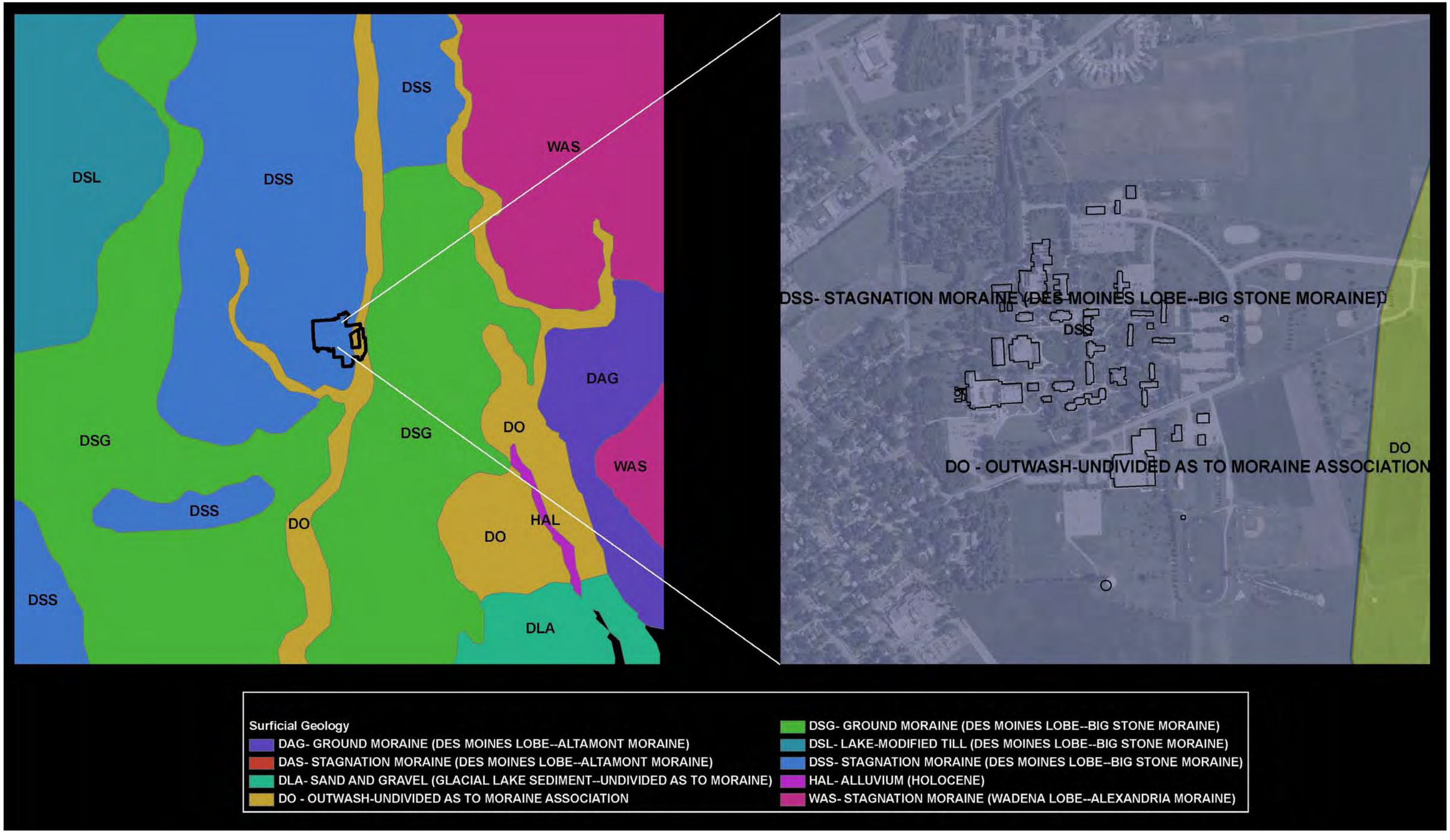


Figure 4.3a: Surficial Geology of the Morris Region.

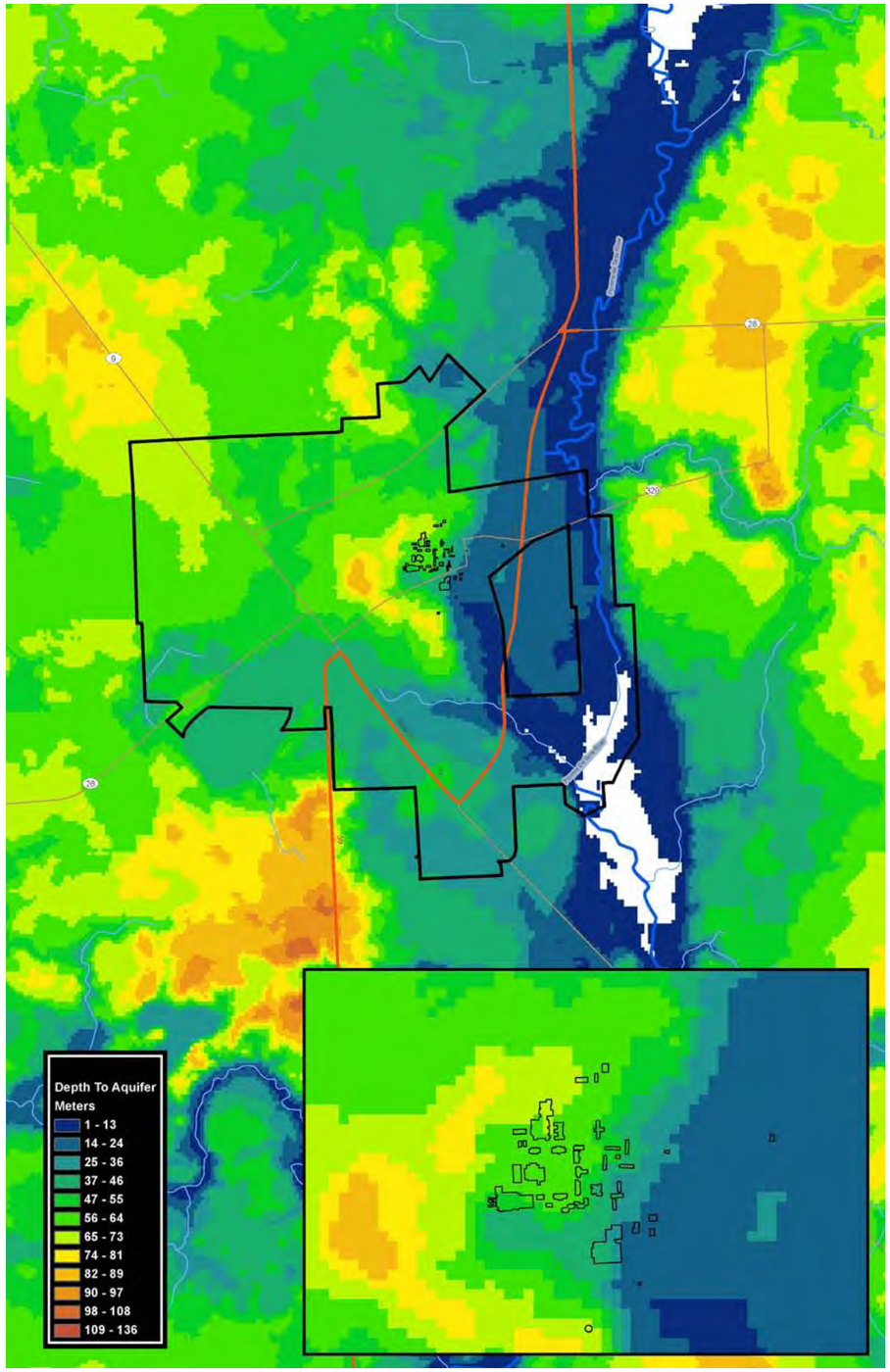


Figure 4.3b: Depth to Surficial Aquifer in the Morris Region

4.3. GEO-TECH ANALYSIS.

Surficial geology in the Morris region is dominated by Des Moines Lobe stagnation and outwash moraine deposits in the uplands and undifferentiated deposits in the Pomme de Terre River valley (Figure 4.3a). Soils that form from the Des Moine Lobe deposits are fine loamy tills with limestone, granite and shale parent material. These are excellent prairie soils (pre-settlement) and very fertile agricultural soils.

In the Morris Region, depth to underlying bedrock is generally 100-200 feet. Depth to the surficial aquifer is highly variable and ranges from a few feet near the Pomme de Terre River to almost 100 feet just to the west of UM-Morris in the town of Morris.

The surficial aquifer elevation was interpolated from the Minnesota Pollution Control Agency's (MPCA) Minnesota County Well Index. This surficial aquifer elevation dataset was then subtracted from the land surface elevation data giving the depth to the surficial aquifer map shown in Figure 4.3b.

RECOMMENDATIONS:

- **Stormwater should be managed to ensure that stormwater contaminants do not reach the shallow aquifer zones identified on Figure 4.3b. The university should also have a hazard mitigation strategy for spills or leaks that may occur in areas with a shallow depth to the surficial aquifer, especially since parts of campus are overlain by porous soils and glacial deposits.**

- **While the underlying surficial geology of the Morris campus appears well suited for geothermal heat pumps, it is recommended that the University maximize use of its combined heat and power (CHP) system (also known as cogeneration). CHP systems generate electricity and thermal energy in an integrated system–in Morris' case, from biomass, a renewable energy resource. To increase efficiency and reduce costs, the entire campus should maximize use of thermal energy recovered from the CHP system for its heating and cooling needs. Should the campus maximize its thermal energy efficiency (depending on the drain of the parasitic load on energy production), it is recommended that the University consider either expanding its CHP system or explore other options such as geothermal heat pumps.**

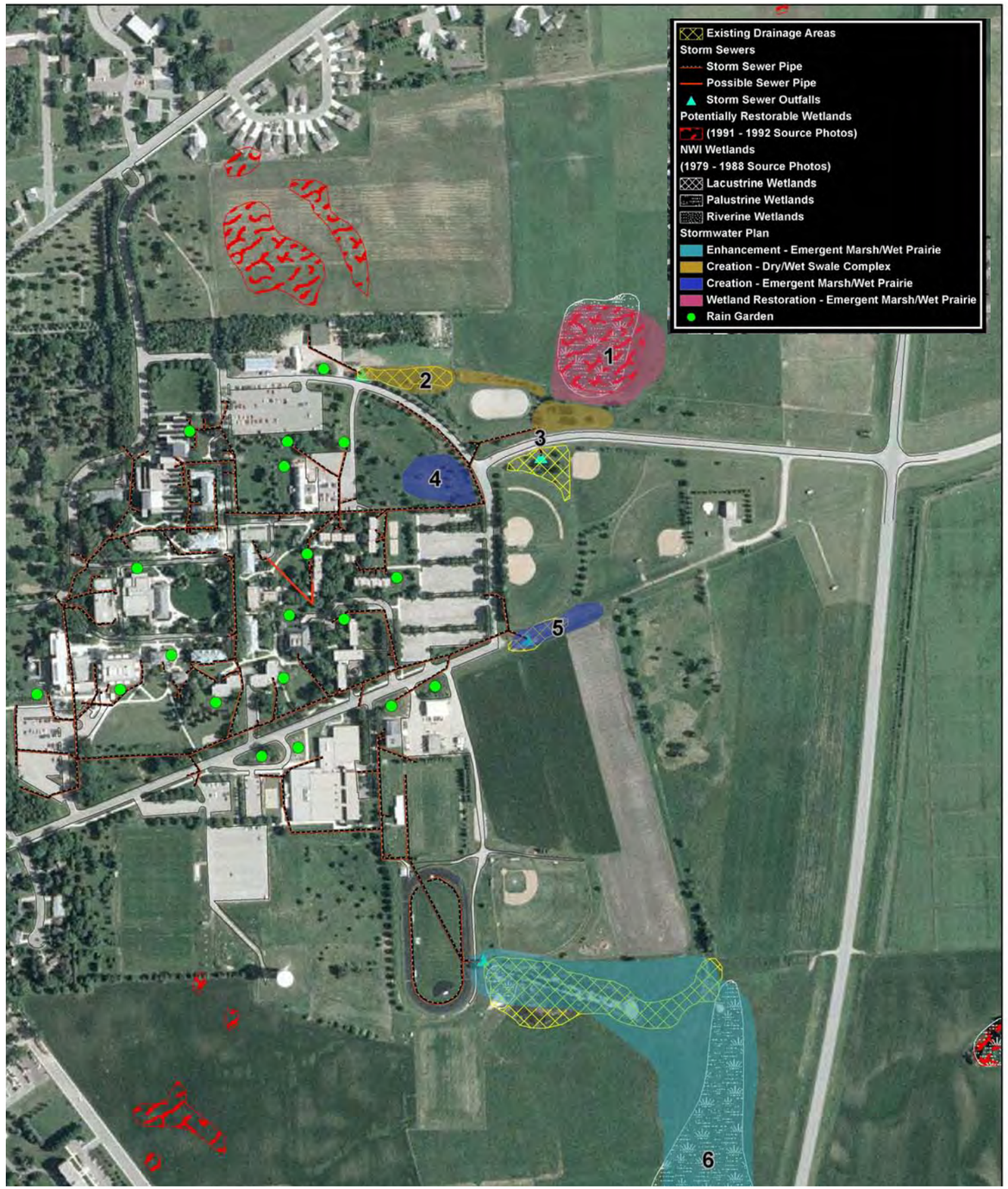


Figure 4.4a: Existing Stormwater Systems and Recommended Enhancements.

4.4 STORMWATER ANALYSIS.

The University of Minnesota Morris is located wholly within the Pomme de Terre Watershed. The Pomme de Terre River is the major drainage of the watershed and flows from north to south into the Minnesota River.

Land use/land cover change will likely increase the rate and volume of stormwater runoff. In particular, impermeable surfaces and agriculture are responsible for the greatest increases in rate and volume of stormwater runoff, which can change the natural flow regimes (magnitude, timing, duration, frequency and rate of change) of rivers and streams. Altered flow regimes can lead to river and stream instability (i.e., stream bank incision, widening and/or increased turbidity, and aquatic habitat instability.

The Minnesota Pollution Control Agency (MPCA) administers the federal Clean Water Act 303(d) mandated list of statewide impaired lakes and rivers in Minnesota. This program designates bodies of water impaired if they fail to meet certain clean water standards. The Pomme De Terre north of Morris to its confluence with Muddy Creek is listed as impaired for fish indices of biologic integrity (IBI) – low diversity - and mercury. South of its confluence with Muddy Creek (four to five miles south of the town of Morris), the Pomme De Terre River is listed as an impaired water for mercury, fecal coliform bacteria and turbidity.

Existing stormwater systems were analyzed through an examination of an AutoCAD drawing of the University of Minnesota – Morris' sewer, storm sewer and water utility infrastructure done in 2002 by the engineering, architectural, surveying and environmental consulting firm, Widseth Smith, Nolting and Associates, Inc. (WSN). Stormwater pipes and outfalls were separated from the drawing and exported to an ArcGIS shapefile and overlain on the campus map and aerial photography (left). This map was sent to UM-Morris' building services for verification and comments were used to update any inaccuracies.

At UM-Morris stormwater discharge is collected in storm sewer pipes and discharged above ground in lower lying areas away from the campus. This stormwater either then infiltrates to the shallow groundwater or flows naturally or through ditches overland to the Pomme De Terre River. It is not directly discharged into the Pomme De Terre. None of the discharge areas appear to have flooding problems (R. Thompson 2007, pers. comm., Dec 11).

Compared to other LULC changes in the watershed the increased discharge from the UM-Morris campus is likely small. However, the cumulative impact from impermeable surfaces and land use/land cover change, in general, within the Pomme De Terre Watershed has likely contributed to degradation of the River and increased turbidity. An opportunity to naturalize the infiltration and conveyance of stormwater from the University should be part of a larger strategy within the watershed for similar action. This is consistent with the priority concern identified within the Stevens County Local Watershed Management Plan (2005) of stormwater and drainage management focusing on wetland restorations and flood control.

Stormwater runoff often contains many particulate and dissolved pollutants originating from the surfaces on which rainwater falls. Among the most common urban elements contributing to degraded water quality are roads, parking lots, and utility vehicle storage areas. These elements contain surfaces that produce substantial quantities of organic pollutants, heavy metals, and hydrocarbons; these constituents may be particulate or dissolved and are typically derived from automobile parts, automobile fluids, and miscellaneous municipal waste. Harmful constituents build up on impervious surfaces during dry periods and are mobilized during precipitation events. Once mobilized, physically or chemically, harmful pollutants are conveyed to regional streams, rivers, and wetlands via stormwater infrastructure. Urban surfaces are a significant threat to local and regional water quality, as there are more petroleum based residues running off of roads, parking lots and industrial sites today than spilled by oil tankers and barges. (Marsh p. 205)

STORMWATER MANAGEMENT

Natural stormwater treatment areas can remediate many of these pollutants through uptake, absorption and/or transformation of these chemicals by native plants, microbes and soils. Further, the natural stormwater treatment areas promulgate a more natural discharge volume and rate by slowing, evaporating and infiltrating stormwater runoff.

To this end, the team used soil infiltration data from the USDA – SSURGO dataset, the National Wetlands Inventory (NWI) and the MN DNR's Potentially Restorable Wetlands layer to suggest a variety of stormwater best management practices for the UM-Morris campus. The locations of the suggested BMPs are numbered and shown in Figure 4.4a. Native prairie and wetland plants are recommended for all BMPs because of habitat benefits to wildlife, infiltration facilitated by their deep rooting, and the hardiness and ease of maintenance of native plants. Further, flow should be dispersed at the storm sewer discharge locations or soils may be quickly eroded.

Infiltrating water as close to the source as possible significantly reduces stormwater conveyance via storm sewers and drainage outlets. Stormwater best management practices (BMPs) such as rain garden installation (shallow depressions planted with native plants), are an example of a BMP designed to collect stormwater from roof tops and smaller impervious areas and infiltrate/evaporate much of the water that would otherwise run into the storm sewer – as well as create habitat. Several possible locations for rain gardens are shown in Figure 4.4a, but onsite investigation and assistance from a professional trained in BMP design and implementation would be required for optimum placement and design. Rain barrels can be installed to collect rooftop runoff for use in landscaping or to evaporate runoff between precipitation events. Urban Small Sites Best Management Practice Manual created on behalf of the Metropolitan Council is an excellent resource: http://www.metrocouncil.org/environment/Watershed/bmp/manual.htm.
It categorizes BMPs into the following categories:

- Impervious Surface Reduction: Reducing the amount of hard surface.
- Housekeeping Techniques: Basic clean-up and management practices.
- Construction Practices: Ways to reduce opportunities for sediment release in stormwater.
- Soil Erosion Control: Techniques to prevent exposed soils from eroding.
- Sediment Control: Methods to catch sediment already suspending in stormwater.

RECOMMENDATIONS (SEE FIGURE 4.4A):

- **Restore the wetland north of the baseball diamonds (Area 1). It appears from the NWI that the wetland was likely an emergent marsh, however, a professional restoration ecologist should be consulted to determine the original wetland type and hydrologic regime, as well as for assistance in plant selection and maintenance. A study should be completed prior to restoration of this wetland, or other infrastructure creation described below, that identifies all subsurface drainage, specifically agricultural drain tile.**

- **Create a series of dry to wet swales (Area 2) from west to east that drain to the restored wetland at 1. Swales consist of open vegetated channels and filter and slow stormwater (Shaw and Schmidt 2003). See Shaw and Schmidt (2003) for a list of native plants best suited for each type of swale and other BMPs discussed below. These swales would move from high to moderate slopes, and from well drained to poorly drained soils. The swales should have mild longitudinal and side slopes, or check dams where necessary.**

- **Although no major flooding has been observed near the storm sewer outlet near the baseball diamonds (R. Thompson 2007, pers. comm., Dec 11), it is recommended to move the outlet back across the road into the swale/wetland complex in 1 and 2, above (Area 3). This will prevent possible flooding, reduce pollutants, and better attenuate flows. Consulting with a licensed professional civil engineer and licensed professional ecologist will be necessary.**

- **Creating a wet prairie or an emergent wetland at Area 4 could provide substantial attenuation of stormwater runoff peak flow rates prior to stormwater discharge into the existing stormwater management system. Further site investigation would be necessary to validate this recommendation.**

- **An existing drainage area, Area 5, would be well suited for the creation of a wet prairie or emergent marsh. This would reduce contaminants, create habitat, and attenuate stormwater runoff.**

- **Area 6 (a NWI emergent marsh/wet prairie) could benefit from enhancement through native plantings and proper maintenance to ensure success of native plants. It is likely that it is dominated by invasive plants and may not function optimally for habitat, water attenuation, and pollutant remediation due to the agricultural and urban land uses surrounding it. This area has a shallow depth to groundwater. Restoring natural ecological function is important to limit contamination from stormwater runoff.**

- **Evaluate the volumes and water quality of water being discharged into the Pomme de Terre from the campus and analyze the discharge in the context of the larger area, including any discharge into the river by the City of Morris.**

- **The large volumes produced by the sump pump in the Central Heating Facility could be treated and considered for cooling at the biomass gasifier cooling tower. The sump pump water may have to be treated, but additional research and testing would have to occur to determine the feasibility.**

- **A distributed system of harvested gray water integrated into the various campus buildings and sites would be the preferred source for water irrigation services. Over time, the systems can become self managing through the use of water/rain/moisture sensors, and solar pumps.**

- **The campus should adopt stormwater policies and best management practices (BMPs) as outlined in the Metropolitan Council's Urban Small Sites Best Management Practice Manual. The manual consists of 40 BMPs that are aimed at managing stormwater pollution for small urban sites in a cold-climate setting and is divided into the following sections:**

Runoff Pollution Prevention
Impervious Surface Reduction
- Street Design
- Cul-de-Sac Design
- Parking Lot Design
- Turf Pavers
- Green Rooftops

Housekeeping
- Pavement Management
- BMP Maintenance
- Landscape Design and Maintenance
- Animal Management

Construction Practices
- Grading
- Sequencing
- Vehicle Tracking Pad

Soil Erosion Control
- Mulches, Blankets, and Mats
- Vegetative Methods
- Structural Methods

Sediment Control
- Silt Fences
- Inlet Protection
- Temporary Sedimentation Basins
- Check Dams

Stormwater Treatment BMPs
Infiltration Systems
- On-Lot Infiltration
- Infiltration Basins
- Infiltration Trenches

Filtration Systems
- Bioretention Systems
- Surface Sand Filters
- Underground Filters
- Filter Strips

Constructed Wetlands
- BMPs in Series
- Stormwater Wetlands
- Wet Swales

Retention Systems
- Wet Ponds
- Extended Storage Ponds
- Wet Vaults

Detention Systems
- Dry Ponds
- Oversized Pipes
- Oil/Grit Separators
- Dry Swales

Flow Control Structures
- Permeable Weirs
- Flow Splitters
- Proprietary Flow Control Devices

Regulation of Water Quality

WIND ANALYSIS

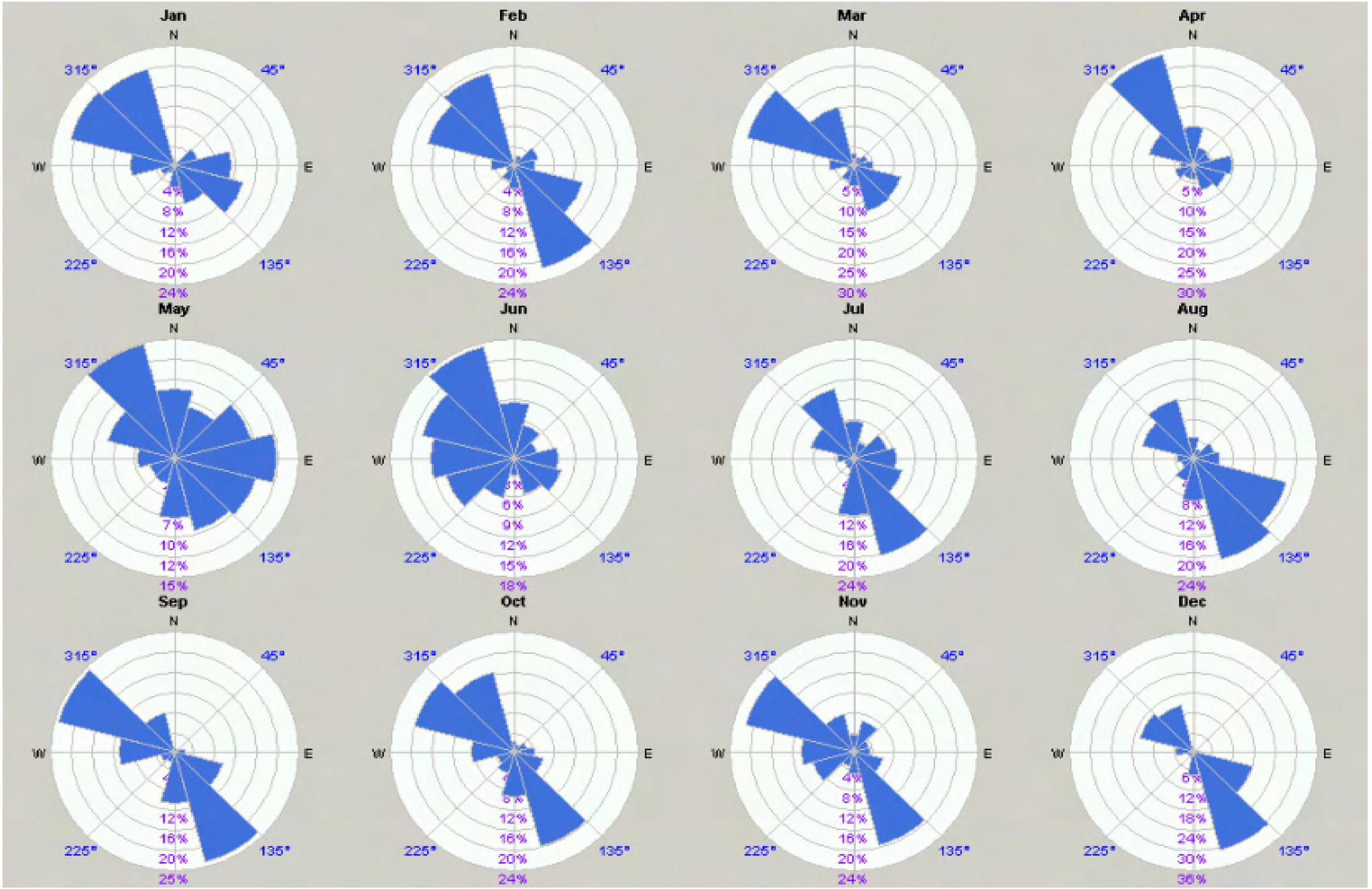


Figure 4.5a: WCROC Wind Resource Assessment August 2003 to July 2004 Wind Roses.

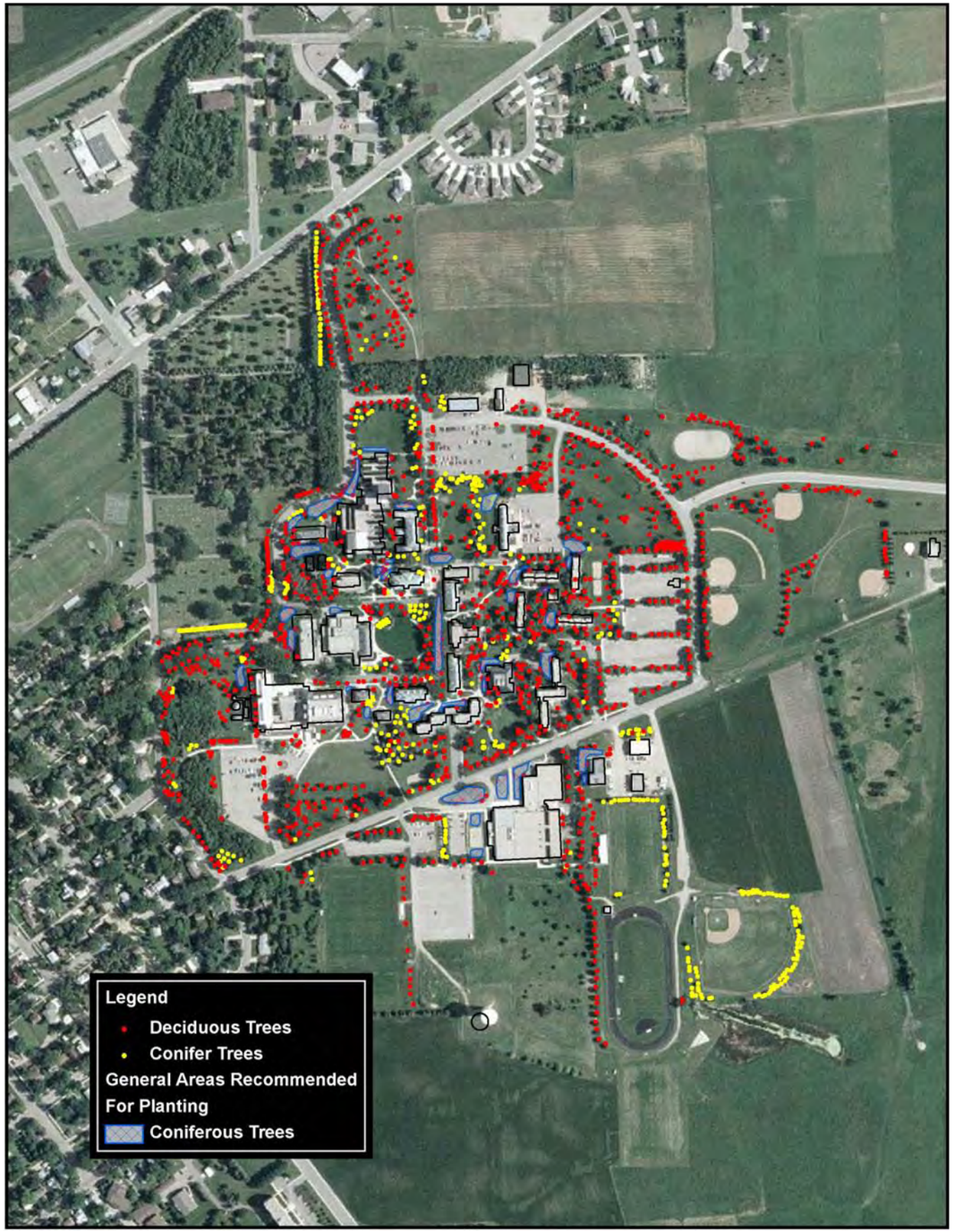


Figure 4.5b: General areas recommended for coniferous plantings.

4.5. WIND ANALYSIS

The objective of the wind analysis is twofold: 1) determine the seasonality of prevailing winds for passive ventilation of buildings and determine the best areas for coniferous plantings to shield buildings from harsh winter winds; and, 2) identify optimum sites for future and proposed wind turbines.

To achieve the first objective the team reviewed "WCROC Wind Resource Assessment August 2003 to July 2004" available online at: http://wcroc.cfans.umn.edu/Renewable_Energy2.html. The wind roses were compared by month with the campus map to determine how new building construction could take advantage of seasonal prevailing winds and how retrofits might help existing buildings (Figure 4.5A).

To achieve the second objective we mapped the 80m wind speed (updated in 2006): obtained from the Minnesota Department of Commerce's website: http://www.state.mn.us/portal/mn/jsp/content.do?contentid=536887066&contenttype=EDITORIAL&agency=Commerce

Annual average wind speeds at 80m are between 7.8 and 8.2 m/s near UM-Morris. There is some difference in wind speeds on land owned by the University of Minnesota with average wind speeds shown as slightly higher in the southeast portion of UM land on the east side of the Pomme de Terre River. Local meteorological data would be needed to verify this data.

While excellent for general planning, the Minnesota Department of Commerce wind maps do not provide the detail needed for accurate assessments of energy production and site specific meteorological data should be gathered. Prior to installation of its first wind turbine the West Central Research and Outreach Center (WCROC) installed a met tower and gathered data from August 2003 to July 2004. Sustainable Automation, LLC, performed analysis of this data and determined that wind speeds at 70m (the turbines hub height) would be 7.35 m/s. This is 5-7% higher than wind speeds at the nearest Wind Resource Assessment Program (WRAP) meteorological tower near Alberta, MN. This wind speed was also somewhat higher than what the Minnesota Department of Commerce wind maps available at the time of analysis predicted.

RECOMMENDATIONS:

- **Evaluate the potential for existing and future buildings to use natural ventilation systems based on prevailing winds; this strategy could be particularly useful for reducing summer peak electrical loads to cool buildings when activity levels on campus are relatively low. The strategy includes focusing on placement of air intake systems and operable windows on the side of buildings facing the prevailing winds and creating corresponding outlets for ventilation on the opposite side. With new construction, natural ventilation can be incorporated into mechanical systems to supplement their air flow and reduce the need for energy.**

- **November through February wind roses should inform tree planting, including dense coniferous trees as a wind break as a suggested species choice. (Figure 4.5b)**

- **Temporary or permanent meteorological towers should be erected to evaluate sites proposed for future wind turbines. While turbines have anemometers on the leeward side of the nacelle, the wind speed data are often significantly affected by the turbulence created from the turbine blades. Accurate wind data is essential for validating and predicting energy production estimates.**

- **Develop a site-specific wind resource grid for use in optimizing the placement of future wind turbines.**

SOLAR INSOLATION ANALYSIS

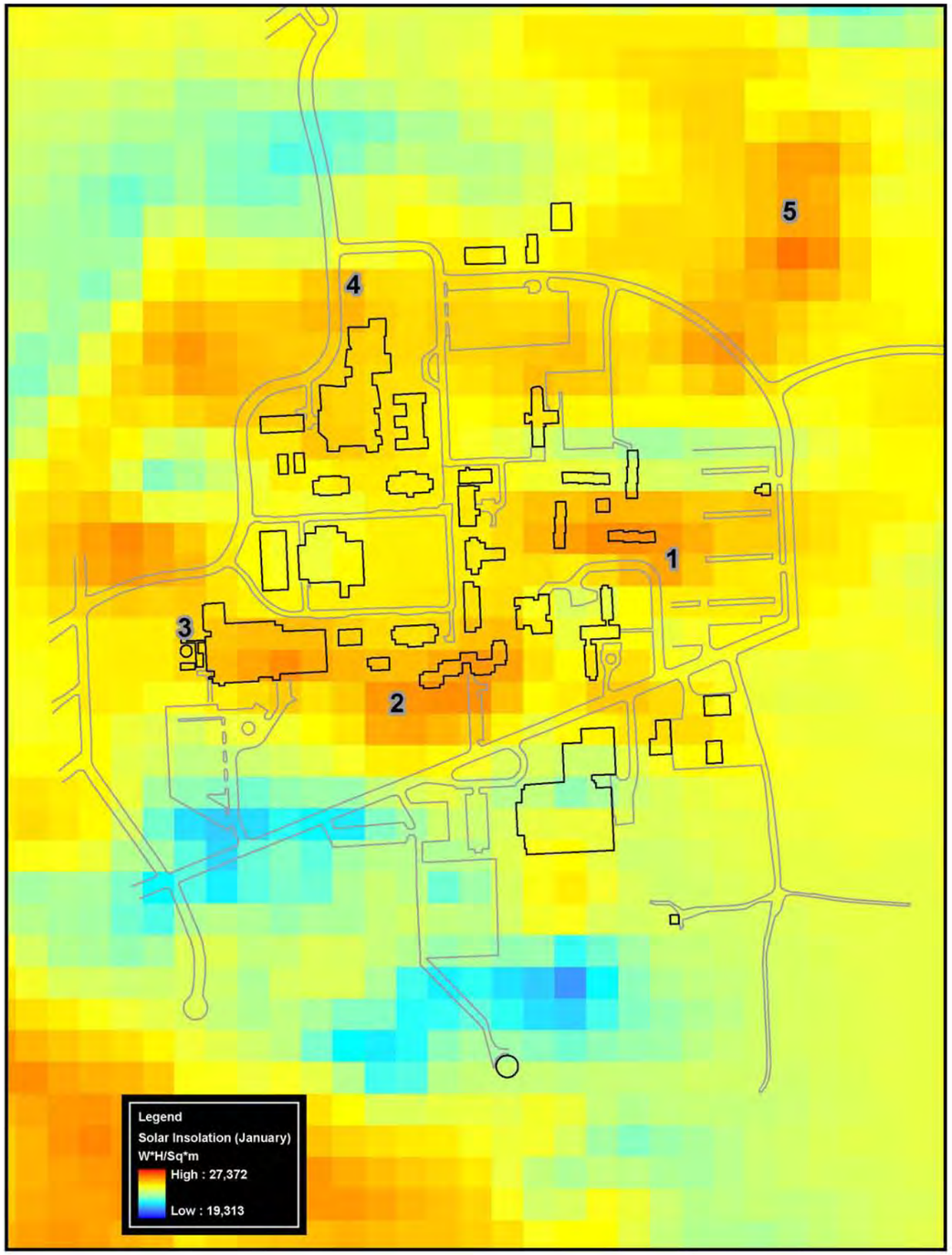


Figure 4.6a: Solar Insolation in January.

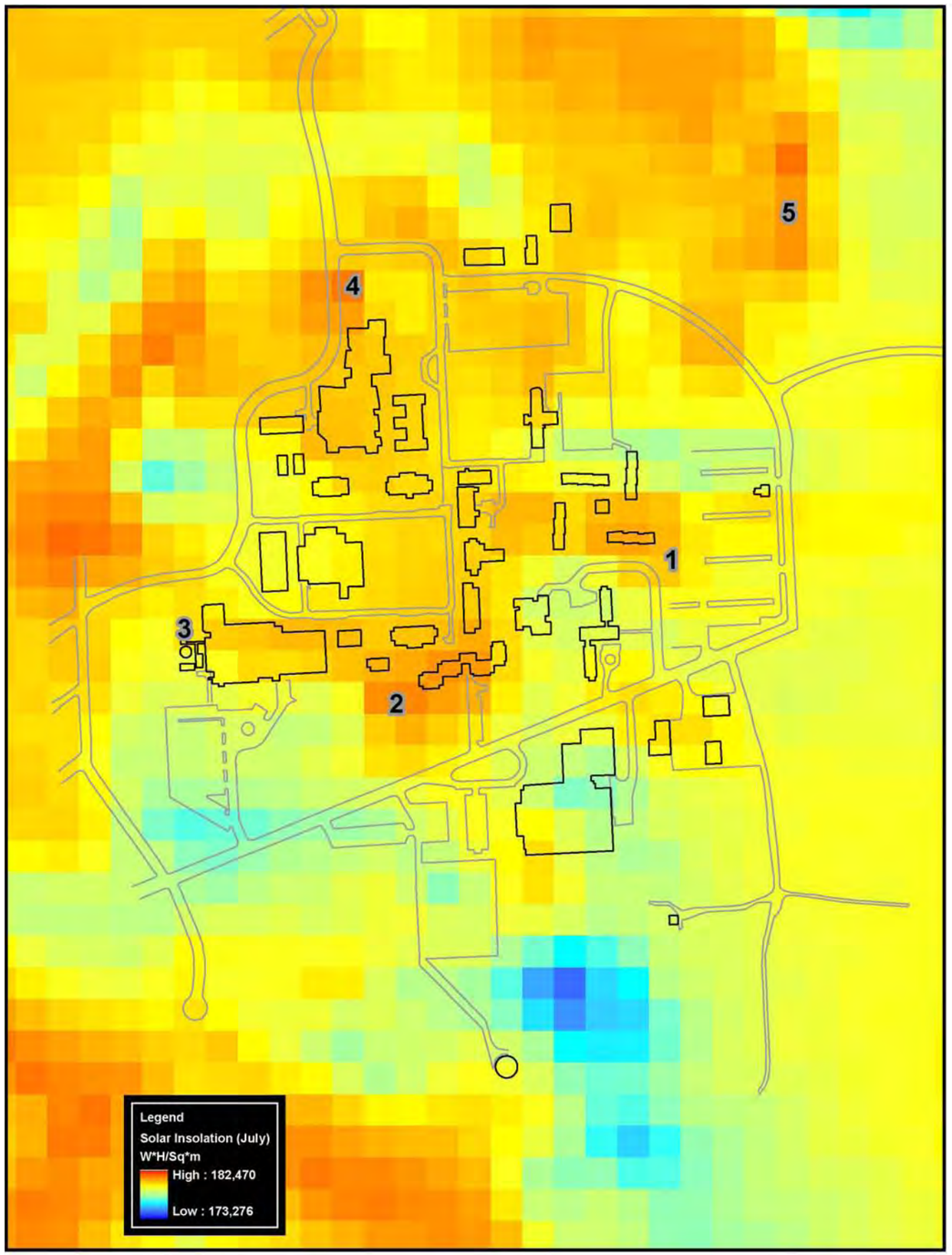


Figure 4.6b: Solar Insolation in July.

4.6. SOLAR INSOLATION ANALYSIS

Solar insolation is a measure of direct, diffuse and reflected solar radiation. Direct solar radiation befalls a given surface without major impediment by clouds or other significant absorptive substance. Diffuse solar radiation is radiation befalling an area after being partially absorbed and/or refracted, i.e., clouds. Reflected radiation is radiation that is reflected from other surfaces and is often an insignificant source of solar energy on a given area except in areas with highly reflective surfaces, for example, areas with significant snow cover.

Solar insolation was modeled in ArcGIS for UM-Morris. This model is strongly dependent on surrounding topography in determining a particular location's insolation. In this analysis the 30m USGS DEM was the input topography. Further, building footprints and heights were not considered, nor was summertime tree cover. In the future, topography data with finer resolution is recommended, i.e., two foot contour data, as is including building heights (unavailable for this analysis). Lastly, it should be noted that the solar insolation model in ArcGIS does not include reflected radiation and this could increase winter solar insolation values at UM-Morris.

Seasonal variation of insolation is significant. Summer insolation values (in Watt-Hours per Square Meter) are five to ten times higher in July (Figure 4.6b) than in January (Figure 4.6a). Current or future buildings receiving high January solar insolation should be retrofitted or built to take advantage of the solar energy when it is strongest, e.g. when the sun is in the southeast, south and southwest. Generally, the areas receiving the strongest solar insolation in January are also receiving the highest insolation in July. Large insulating windows might be placed on the southeast, south and southwest sides of buildings in these areas to receive the winter insolation but should have shading and/or overhangs during the summer months to prevent excessive summer passive solar heating. Planting deciduous trees southeast, south and southwest of buildings in these areas might also be a strategy to receive maximum solar benefit. The trees' summer foliage would absorb the strong summer insolation yet would lose their foliage in the fall so that the weaker winter insolation would benefit buildings in these areas through passive heating and lighting.

There are five clustered areas on campus where applications of solar technology are likely to be the strongest based on this insolation analysis:

- An area (1) immediately adjacent to the east parking lot that includes some student housing;
- An area (2)on the southern edge of the campus that includes Gay Hall;
- An area (3) in the southwest corner of the campus with the Science Building;
- An area (4) immediately north of Martin Luther King Jr. Drive;
- An area (5) in the northeast corner of campus by the Horse Arena.

The areas of strong solar insolation on the south and east sides of campus offer opportunities for future use of solar energy to provide hot water or possibly electrical power to the Science Building and Gay Hall. The area near Martin Luther King Jr. Drive would be best utilized for solar lighting and signage as one of the gateways to the campus. If the greenhouse is not sited near the Central Heating Facility, the Horse Arena would be an acceptable option for the greenhouse because of its strong solar access.

RECOMMENDATIONS:

- **Create a solar strategy that new or remodeled buildings be outfitted to be "solar ready". That means structures are built with the capacity to carry the additional weight of a solar thermal or electrical system and electrical designs are installed that will facilitate bringing electrical power into the interior of the structure for use. This could be phased with buildings that are in high solar area zones, such as Gay Hall, the Science building and the M, L, K dormitories adjacent to the east parking lot.**

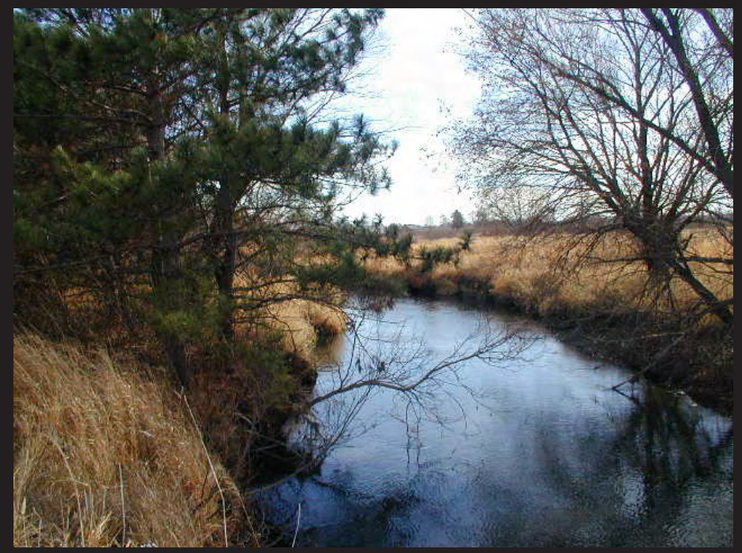
- **Solar thermal or solar electric installed in strategic locations can reduce energy costs, the campus carbon footprint, and provide demonstration, learning, and research opportunities for staff and students.**

- **Solar lighting or signage is an opportunity at the gateway, or throughout the campus landscape.**

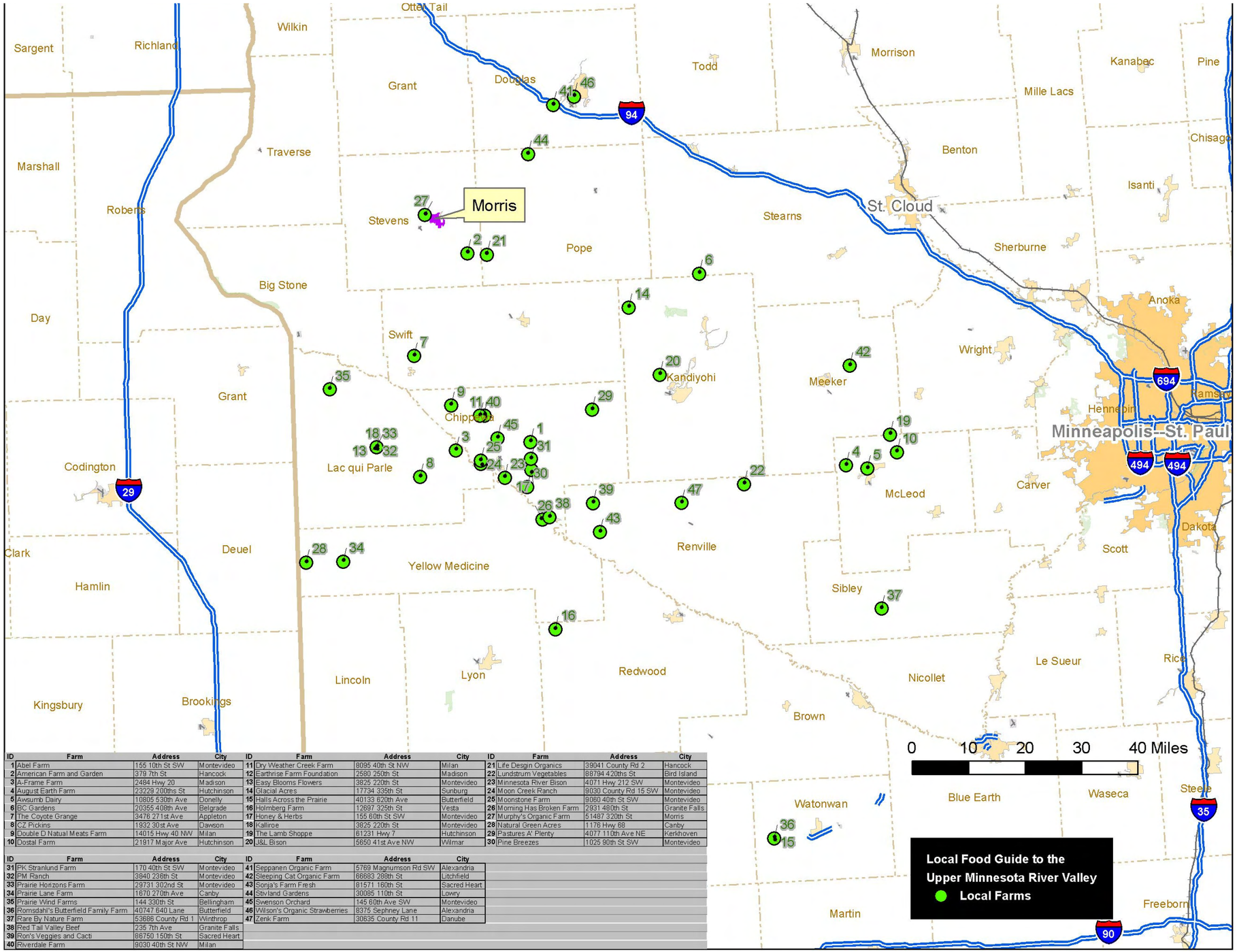
- **Deciduous trees planted along the southern facades of buildings will help decrease solar gain in summer months. When leaves drop in fall, light and thermal energy passes through the tree canopy to increase solar insolation.**

Analysis IV - UMM Services and Support

campus master plan 2008



FOOD SERVICE ANALYSIS



ID	Farm	Address	City
1	Abel Farm	155 10th St SW	Montevideo
2	American Farm and Garden	379 7th St	Hancock
3	A-Frame Farm	2484 Hwy 20	Madison
4	August Earth Farm	23229 200ths St	Hutchinson
5	Awsumb Dairy	10805 530th Ave	Donelly
6	BC Gardens	20355 408th Ave	Belgrade
7	The Coyote Grange	3476 271st Ave	Appleton
8	CZ Pickins	1932 30st Ave	Dawson
9	Double D Natual Meats Farm	14015 Hwy 40 NW	Milan
10	Dostal Farm	21917 Major Ave	Hutchinson

ID	Farm	Address	City
11	Dry Weather Creek Farm	8095 40th St NW	Milan
12	Earthrise Farm Foundation	2580 250th St	Madison
13	Easy Blooms Flowers	3825 220th St	Montevideo
14	Glacial Acres	17734 335th St	Sunburg
15	Halls Across the Prairie	40133 620th Ave	Butterfield
16	Holmberg Farm	12697 325th St	Vesta
17	Honey & Herbs	155 60th St SW	Montevideo
18	Kalliroe	3825 220th St	Montevideo
19	The Lamb Shoppe	61231 Hwy 7	Hutchinson
20	J&L Bison	5650 41st Ave NW	Wilmar

ID	Farm	Address	City
21	Life Desgin Organics	39041 County Rd 2	Hancock
22	Lundstrum Vegetables	68794 420ths St	Bird Island
23	Minnesota River Bison	4071 Hwy 212 SW	Montevideo
24	Moon Creek Ranch	9030 County Rd 15 SW	Montevideo
25	Moonstone Farm	9060 40th St SW	Montevideo
26	Morning Has Broken Farm	2931 480th St	Granite Falls
27	Murphy's Organic Farm	51487 320th St	Morris
28	Natural Green Acres	1176 Hwy 68	Canby
29	Pastures A' Plenty	4077 110th Ave NE	Kerkhoven
30	Pine Breezes	1025 90th St SW	Montevideo

ID	Farm	Address	City
31	PK Stranlund Farm	170 40th St SW	Montevideo
32	PM Ranch	3840 236th St	Montevideo
33	Prairie Horizons Farm	29731 302nd St	Montevideo
34	Prairie Lane Farm	1670 270th Ave	Canby
35	Prairie Wind Farms	144 330th St	Bellingham
36	Romsdahl's Butterfield Family Farm	40747 640 Lane	Butterfield
37	Rare By Nature Farm	53686 County Rd 1	Winthrop
38	Red Tail Valley Beef	235 7th Ave	Granite Falls
39	Ron's Veggies and Cacti	86750 150th St	Sacred Heart
40	Riverdale Farm	9030 40th St NW	Milan

ID	Farm	Address	City
41	Seppanen Organic Farm	5769 Magnumson Rd SW	Alexandria
42	Sleeping Cat Organic Farm	66683 289th St	Litchfield
43	Sonja's Farm Fresh	81571 160th St	Sacred Heart
44	Stviland Gardens	30085 110th St	Lowry
45	Swenson Orchard	145 60th Ave SW	Montevideo
46	Wilson's Organic Strawberries	8375 Sephney Lane	Alexandria
47	Zenk Farm	30635 County Rd 11	Danube

Figure 5.1 Locally grown food and organic farms in the Upper Minnesota River Valley.

5. FOOD SERVICE ANALYSIS

5.1. INTRODUCTION

The system that brings food to campus, prepares it for consumption, and manages its resultant waste stream is highly complex and involves multiple transactions and relationships. These interactions extend far back into the food product chain to the point where the food is grown or raised. While the agricultural system alone has a substantial footprint, most food is also processed along the way, often transported hundreds of miles, and stored in systems such as freezers and refrigerators that use large amounts of energy. The last steps are preparation of the food and management of packaging and food wastes that result. At every step in this system there is a substantial carbon impact that feeds into the overall campus environmental footprint.

Because of these complexities and multiple steps, the measurement of these impacts consequently will be inexact in specific instances, but can bring greater understanding of the system in the aggregate. Overall, the goal is to provide a framework for taking action over time to improve the quality of the food system, reduce its environmental impacts and perhaps create economic benefits for the local economy in Morris and its region.

Although UMM has made strides to improve the ecological footprint and quality of its food supply, like virtually every other campus food system in the country, the current food system at Morris is not environmentally sustainable and may not be economically sustainable over time. The average food calorie on U.S. tables requires 10 equivalent food calories of energy to get it there. Unless Morris becomes dramatically better at reducing its impacts, the food system will remain a major contributor to the campus' total carbon footprint.

Our research has determined that the best way to reduce the carbon footprint of the food system is to change food consumption patterns on the UMM campus. Although consumption occurs at the end of the food product life cycle, the way we consume our food will drive the necessary systemic changes upstream and downstream from the dining hall.

In developing a formula for evaluating the Morris food service system, we relied heavily on a study of lifecycle impacts of the U.S. food system by Martin C. Heller and Gregory A. Keoleian (2000) at the Center for Sustainable Systems at the University of Michigan.

The original Michigan study apportions carbon impacts from food systems as follows:

Household storage and preparation		31%
Commercial food service		7.0
Food retail		4.0
Packaging material		7.0
Processing		16.0
Transportation	13.0	
Agricultural production		22.0
TOTAL:		100.0%

Because this study looked at the entire U.S. food system, including the substantial portion that is residential or the slightly smaller portion that is based on restaurant and ready-to-eat food outlets, we have made certain adjustments to better reflect the type of food system that is in place on most college campuses. For purposes of this analysis, the carbon footprint from waste disposal associated with the food system has not been included. These impacts are dealt with separately in the section of this report on waste issues. We have assumed, however, a reduced level of carbon impact from packaging due to bulk purchasing and large size packages, and consolidated and generally reduced the impacts from the first three categories in the Michigan study to get a revised allocation of carbon impacts as follows:

Storage and preparation		35.0%
Packaging		7.0
Processing		17.0
Transportation	16.0	
Agricultural production		25.0
TOTAL:		100.0%

Reducing the impacts from household storage and food retail increases the relative percentages of the other categories. These are fairly crude averages across all food types and food systems and an analysis of individual food items will vary greatly from one food type to another. For example, the energy intensity of meat, especially beef, will significantly increase the proportion of energy use attributable to agricultural production when compared to the average for most fruits and vegetables and other types of meat products. Grass-fed beef that is procured from a local source requires less energy to produce than conventional beef and should thus be a priority for local procurement.

This formula can be used to evaluate a series of strategies that are recommended for consideration in reducing the food service footprint. For example, organic agriculture reduces carbon impacts by 50 percent compared to conventional agriculture (reference). Therefore, increasing the relative campus consumption of organic ingredients will reduce the agricultural production impact accordingly.

FOOD SERVICE ANALYSIS

Using the baseline above, each strategy will either increase the overall carbon footprint of the food system or reduce it. Here is a representative estimate of strategies focusing on the consumption patterns of food and the reductions in a baseline carbon footprint:

Strict vegan diet	-72%
Vegetarian diet	-42%
Heavy meat diet	+24%
Mostly organic	-29%
Some organic	-15%

We did not receive any specific data from the UMM campus food service to calculate an initial carbon footprint for the Morris food system. Our general recommendation is that this data be provided in order to make that baseline calculation. From the baseline numbers it will be possible to evaluate the reductions to overall baseline carbon footprint from various strategies that are discussed below. Ideally, future student and faculty research would be directed at this area, and would evaluate actual food sources and then aggregate the data to get a more detailed picture of the food system's environmental footprint.

There are, however, many strategies that we know will reduce the footprint of the campus food system. Some of these strategies that are being utilized by other college campuses are summarized below.

5.2. ORGANIC INGREDIENTS

Organic agriculture produces half of the carbon footprint of conventional agriculture (reference). Increased procurement of organic food within the campus food service system to 50 percent would reduce the campus food system's carbon footprint by 25 percent.

5.3. LOCAL SOURCING OF FOOD SUPPLY

Our analysis shows that a significant number of organic food producers exist within the Upper Minnesota River Valley (See Fig. 5.1). The working assumption for this report is that significant supplies of meat, dairy, eggs and fresh fruits and vegetables are available to at least some extent from within the local area. This could be especially effective, as an initial effort, by identifying a local source of organic, grass-fed beef products.

There are, however, significant barriers to local procurement which cannot be ignored, such as inconsistent quality and quantities, licensing and inspection issues, shipping and receiving logistics, etc. Such a system also certainly requires more management and staff time from the campus food service. However, there are models for how campus food programs have built supply-chain relationships with local providers, including the Southeast Minnesota Local Food Network which is affiliated, in part, by the University of Minnesota. Local sourcing has its most immediate impacts on transportation; however, it also has impacts on packaging, storage and processing with more frequent shipments of fresh foods, rather than more processed and packaged foods. For example, local vendors are more likely to use reusable cartons and containers, which reduce packaging waste. In the aggregate, these reduced energy inputs probably reduce the overall food system footprint by about 25 percent.

5.4. ON-CAMPUS GREENHOUSE

Integrating an on-campus greenhouse into the campus food system would supplement and complement local food procurement efforts. In addition to becoming a symbol of the campus' commitment to sustainability, the greenhouse could utilize currently under-utilized resources, including the water from the sump system in the campus central energy facility. If this water, which is currently pumped out and put directly into the storm sewer system, was used to cool the University's new biomass facility, this water would then contain some thermal energy that could be used for heating the greenhouse. This synergistic relationship between a power facility and a greenhouse has many models around the world and a high level of design for the greenhouse could make it a signature feature of the UM-Morris campus.

One of the goals of a greenhouse program would be to have it work closely with local procurement and overall food procurement efforts. For example, a greenhouse growing fresh vegetables could extend the seasonal timeframe for those commodities beyond the time that would otherwise be available during Minnesota's growing season. Fresh greens and herbs would be the easiest and most useful types of produce that could be grown in a campus greenhouse, providing a year-round supply.
There are several examples of on-campus greenhouses in the region, including two acres of greenhouse at the UM-St. Paul campus and a new greenhouse at Central Lake College in Brainerd. However, these facilities are not being used to produce food for the campus, but are used primarily for research and integration with the science curriculum. One college greenhouse that produces food is at Middlebury College in Vermont, and it is operated under contract by a private entity supplies fresh produce to area restaurants. Morris could also consider contracting for management of a greenhouse facility, perhaps coordinated with a local supplier of fresh food to campus.

5.5. SEASONAL MENU PLANNING

One of the easiest ways to reduce the carbon footprint of the food system by changing the way we eat is to use a seasonal approach to menu planning. Menus should focus on ingredients that are of good quality and plentiful at certain times of the year but not at others. For example, asparagus is plentiful locally in the spring, and although it is possible to procure it nearly year-round, the asparagus on campus in December is likely to have had a long journey and many energy inputs to get it there. Bountiful supplies of apples, and fresh apple juice are available in the late summer and fall and can be served well into October.

Many of the finest restaurants today have moved to this system of local and seasonal ingredients. It is often as simple as shifting the presumption in menu planning away from a standardized set of ingredients to menu planning based on what is available in the region at particular times of the year.

5.6. PREPARATION METHODS

The less that food needs to be processed before it is served, the less energy will typically be required for that preparation. Fresh foods, as opposed to canned, dried, or frozen foods should be a priority in planning campus menus.

Another strategy that is being used on a limited basis on other college campuses is the individual preparation of food items as students and staffs order it, rather than large quantities of food made up ahead of time. For example, sandwiches made to order will significantly reduce the amount of food waste compared to sandwiches that are prepared ahead of time. The quality of the made-to-order food will also be generally higher. The model for this is also in high-traffic food court areas where more and more food vendors make fresh, high-quality food to order for hundreds of individuals at a time.

5.7. WASTE MINIMIZATION

One of the factors in successful food system operation is the ability to utilize as much of the food product as possible while minimizing waste. Creative reuse of food items in soups, stews or salads the next day is one way to minimize waste. The food system should also be continuously conscious of the packaging of food that is brought onto campus. Often vendors will be responsive to concerns about waste volumes and will work with the food service to reduce their packaging or use more reusable packaging systems. Suggestions for how to minimize organic wastes from the food system are addressed in another section of the report.

5.8. RECOMMENDATIONS:

- **Include in the next food service contract a requirement that the contractor must provide data on procurement and carbon footprinting to the best extent possible.**
- **Develop an ongoing research project on the details of the carbon footprint for the campus food system by looking at the carbon footprint of specific food items.**
- **Set targets for increasing the overall percentage of organic and locally-sourced food in the campus food system. UMM should target 50 percent by 2013.**
- **Review menu planning to establish a more seasonal menu plan based on the seasonal availability of local ingredients.**
- **Identify a source of local, grass-fed beef as the top priority, followed by organic pork and chicken, as well as vegetables, as an initial step toward more local sourcing of food supplies. (Reference Figure 8.1 with farms listed)**
- **Conduct a study on the cost-effectiveness of an on-campus greenhouse system.**
- **Evaluate a shift to a made-to-order food ordering system.**

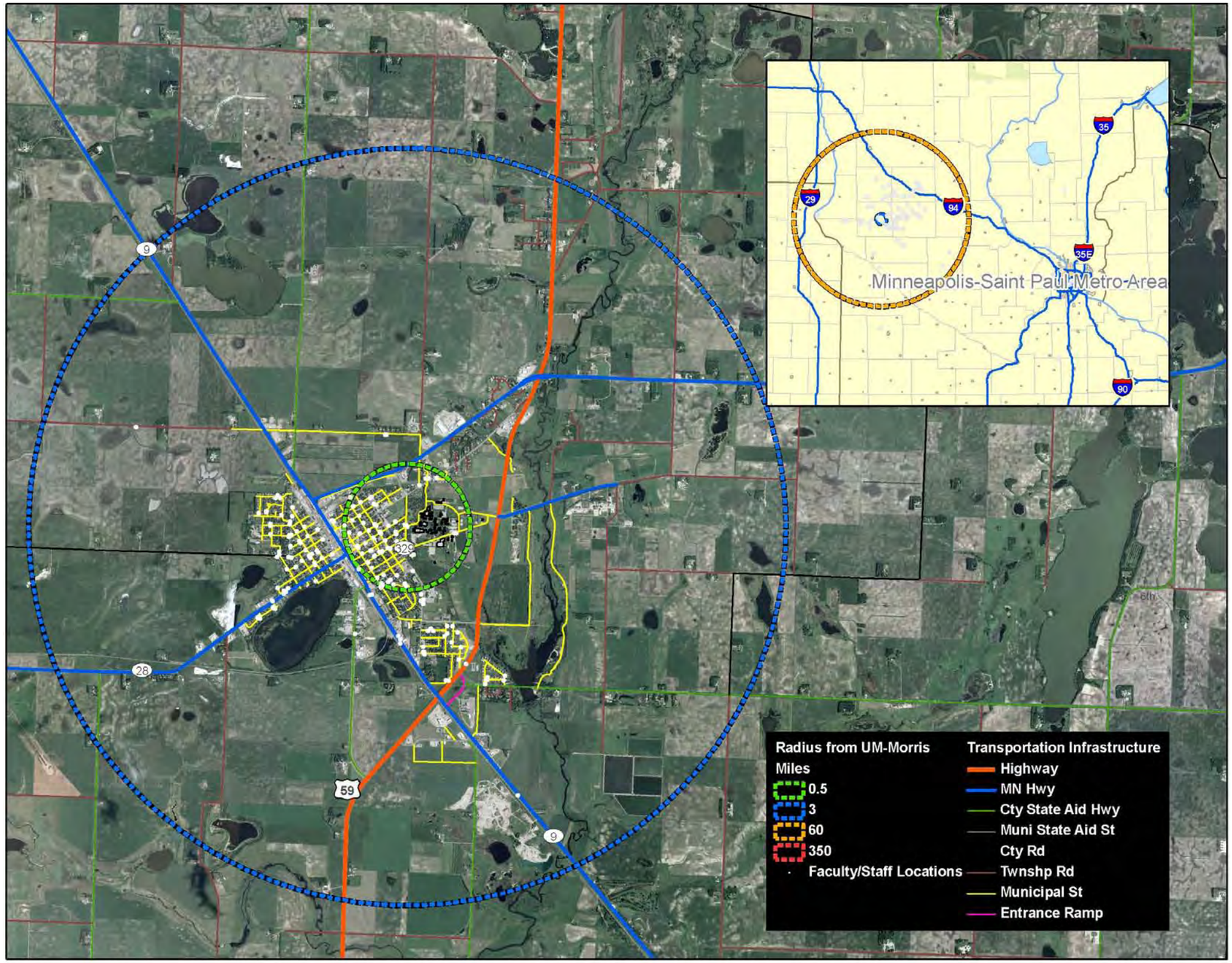


Figure 6.1 Distance Classes from UM-Morris.

6. TRAVEL ANALYSIS

6.1 INTRODUCTION

The carbon footprint of the UM-Morris includes an analysis of staff, faculty and student travels to and from the campus for work and school, as well as travel caused by UM-Morris activities.

The team geocoded staff, faculty and student address to determine their location and distance from campus. Anonymous staff, faculty and student addresses were obtained from UM-Morris computing services, and their addresses were geocoded using an online geocoding service (www. Batchgeocode.com). Nearly all addresses were matched using the online geocoding service, and although the spatial accuracy of the results was not statistically confirmed, a sample of rural addresses confirmed that the results that were in the correct townships and zip codes.

The online geocoding service also computed the distance of each address from the UM-Morris campus. This distance is straight line distance and does not compute the distance by roads. A sample was conducted and the straight line distances were almost always under what the road distance would be by ten to twenty five percent of road distance. A statistically stratified sample by distance classes would need to be conducted to make certain conclusions. Therefore carbon footprint calculations are understated with respect to the commuting distance.

UM-Morris staff informed the team there was an excess of parking spaces on site, especially in the east parking lot. Reducing the number of parking spaces and converting them to green space or other uses would require students, faculty, and staff to consider alternative, sustainable methods of getting to the campus (e.g. carpooling).

6. 2. FACULTY/STAFF ANALYSIS

There are roughly 400 faculty and staff at the UM-Morris. We received addresses for exactly 439. Staff and faculty addresses included the term and percentage of their appointment. This was useful in determining the number of days per year that they might commute to the campus. The following steps were taken to determine working days per year:

1. The term of appointment (in months) was multiplied by the average number of weeks in a month (~4.3) to give “appointment weeks.”
2. The resulting number of appointment weeks was multiplied by the number of work days per week – assumed to be 4.25 to allow for vacation/sick days – to give “appointment days.”
3. The resulting number of appointment days was multiplied by the percent of the appointment to give “work days.”

TRAVEL ANALYSIS

Table 6.1. Summary of UM-Morris Staff/Faculty by Distance to Campus

Category		Walkable	Bikeable	Drive Every Work Day	1 Roundtrip/Wk and Local	Fly	ALL
Distance from Campus (Straigt Line)		0 To 1/2 Mi Radius	1/2 To 3 Mile Radius	3- 60 Mile Radius	60 - 350 Mile Radius	Over 350 Mile Radius	
	Number of Staff/Faculty	94	200	125	16	4	**439**
	Work Days Per Year	16,764	35,483	22,351	2,581	662	**77,841**
	Total Miles	10,858	99,858	730,227	206,521	N/A	**1,047,464**
	Avg Miles/Staff-Fac/Yr	115.5	499.3	5,841.8	12,907.6		**2,386.0**
	Avg Miles/Work Day	0.6	2.8	32.7	80.0		**13.5**

Table 6.2. Summary of UM-Morris Staff/Faculty Distance to Campus as Percentage of Total

Category		Walkable	Bikeable	Drive Every Work Day	1 Roundtrip/Wk and Local	Fly	ALL
Distance from Campus (Straigt Line)		0 To 1/2 Mi Radius	1/2 To 3 Mile Radius	3- 60 Mile Radius	60 - 350 Mile Radius	Over 350 Mile Radius	
	Number of Staff/Faculty	21.4%	45.6%	28.5%	3.6%	0.9%	**100%**
	Work Days Per Year	21.5%	45.6%	28.7%	3.3%	0.9%	**100%**
	Total Miles	1.0%	9.5%	69.7%	19.7%	N/A	**100%**

Table 6.3. Summary of Total Miles Commuted By SOV if Those within a 3 Mile Radius Walked or Biked 50% of Work Days

Category		Walkable	Bikeable	Drive Every Work Day	1 Roundtrip/Wk and Local	Fly	ALL
Distance from Campus (Straigt Line)		0 To 1/2 Mi Radius	1/2 To 3 Mile Radius	3- 60 Mile Radius	60 - 350 Mile Radius	Over 350 Mile Radius	
	Number of Staff/Faculty	94	200	125	16	4	**439**
	Work Days Per Year	16,764	35,483	22,351	2,581	662	**77,841**
	Total Miles	5,429	49,929	730,227	206,521	N/A	**992,106**
	Avg Miles/Staff-Fac/Yr	57.8	249.6	5,841.8	12,907.6		**2,259.9**
	Avg Miles/Work Day	0.3	1.4	32.7	80.0		**12.7**
				Total Mileage Savings from Scenario			**5.3%**

Table 6.4. Summary of Total Miles Commuted By SOV if Those between 3 and 350 Mile Radius Carpooled Twice a Week or Telecommuted 1 Day per Week

Category		Walkable	Bikeable	Drive Every Work Day	1 Roundtrip/Wk and Local	Fly	ALL
Distance from Campus (Straigt Line)		0 To 1/2 Mi Radius	1/2 To 3 Mile Radius	3- 60 Mile Radius	60 - 350 Mile Radius	Over 350 Mile Radius	
	Number of Staff/Faculty	94	200	125	16	4	**439**
	Work Days Per Year	16,764	35,483	22,351	2,581	662	**77,841**
	Total Miles	10,858	99,858	584,181	165,217	N/A	**860,114**
	Avg Miles/Staff-Fac/Yr	115.5	499.3	4,673.5	10,326.0		**1,959.3**
	Avg Miles/Work Day	0.6	2.8	26.1	64.0		**11.0**
				Total Mileage Savings from Scenario			**17.9%**

Knowing work days and the approximate (straight line) distance from UM-Morris we computed the total miles commuted. First, however, the faculty and staff were categorized into five areas based on how far they live from campus. Figure 6.1 shows the first three distance classes' radii geographically. Table 6.1 summarizes the number of staff/faculty by distance class as well as their respective work days per year, total miles traveled and average miles per staff/faculty/year and average miles/work day. Some assumptions that went into the calculation of total miles are:

1. All staff and faculty that live within a 60 mile radius of campus drive in a Single Occupancy Vehicle (SOV) every "work day."
2. Those who live between a 60 and 350 miles radius of campus likely drive to campus one time per week and return home the same week while staying locally if working more than one day per week. For work days within a week an estimate of 2 miles was used for local trips. For example someone living in the Twin Cities would drive to Morris on Sunday night to a local apartment and make within Morris trips (2 miles) until returning to the Twin Cities Friday night.
3. Those who lived over a 350 mile radius from campus likely flew as their major form of transportation. There were only four such staff/faculty and assumptions about their travel behavior was difficult and omitted from the analysis.

Faculty and staff who live within a 3 mile radius (the walkable and bikeable categories combined) make up 67.0 percent of the entire staff and faculty. They contribute 10.5 percent to the total miles commuted. Faculty and staff who live between 3 and 350 miles make up 32.1 percent of the staff and faculty yet contribute 89.5 percent of the total miles commuted (Table 6.2).

Assuming that the total miles commuted in Table 6.1 are all by single occupancy vehicle, Table 6.3 show how many miles of SOV travel will be saved if those in the three mile radius travel by foot or bicycle fifty percent of the time. Table 6.3 shows that approximately 55 thousand miles of SOV driving will be saved per year, or 5.5% of the total current traveled miles.

Compared to assuming that the total miles commuted in Table 6.1 are all by single occupancy vehicle, Table 6.4 show how many miles of SOV travel will be saved assuming that those between a 3 and 350 mile radius of campus car pool two times per week or telecommute one time per week (both result in a reduction of 1 work day trip per week.) Table 6.4 shows that approximately 190 thousand miles of automobile driving will be saved per year, or 17.5% of the total current traveled miles.

6.3. STUDENT ANALYSIS

The team hypothesized that analyzing students' travel behavior is different than staff and faculty's travel behavior in that they are located in the Morris area during the school year and, often, have a "home-base" where they return at semester beginning, end and perhaps in between during breaks. Thus, there was an attempt to find both a permanent home address and a local school address for students attending UM-Morris. Computing services at UM-Morris provided two sets of addresses for each of 1525 students. One was obtained from a database where students are able to update address information online. This was hypothesized to be the "local" address. The other dataset came from the admissions office and was hypothesized to be the permanent address of students.

Neither dataset contained information on whether students were part or full time. So for this analysis all students were treated as full time unless the closest address (or what was considered "local") was from 60 to 90 miles. At this distance it is likely that students are not driving to UM-Morris every day for class and were hypothesized to be part time, or driving two days per week while spring and fall semesters were in session. The number of class weeks and days per semester were gathered from the UM-Morris online calendar.

Table 6.5. Summary of UM-Morris Students by Distance Category from "Local" Address to Campus

Category		On-Campus	Walkable	Bikeable	Assumed Local	Drive Every Class Day	2 Roundtrip/Wk	ALL
Distance from Campus (Straigt Line from Local Address)		0	0 To 1/2 Mi Radius	1/2 To 3 Mile Radius	2 Mile Radius	3- 60 Mile Radius	60 - 90 Mile Radius	
	Class Days Per Year	148	148	148	148	148	64	
	Number of Students	130	55	99	931	200	110	1,525
	Total SOV "Local" Miles	0	5,174	38,196	551,152	2,122,136	1,087,020	3,803,678
	Total SOV "Permanent" Miles	228,538	47,493	91,967	2,073,549	39,454	12,322	2,493,323
	Total SOV Miles	228,538	52,667	130,162	2,624,701	2,161,591	1,099,342	6,297,001
	Percent Local	0%	9.8%	29.3%	21.0%	98.2%	98.9%	60.4%
	Total Plane Miles	169,939	34,731	39,110	2,644,290	9,056	3,586	2,900,712
	Avg Miles/Student/Yr	1,758	958	1,315	2,819	10,808	9,994	4,129
	Avg Miles/Class Day	1,544	356	879	17,734	14,605	17,177	50,752

Table 6.6. Summary of UM-Morris Students by Distance Category to Campus as Percentage of Total

Category		On-Campus	Walkable	Bikeable	Assumed Local	Drive Every Class Day	2 Roundtrip/Wk	ALL
Distance from Campus (Straigt Line from Local Address)		0	0 To 1/2 Mi Radius	1/2 To 3 Mile Radius	2 Mile Radius	3- 60 Mile Radius	60 - 90 Mile Radius	
	Class Days Per Year	148	148	148	148	148	64	
	Number of Students	8.5%	3.6%	6.5%	61.0%	13.1%	7.2%	100.0%
	Total SOV "Local" Miles	0.0%	0.1%	1.0%	14.5%	55.8%	28.6%	100.0%
	Total SOV "Permanent" Miles	9.2%	1.9%	3.7%	83.2%	1.6%	0.5%	100.0%
	Total SOV Miles	3.6%	0.8%	2.1%	41.7%	34.3%	17.5%	100.0%
	Total Plane Miles	5.9%	1.2%	1.3%	91.2%	0.3%	0.1%	100.0%

Both address datasets were geocoded as in the staff/faculty analysis and the distances from campus of both address datasets were compared. 1,216 students had the same address in both datasets. Their local and permanent addresses were considered to be the same. 309 students had different addresses. The shorter of the two distances from campus was considered to be the local address in this case.

Whether a student had two addresses that were the same or different, the following methods were used to calculate the total single occupancy vehicle (SOV) and plane miles traveled by a student per academic year:

1. If the distance of the closest address was over 90 miles from campus it was assumed that the student had not reported a local address and an assumed distance of two miles was assigned to their local distance travel. If both addresses for a student were the same and less than 90 miles it was considered their permanent address. There were 71 instances where a student's addresses were different and both over 90 miles. When this occurred, the differences in distance were mostly negligible. The few other cases were usually determined to be an error in the geocoding of one of the addresses (usually with a foreign country or a non-conforming address type) and the more correct distance was chosen or assigned.

2. If a student's permanent address was within a 450 mile radius from UM-Morris, it was assumed that they made one roundtrip per month in a SOV back to their permanent address. (This is unless their local and permanent address were the same and within a 90 mile radius of campus.)

3. If their permanent address was 450 miles to 2000 miles away it was assumed that they made two roundtrip plane trips per year to their permanent address.

4. If their permanent address was over 2000 miles away it was assumed that they made one plane trip per year to that address.

For purposes of analysis students were categorized into the distance classes based on their local address. Table 6.5 shows these categories and the distance of each from campus. Six categories are presented: On-Campus, Walkable (within a half mile radius), Bikeable (between a half mile and three miles), Assumed Local (when the only address for a student, or both addresses, were over 90 miles from campus), Drive Every Class Day (between a 3 and 60 mile radius), and 2 Roundtrip/Wk (between 60 and 90 mile radius). Every category was assumed to travel 148 days roundtrip in a SOV except the 2 Roundtrip/Wk category which was the assumed part-time students which were assumed to travel 64 days per academic year in a SOV.

A summary of local, permanent and plane miles is given for each category, as well as the average SOV miles per student per year and average SOV miles per class day. The highest SOV miles traveled is the Assumed Local category with 21% of total miles being local while the remainder comes from trips back to their "home base." The total SOV miles traveled is second highest for those in the Drive Every Class Day category with 98.2% of total miles considered local. However, because of the number of students falling into the Assumed Local category the average miles traveled in a SOV per year is 2,819 versus 10,808 for the Drive Every Class Day category. In contrast the Assumed Local category travels nearly 300 times the distance by plane per year as the Drive Every Class Day category. (Note: Miles traveled by plane contribute significantly more to a carbon footprint calculation than a mile driven in a SOV.)

There are 50,752 SOV miles traveled per class day at UM-Morris (considering averaged local and permanent miles). The vast majority of those come from the Assumed Local, Drive Every Day and 2 Roundtrip/Week categories.

Table 6.6 shows students and miles as a percentage of total students and total miles by distance category. Most notable is that students living within a 3 mile radius of campus during the school year make up approximately 19% of the students but only contribute to approximately 6.5% of the total SOV miles and 8.5% of the total plane miles.

Assuming all miles traveled in Table 6.5 are by SOV, Table 6.7 shows the change in total SOV miles if those living within a 3 mile radius of campus walk or bike half of the class days (including the Assumed Local category who are assumed to live within 2 miles of campus during the academic year). Doing so would lead to a 4.7% reduction in total SOV miles traveled.

Again, assuming all miles traveled in Table 6.5 are by SOV, Table 6.8 shows the change in total SOV miles if those in the Drive Every Class Day category carpooled twice a week or telecommuted one day per week. This leads to a 6.7% reduction in total SOV miles traveled. Other scenarios to reduce total SOV miles traveled could be envisioned: offering more distance learning opportunities, offering shuttles to local communities where students are clustered and coordinating ride-shares among students who drive a significant distance to go to their "home base."

TRAVEL ANALYSIS

Table 6.7. Summary of Total Miles Commuted By SOV if Those within a 3 Mile Radius Walked or Biked 50% of Class Days (from "Local" Address)

Distance from Campus (Straigt Line from Local Address)		0	0 To 1/2 Mi Radius	1/2 To 3 Mile Radius	2 Mile Radius	3- 60 Mile Radius	60 - 90 Mile Radius	
	Class Days Per Year	148	148	148	148	148	64	
	Number of Students	130	55	99	931	200	110	1,525
	Total SOV "Local" Miles	0	2,587	19,098	275,576	2,122,136	1,087,020	3,506,417
	Total SOV "Permanent" Miles	228,538	47,493	91,967	2,073,549	39,454	12,322	2,493,323
	Total SOV Miles	228,538	50,080	111,064	2,349,125	2,161,591	1,099,342	5,999,740
	Percent Local	0%	9.8%	29.3%	21.0%	98.2%	98.9%	58.4%
	Total Plane Miles	169,939	34,731	39,110	2,644,290	9,056	3,586	2,900,712
	Avg Miles/Student/Yr	1,758	911	1,122	2,523	10,808	9,994	3,934
	Avg Miles/Class Day	1,544	338	750	15,872	14,605	17,177	48,744
					Total Mileage Savings From Scenario			4.7%

Table 6.8. Summary of Total Miles Commuted By SOV if Those between 3 and 60 Mile Radius Carpooled Twice a Week or Telecommuted 1 Day per Week

Category		On-Campus	Walkable	Bikeable	Assumed Local	Drive Every Class Day	2 Roundtrip/Wk	ALL
Distance from Campus (Straigt Line from Local Address)		0	0 To 1/2 Mi Radius	1/2 To 3 Mile Radius	2 Mile Radius	3- 60 Mile Radius	60 - 90 Mile Radius	
	Class Days Per Year	148	148	148	148	148	64	
	Number of Students	130	55	99	931	200	110	1,525
	Total SOV "Local" Miles	0	5,174	38,196	551,152	1,697,709	1,087,020	3,379,251
	Total SOV "Permanent" Miles	228,538	47,493	91,967	2,073,549	39,454	12,322	2,493,323
	Total SOV Miles	228,538	52,667	130,162	2,624,701	1,737,163	1,099,342	5,872,574
	Percent Local	0%	9.8%	29.3%	21.0%	98.2%	98.9%	57.5%
	Total Plane Miles	169,939	34,731	39,110	2,644,290	9,056	3,586	2,900,712
	Avg Miles/Student/Yr	1,758	958	1,315	2,819	8,686	9,994	3,851
	Avg Miles/Class Day	1,544	356	879	17,734	11,738	17,177	47,885
					Total Mileage Savings From Scenario			6.7%

RECOMMENDATIONS:

- **Campus vehicle fleet should continue to be gradually converted to alternative fuel based and hybrid technologies.**
- **Purchase a "green" bus which uses hybrid technology, alternative fuels or both for campus purposes and look at ways to reduce private vehicle miles by using the bus for coordinated trips and links to regional transit systems, such as the North Star Corridor train.**
- **Diesel fueled vehicles should be outfitted with diesel particulate filters to reduce emissions.**
- **Preferential parking should be provided for hybrid, alternative fuel, or carpool vehicles. The preferential parking areas should be in existing parking areas, but closest to classrooms, dorms and other campus buildings and signed appropriately.**
- **Financial incentives for students living on campus for choosing not to bring their car to campus (i.e., reduced residential fees)**
- **Implement a shared vehicle system, such as the Hour Car program in the Twin Cities. (www.hourcar.org)**
- **Evaluate travel patterns for opportunities to create carpooling opportunities. One option would be to provide "Park and Ride" lots in strategic locations for carpools.**
- **Convert excess existing parking to green spaces or other uses over time.**
- **Create a hierarchy of roads, bike trails, pedestrian walkways, and campus entrances that enhance the walking / biking experience in order to encourage less intra-campus automobile use. This will clarify that, as a policy matter, the safe movement of pedestrians and bicyclists on campus is the top transportation priority and not the movement of vehicles. This principle should be held in mind for future campus planning that impacts the movement of people and vehicles.**

7. WASTE MANAGEMENT

7.1 INTRODUCTION

The University of Minnesota Morris produces a large amount of organic food waste each year from its cafeteria. This material is presently being land-filled, trapping valuable nutrients and embodied energy value in a mixture of garbage that includes toxic materials. As the food waste breaks down it releases methane, a potent greenhouse gas that contributes significantly to climate change if it is not recaptured at the landfill. There are better options for dealing with food waste that can simultaneously protect soil fertility, reduce carbon emissions, and save money on waste tipping fees for the University. The team identified five alternative strategies for dealing with this left over organic material, which will convert expensive waste into valuable commodities.

7.2 STRATEGIES FOR WASTE MANAGEMENT

7.2.1. ON-CAMPUS OPEN AIR COMPOSTING

A campus compost system is the easiest and cheapest method for composting food waste. A covered, open-air facility would need to be constructed to protect the compost from rain and snow.. The food waste is applied directly to the pile and mixed with carbon rich material (such as grass clippings or shredded yard waste) supplied by the grounds crew. Grounds staff would need to mechanically mix the pile and monitor the compost to ensure the proper internal temperature year-round. The compost could then be applied to campus grounds, or sold as a fertilizer or soil amendment.

This is a very inexpensive system that only requires minimal space and amount of staff involvement. The facility would need to be sized correctly to ensure that the food waste has sufficient time to compost without over accumulating. The by-products could be used on campus or sold to area farmers as fertilizer. However, this type of system cannot process large amounts of meat products. It is somewhat prone to odor production – mainly ammonia – and will need to be situated carefully to prevent disruptions to the rest of campus.

7.2.2.ON-CAMPUS INDUSTRIAL COMPOSTER

Industrial composting machines can greatly reduce the time required for composting food waste and ensure more evenly finished and higher quality final compost. They also are more flexible in terms of inputs, and can compost food waste as well as larger amounts of meat and dairy products, larger pieces of tree and yard waste, and compostable materials such as papers, bio-degradable plastics and cardboard. An industrial system is the only on- campus method that could compost all of the organic materials that is collected on campus now and in the future.

An industrial system has a significant capital cost, estimated at $285,000 or more, and requires staff members to undergo extensive training in its operation. The ability to process all organic material on campus would likely produce more compost than could be used on-site and would need to be sold or disposed of off campus, unless the campus also proceeds with an on-campus greenhouse facility.

7.2.3.ON-CAMPUS HOG FEED

Using food waste as hog feed is an effective way to turn low quality food matter into high quality manure that can be applied directly as a fertilizer or processed in an anaerobic digester to produce methane and electricity with a residual material that can also be used as a fertilizer. The hogs can also become a food source for the campus food system as fresh, locally produced pork. Raising hogs on campus may provide educational opportunities for agricultural students. The hogs could be located strategically on campus and the manure could probably be dealt with in the same manner as the horse manure.

On-site processing of food waste eliminates transportation costs and would also supply fresh, local pork to the school cafeteria. However, hogs can only process vegetable food waste, and if they are fed food that has come into contact with meat than it must be cooked to ensure that no pathogens are passed on to the hogs. The State requires a license for these operations that Morris would need to obtain and maintain while they are running a hog feeding operation. Hog manure also raises odor concerns, although placement of the hog pen near the stables would minimize additional impact to campus or the surrounding community.

Some hog farmers will arrange to pickup food scraps from large institutions at a fee substantially less than landfill tipping fees. They use it as a reduced cost feed source for their hogs, and simultaneously prevent landfill growth and reduce the amount of acreage needed to produce other feed for the hogs.

This would eliminate concerns about odor or animal care. The University would not have to deal with large amounts of manure production, nor obtain and maintain a state license for hog feeding. Morris would not benefit from a free source of compost for its own use, and would likely have to pay transportation costs for the hog farmer. Depending on the farmer's permit, Morris may have to maintain meat separate from the food waste stream and the system does not process other non-food organics. At the moment there are no hog farmers licensed to feed hogs with food scraps within 100 miles of UMM, and the University may have to initiate a partnership with a hog farmer in the area.

7.2.4.ANAEROBIC DIGESTER

Anaerobic digesters use bacteria to break down organic waste in a sealed environment without the presence of oxygen. Food waste and other organic wastes are placed directly into an anaerobic digester to produce methane for a number of uses, including heating, cooking, and electricity generation. The process also produces a fibrous digestate by product that can be used as a soil amendment. Companies are presently testing digestate as a raw resource for producing fiberboard products.

The digester process captures methane which can be used as a substitute for natural gas for electricity production or for heating purposes. This converts the methane into carbon dioxide which is a far less potent greenhouse gas. It is being used extensively in Europe and Japan at a number of scales to deal with organic wastes and also produce renewable energy.

The capital costs of an anaerobic digester can be considerable based on the size and capacity of a digester and these need to be taken into account. However, the savings in food waste disposal costs and the energy value produced by the digester can also pay for the system over a relatively short time frame.

RECOMMENDATION:

- **Of the aforementioned strategies, UMM should focus initially on the feasibility of an industrial composting system, which should include capital costs, procurement, etc. The major advantage of this system is its ability to accept paper and meat-based waste for its composting process.**

7.2.5.UNIVERSITY OF MN MORRIS ZERO WASTE

UMM has been recycling for several years, and has an average recycling rate of 20% of its total waste stream. (see Appendix 9) The majority of this recycling stream has been cardboard and mixed ledger paper, with smaller amounts of plastics, metals and glass. There is still opportunity for Morris to reduce its waste stream as part of a Zero Waste Initiative. There is no clear data as to the composition of the overall waste stream at Morris. However, as a comparably sized institution, Macalester College's waste management data can provide a reasonable estimate for Morris. In 2005 through 2006, waste sorts at Macalester College in St. Paul indicated that a very low proportion of the waste stream was made up of materials that should be classified as waste. The results of their waste sorts in percentage by weight are:

37% Recyclable Materials
36% Compostable Materials
19% Trash – Actual Waste
8% Reusable Materials

With a recycling rate of 17% over 3 years, Macalester College was land-filling nearly two thirds of their recyclable materials. This is similar to Morris's current recycling rate of 20%. The team recommends that UMM set a goal to become a Zero Waste institution and begin exploring ways to dramatically reduce their waste stream through increased recycling, composting, and reuse. Opportunities for improvement include increased waste monitoring, a new waste infrastructure policy that ensures that there are recycling containers in every location where there is a waste container, and education about the true composition of UM Morris's waste and what can be done to minimize its environmental impact.

7.3. WASTE REDUCTION STRATEGIES

7.3.1.WASTE INFRASTRUCTURE

At present, there are far more general waste receptacles than recycling containers on the UMM campus. The University waste stream is nearly 40% recyclable materials and only 20% actual waste. The low recycling percentages in the past have been due to poor collection and separation. Morris should establish a policy of placing recycling containers next to every waste container on campus. This will greatly increase the percentage of recyclable materials recovered from the waste stream, significantly reducing the amount of waste that needs to be land filled. The type, size, and color of the bins should all be examined to make recycling as simple and user-friendly as possible.

7.3.2.RECYCLING CULTURE

The University should strive to create a culture of recycling, where the norm on campus is to recycle. As this action becomes internalized the community will enforce waste reduction and recycling itself through peer pressure – it will be seen as odd or unusual not to recycle. Instead of recycling being a political act, the norm should be to recycle and make waste the negative political act. For example, the University could sponsor recycling competitions amongst various departments or buildings, with the winners receiving the profits from their recycled material for a month to spend on a common goal.

7.3.3.PROCUREMENT

The first step in waste generation is purchasing items and materials to use. An emphasis on the impact of purchases on the waste stream could help to avoid materials such as some plastics that cannot be recycled, reused or composted and must become waste. A strategy to phase out purchasing materials that will end up as unusable waste will have a long term impact on the reduction of waste at Morris, and will be an integral component of a Zero Waste Policy. Student volunteers or workers could research procurement practices and identify alternative purchases that would be more manageable once their usable lifespan is over.

7.4. RECOMMENDATIONS:

- **Complete a thorough waste analysis and composition study for the campus.**
- **Conduct a cost benefit analysis of an industrial composting system.**
- **Expand educational efforts related to recycling and waste reduction with students and staff.**
- **See also recommendations in the section on the campus food system.**

8. UTILITY INFRASTRUCTURE

8.1. INTRODUCTION

The UMM McKinstry study thoroughly covered most of the issues related to infrastructure. The team generally supports their recommendations. As a supplement, considering solar lighting may be an opportunity not addressed directly in the McKinstry study.

8.2. DEMAND-SIDE MANAGEMENT

Energy is a core component of sustainability, and one that will play an increasingly important role in a future carbon-constrained world. UM Morris has already taken several major steps towards redefining its relation to energy by constructing a wind turbine and the new biomass heating plant. While increasing the University's energy production, it is also important to manage their energy demand and usage. In order to most effectively meet on-campus energy needs in a local and sustainable fashion the University should continue to upgrade its internal electrical grid with smart meters and real time demand management software for the HVAC systems and other major energy users. An interactive and intelligent metering system will allow for effective monitoring of energy usage, identification of possible efficiency gains and allow the University to control its peak energy usage – one of the most effective cost saving methods.

8.3. SMART GRID CAPABILITIES

UM-Morris should install/upgrade a building/energy control system that can accommodate the wind turbine and future sources of electrical generation and maximize their contributions to the campus grid. Solar power, the wind turbine the biomass plant are all sources of electricity that can play an increasing role in campus usage and help to minimize the amount of power that Morris needs to purchase from off-site. A smart grid control system would also enable to College to sell excess power more effectively in the future back to the grid when it is producing more than it needs.

8.4. RECOMMENDATIONS:

- **We concur with the recommendations put forth in the McKinstry study, which are listed in their report.**
- **Further evaluate opportunities for solar lighting on campus along pathways and on the exterior of buildings were the costs of connection to the electrical grid system tends to be higher and offsets the costs of the solar lighting application.**

9. US GREEN BUILDING COUNCIL LEED® CERTIFICATION

9.1 INTRODUCTION

The United States Green Building Council (USGBC) provides third party certification for green buildings through the LEED rating system. LEED stands for Leadership in Energy and Environmental Design, and has various categories for rating such as New Construction, Existing Buildings, Retail, etc. LEED also has a guideline for campuses. The LEED Application Guide for Multiple Buildings and On-Campus Building Projects provides guidance for how campuses can achieve maximum LEED credits as part of new construction or applications of LEED-EB (existing buildings).

9.2 LEED FOR MULTIPLE BUILDINGS AND CAMPUSES

The LEED Application Guide for Multiple Buildings and On-Campus Building Projects provides guidance for how campuses can achieve maximum LEED credits as part of new construction or applications of LEED-EB (existing building).

LEED is broken down into six categories:

1. Sustainable Sites
2. Water Efficiency
3. Energy and Atmosphere
4. Indoor Environmental Quality
5. Materials and Resources
6. Innovation in Design or Innovation in Operations (depending on the rating system)

Options for the LEED for campuses applications are as follows:

- Certification of a new building within the existing campus infrastructure.
- Certifying new buildings with only one LEED rating received.
- Certification of new buildings where each new building is constructed to a set of standards but will receive an independent rating based on achievement of credits beyond the standards specific to that building. These buildings may constitute the entire campus or be a subset of an existing campus.

It is likely the third approach will be the method used at Morris. Morris could also choose to address the LEED for Existing Buildings: Operations and Maintenance rating system for their existing building stock.

LEED offers four levels of certification: Certified, Silver, Gold, or Platinum, with Certified being the lowest level and Platinum the highest.

Generally, credits are available to any building that benefits from shared systems (such as the wind turbine or biomass facility that powers the campus) when those systems are part of an overall campus master plan. The best opportunities for credits through interpretation of the Application Guide are in the areas of: Sustainable Sites, Water Efficiency and Energy and Atmosphere. It is also helpful to demonstrate that plans are in place to anticipate future building work on campus within the context of LEED guidelines.

The LEED Application Guide requires establishment of a "reasonable and logical" project site boundary. Given the relatively compact nature of the Morris campus, site boundaries should be drawn to include parking, open space, and athletic areas since these features can be exempted from future calculations of overall density.

It is also possible to establish a prototype set of LEED credits for multiple projects undertaken over time. This is achieved by going through an extensive LEED certification process on an initial building, which in the case of Morris could be the new dormitory project currently underway. Successfully establishing a prototype set of credits will benefit future projects which will be reviewed and audited on no more than six credits or prerequisites.

The elements of the Master Plan that should be integrated with current and future LEED projects are generally in the area of sustainable sites. These additions to the master plan can be incorporated right away or added later as

US GREEN BUILDING COUNCIL LEED® CERTIFICATION

amendments to the plan:

- Designation of a LEED project area that will be the future reference point for density and community connectivity calculations.
- Designation of preferred parking areas for alternative fuel and commuter/car pool vehicles.
- Integration of a centralized stormwater management plan using distributed technologies.
- Exterior lighting plan, which can be included in energy modeling and renewable energy calculations.
- A central facility for sorting and collection of recycling (rather than on-site recycling centers in each building) should be added to the 2008 Master Plan. This is a LEED initiative will help Morris to meet on site recycling goals.

INDOOR AIR QUALITY

There are several dozen additional LEED credits that should be interpreted in the context of the Application Guide for campuses, such as indoor air quality. Indoor air quality effects occupants' health and productivity when inside of buildings. Air quality management should be addressed, not only during construction, but also during building occupation. Air quality management is specifically dealt with in the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3. SMACNA Guidelines for Occupied Buildings under Construction is primarily created for buildings under renovation, but the principles are also applicable to the IAQ problems encountered in occupied areas of buildings during the final phases of new construction, or during occupancy.

While plants in buildings should be encouraged for their aesthetic and natural ability to clean the air, LEED does not yet have a way to recognize this. Research suggests that the presence of indoor plants can increase productivity, lower stress, and reduce the effects of Sick Building Syndrome. Low light, low maintenance plants such as the peace lily, can be a quick addition to a building. The peace lily has also been recognized as one of the most effective toxin reducing plants in buildings.

An air quality plan will help reduce and prevent indoor air quality problems during the construction process. This will help sustain the comfort and well being of construction workers and building occupants. Reviewing and implementing good management practices (such as regularly changing filters, regular cleaning and housekeeping) will reduce issues that might occur during and after construction.

This Construction IAQ Management Plan follows the recommended Design Approaches of The following methods of control and management techniques will be followed during construction to ensure indoor air quality during construction and for the building turnover.
SMACNA guidelines recognize five specific areas for air quality management: HVAC protection, source control, pathway interruption, housekeeping, and scheduling. A sample IAQ plan that Morris could utilize is enumerated below:

HVAC Protection

- Do not use the permanently installed HVAC system during construction.
- If air handlers must be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 to be used at each return air grill, as determined by ASHRAE 52.2-1999. All filters must receive frequent maintenance and be replaced at the end of the project.
- Protect HVAC equipment from dust and odors by sealing the supply and return air system openings and the diffusers with plastic.
- All system openings in (or immediately adjacent to) the construction area to be sealed with plastic.
- Plastic covering and protecting duct openings is not to be removed until building flush out.
- Upon periodic inspections during construction, if the ducts become contaminated due to inadequate protection, the ducts will be cleaned professionally.
- The mechanical rooms will not be used to store construction or waste materials. Rooms will be kept clean and neat.
- When activities that produce high dust or pollution levels occur, such as drywall sanding, concrete cutting, masonry work, wood sawing, and insulating, return and supply air system openings will be sealed off completely for the duration of the task. To avoid potential contamination of the ceiling tiles, lay-in tile installation will be delayed until after the drywall, paint and floor finishing is completed.

Source Control

- Use of low-emitting products, cleaning agents, and solvents, as specified in the Contract Documents will be used throughout the project.
- Cover and seal containers of wet products and waste materials that can release odor or dust.
- Ventilate areas where workers are using any VOC materials.
- All onsite workers are required to check in with the site superintendent/project manager/facilities manager before using any primers, paints, or coatings, inside the building.
- Pollution sources will be exhausted to the outside with portable fan systems. Care will be taken to ensure exhaust does not re-circulate back into the building.
- Drywall dust to be controlled through proper ventilation, isolation of affected areas, filtration, and protective equipment for individual workers.
- Carpenters' cut stations to be set up in designated, isolated areas; any cutting done elsewhere is prohibited.
- Prefabricated insulated ductwork will be protected against moisture during delivery to the job site. Ductwork materials will be stored inside the structure in a dry and clean environment pending installation.
- Electric or natural gas alternatives for gasoline and diesel equipment will be used where possible and practical.
- Equipment will be cycled off when not being used or needed.
- Traffic volume will be restricted and idling of motor vehicles will be prohibited where emissions could be drawn into the building.
- Construction entry mats will be maintained at each entry to limit dirt and debris from entering the buildings.

Pathway Interruption

- Where applicable, dust curtains or temporary enclosures will be used to prevent dust from migrating to other areas
- Pollutant sources will be relocated as far away as possible from supply ducts and areas occupied by workers when feasible.
- During construction, areas of work will be isolated to prevent contamination of clean or occupied areas. Pressure differentials may be utilized to prevent contaminated air from entering clean areas.
- Depending on weather, ventilation using 100% outside air will be used to exhaust contaminated air directly to the outside during installation of VOC emitting materials.
- Construction entry mats will be maintained at each entry to limit dirt and debris from entering the buildings

Housekeeping

- General housekeeping and dust suppression programs will use wetting agents or sweeping compounds. Efficient and effective dust collecting methods such as damp cloths, wet mops, and vacuums with particulate filters, or wet scrubbers will be used.
- Only low VOC cleaning products will be used
- Ensuring that all surfaces (including higher ledges, behind furniture, and inside mechanical equipment) are kept clean. This can be facilitated before the start of work by moving contents out of the work area or covering them.
- Cleaning activities will be instituted concentrating on HVAC equipment and building spaces to remove contaminants from the building prior to occupancy.
- Remove any accumulated water and keep work areas as dry as possible (using dehumidification if necessary).
- Porous materials such as insulation and ceiling tile will be protected from exposure to moisture.

- Interior absorptive materials will be protected and stored in clean, dry areas (insulation, drywall, carpet, cabinets, doors & millwork)
- All coils, air filters, fans and ductwork will remain clean during installation and will be cleaned prior to performing the testing, adjusting and balancing of the systems.
- All on-site personnel will keep their work areas clean, dry, and orderly on a daily basis.
- Sweeping compound will be used to keep dust to a minimum
- Follow MSDS labels for material handling

Scheduling
- Move-in of hard surface fixtures, furnishings and equipment (FF&E) will occur during the flush-out period, but soft or porous FF&E items will be delayed until after the flushing cycle.
- Coordinate material installation to limit absorption by porous materials by wet or odorous materials—i.e., paint the walls before the carpet goes in
- Building will not be occupied until 2-week flush-out (with 100% outside air) is complete

IAQ Monitoring
- Weekly meetings with project foremen and Project Managers will occur on Tuesdays at 10am. The appropriate components of the IAQ plan will be reviewed as a regular action topic at these meetings and the implementation of the plan will be documented in the minutes of meeting.
- SMACNA IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3 will be available onsite for review by trade foremen.

While this IAQ plan is more specifically geared towards construction, minor changes could be made to address general occupation issues, such as:

- Require low or no VOC cleaning products
- Equipment used for cleaning be switched out from gas to electric
- Scheduling major cleaning events (such as floor sanding or re-sealing of floors) when there is ample time for the building to be properly aired out.

9.3. RECOMMENDATIONS:

• Designation of a LEED project area that will be the future reference point for density and community connectivity calculations.
• Designation of preferred parking areas to be located in close proximity to building entrances and other desirable locations for alternative fuel and commuter/car pool vehicles.
• Integration of a campus wide stormwater management plan using distributed technologies.
• Exterior lighting plan, which can be included in energy modeling and renewable energy calculations.
- Pursue further research on indoor plantings to reduce harmful indoor air quality.

Note: we did not see any reference to solar exterior lighting in the McKinstry report and recommend that these lighting systems be evaluated for exterior applications.

10. DEVELOPING A CARBON FOOTPRINT FOR UM-MORRIS

10.1 INTRODUCTION

In researching approaches to the development of a comprehensive carbon footprint tool for the Morris campus, we identified a number of resources and options. We have relied primarily on the structure created by the Carbon Trust in Great Britain, which defines the carbon footprint as:

“The total set of greenhouse gas emissions caused directly and indirectly by an individual, organization, event or product”

The level of detail and the overall scope of a carbon footprint analysis, sometimes referred to as its “boundary,” include the direct emissions from activities that are in the direct control of the organization, and all emissions from the organization’s use of electricity.

While these are generally the simplest and easiest emissions to measure, a comprehensive carbon footprint should also include indirect emissions from products, services and events.

“Each product or service that is purchased by an organization is responsible for emission. So the way the organization uses products and services affects its carbon footprint.” (“Carbon Footprinting”, 2007, www.carbontrust.co.uk/energy).

The reason for developing a comprehensive carbon footprint analysis is to give campus decision makers and stakeholders a tool for ongoing management of its facilities and programs. The steps recommended for developing a carbon footprint are listed out in the recommendations section.

Implementation of a carbon footprint program requires longitudinal data collection in the recommended areas listed below combined with ongoing discussions to identify and prioritize strategies for reducing the campus footprint. Even with a very aggressive program of green house gas reductions, it is not possible to move the campus on its own to a position of carbon neutrality. To meet that goal it will be necessary to fund carbon offsets, which reduce emissions somewhere outside of the campus systems and typically include energy conservation measures, renewable energy development, tree planting or sustainable agricultural initiatives.

10.2 RECOMMENDATIONS:

- **Define the methodology. The best tools for methodology are the GHG (Green House Gases) Protocol tool from the World Resources Institute and the World Business Council for Sustainable Development (www.ghgprotocol.org). There is another format that has been developed as an ISO standard, ISO 14064 and available at www.iso.org.**

- **Specify the boundary and scope. In instances where a large institution such as UM-Morris wishes to understand its carbon footprint, we believe it is essential to include in the analysis indirect sources that contribute significantly to an overall carbon footprint, including the campus food service, transportation to and from campus by students and staff, material procurement, and events sponsored by the campus. Campus stakeholders should have a discussion of what might be the appropriate boundary for future LEED purposes. This will be a useful segue into the broader discussion of LEED issues.**

- **Collect data and calculate the footprint. The primary data sources are onsite fuel consumption, campus transportation use, any on-campus processes that generate emissions, electrical consumption, student and staff travel in vehicles not owned by the University. A secondary set of data and calculations need to be done for supply chain emissions, including primarily the campus food system and more general materials procurement on campus.**

- **Independent Review. It is often recommended that the campus footprint analysis be verified or reviewed by an outside entity, although this is not generally necessary if the program is to be used primarily as in internal management tool. This capacity is best developed as an internal function, although it may be desirable to have an outside entity assist the campus with establishing its structure and operating procedures.**

11. FINAL CONCLUSION

Given the comprehensive and interrelated nature of the research and recommendations in this report, one final, over-arching recommendation we have for the Morris campus is that the University establish an action group to implement these recommendations. This group should be broadly representative of the stakeholders on campus and be given the authority to make changes within the University system.

Subject to the stakeholder group's general grant of authority and oversight, stakeholders should be empowered to undertake activities that support the group's planning and priorities. The group should hold itself responsible overall for the outcomes and progress made in advancing the campus toward its sustainability goals.

The first step for such a group is to begin inventorying the recommendations in this report and discuss the vision created by the Master Plan. Measurement of outcomes should be developed where data is readily available and tracked over time. The campus may wish to develop the format for an annual sustainability report that could be integrated into the budget process. The process should begin with relatively easy measures that will help the group build support and create momentum for ongoing activities.

For models of how to manage this type of environmental management process and maintain momentum for its implementation, the University may want to consider the format provided by the ISO 14000 program, an internationally recognized standard for environmental management that is primarily oriented to businesses, but which could be adapted for the University if it decides to pursue this work as a kind of business model.

Technology Assessment and Advancement

campus master plan 2008

EXISTING TECHNOLOGY INFRASTRUCTURE

1 INTRODUCTION

oslund.**and**.assoc. retained Elert & Associates to assess the status of the UM-Morris's technology systems and compare their status with other Elert & Associates higher ed clients. Elert & Associates reviewed UM-Morris data network, wireless data network, phone system, cabling infrastructure, and AV-multimedia systems.

The following report provides information on where UM-Morris stands as far as technology and offers recommendations in areas where improvement can be made.

2 FINDINGS

2.1 TECHNOLOGY CABLING INFRASTRUCTURE

UMM has a combination of Category 5, 5e, and 6 cabling on campus. Approximately half of the cabling is Category 5 cabling terminated on Category 5-rated 110 blocks. The other Category 5e and 6 cabling is terminated on RJ45 jacks in patch panels. Voice and data cabling are kept separate in telecommunication rooms. Inter-building connections for the data network are made on multimode fiber.

2.2 WIDE AREA NETWORK

UM-Morris (UMM) is connected to the State of Minnesota's MNET network. UMM has a primary OC-3 (155 Mbps) with a secondary DS-3 (45 Mbps) connection from the MNET POP in Morris. Only one fiber connection exists between the campus and the POP located in Morris.

2.3 DATA CENTER/SERVERS

Most of the server applications are located on the University of Minnesota network in the Twin Cities. UMM has moved this functionality because of the expertise of personnel in the Twin Cities and because of data center facilities available in the Twin Cities. Data storage on campus has been moved to the Twin Cities facilities as well with approximately 1 TB of storage (2 TB of capacity) on the UMM campus.

The main campus data center has an uninterruptible power supply (UPS), backup power generator, and air conditioning. Most of the servers are stored on shelves with most having their own keyboard and mouse.

UMM currently backs up their servers to tape. Their intention is to eventually backup to the storage area network (SAN) in the Twin Cities. Access to the data center is via key access. Adjacent to the data center is the phone switch room, which houses the core data switch. The phone switch room does not have fire suppression and has poor air conditioning (a single window air conditioner). The room is on the same

UPS and backup generator system as the main server room.
The room has windows to the outside and also has many water pipes directly overhead of much of the equipment.

2.4 LOCAL AREA NETWORK

The core of the UMM local area network (LAN) consists of a single Cisco Catalyst 6509 chassis. Most of the buildings have Gigabit Ethernet connections directly back to Behmler while the remaining buildings have Gigabit Ethernet connections back to consolidation points that are then connected to Behmler via Gigabit Ethernet. All of these Gigabit Ethernet connections come back to the Catalyst 6509.

UMM has been moving from HP to Cisco for distribution data electronics. Approximately 10% of the switches are HP switches. Some of the data electronics that were examined on the tour of wiring closets were in very poor environments. Some of the spaces have paper storage and janitorial storage that are causing dust build-up on the power supply intakes and in the Ethernet ports on the switches. A week following the visit to campus, one of the switches that was covered with dust failed and needed to be replaced. The UMM data network delivers predominantly 10/100 Mbps switched Ethernet to users.

2.5 WIRELESS DATA NETWORK

UMM has sporadic wireless data network access throughout the campus. Wireless exists in all of the academic buildings and in the public spaces in the dormitories but there is not 100% coverage throughout campus. Outdoor coverage is provided by any indoor coverage that spills outside of each building. No outdoor access points or antennas have been installed.

2.6 PHONE SYSTEM

UMM has a Mitel SX-2000 phone system for the campus. The campus also uses the Mitel voice mail system. There are approximately 1,000 users on the system, roughly half academic and half student. UMM has a certified technician on staff to support the system.

2.7 AV-MULTIMEDIA SYSTEMS

UMM has projectors deployed in a handful of classrooms. The common setup is a projector with a DVD/VCR player and loudspeakers for sound reinforcement. Some of the larger spaces have wireless microphones. Some rooms have Crestron controllers for controlling AV systems while others use individual remotes for the control of different AV devices.

UMM have 5 dedicated video conferencing rooms for video conferencing mostly on the U of M network and the state network. UMM uses Tandberg for video conferencing.

3 ANALYSIS AND RECOMMENDATIONS

The following section provides analysis for each technology in comparison to other higher education organizations. Based off of the analysis, recommendations are provided to close the technological gap with other colleges and universities. Estimated costs are provided for recommendations of which E&A had enough information to formulate an estimated cost.

3.1 TECHNOLOGY CABLING INFRASTRUCTURE

Higher Ed Institution	Cat. 5/5e/6	Fiber	Voice on Patch Panels
UM-Morris	Cat. 5	MM and SM	No
Benedictine University	5e or higher	12 MM between buildings	No
Broward Community College	5 and 5e		Yes
Carleton College	5e, a little 6a		Up to now, no. From now on, yes
Century College	Cat. 6	50 micron MM and SM	All data grade on patch panels
Chadron State College	Voice Cat. 2, Data Cat. 5	SM and MM	No
Kansas University	Cat. 6	SM and MM	No
Lake Superior College	Augmented Cat.6/Cat. 5e	50 micron MM and SM	All data grade on patch panels
Lincoln University	Voice Cat. 3, Data Cat. 5 and 5e	SM and MM	No
MacPhail Center for Music	Augmented Cat. 6	SM and MM	
Minneapolis Community & Technical College	Cat 5e	50 micron MM and SM	All data grade on patch panels
Normandale Community College	Cat 6	50 micron MM and SM	All data grade on patch panels
North Hennepin Community College	Cat 5e	50 micron MM and SM	All data grade on patch panels
Ohio Wesleyan University	Cat 5e	50 micron MM and SM	All data grade on patch panels
Rochester Community & Technical College	Cat 5e	50 micron MM and SM	All data grade on patch panels
St. Paul Technical College	Cat 5e	50 micron MM and SM	All data grade on patch panels
Truman State University	Cat 6	50 micron MM and SM	All data grade on patch panels
University of Minnesota - Carlson School of Management	Cat 5e	50 micron MM and SM	Cat 5e voice on 110 blocks
University of Minnesota-Duluth	Voice Cat. 3, Data Cat. 5 and 5e		No
University of Wisconsin-Superior	Cat 6	50 micron MM and SM	All data grade on patch panels
Washburn University	Voice Cat. 3, Data Cat. 5		No

3.1.1 CABLING ANALYSIS

The cabling infrastructure trend on college and university campuses is to install Category 6 or 6+ (Category 5e, at minimum) cabling for horizontal copper cabling. There is no longer a designation for voice and data cabling as Category 6 cabling is being installed for both technologies. Since there is not designation between voice and data cabling most colleges and universities are moving to installing all horizontal copper cabling on patch panels in telecommunication rooms. Telecommunication rooms are still being interconnected with fiber optic cable. The standard for multimode fiber is 50 micron fiber in place of the older 62.5 micron fiber. Singlemode fiber optic cabling is being installed only where multimode fiber cannot meet the distance requirements. Coaxial cabling systems are still present on university campuses although there is a growing trend to deliver video over the data network across the Category 6 cabling mentioned earlier.

Although not all campuses can afford to provide a dedicated space for each telecommunication room, an effort should be made to provide clean, environmentally-friendly (proper ventilation, cooling, power, etc.) to prolong the lifespan of the investment made in data network electronics. Most campuses are realizing this when building a new building or remodeling a space in a building that they need to allow for new telecommunication rooms to house cabling and data electronics. With the introduction of Ethernet switches delivering power (and generating more heat) to wireless access points and VoIP phones, the importance of ventilation and cooling becomes even greater.

3.1.2 CABLING RECOMMENDATION

Elert & Associates recommends that UMM replace the cabling in the wiring closets where Category 5 cabling is installed and terminated on 110 blocks. UMM should strive to maintain at least Category 5e for horizontal copper distribution. This will allow for Gigabit Ethernet transmission to the desktop as required.

The cost estimate to upgrade the horizontal cabling at UMM is $1,750,000. Elert & Associates recommends that when cabling upgrades or building renovations take place that UMM install 50 micron fiber for internal building fiber backbones.

After touring a handful of wiring closets on the campus and with the help of Morris IT personnel it was deemed that 19 of the 51 wiring closets on campus are unacceptable for housing cabling and data electronics. Elert & Associates recommends that these spaces be modified to allow for better ventilation, cooling, and dedicated power. In spaces where the wiring closet is purposed for another function (janitor's closet, etc.), a new space near the existing space should be created. Some of these situations could be solved by installing either a floor-standing cabinet or wall-mount cabinet in a space that has better environmental conditions.

3.2 WIDE AREA NETWORK

Since every college and university connects to their own WAN in their own way, it is hard to reach a consensus on which is the correct way of connecting to a WAN. Elert & Associates feels that UMM has an adequate amount of bandwidth in connecting the MNET. However, since most of UMM's services are now accessed via the WAN they should look to making this connection redundant in the case of outages due to cut links or periodic maintenance. The connection coming into the City of Morris is redundant to the state but the connection between campus and the POP in Morris is not redundant. Another connection between the campus and the POP should be installed to provide redundancy. This link should enter the campus on a different path than the current link possibly connecting to a second core site on campus for even more redundancy.
Cost for this redundant link is unknown.

3.3 DATA CENTER/SERVERS

Higher Ed Institution	Two Data Centers
UM-Morris	No
Benedictine University	No
Carleton College	One, moving toward two
Century College	No
Hennepin Technical College	Yes, one at each campus
Lake Superior College	No
Lincoln University	No
Minneapolis Community & Technical College	No
Normandale Community College	No
North Hennepin Community College	Yes
Ohio Wesleyan University	No
University of Minnesota - Carlson School of Management	No
University of Wisconsin-Superior	No

3.3.1 DATA CENTER ANALYSIS

Most universities have a single data center on campus similar to UMM. Although most universities have a single data center, most have redundant data cores on their campuses or are moving to having redundant data cores. A few universities have established storage area networks between their two data cores to establish data storage redundancy.

Universities that have dual data cores often run half of the fiber backbone to one data core and the other half to the other data core. The dual cores have multiple fiber paths between them for added redundancy. Some universities actually dual home each outlying building to each data center. Dual-homing is occurring more often but is often out of the budget of most campuses.
It is common that all data cores (and/or data centers) have UPS systems, backup power, and dedicated air conditioning.

3.3.2 DATA CENTER RECOMMENDATION

Elert & Associates recommends that UMM move forward with the following recommendations:

Phase I

- **Move the existing Cisco chassis into the data center and out of the switch room.**
- **Make the existing data center the primary data center on campus and re-route fiber currently in the switch room to the data center.**
- **Remove the shelves in the data center and move to server cabinets with rack-mounted servers. This will create more space in the data center and will also improve security and air handling within the room.**
- **Install an IP KVM to access individual servers. This will eliminate the abundance of keyboards, mice, and monitors from the data center allowing authorized IT personnel to access servers across the network.**
- **Remove any unnecessary storage in the data center (ex: old HP switches, etc.)**

Phase II

- **Establish a second data center on campus with another Cisco chassis that has an identical configuration (Gigabit ports may vary).**
- **The second data center should have a UPS system, backup power, and its own air conditioning system.**
- **Install a card access system for each data center. This allows for better security allowing UMM to keep better control of access to the data centers and also to track entry into the data centers.**
- **Move a portion of the buildings on campus onto the second data core. It is common to divide the buildings up geographically on campus with half on one core and the other half on the other core.**

Phase III

- **Create dual fiber connections from each building to the data cores. Ideally having separate fiber paths to each core would offer the most redundancy. However, if funding is limited, fiber can be routed between the two cores so that each building will connect to each core but not be on redundant fiber paths. This would provide redundancy in case one of the two chassis was to fail. This also allows UMM to more easily perform periodic maintenance on each chassis without having to bring the campus network down.**

More information is needed to provide estimates for the technology aspects of these recommendations. Elert & Associates cannot provide architectural, mechanical, or electrical cost estimates for any new spaces.

3.4 LOCAL AREA NETWORK (LAN)

Higher Ed Institution	10/100 or 10/100/1000	PoE	Redundant Data Cores
UM-Morris	10/100	No	No
Benedictine University	A mix	No	No
Broward Community College	10/100	40%	Yes
Chadron State College	10/100	40%	Yes
Kansas University	10/100	Some	Yes
Lincoln University	10/100	Near 100%	Yes
MacPhail Center for Music	10/100	100%	No
Ohio Wesleyan University	Mostly 10/100	Approx. 20%	Yes
University of Minnesota-Duluth	10/100	Some	
Washburn University	10/100	Some	Yes

3.5 WIRELESS DATA NETWORK

Higher Ed Institution	Campus-wide	a/g	n
UM-Morris	Partial	Yes	No
Carleton College	Rolling out 2008-09	Yes	No
Century College	Partial	Yes	No
Kansas University	Currently deploying partial campus coverage	Yes	No
Lake Superior College	Partial	Yes	No
Lincoln University	Yes	Yes	No
Minneapolis Community & Technical College	Partial	Yes	No
Normandale Community College	Yes	Yes	No
North Hennepin Community College	Partial	Yes	No
Ohio Wesleyan University	Rolling out 2008	Yes	Yes
St. Paul Technical College	Yes	Yes	No
University of Minnesota - Carlson School of Management	Yes	Yes	No

3.4 LOCAL AREA NETWORK (LAN)

3.4.1 LAN ANALYSIS

Campuses have, at minimum, an installed base of switched 10/100 Mbps Ethernet to all users. As prices drop and the need for bandwidth rises, campuses are moving to 10/100/1000 Mbps Ethernet switches.
As more devices require power over the network, the need for switches with power over Ethernet (PoE) capabilities grows. Devices such as VoIP phones and wireless access points accept power over the network thus eliminating the need to install power locally for these devices.

3.4.2 LAN RECOMMENDATION

Elert & Associates recommends that UMM continue to replace its HP switches with Cisco switches installing the same models where possible. UMM should also consider installing one (or greater in TRs with more PoE devices) PoE switch in every telecommunications room to supply power for devices requiring PoE.

Based on the current switch information that provided the following cost estimates are for replacing the remaining HP switches with Cisco switches:

Cost estimate for 10/100 Mbps: $72,000
Cost estimated for 10/100/1000 Mbps: $108,000
These cost estimates include the cost of PoE ports.

3.5 WIRELESS DATA NETWORK

3.5.1 WLAN ANALYSIS

The trend for wireless networks in higher education environments and throughout the wireless LAN industry is moving toward the lightweight access point. The concept behind this design is that multiple “non-intelligent” wireless access points are placed throughout a campus or business and controlled by a central wireless controller or controllers. The previous architecture consisted of numerous autonomous access points that each had intelligence and operated independently of each other. The lightweight access point architecture allows a wireless LAN to act as one contiguous system, changing power and frequencies automatically to offer the best service to clients on the system.

The currently technology most widely used is 802.11g which offers data rates of around 19-20 Mbps (54 Mbps theoretical). A new standard, 802.11n, which will be adopted next year, will offer speeds of 70-75 Mbps (250 Mbps theoretical).

3.5.2 WLAN RECOMMENDATION

Elert & Associates recommends that UMM develop a campus-wide deployment plan for wireless networking. Currently they have access points deployed throughout campus but no overall vision as far as a campus-wide system. At the time of deployment of a campus-wide system, UMM should strongly consider 802.11n as most manufacturers offer pre-draft equipment both on the network and end user sides.
The following are estimates for a campus-wide wireless network for UMM:
802.11a/g system: $280,000
802.11a/n system: $350,000

3.6 PHONE SYSTEM

Higher Ed Institution	Traditional or VoIP	Wireless Voice (900 MHz or VoIP)
UM-Morris	Traditional	No
Benedictine University	Traditional	Some 900 MHz
Broward Community College	Hybrid, 25% VoIP	
Carleton College	Traditional	No
Chadron State College	Hybrid, analog for students	
Lake Superior College	Started VoIP deployment in 07	
Lincoln University	VoIP, analog for students	
MacPhail Center for Music	VoIP	
Minneapolis Community & Technical College	VoIP-NEC	
North Hennepin Community College	Traditional	
Ohio Wesleyan University	Traditional with 20% VoIP	Some 900 MHz
Rochester Community & Technical College	Centrex-moving to VoIP	
St. Paul Technical College	Traditional	
University of Minnesota - Carlson School of Management	Traditional-Avaya	
University of Minnesota-Duluth	Traditional with some VoIP	
University of Wisconsin-Superior	Traditional	
Washburn University	Traditional	

3.6.1 PHONE ANALYSIS

The acronym being thrown around the phone industry today is VoIP (voice over IP). Every technology seems to be migrating to IP as their common protocol including voice. Elert & Associates estimates that 15-20% of our higher education clients have moved to VoIP for their entire phone needs while 100% of our higher education clients are thinking about some sort of rollout of IP.

3.6.2 PHONE RECOMMENDATION

Based on the current evaluation of the phone system at UMM, the campus is in fairly good shape. Their existing phone system has been updated to the latest version of software while their voice mail (NuPoint) needs to be upgraded.

The UMM system as it sits today is not ready for an IP phone implementation. If UMM chooses to stay with the Mitel System it will have to incorporate a 3300 to start deploying IP phones on campus. There are multiple migration strategies for moving to an IP-based system. The costs will vary greatly depending on how deep UMM wants to bring VoIP on campus.

3.7 AV-MULTIMEDIA SYSTEMS

Higher Ed Institution	Classroom projector deployment	Annotation technology	Networked control system	Digital Signage	Audience response systems	Simulation systems
UM-Morris	Partial	Some Smartboards	Crestron, some networked	No	No	No
Benedictine University	In some rooms					
Carleton College	Nearly 100%	Some Smartboards	AMX, not networks	Extremely Limited	No	None
Connecticut Community Colleges	Widespread		Crestron, networked	Varies by campus		Yes-healthcare
Gateway Technical College	Widespread	Some Sympodiums	Crestron, networked			
Lake Superior College	Widespread	Some Sympodiums	Crestron, networked	Campus-wide, extensive	no	Yes-healthcare
Minneapolis Community & Technical College	Nearly 100%	Some Sympodiums	Crestron, Extron, networked	Yes, extensive	no	no
Normandale Community College	Nearly 100%	Some	Crestron, networked	Limited	no	no
Ohio Wesleyan University	In some rooms					
Truman State University	Widespread		Networked			
University of Minnesota-Academic Health Center	Nearly 100%	No	AMX, networked	Campus-wide	Yes, course-specific	Yes-healthcare
University of Minnesota - Carlson School of Management	100%	Some	AMX, networked	Campus-wide		None
Viterbo College	Widespread		Crestron, networked			

3.7.1. AV-MULTIMEDIA SYSTEMS ANALYSIS

The following is a summary of what Elert & Associates is finding at other universities when it comes to AV-Multimedia Systems:

- 90-95% of classrooms have, at minimum, a projector. In new or renovated spaces on campuses the figure is 100%. In larger rooms, approximately 20% have two projectors installed.
- Smartboards or sympodium-type annotation technologies are rarely implemented due to cost. Most of these types of systems that are implemented are portable units.
- Most universities that have deployed multiple fixed AV sources in a classroom have also installed a control system integrated into the classroom.
- Most universities are connecting the previously mentioned control systems to the network to monitor devices or receive notifications (ex: projector bulb life, device disconnected, device on/off, etc.)
- Most universities are not using the helpdesk feature that is common with most control systems. This is primarily due to staffing costs.
- Most Minnesota college/universities, public and private, have some sort of digital signage whether it is on a per-building basis or campus-wide. The main functions of these systems are informational while some institutions are using them for individual classroom information.
- In addition to installing projectors into classrooms most college/universities are installing sound systems as well.
- Universities/colleges have dedicated video conferencing spaces. We are finding that universities/colleges are requesting the ability to connect a portable video conferencing cart into all classrooms more than having a dedicated space for video conferencing.
- Audience response (“clicker”) systems are discussed by almost all of our university clients but no one is implementing them. Of our clients that have implemented these types of systems, they are typically portable systems.
- Simulation systems for nursing, law enforcement and other disciplines are a hot topic. For example, multiple classrooms can view a demonstration of a nursing technique from a simulated patient room utilizing multiple cameras and an interactive audio system to allow for questions.

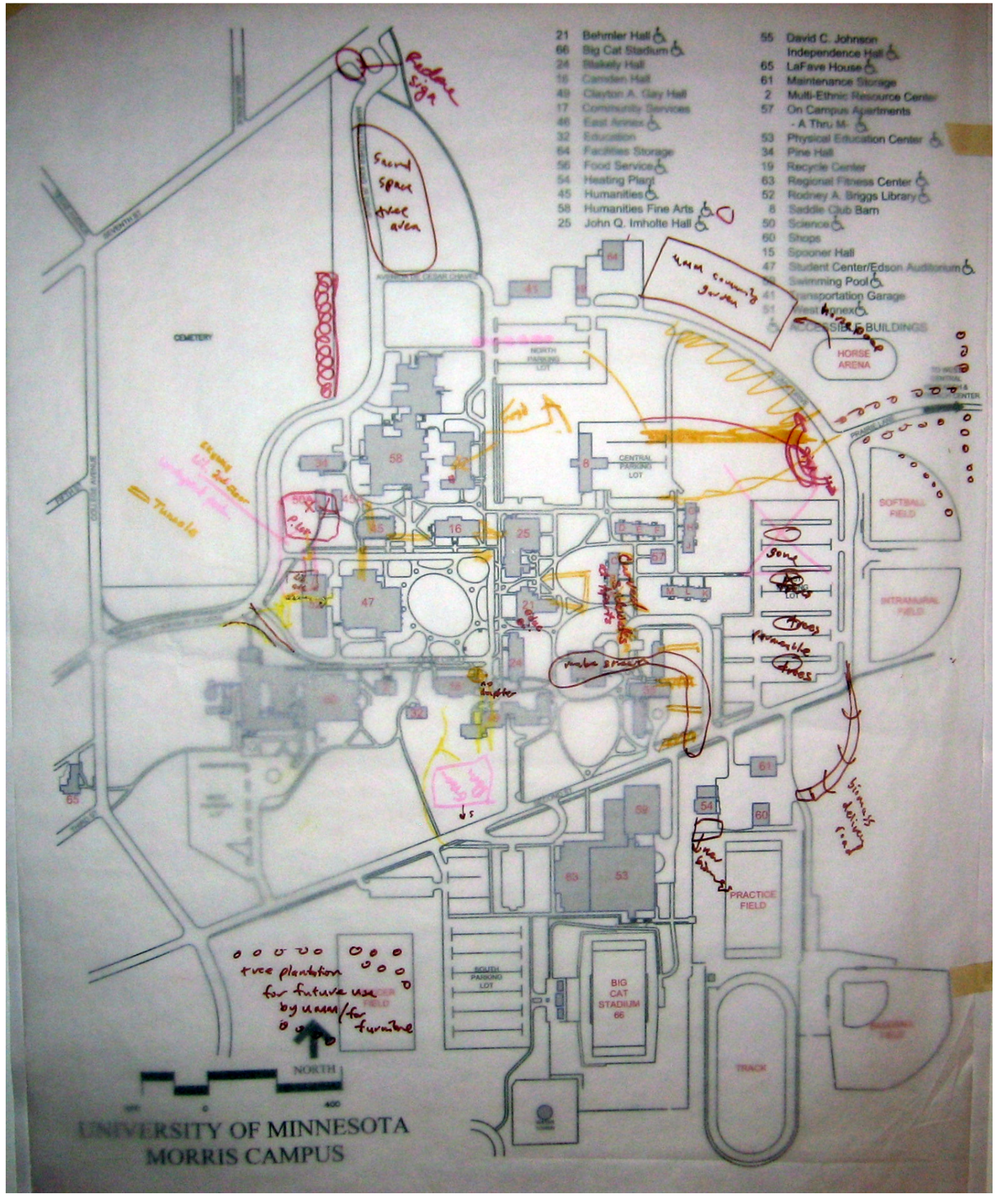
Elert & Associates recommends that UMM budget for placing projectors in all of their classrooms. Typically the cost of a dedicated AV system for a classroom is $12,000 - $15,000 for a projector, mechanical, wall-mount screen, network AV control system, DVD/VCR player, sound system, and a document camera. The instructor work area which houses the equipment is not included in the total because the work area can vary greatly in cost based on matching the aesthetics of the room, size, mobility, etc.

A room response (“clicker”) system can range from $5,000 to $20,000 for a 100-student room. The cost for these systems can vary based on whether the system is portable or fixed and how many features the university would like implemented.

Campus Planning Charrette

campus master plan 2008

CHARRETTE GROUP ‘A’



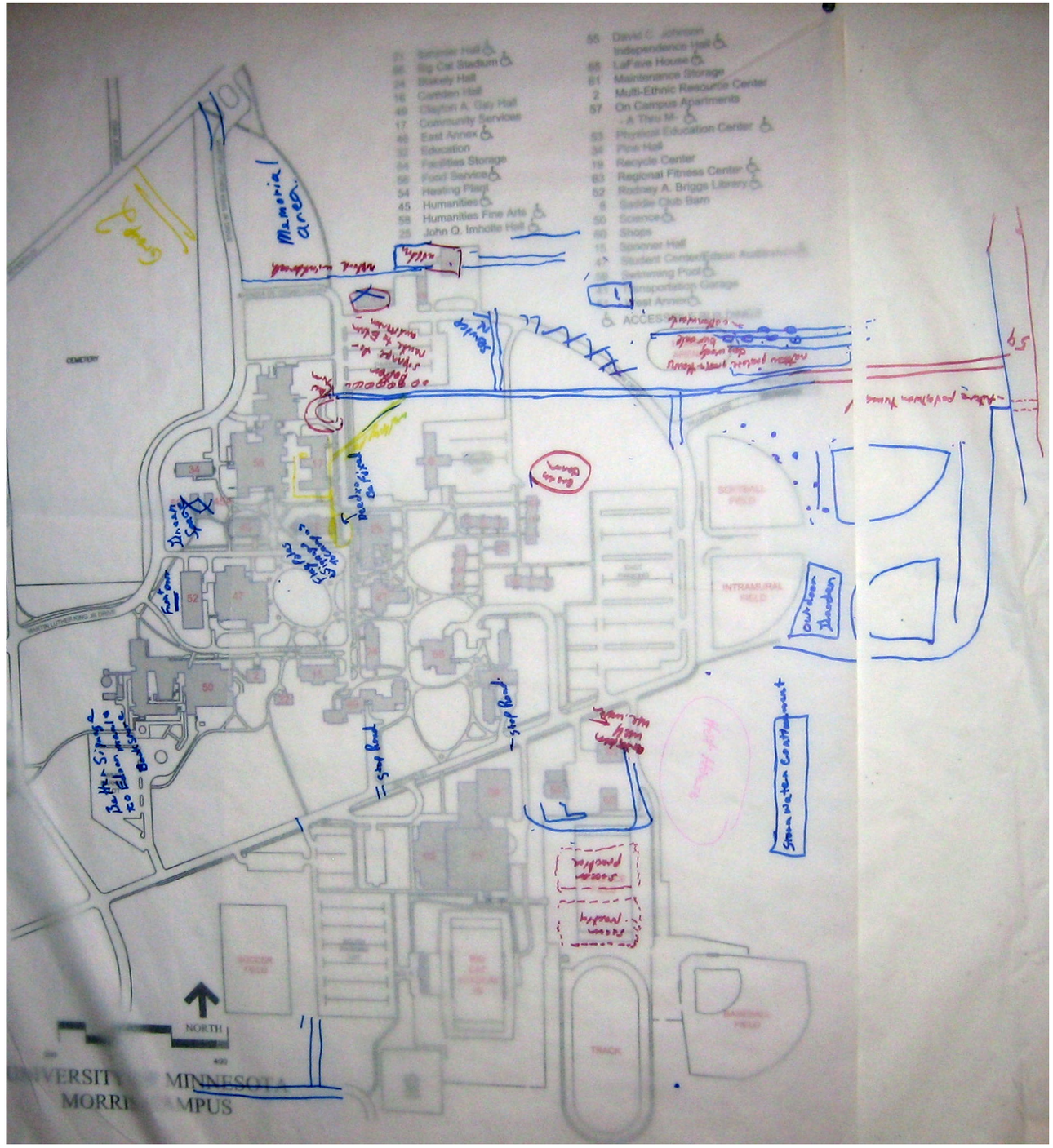
GROUP A SUMMARY

- Re-design sign/loop at 7th Street entrance.
- Reduce/breakup large parking lots and re-distribute smaller on through campus/near buildings.
- Add more trees and plantings to large parking lots.
- Demolish fish houses and add underground parking near library.
- Expand library and add walkthrough entrance on 1st floor.
- Tree plantation along South edge of campus.
- Community Garden near Horse Arena.
- Green Dorm located next to historic Miller Field (Central location that will display the green strategy effort).

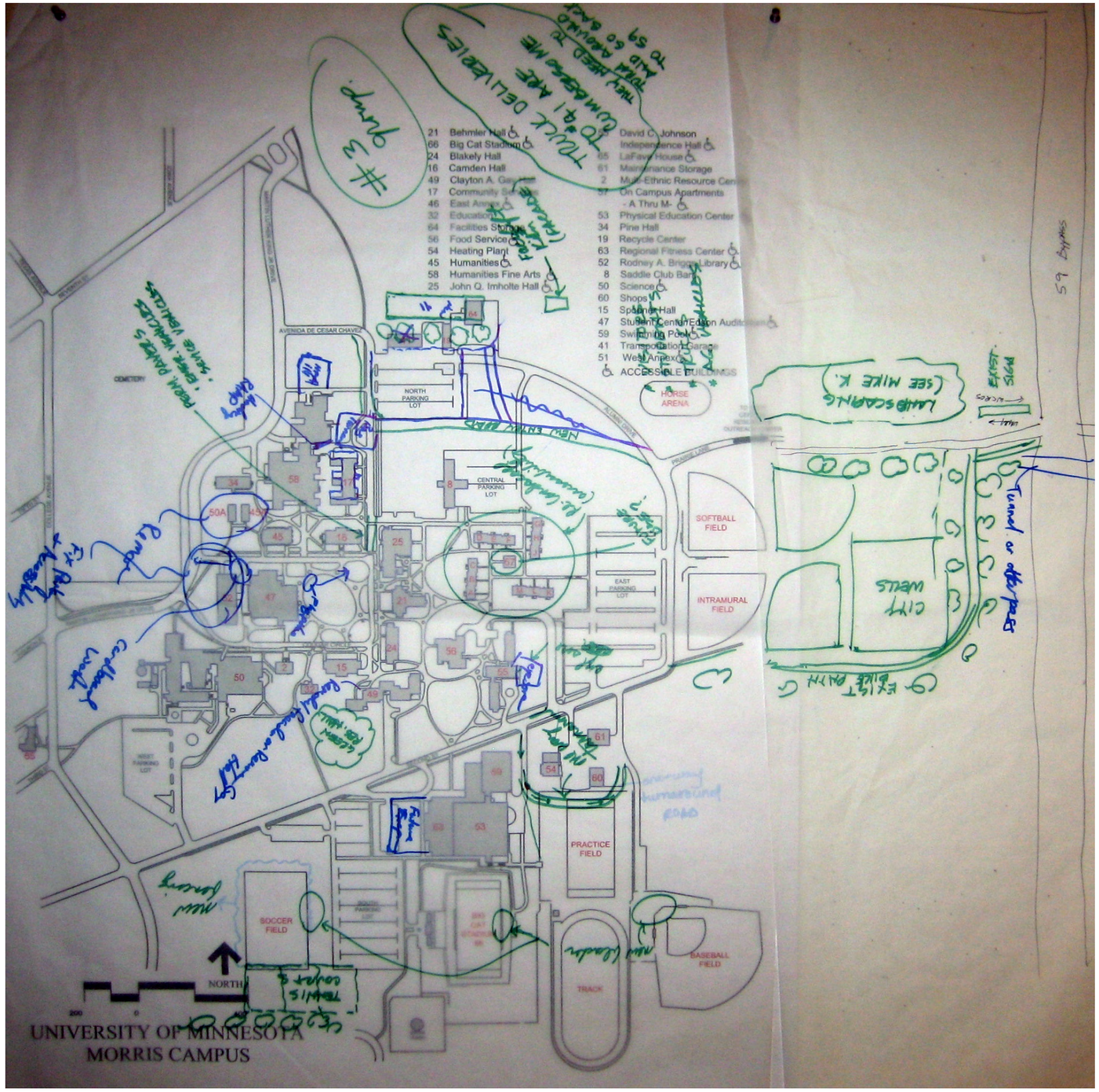
CHARRETTE GROUP ‘B’

GROUP B SUMMARY

- Straighten Hwy. 59 Entry to the center of campus.
- Plant trees and native grasses along edge of new entry, and harvest grasses for biomass.
- Re-align 7th Street entrance. Add a memorial area to 7th St. entrance roadway.
- Enlarge bus turn-around, locate a storm water pond near the ball fields, and reuse water for irrigation.
- Break 2nd Street behind fitness center.
- Improve circulation and signage around bookstore buildings. When buildings are locked circulation around them is awkward.
- Front door of library on 4th Street side of building.
- Add/site/design new flagpoles in the campus quad.



CHARRETTE GROUP ‘C’



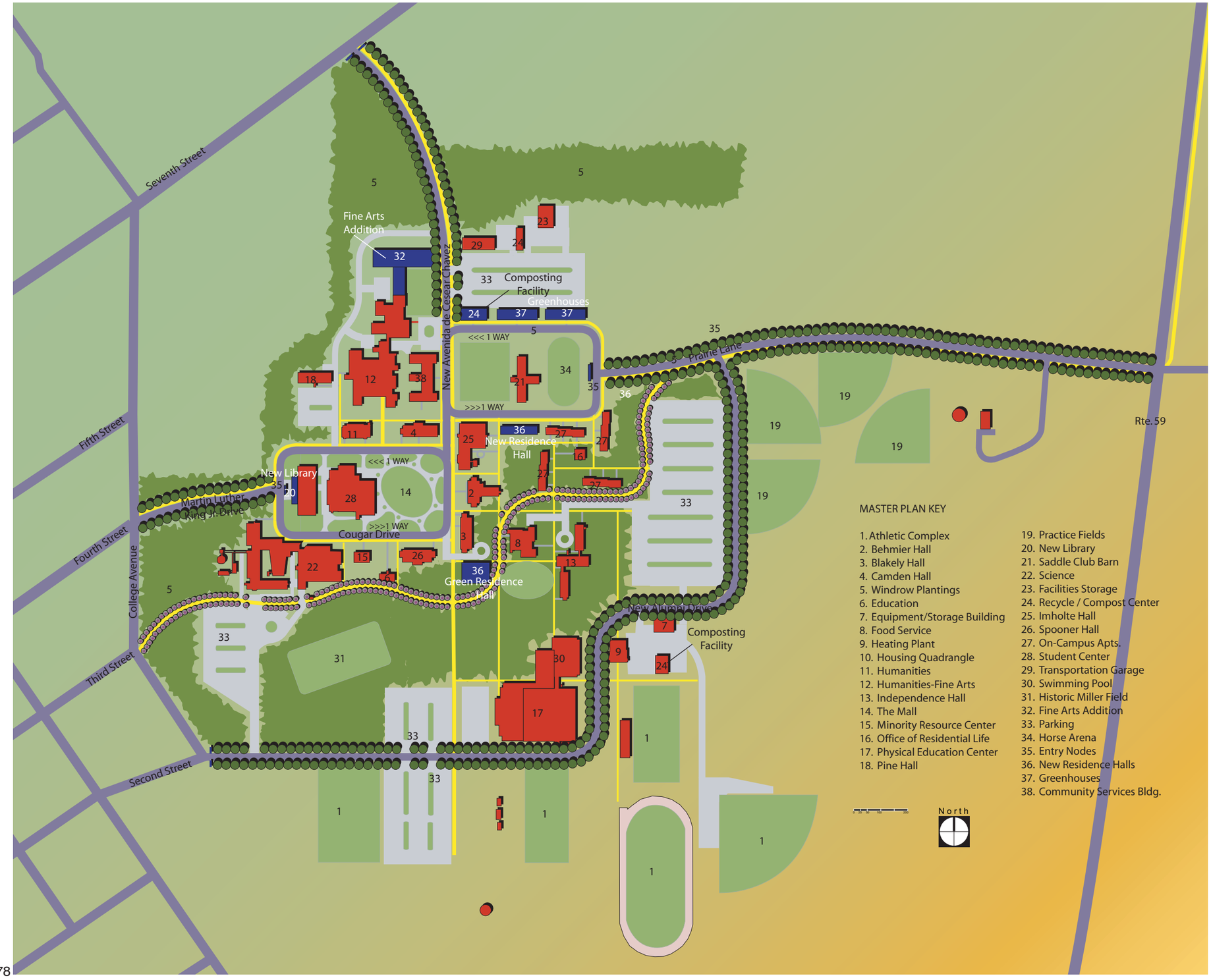
GROUP C SUMMARY

- Re-design and landscape Hwy 59 entry, and straighten road to campus center.
- Landscape the new bike path and add a tunnel under 59.
- Remove 2 buildings; add landscape to hide service operations.
- New bus turnaround area near north parking lot.
- Identify a future use for building 57.
- New bleachers for sport fields.
- Combine tennis courts with high school.
- Remove fish houses, add new parking area.
- Site new flagpole location in campus quad.
- Re-open road way into quad area.

Master Plan Scheme Options

campus master plan 2008

OPTION 1 - THE CLEARING



The idea for the Clearing option came from the desire to create a mirror of the historic quad on the eastern side of campus - a new quad for the new century. This plan also looked at creating pedestrian and bicycle connections across campus and on into downtown Morris.The other big idea was to re-align 2nd Street for the purpose of calming traffic and knitting the campus fabric back together.

Responses to this option follow:

- This plan works well from a service route perspective, but the North-South route was closed to slow traffic in the historic district (1970s). This scheme could also work without the 7th Street entry (like other 2 schemes). This would slow traffic (i.e NASCAR route) through the double loop roads.
- GAP between the RFC and stadium is likely too small to accommodate the new 2nd street.
- One of the benefits of this plan is that it opens the center of campus to the community. It makes the historic district visible. It is easier to get to the heart of campus.
- There is a clean separation between pedestrian and vehicular circulation. Eliminates conflicts, improves way finding and navigation.
- Parking lots can serve as drop off loop and staging area for waiting buses.
- All 3 plans eliminate Gay Hall. Has this been approved? Is this realistic? This is a plan for the future. Not all of these changes are expected to occur in the short term. As facilities get upgraded, these plans recommend that Gay Hall be replaced with new, updated, green residential housing facilities in other sites. This will eventually restore the North-South axis through campus (a component of the historic Morrell-Nichols design), both visually, and physically (for pedestrians).
- No new parking on the Mall loop (fish house location). This was a historic green space that should be restored.
- If the Saddle Club Barn is to remain as a new focal/arrival point on campus it could be a beautiful representation of the rural nature of this campus. It will, however, require a ‘facelift’.
- Other new buildings on loop (conservatory green houses, compost facility will showcase the green efforts on campus. While the Historic Quad/N-S axis is restored to highlight the campus past , the new quad represents the future.
- Green dorm location should be placed on the plan where the University plans to build it. Its layout should follow optimum solar orientation.
- Work the apple allee around the historic plantings (conifers) in front of Spooner Hall.
- The heating plant may not provide the most attractive vista for the new 2nd Street route.

OPTION 2 - THE HOOK

The idea for the Hook option came from the desire to re-align 2nd Street for the purpose of calming traffic and knitting the campus fabric back together. By breaking 2nd and creating turn-arounds, the campus is reintegrated into a whole, not a city through-street. Access is granted to the area for specific uses only.

Responses to this option follow:

- The Humanities, Fine Arts (HFA) building expansion includes a 1000 seat auditorium. We will have to accommodate parking for this new event space. The loss of North lot parking in this scheme makes this a greater challenge. The ¼ mile/5 minute walk radius illustrates that all parking lots are within a 5 minute walk. Event management is key (Traffic direction, signage, planning).

- Need to consider fire truck and service vehicle access, moving day access to residence halls. Management will help to solve this problem. Consider limiting delivery truck size, and timing of deliveries on Mall area to keep this a pedestrian friendly environment. Sidewalks can be widened and emergency access roads can be green, as long as they remain open.

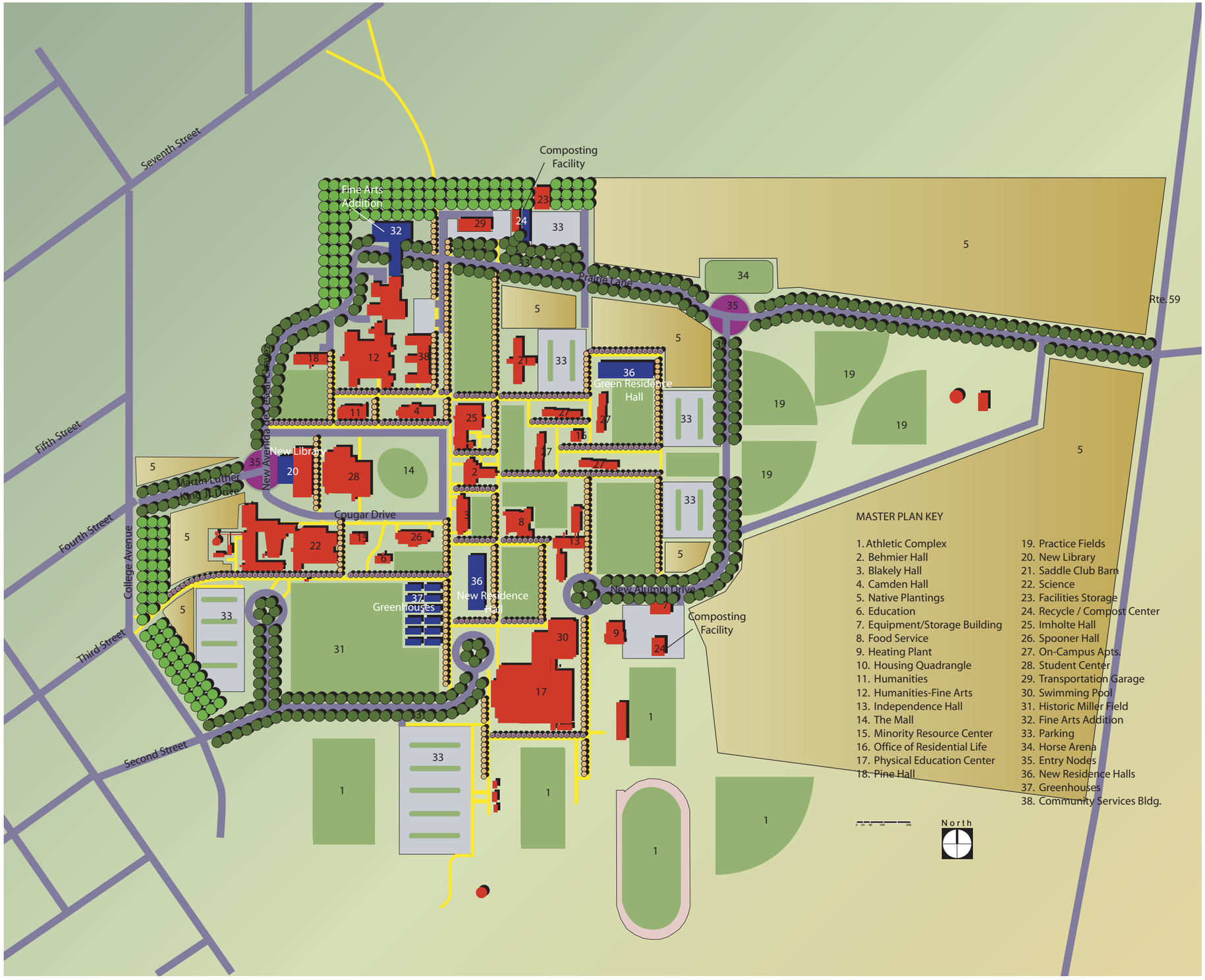
- e: Breaking Up 2nd Street. Campus planning committee likes how the 3 schemes create a more walkable campus, and this was one of the directives in the first 2 meetings. $600,000 needed to repair existing road – may open opportunities for change.

- The Recreational Fitness Center is co-owned with the community. The loop road scheme appears to merge this facility with campus, and segregate it from the community.

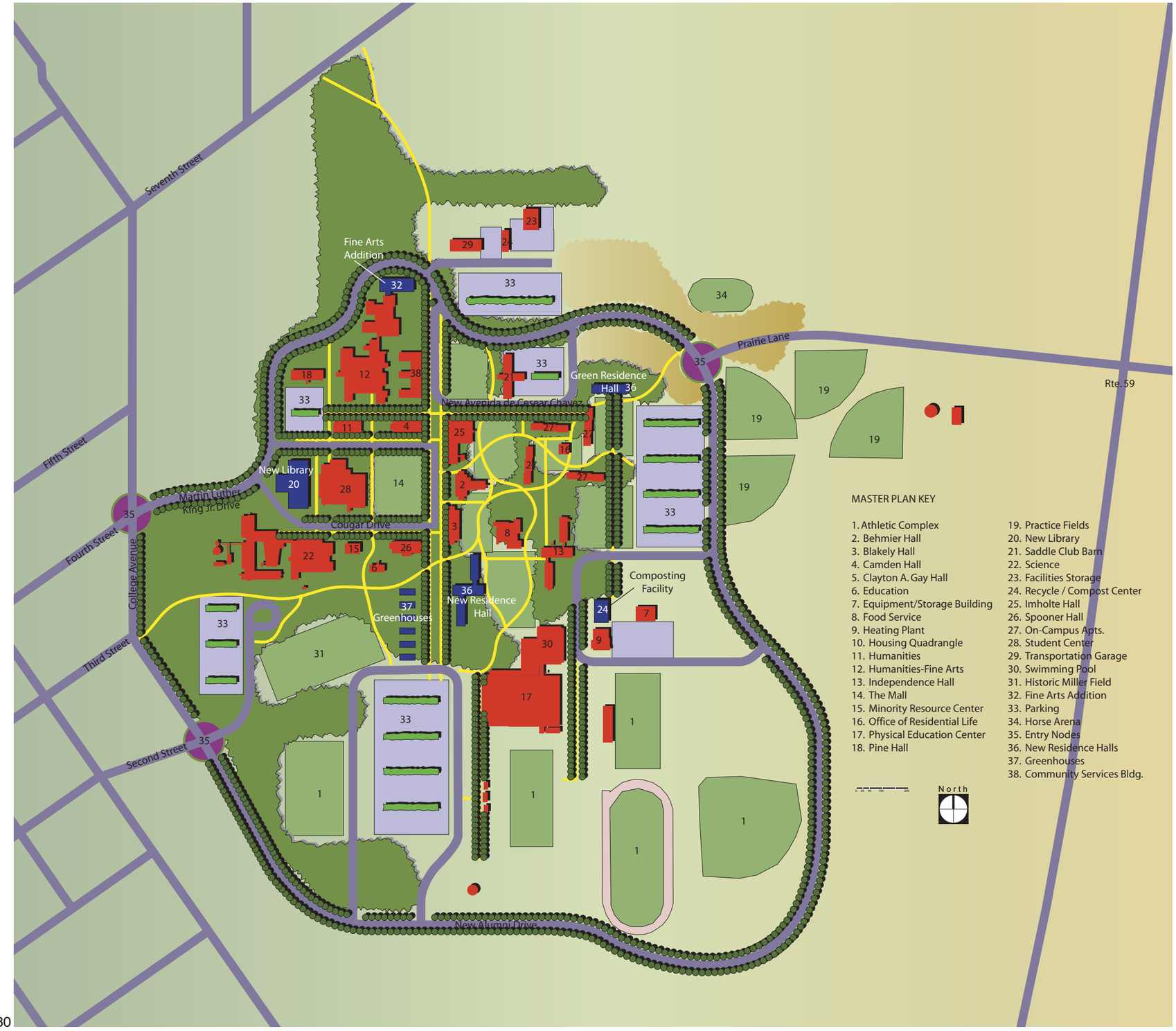
- More parking needed at RFC. Big Cat Stadium parking fills up with every game. Management during events to direct top other lots is critical. We will also look at making effective connections with the public school lots and circulation routes to the south.

- Need to preserve the plantings and character of the inner historic district as per the Morel and Nichols design that is outlined in the Historic Preservation Plan. Transition into the new areas on the edge of campus.

- Parking lots are all on the outskirts. This may present a safety/security issue at night for people walking alone. Lighting and planning will be directed by the crime and prevention environmental design principles.



OPTION 3 - THE LOOP



The idea for the Loop option was based on creating a single, contiguous campus landscape with all aspects, buildings, services inside a ring road that defined the campus boundaries.

Responses to this option follow:

- The loop road goes through a storm water path/wetland at the SE corner. This could be bridge or re-routed between the practice field and RFC. (i.e. merge Loop and Clearing schemes here).
- Traffic congestion around stadium needs to be remedied. The Elementary school road and parking should be pulled into the plan to remedy this.
- Are house acquisitions required on the plan? Yes. South of college and 2nd Street intersection (cul de sac).
- The improvements to the 59th street entry are priorities… the other items on the all 3 plans are not as likely, but should be considered into the future. They would require major growth in the student body and campus population to be realistic. We will include a phasing plan for the final master plan scheme.
- We need to consider is cutting off 2nd Street would be neighborly to the community. This is a main access route between town and HWY 59. The is a general consensus that we don't want to cut community off, but transitioning from the existing direct traffic flow corridor (i.e. through route) to a winding campus drive (Loop and Clearing schemes) maintains the connection, slows traffic, and builds safe pedestrian connections between the recreational facilities and the rest of campus.
- $600,000 needed in repair to 2nd Street = opportunity to improve these connections.
- Removal of 7th Street. It is a beautiful entry point, although it needs updating. Does this need to be vehicular, or could it remain as a pedestrian-bicycle connection. This depends on access to other entries in each scheme. It is a good move to straighten out the path (either vehicular or pedestrian) to its original configuration.

Hybrid Plan Schemes

campus master plan 2008

HYBRID SCHEME A

Taking feedback from the previous 3 options, this hybrid option was created and presented on campus.

Responses to this option follow:

AM MEETING WITH THE HISTORIC PRESERVATION PLAN CONSULTANTS AND PLANT CREW:

- The plant crew thinks that this plan shows good progress from the first 3 schemes. They especially appreciate the relocation of plant and utility services in the south part of campus. Need to retain seed barn in North – historic building.
- There could be a security post/information building at the new 59th street entrance near the traffic circle – an opportunity to stop and get directions, etc.
- Road to food service via East lot = good. Provide adequate turn around space.
- N-S Axis, 7th St Entry closure to cars: Excellent move to restore N-S axis, but it should include vehicular traffic due to ease of circulation and HP design. This also connects the community to heart of campus via 7th St. Plant Services thinks closing this may work in light of new 59th Street entry – simplify navigation.
- Like the rectilinear organization of the plan, walks, roads in combo with loop road outside of the Historic District. Need to maintain porosity and not close entrances.
- Library Entry: restore horseshoe curve = symmetrical. May move closer to entry to fit with new science building. The entry is not intended to be the 'welcome' or 'arrival' point… the opening landscape in the quad is the 'ah ha' moment.
- Orchard Walk: This should be a walk through the historic landscapes up to the intersection with the N-S Axis (edge of Historic District). The apple tree idea is good beyond this point, but the walk could be better represented through the Miller Field walk, Spooner grove walk, West grove walk, etc. Maybe the path is held consistent with a type of paving or lighting elements.
- Integrate the Historic Core Values. Ensure a relation between the districts.
- Seed House could become the welcome center/museum.
- 59th street entry – buffer with more plantings.
- N-S axis through campus core (between quads) should follow historic pattern: walk-trees in boulevard – street – blvd w tree-walk. (maybe trees split from ped-only axis.
- Historic plantings in Engineering Quad – rename.

PM MASTER PLAN COMMITTEE MEETING

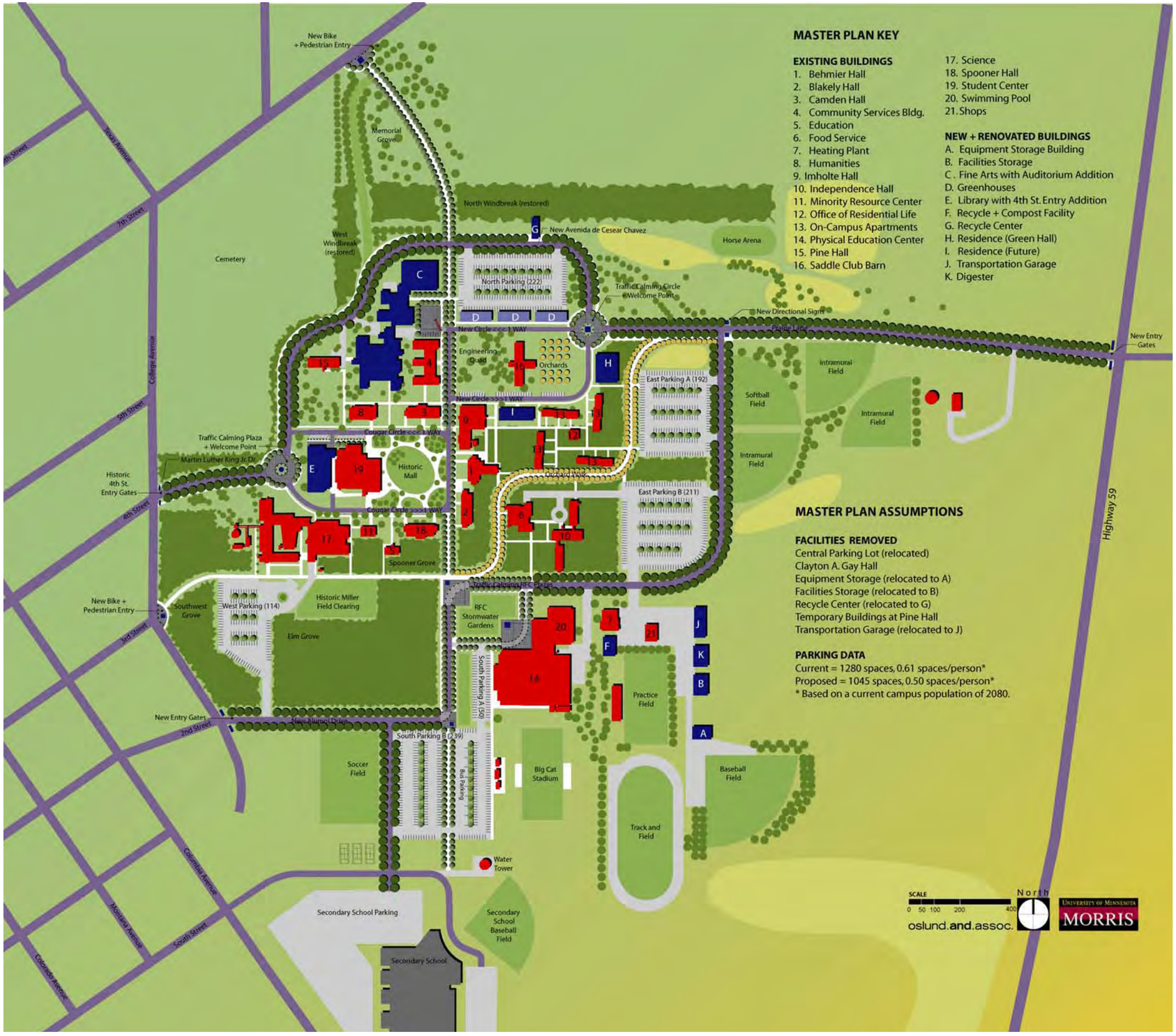
- RFC Parking: need to add 6-8 HC parking spots, for >70 (age). Need a drop off loop and more accessible parking.
- Add Tennis courts at/next to south parking.
- Need to add back some of the parking in Central Lot (edges?)
- HC parking near library loading dock.
- South loop road shifts to NS axis so parking can be placed at RFC.
- Pine Hall becomes arts & music dorm
- Add evergreens to north side of South St (by school)
- Avoid pushing into historic windbreaks.
- Spooner grove clearing and miller field positions.
- Make the connection between quads 'look' like road.

HYBRID SCHEME B

Taking feedback from the previous hybrid, this second hybrid option was created and presented on campus.

Responses to this option follow:

- #11 on key should read: Multiethnic RC
- #12 should be removed, as ORL is now in Gaye and we are showing Gaye gone
- #13 add La Fave house
- #20 RFC is name, not pool
- Make HFA red, only addition blue
- Look at roundabout sizes – shrink.
- Look at types of lighting fixtures – LED's? – Tausento Lighting
- Add topography to MP, shade appropriately
- Parking near apartments – need better access for groceries/move-in, move-out
- Consider areas of "Grass Pave" for overflow event parking
- Can we move East lot N to accommodate the Green Res Hall?
- Moving horses to/from arena?
- Get info from LHB about Green Res Hall footprint – distance from roundabout?
- Library entry from 4th to be added in 2011 – consider this in design.
- Better pedestrian access to baseball fields.
- Add throughway for buses/cars on East side of RFC/Biomass.



HISTORIC PRESERVATION CONSIDERATIONS

Representatives from the State Historic Preservation Office also provided significant contributions to the formulation of the campus plan. The goal is to plan for a campus of the future, while also preserving significant elements from the Garden Campus of the past. The following comments and references to UMM's Historic Preservation Plan (Memo to Lowell Rasmussen and the UMM Master Plan Committee, February 4, 2008) helped to further refine the hybrid plans.

UMM's "traditional entry drive (4th Street) is one of its most intact and significant historic designed landscapes" and is a key element of the Morell and Nichols design (p. 76.) The Master Plan Hybrid drawing alters the shape of the entrance drive immediately west of the library, further changing the shape of the branching point that was partly altered in the 1970s when the road west of HFA was built. The Preservation Plan recommends, "When the opportunity arises related to new construction projects or road rebuilding, restore the shape of the original symmetrical and branching entry drive as it divides west of Briggs Library" (p. 107). This will strengthen this character-defining element of the designed landscape.

The Hybrid drawing removes the north 7th Street entrance to the campus, which will likely route additional traffic down College Avenue from 7th Street to the 4th Street entrance. The angle at which the 4th Street entrance meets College Avenue is acute, and is a critical part of the 4th Street entrance drive's characteristic curving shape. Increasing numbers of cars and trucks making this sharp turn will put pressure on UMM to alter this intersection, causing an unfortunate and fundamental change to the design of Morell and Nichol's entrance drive.

The Hybrid demolishes the Seed House (now Recycling Center), a contributing building within the historic district. The Preservation Plan recommends preserving the Seed House. The building is visually prominent because of its siting and is one of the last buildings that had an agricultural use. (The Transportation Garage is also from the WCSA era, but because of its more recent date is not a contributing building in the historic district. The Preservation Plan recommends that, when it is removed, opportunity be taken to strengthen the North Windbreak with additional rows of trees.)

Dense North and Northwest Windbreaks are a character-defining feature of the campus (p. 65). The Hybrid drawing shows the Northwest Windbreak removed entirely. The Hybrid drawing removes the North Windbreak to accommodate a newly-built east-west street north of HFA, and then replants it about 200' to the north. The Preservation Plan recommends "Retain both [North and Northwest] windbreaks in their current locations and general scale," and makes several recommendations regarding their rehabilitation (p. 140). (The North Windbreak has become thinner through the years as storage areas were created and a new storage building was constructed east of the Seed House.) The Hybrid plan shows the newly-planted North Windbreak as dense and sheltering, which is consistent with Plan recommendations.

The greenhouses drawn on the south edge of the North Parking Lot appear consistent with the Preservation Plan recommendation that "Future additions and structures occurring in the Farm Buildings Area should be unobtrusive and compatible with the original historic design, including both building scale and spatial relationships" (e.g., buildings arranged orthogonally and oriented to the campus grid) (p. 132). The redesign of the North Parking Lot shown on the drawing appears consistent with Preservation Plan recommendations.

Engineering Quad (west of the barn). The Hybrid drawing shows a rectangular street pattern around the Engineering quad and barn. This street pattern is consistent with the Preservation Plan, which recommends "an historically based" pattern of vehicular and pedestrian movement (p. 76) including, as a character-defining feature, "an orthogonal grid of roads and walks in the mall and farm buildings areas" (p. 74).

The Hybrid drawing shows the quad west of the barn as an open space, which the Preservation Plan also recommends, but the drawing shows the space occupied by new sidewalks and rows of trees. The Preservation Plan recommends, "Avoid planting trees or shrubs and introducing any structures or paved surfaces in the lawn area" (p. 127). The Plan's intent was to preserve this as a clear open grassy area without formality or additional pavement. The Preservation Plan also recommends "Minimizing the construction of additional sidewalks in the historic district" (p. 78).

The north-south axis road "serves as a prominent feature in the layout of the Morell and Nichols plan. As the only purely straight street (other than 2nd St.) in the plan, it balances the curving 4th Street entry and the symmetrically curving drives to the Mall. It functioned as a counterbalance to the enclosed intimate feeling of the Mall, providing a tree-lined release to the north and the south from the head of the Mall" (p. 123). It also provided side entrances to the campus.

Another character-defining feature of the historic landscape is "a continuous linear pattern of parallel concrete sidewalks, concrete curb lines, grass boulevards, and evenly spaced street trees and street lamps" (p. 74), as well as "Boulevard trees evenly spaced on both sides of streets forming [an] arched canopy (except on the Mall side of Cougar Circle and the south side of 2nd Street). These boulevard trees create strong linear patterns when combined with curbs, sidewalks, grassy boulevards, and street lamps" (p. 65). This pattern of streets, curbs, boulevards, sidewalks, and trees is depicted in numerous historic photos throughout the Preservation Plan and is a strong design element of the historic landscape.

The Hybrid drawing does not show boulevards and street trees around Cougar Circle. Along the north-south axis road, the drawing shows the pattern entirely changed – the street is removed north of Community Services, there is no tree-planted boulevard in front of Community Services, the street is not rebuilt between Camden and Social Science, the street remnant is removed east of Spooner, and the trees in the drawing flank the sidewalk, rather than the street.

The Plan recommends "Keeping existing roads, sidewalks, curbing, and boulevards at their historic width, alignment, shape, grading, and elevation whenever possible, along with their accompanying pattern of street trees and street lights" (p. 76). The Plan also recommends "reconstruct the street (southward) to 2nd Street" in the event that Gay Hall is removed, and "Design and implement a plan that restores the linear and planar character of the axis between Camden and Social Science where the new tunnel has been built. . . . It should restore the essential elements of the historic streetscape pattern, including pavement, curbing, boulevard and street trees" (p. 124).

The Hybrid drawing shows an "Orchard Walk" crossing the historic district east-west. In the area west of Education, the new sidewalk would replace existing sidewalks and be built on approximately their location (rather than adding additional paved surfaces). The Hybrid shows the new sidewalk lined with apple trees. The proposed apple tree allee introduces a new, strong visual element in the landscape of the historic district, instead of preserving and, where possible, strengthening historic landscape patterns. This Plan recommends that new tree plantings within the district follow historic landscape patterns. It recommends "Selecting overstory trees for grandeur and arching effect of the canopy, creating an expansive sense of space and vistas of ground plane and horizon" (p. 66). The apple trees are not overstory but "understory" trees (20' or less), which the Plan recommends using only "where historic precedent exists for such use" (p. 66). Also note that Miller Field is not depicted correctly on the Hybrid plan – the flat grading of the football field did not extend east past the north-south sidewalk aligned with the west wall of Education.

From the west wall of Education eastward, the Orchard Walk proposes that a new sidewalk be built through an area called the Spooner grove and hillside in the Preservation Plan. This is a grassy shady area that is a "distinct and memorable vegetative space" (p. 117) where the trees "shelter a grassy and human-scaled environment beneath their lower branches" (p. 118). Planted about 1920, the trees are "one of the most intact collections of historic evergreens on campus" (p. 117). The Plan recommends "Do not introduce any new hard surface walks or drives in this zone" and rejuvenate the evergreens through interplanting. (To handle an unwanted "desire line" path created by student foot traffic beneath the trees, the Plan recommends remediating the compacted soil with aeration and other good turf care practices. After the Plan was written the UMM grounds crew learned about a structural soil used on the Twin Cities campus used to reduce compaction and mitigate desire lines where it is desirable to avoid new sidewalks.)

The Hybrid drawing proposes the removal of 2nd Street. The Preservation Plan recommends, "Determine and implement an appropriate design treatment for 2nd Street, taking into account its historic role as the edge of the campus building cluster and as a regional transportation corridor, but recognizing its change in function to a street more like a campus drive. For example, the width could be narrowed and curbs installed, but the alignment might be preserved" (p. 115). The Plan also recommends "Reestablish boulevard trees along 2nd Street" (p. 115). It also recommends "If a campus entrance sign is added in the future to mark the campus entrance near 2nd Street and College Avenue, design this element to be compatible with the historic district ..." (p. 115).

Realignment of the east entrance from Highway 59. The Hybrid's realignment of the Highway 59 entrance road appears consistent with the recommendations of the Preservation Plan (see map p. 75). The Preservation Plan recommends that the redesign of this entrance road be modeled after the 4th Street entrance drive (e.g., a gently curving drive lined on both sides with street trees) (p. 76).

Master Plan Goals and Guiding Principals. The master plan update goal that begins "Honor Miller Field and other historically significant sites..." does not acknowledge that the master planning process is addressing the preservation or management of an entire historic district with a comprehensive landscape design and important interrelationships – not a set of discrete historic sites.

The Hybrid's "Guiding Principals" do not seem to reflect UMM's stated desire to sensitively manage its historic resources and integrate the Preservation Plan into the master plan update.

Final Campus Plan

campus master plan 2008

CAMPUS PLAN 2008

In the final master plan for the University of Minnesota Morris, all previous commentary has been considered and changes reflected in this iteration.

This plan is a very strong representation of the collaborative nature that this planning process offered. Many thoughts from multiple constituencies found their way into this final design.

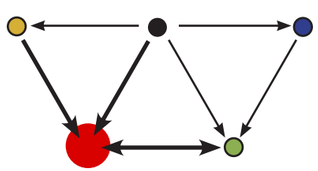
We feel that this plan offers the University a strong roadmap for a sustainable and forward-thinking, precedent-setting future.
By reducing the campus entry points and enhancing those remaining, by clarifying the loop road circulation system, and by introducing roundabouts at key decision points, and by adding clear signage at these points of reference; campus wayfinding will certainly be improved.

A new quad space, surrounded by uses that reflect the campus committment to sustainability and the 21st century, creates a new gateway and front door to the campus. The new green residence hall is a focal point, visually showcasing the green committment to prospective students.

Campus walkability and connection to the town beyond has been improved and focused. Parking has been reconfigured, as has been access to the RFC. The re-alignment of 2nd Street is a strong move towards integrating both sides of the campus into one contiguous whole. This also helps reduce campus through-traffic and offers a place for stormwater gardens - another locale to showcase the sustainability practices in place on campus.

Wetlands have been recreated. Facilities services have been concentrated. Jewel box greenhouses line the new quad and offer iconic focal points near the entry roundabout.

We feel this plan will offer Morris a clear framework for expansion and growth during the next 20 years. As with any masterplan, the document is to be considered organic and flexible to change along with the evolution of the campus.



The spatial organization of the Campus Plan was driven by Master Plan Goals and Principles, Historic Preservation Plan Recommendations and Sustainability Strategies.

MASTER PLAN KEY

EXISTING BUILDINGS

1. Behmier Hall
2. Blakely Hall
3. Camden Hall
4. Community Services Bldg.
5. Education
6. Food Service
7. Heating Plant
8. Humanities
9. Imholte Hall
10. Independence Hall
11. Multi-Ethnic Resource Center
12. Office of Residential Life
13. On-Campus Apartments
14. RFC/Swimming Pool
15. Pine Hall
16. Saddle Club Barn
17. Science
18. Spooner Hall
19. Student Center
20. LaFave House
21. Shops
22. Humanities/Fine Arts

NEW + RENOVATED BUILDINGS

A. Equipment Storage Building
B. Facilities Storage
C . Fine Arts with Auditorium Addition
D. Greenhouses
E. Library with 4th St. Entry Addition
F. Recycle + Compost Facility
G. Recycle Center
H. Residence (Green Hall)
I. Residence (Future)
J. Transportation Garage
K. Digester

MASTER PLAN ASSUMPTIONS

FACILITIES REMOVED
Central Parking Lot (relocated)
Clayton A. Gay Hall
Equipment Storage (relocated to A)
Facilities Storage (relocated to B)
Recycle Center (relocated to G)
Temporary Buildings at Pine Hall
Transportation Garage (relocated to J)

PARKING DATA
Current = 1280 spaces, 0.61 spaces/person*
Proposed = 1030 spaces, 0.50 spaces/person*
* Based on a current campus population of 2080.

2008 CAMPUS PLAN - PHASE 1

Phase 1 focuses on the development of the new Highway 59 Entry Drive and a new 'Green Quad', both of which are surrounded by uses that reflect the campus commitment to sustainability.

Highway 59 Entry Drive:

- Re-alignment and extension of Prairie Lane to the new Green Quad.
- Construction of a new campus entry gate on Highway 59 and the traffic circle welcome point.
- Restore the wetland to the north of the baseball diamonds. Design and construct a series of swales to drain into the restored wetland, and create new wetlands north of the east parking lots.
- Establish trees and plantings along the new entry drive following sustainability guidelines and recommendations in the Historic Preservation Plan.

New Green Quad

- Renovate existing roads/paved surfaces and construct new road segments to complete a one-way loop around the quad. This includes street parking areas along the south edge of the quad.
- Construct the new Green Dormitory at the east end of the quad.
- Re-locate the transportation garage and facilities storage buildings from the north parking lot to a new facilities buildings area adjacent to the practice field.
- Construct the new anaerobic digester and compost facilities in the new facilities buildings area.
- Remove the central parking lot and expand the north parking lot. Construct planted infiltration basins in the islands of the new lot to infiltrate storm water.
- Construct a row of 'jewel box' conservatory greenhouses along the north edge of the new quad to house campus food production programs.

Pedestrian Circulation

- Remove the north segment of Martin Luther King Jr. Drive and close the 7th Street Entry to vehicular traffic. Restore the north and west windbreaks.
- Re-establish the northern segment of the historic North-South Axis as a pedestrian and bike route to the center of campus. Include orientation signage at the new entry point.

2008 CAMPUS PLAN - PHASE 2

Phase 2 focuses on the re-alignment of 2nd Street towards the establishment of a loop road around campus. This will foster a more pedestrian-oriented campus environment and build safer connections to the RFC for both community and campus users.

Parking and Vehicular Circulation:

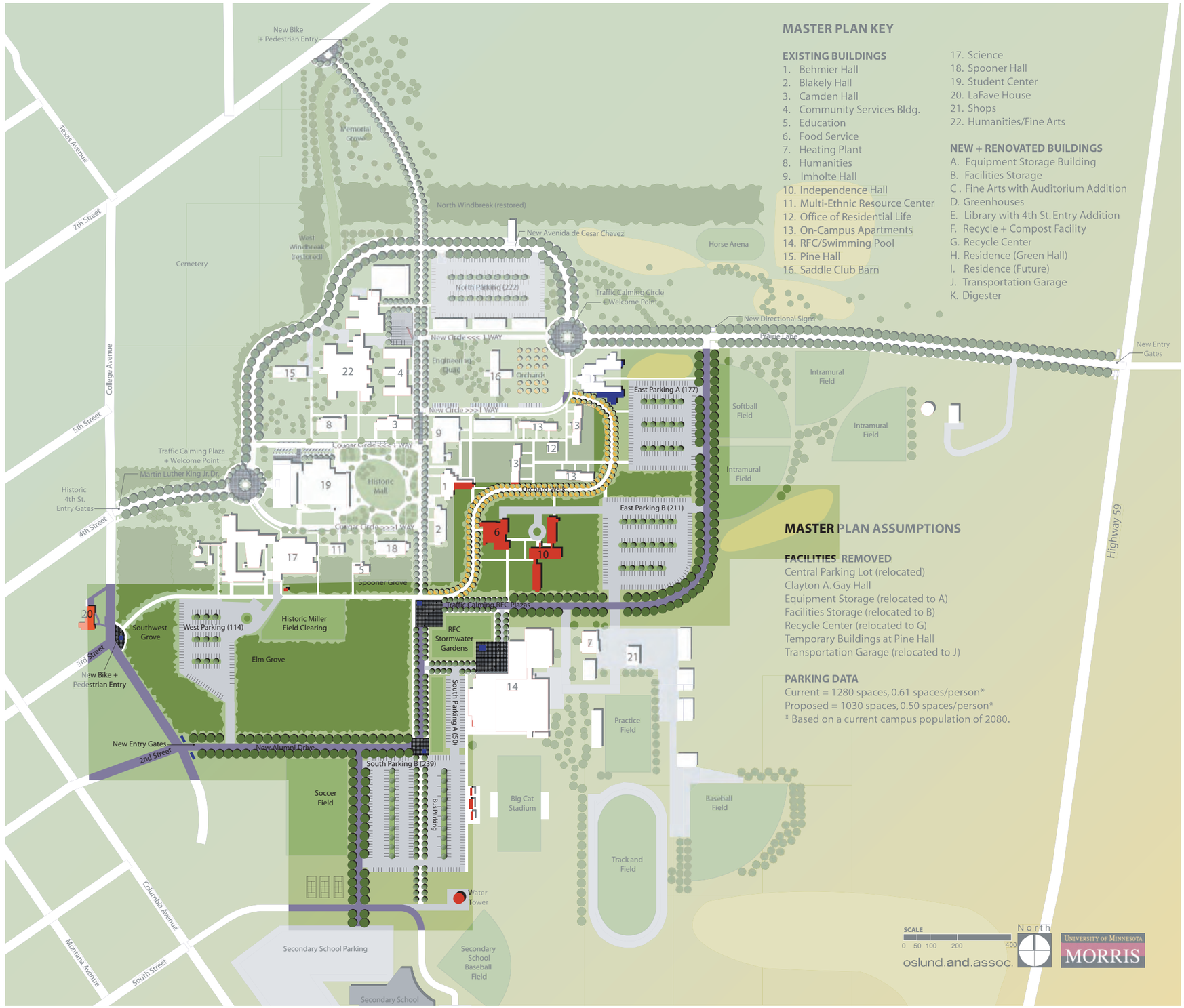
- Re-align 2nd Street to connect to the new Highway 59 Entry Drive. Establish a new entry gate with orientation signage at College Avenue.
- Construct the new drop off loop and South Parking 'A' lot to accommodate parking for accessibility to the RFC.
- Expand the South Parking Lot, including the bus loading zone. Construct planted infiltration basins in the islands of the new lot to infiltrate storm water.
- Extend a new road from the loop drive southwards to connect to the parking areas at the secondary school. Establish a system for sharing parking and athletic facilities (e.g. new tennis courts) between UMM and the secondary school.
- Expand and divide the east parking lots. Construct planted infiltration basins in the islands of the new lot to infiltrate storm water.

Pedestrian Circulation

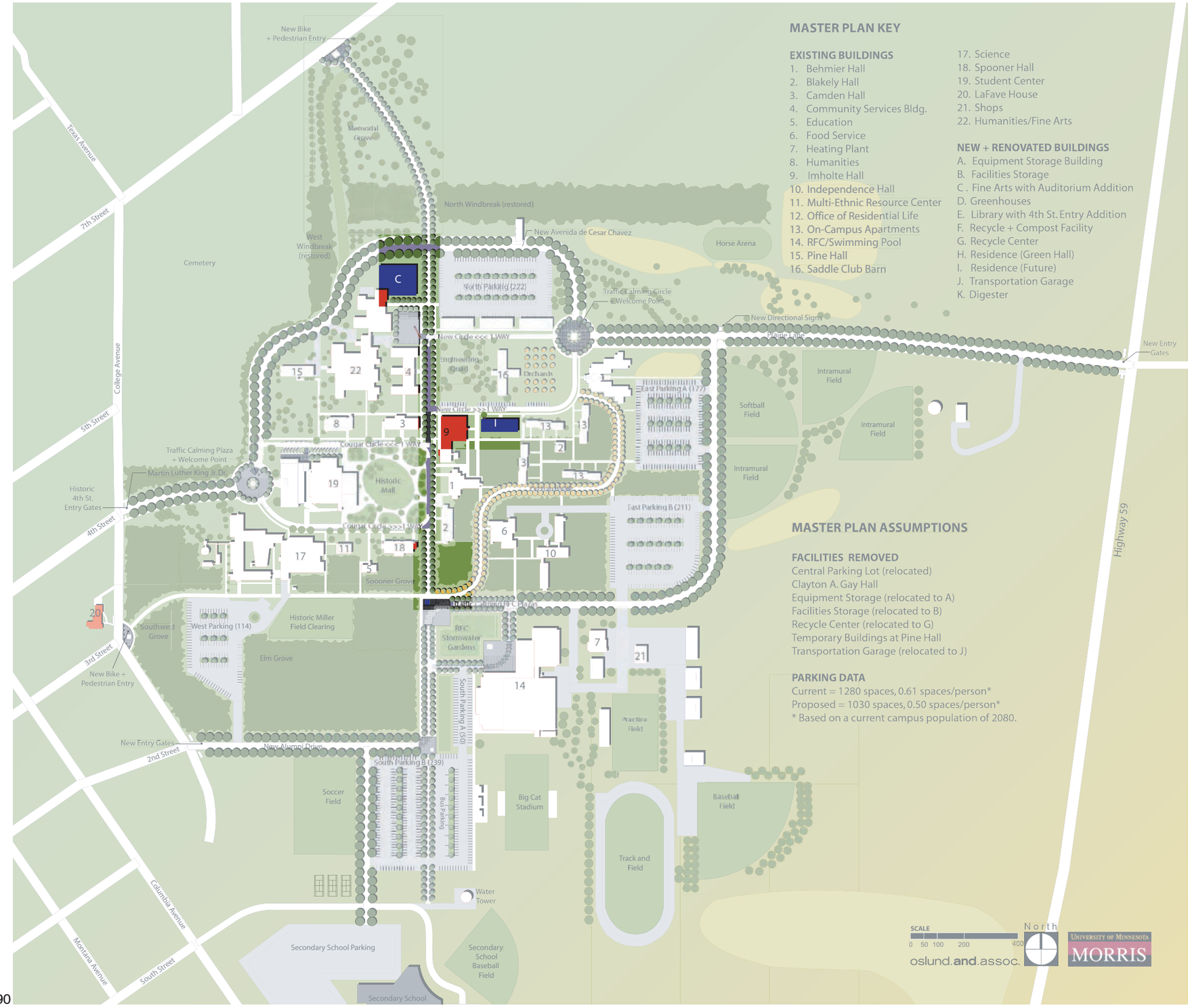
- Construct the RFC entry plazas to calm traffic and orient pedestrians travelling between the campus and the RFC
- Connect pedestrians from the North-South Axis at the RFC to the campus residence halls and the new dormitory via the new Orchard Walk.
- Connect the pedestrian walkways through the Southwest Grove, along the north edge of Miller Field, and through Spooner Grove to the Orchard Walk at the intersection with the North-South Axis.
- Establish a new pedestrian entrance plaza, including orientation signage, at 3rd Street and College Avenue.

Stormwater and the Environment

- Construct a new wetland for storm water retention and filtration south of the baseball diamonds.
- Build the RFC Stormwater Gardens to infiltrate stormwater and increase the visibility UMM's commitment to environmental sustainability.
- Restore the Elm Grove and plant boulevard trees along the new Alumni Drive loop road following the recommendations outlined in the Historic Preservation Plan.



2008 CAMPUS PLAN - PHASE 3



Phase 3 focuses on the restoration of the Historic North-South Axis and the completion of a campus-wide pedestrian/bike circulation system.

Pedestrian Circulation

- Restore the North-South Axis through central campus. The north and south portions of the axis are pedestrian/bike paths. The character of the axis should follow historic streetscape patterns where vehicular traffic is permitted through the historic district.

- Construct a driveable plaza that maintains ties to the historic streetscape character between Camden and Social Science. Design this space to calm traffic and promote a safe, pedestrian-oriented environment.

New Facilities

- Remove Gay Hall to re-open the North-South Axis.

- Construct a new residence hall (to replace Gay Hall) on the south edge of the Green Quad. Green building principles, should be employed, similar to the design principles in the new dormitory at the East end of the Quad.

- Construct the new Fine Arts Auditorium Addition.

2008 CAMPUS PLAN - PHASE 4

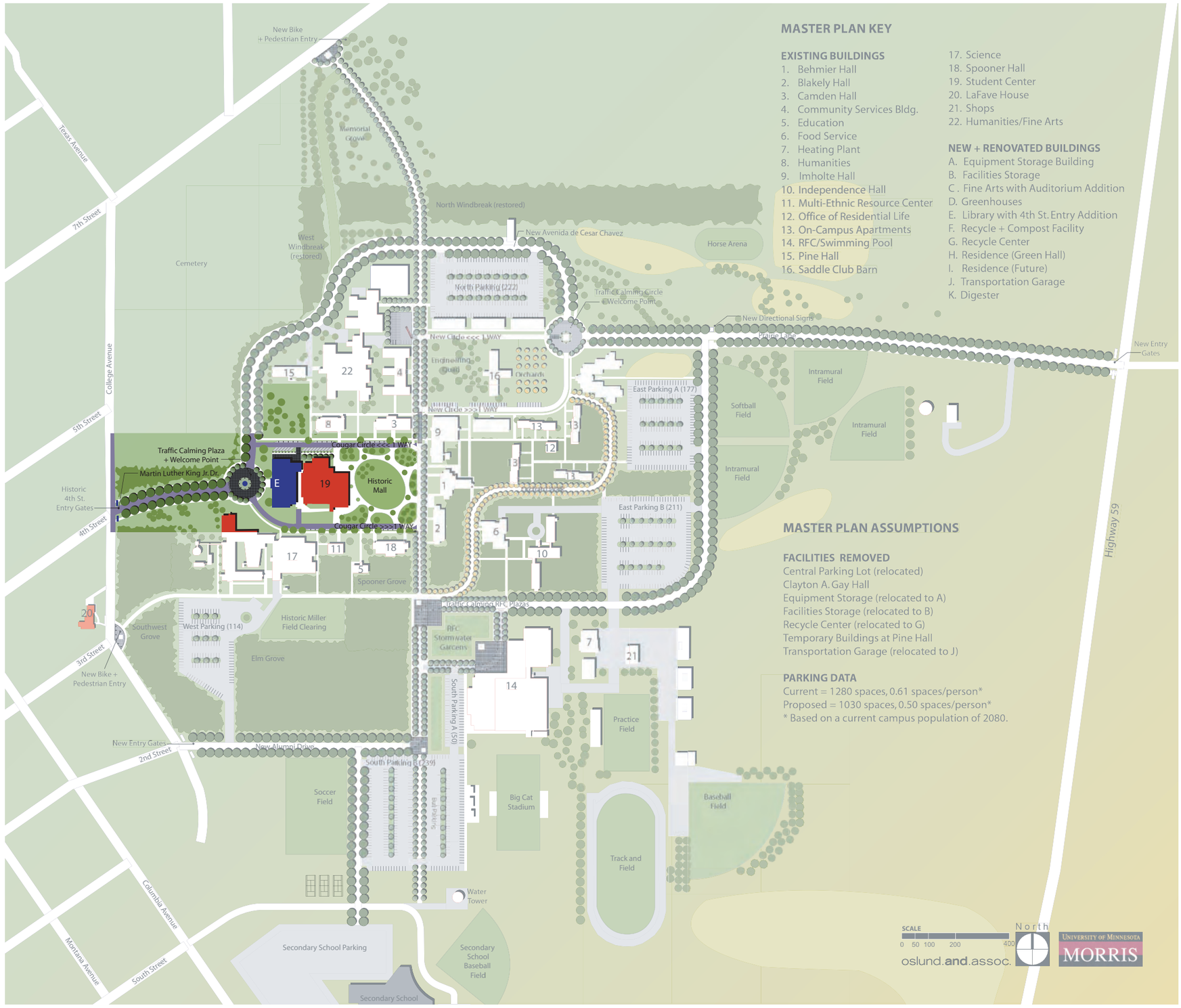
Phase 4 focuses on the expansion of the Library and the development of a 4th Street Entry welcome point to enhance the arrival experience on the West side of campus.

Parking and Vehicular Circulation:

- Construct a welcome plaza loop in front of Briggs Library to calm traffic and orient visitors arriving from the West.
- Convert Cougar Circle to a one-way loop to improve pedestrian safety. Maintain and restore the historic character of the streetscape.
- Add street-angled parking spaces to the north side of Briggs Library for accessibility.

New Facilities

- Design and build an addition to Briggs Library to enhance the arrival experience to campus from the 4th Street Entry (i.e., a new 'front door').
- Remove the temporary buildings on the north side of Cougar Circle and restore the historic nature of the Pine Hill Glen open space.



Appendix I

campus master plan 2008

CAMPUS PHOTO SURVEY

East Entry Drive Experience

University of Minnesota Morris Master Plan - Analysis 09.18.07

oslund.and.assoc. Kandiyohi Development Partners

CAMPUS PHOTO SURVEY

East Entry Drive Experience

CAMPUS PHOTO SURVEY

University of Minnesota Morris Master Plan - Analysis 09.18.07

North Entry Drive Experience

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CAMPUS PHOTO SURVEY

North Entry Drive Experience

University of Minnesota Morris Master Plan - Analysis 09.18.07

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CAMPUS PHOTO SURVEY

University of Minnesota Morris Master Plan - Analysis 09.18.07

North Entry Walk Experience

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CAMPUS PHOTO SURVEY

North Entry Walk Experience

University of Minnesota Morris Master Plan - Analysis 09.18.07

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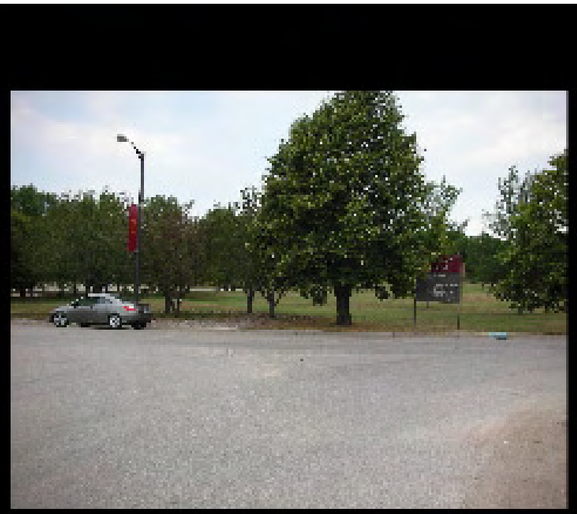
CAMPUS PHOTO SURVEY



East Entry Drive Experience

University of Minnesota Morris Master Plan - Analysis 09.18.07

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CAMPUS PHOTO SURVEY

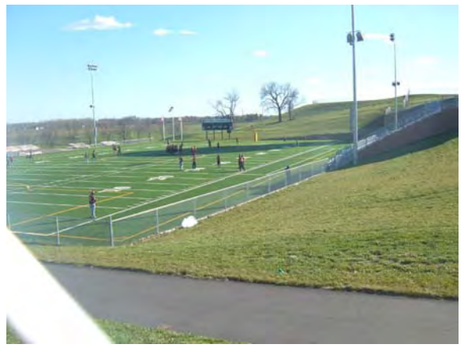
Entry Points / 1st Impressions

STEERING COMMITTEE PICTURES

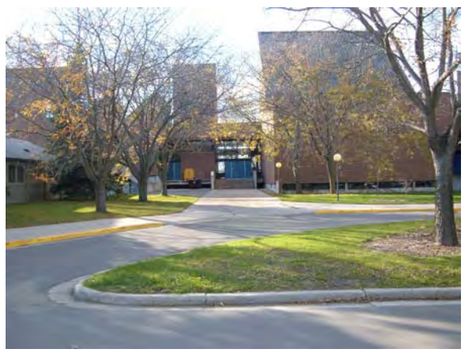


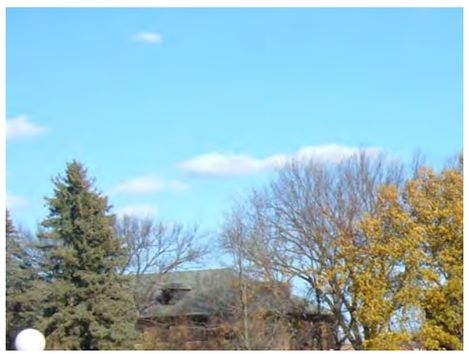








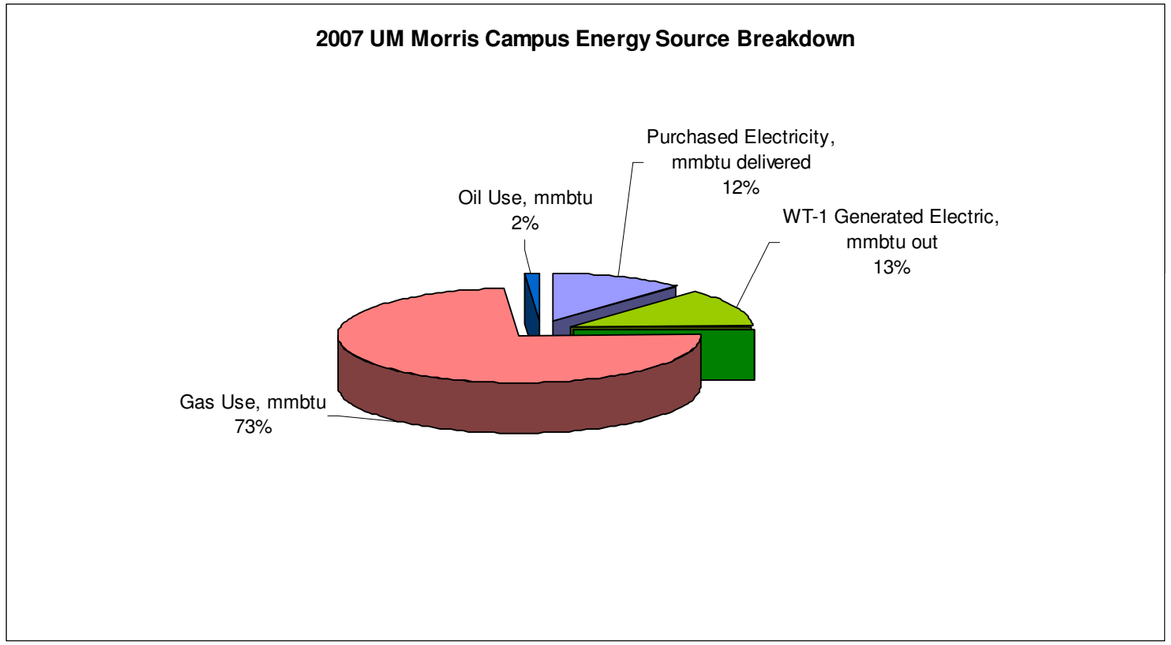
Appendix II

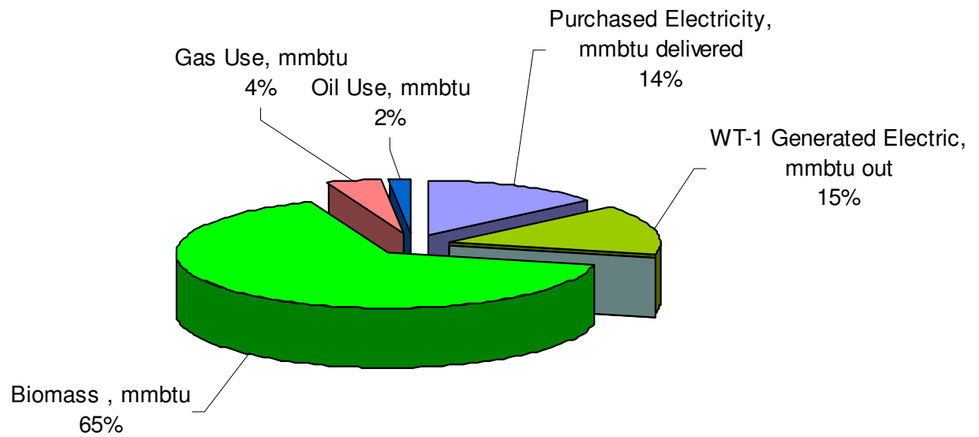
campus master plan 2008

UMM CARBON PLAN

Morris Campus
Renewable Fuels Initiative

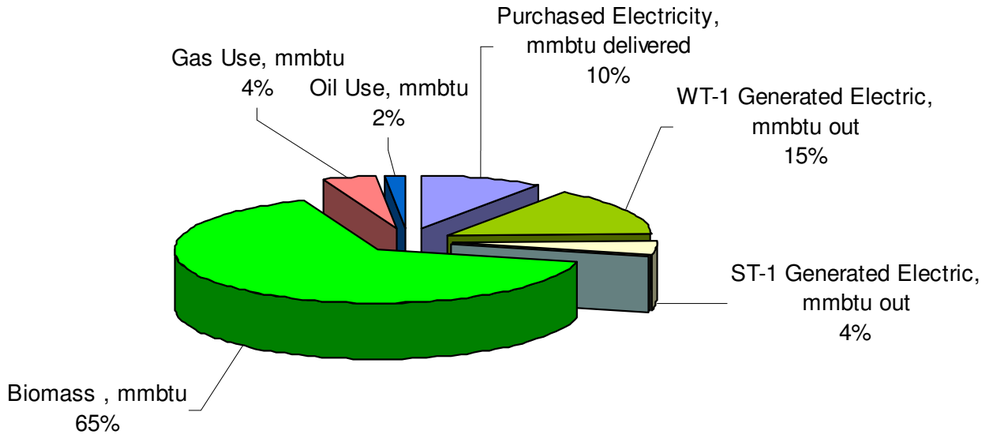
Phase 1 Wind and Biomass





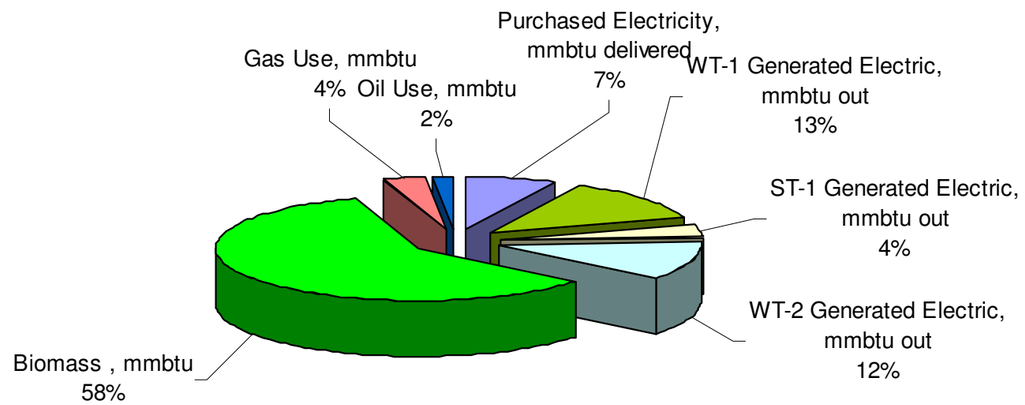
Phase 2 Combined Heat and Power

2009 UM Morris Campus Energy Source Breakdown



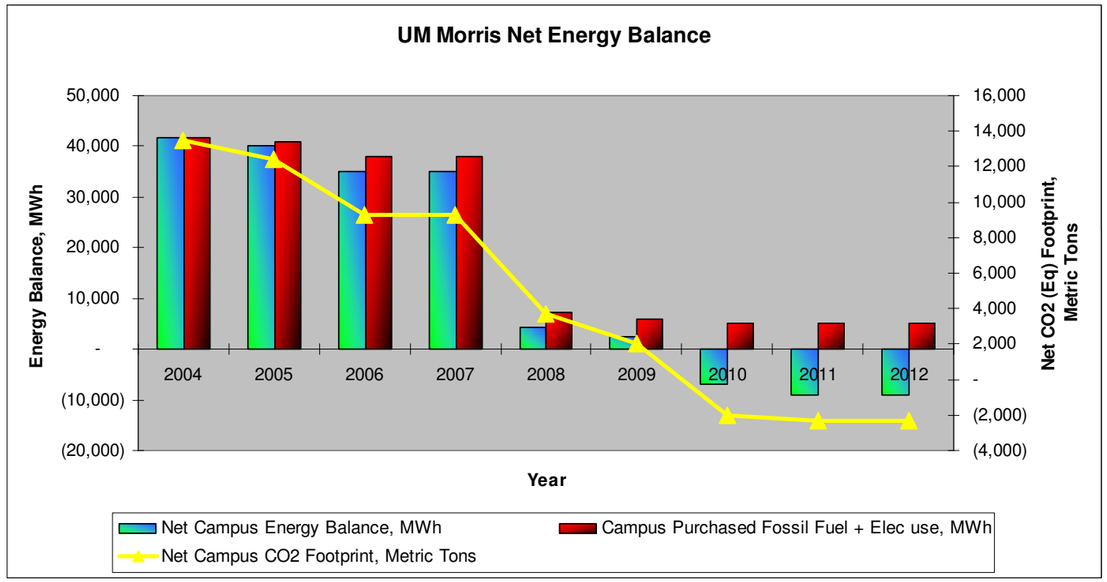
Phase 3 Hybrid Distributed CHP Platform

2010 UM Morris Campus Energy Source Breakdown

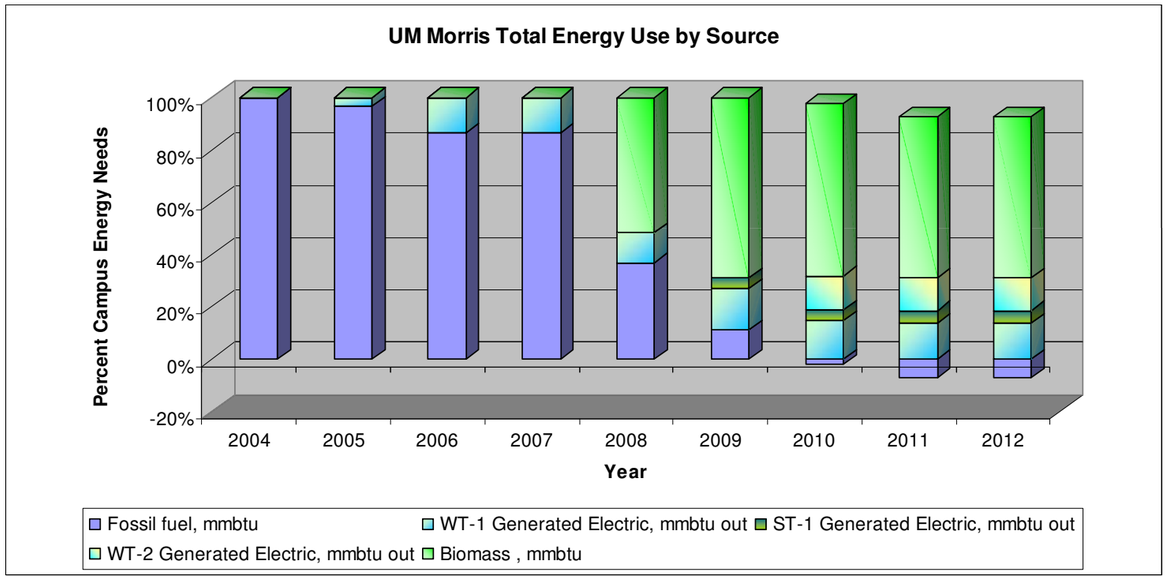


UMM CARBON PLAN

Carbon Transition



Fossil to Renewable Transition



Transforming the University of Minnesota

Final Recommendations of the System Task Force – Coordinate Campus

UNIVERSITY OF MINNESOTA
MORRIS

A Public Honors College

Committee Members

Angel (Andy) Lopez, *Professor of Computer Science, Chair*
Joseph Basel, *Student, Economics and Management*
Jonathan Bringewatt, *Student, Political Science and History*
LeAnn Dean, *Director, Rodney A. Briggs Library*
Sara Haugen, *Coordinator, Commission on Women*
Bryan Herrmann, *Assistant Director of Admissions*
Kenneth Hodgson, *Associate Professor of Music*
Arne Kildegaard, *Associate Professor of Economics*
Pareena Lawrence, *Associate Professor of Economics & Management*
Sarah Mattson, *Human Resource Director*
Madeline (Maddy) Maxeiner, *Associate Vice Chancellor for External Relations*
Cassie McMahon, *Student, Environmental Studies and Economics*
Daniel Moore, *Student, Global Business and World Politics*
Lowell Rasmussen, *Associate Vice Chancellor for Physical Plant and Master Planning*
Sharon Van Eps, *Program Advisor, Center for International Programs*
Roger Wareham, *Pre-Award Coordinator, Grants Development Office*
Peter Wyckoff, *Associate Professor of Biology*

November 1, 2006

Executive Summary

The University of Minnesota, Morris Strategic Positioning Task Force was charged by Senior Vice President Robert Jones and Chancellor Sam Schuman to identify Morris' unique contribution to the University's goal of becoming one of the top three public research universities in the world and recommend new ways to serve our students and the state while engaging in bold and visionary thinking to identify strategies that will propel us forward.

University of Minnesota, Morris Mission – Draft Version

The University of Minnesota, Morris provides an undergraduate liberal arts education of uncompromising rigor for a diverse student body. As a public honors college, UMM is committed to outstanding teaching and learning, undergraduate research, faculty scholarship, creative activity, genuine outreach, engagement and diversity. Our small, residential academic setting fosters authentic relationships, and the University serves as an educational and cultural resource for the region, nation, and world. A personalized educational experience prepares graduates to be global citizens who are interculturally competent, civically engaged, and effective stewards of their environments.

University of Minnesota, Morris Strategic Goal

To position the University of Minnesota, Morris as the best public liberal arts college in the nation, in the top tier of national liberal arts colleges, and as a public honors college.

Recommendations

After extensive input from UMM stakeholders, the Strategic Planning Task Force presents the following recommendations for becoming a public honors college and the nation's best public liberal arts college.

Ensuring the Future: Viability, Sustainability, and Visibility

The University of Minnesota, Morris is facing demographic, competitive, and financial challenges. In order to be viable and successful in reaching our strategic goal, we must restructure our academic programs, leverage our strong green campus initiatives, and reorganize the curriculum to reflect a richer international and multicultural perspective. To sustain UMM, we must:

- Achieve a student body of 2,100 by 2013, through more active coordination of and focus on recruitment and marketing, increasing scholarship funding, and improving retention.
- Provide an honors environment that includes an exceptional student experience, which begins with a culture of accomplishment, and culminates with graduation and development of active alumni. Our strategic goals include a comprehensive First Year Experience, campus-wide expectation of graduation in four years, and opportunities for all students to participate in activities to enrich academics, research, and outreach in a personally engaging community environment.
- Enhance private and nontraditional revenue by deepening our relationships with a growing pool of mature alumni and donors, achieving energy self-sufficiency through renewable energy investments, and pursuing creative sources of revenue such as expanding wind energy production and facility use during non-peak times. We must also continue to aggressively pursue state funding and acquire federal support for the Native American Tuition Waiver program.

area of strategic financial management, offer facilities and grounds comparable to top tier national liberal arts colleges, better utilize our existing facilities during non-class periods, and regularly update and implement a technology plan.

Implementation of Recommendations

To position ourselves for the future, we must provide an exceptional student experience, reach our graduation rate goals, increase student enrollment, achieve a balanced budget, provide strong support for faculty research and creative activity, and provide effective professional development for faculty and staff. To achieve these goals and deliverables, the campus should undertake the following initiatives:

- Teaching and Outreach: Broad integration of liberal learning outcomes and integration of green initiatives and global and multicultural perspectives into the curriculum.
- Viability & Sustainability: Increase scholarship funds and non-traditional revenue sources, leverage our Green Campus initiatives, and secure full funding for the Native American Student Tuition Waiver.
- Student Initiatives: Develop a cohesive, year-long First Year Experience, create the Academic Center for Enrichment, and strengthen student 'life planning' and academic support.
- Faculty & Staff Initiatives: Provide comparable and competitive salaries for faculty and staff and secure additional funds to support faculty scholarship and creative activity.
- Visibility: Develop a brand identity for the campus and implement a campus-wide integrated marketing plan to enhance our national and international recruitment.
- Capital Plan: Update the Campus Master Plan to align with strategic initiatives of visibility, outreach, and exceptional campus community experience.

Several of these initiatives have begun, but many still require additional resources, consultation, and planning. (See Appendix L)

- Institute a more rigorous system for aligning and allocating faculty and staff with University needs and student body size, develop a strong campus community, enhance recruitment and retention efforts, and provide competitive compensation for faculty and staff.
- Enhance partnerships with other institutions, organizations, and our regional community.
- Seek external funds in order to support capital projects imperative to our mission and sustainability.

In order to increase our visibility as a public honors college, we must continue to brand UMM as a public liberal arts college offering an honors experience, increase student participation and success in national scholarship competitions, improve the visibility of faculty research and creative activity, improve the visibility of undergraduate research, and increase faculty success in external scholarly awards and grants.

Doing it Right: Teaching, Research, and Outreach

Academic rigor and innovation in teaching, research, and creative activity must continue to be at the heart of our work. This requires that we improve our already selective admissions standards and continue to incorporate unique academic opportunities such as first-year seminar and senior capstone courses and undergraduate research opportunities. We must also achieve significantly higher student participation in service learning, leadership and study abroad programs and provide the required support to ensure success. We must obtain the necessary support for the hiring, retention, and development of excellent faculty and staff. Additionally, we need to maintain a strong focus on providing all students with a broad educational experience and continue our support for students who wish to pursue interdisciplinary and/or multiple majors.

Faculty scholarship and exceptional student experience are paramount to our public honors college mission. We will seek opportunities to increase faculty and staff leaves for professional development and enhance funding opportunities for and visibility of faculty research and creative activities. We will create a new scholarship program to support undergraduate research, study abroad, internships, and other enrichment opportunities. Furthermore, the campus needs to provide support to expand the Undergraduate Research Symposium and the Undergraduate Research Opportunities Program, and improve the Morris Academic Partner and Morris Student Administrative Fellowship programs.

Relationships, connections, and contributions form the core of the UMM experience. To build on these, we must increase our U.S. students of color population, actively recruit international students, expand partnerships that transfer University knowledge and resources, provide cultural partnership for the region, and meet lifelong educational goals of area residents.

Making it Happen: Organization and Operations

In order to achieve our strategic goal, UMM must provide adequate organizational support and operational structure for our campus community.

- To help faculty and staff accomplish their professional goals, we must offer increased opportunities for professional development, secure additional money to support research and creative activity, provide effective mentoring, and develop ongoing programming to enhance intercultural awareness.
- To retain and graduate outstanding students, we must offer 'life planning' support, promote intercultural awareness, enhance support and transition services for international students, promote activities that meet contemporary expectations of faculty, staff, and students, evaluate and improve student life services, and facilitate the integration of student involvement portfolios.

To maximize the efficiency with which we can deliver a strong set of programs, we must create an Academic Center for Enrichment, continue to rely on a proven model of shared governance, invest in the

Introduction and Process

Beginning in fall 2005, the University of Minnesota, Morris Strategic Positioning Task Force began the process of developing a ten-year strategic plan for our campus that would establish our direction and align us with the University of Minnesota's goal of becoming one of the top three public research universities in the world.[1]

The Task Force began by identifying critical challenges facing UMM. These included a decline in student enrollment, changing demands and expectations of enrolling students, declining regional population, statewide drop in the number of high school graduates, continued cost increases, decreasing state financial support for higher education, and increased competition for high ability students.

We conducted a comprehensive review that included previous studies of UMM enrollment, the honors program, and athletics; a marketing and communications audit; the facilities master plan; the institutional data book; Admitted Student Questionnaire for UMM and peer institutions; the student satisfaction survey for UMM and the University system; the Continuing Education, Regional Programs and Summer Session Task Force Report.

The University of Minnesota, Morris Analysis and Background Data provided by Central Administration, containing demographic, student, faculty, staff, academic, technology, partnership, ranking, finance, and planning data, is located at http://www.morris.umn.edu/strategic/UMM_data_report.pdf.

To provide an ethical foundation and broad based support for the final recommendations, we engaged a broad group of internal and external stakeholders to identify our strengths and comparative advantages and establish mechanisms to leverage these to meet our challenges. Beginning with a campus-wide kickoff event in October we proceeded to host over 60 focus groups attended by over 650 campus and community members to identify core values, strengths, and key issues. Mail-in and web-based surveys supplemented this effort and were distributed to several thousand stakeholders, 210 of whom responded. Individual interviews with University of Minnesota Regents and senior administration and legislative representatives provided a broader context and perspective. Since publication of the March document, additional meetings with standing Campus Assembly committees, academic divisions, Morris Campus Student Association, and public fora have been held for broader discussion, input, and shared ownership of the plan. A website keeps the process transparent and communicated current information.[2]

We also researched the strategic plans and missions of peer institutions to better understand the competitive marketplace facing UMM. In our research on comparable public and private liberal arts colleges, we found ourselves to be unique, given our rural location, declining population base, part of a land grant system, and our mission as a solely undergraduate liberal arts college compared to comprehensive liberal arts colleges which have graduate programs. (See Appendix E) Research based on the Admitted Student Questionnaire highlights that two of the primary reasons students choose not to come to UMM are financial aid and competition from the U of M Twin Cities and other competitive private schools in Minnesota. (See Appendix F)

Working from the ideas generated through the focus groups and background research, the Task Force prepared a series of recommendations for UMM's future. We solicited advice from UMM senior administration and campus leaders, modified the plan, and sought input from campus and community members.

UMM Mission and Strategic Goal

As part of the broader University system, the University of Minnesota, Morris mission and goals are fully consistent with the University's mission of research and discovery, teaching and learning, and outreach and public service, as well as the strategic goal of being one of the top three public research universities in the world.

The University of Minnesota, Morris will position itself for the future by offering our students a distinctive honors experience while maintaining our core mission as a public liberal arts college. This is an affirmation of our history and our legacy of providing an outstanding educational experience for a selective group of students in the context of the public domain. The identity of a public honors college reaffirms who we are and truly reflects the student experience at UMM. The public honors college designation gives a clear and distinct message in the higher education market. Through our strategic positioning process, we will further strengthen and emphasize areas of excellence, deliver on the continuing promise of a high quality educational experience, and fulfill our mission to our region as a public institution of higher learning.

UMM Mission – Draft Version

The University of Minnesota, Morris provides an undergraduate liberal arts education of uncompromising rigor for a diverse student body. As a public honors college, UMM is committed to outstanding teaching and learning, undergraduate research, faculty scholarship, creative activity, genuine outreach, engagement and diversity. Our small, residential academic setting fosters authentic relationships, and the University serves as an educational and cultural resource for the region, nation, and world. A personalized educational experience prepares graduates to be global citizens who are interculturally competent, civically engaged, and effective stewards of their environments.

UMM Strategic Goal

To position the University of Minnesota, Morris as the best public liberal arts college in the nation, in the top tier of national liberal arts colleges, and as a public honors college.[4]

Recommendations

Ensuring the Future: Viability, Sustainability, and Visibility

As we move toward maturity as an institution, this strategic plan will position UMM for a great future. To do this we must ensure a viable mission and direction, maintain a sustainable financial position, build upon our image, and increase our visibility to ensure that we attract our target constituents. As a public honors college offering uncompromising rigor and a personalized education, we must seek additional state support to remain accessible to all students.

Viability and Appeal

Fundamental to UMM's viability as a world-class public liberal arts institution is maintaining the highest academic standards while continuing to provide substantial financial assistance to qualified students. (See Appendix F) As a rigorous, undergraduate institution, UMM is committed to the liberal arts tradition that educates students to think critically, prepares them to contribute in meaningful ways, and helps them to develop as interculturally competent citizens who embrace both multicultural and international perspectives. The campus recognizes the strategic importance of clearly articulating the contemporary

relevance of the liberal arts and liberal learning as essential dimensions of the baccalaureate experience in the twenty-first century. This is particularly important in the context of changing preferences of a public concerned about the costs of higher education and interested in seeing outcomes related to employment. To do this, the Task Force recommends the following:

- Restructure academic programs to better support our liberal arts focus and current strengths, as well as recognize changing demands and needs. Responsibility: Appropriate standing committees and the Chancellor and Chief Academic Officer. Timing: Review and revise within a year of installation of the new Chief Academic Officer.
- Leverage our strong green campus initiatives and partnerships to integrate environmental issues into the curriculum and campus opportunities, while becoming an energy self-sufficient campus.[5] Responsibility: Appropriate standing committees, Chief Academic Officer, Associate Vice Chancellor for Physical Plant and Master Planning, West Central Research and Outreach Center, community partners, and others. Timing: Since 2000, these initiatives have become nationally recognized and will be aggressively pursued.
- Formally restructure the curriculum to reflect rich international and multicultural perspectives and opportunities in response to student and faculty needs, changing demographics and global expectations while reaching out to our region and community. Responsibility: Chief Academic Officer, Academic Center for Enrichment, and others. Timing: Initial steps began in 1996 and are continuing; this will accelerate in 2008 following the installation of the new Chief Academic Officer.

Sustainability

To sustain UMM, we must find the appropriate balance among student enrollment and retention, revenue enhancement, faculty and staff recruitment and retention, partnerships, and capital investments.

Student Enrollment

The majority of our current students are from Minnesota. During the past ten years, overall student enrollment has declined by 14.6 percent due to changing regional demographics, increased competition for high-ability undergraduates, increased tuition costs, flat scholarship resources, and insufficient attention to marketing, recruitment, and retention. The three most effective ways to increase student enrollment are to effectively position ourselves as a public honors college and better articulate our strengths, to increase the size and improve the quality of our first-year and transfer classes, and to improve our retention rates. The Task Force believes it is critical to both increase new student enrollment and retain and graduate students by focusing on the following objectives:

- Achieve and maintain a student body of 2,100. Students will continue to be highly qualified and increasingly diverse in their backgrounds and interests. We will increase the percentage of students from outside Minnesota from 13 to 25 percent by actively marketing the competitive advantages of our flagship liberal arts curriculum, personalized educational experience, and single tuition rate. (See Appendix G) Responsibility: Associate Vice Chancellor for Enrollment, Director of Communications, Multi-Ethnic Student Program, and appropriate standing committees. Timing: Enrollment increasing steadily over time, reaching the optimum 2,100 level by 2013.
- Meet enrollment goals while maintaining access by leveraging increased scholarship funds to attract, support, and retain high ability students. Stakeholder input emphasized maintaining access by holding tuition increases to less than six percent per year, and focus on closing the financial gap for a significantly higher percentage of low- and middle-income students.

Responsibility: Chancellor, Associate Vice Chancellor for Enrollment, Associate Vice Chancellor for External Relations, and others. Timing: Beginning fall 2006.

- Retain a significantly higher proportion of students by reducing both transfers out and dropouts. Increase first-year retention from 86 to 90 percent, and second-year retention from 77 to 85 percent. Increase the four-year graduation rate from 40 to 60 percent, the five-year rate from 56 to 75 percent, and the six year rate from 57 to 80 percent.[6] Responsibility: Chief Academic Officer, Associate Vice Chancellor for Enrollment, Retention Work Group, Registrar, faculty advisors, and others. Timing: Ongoing.

Development and Revenue Enhancement

Much of our ability to remain sustainable depends on increasing private and nontraditional financial support for our initiatives. The Task Force recommends the following:

- Increase UMM's self-sufficiency by strengthening private philanthropic support. Increase UMM scholarship endowment contributions from $6 to $20 million, and UMM's overall endowment value from $9 to $28 million. (See Appendix H) Hiring additional staff and renovating the Community Services Building will allow us to dramatically increase the number of donors and their contribution levels. (See Appendix I) Responsibility: Chancellor, Associate Vice Chancellor for External Relations. Timing: Beginning spring 2006 with targets achieved by 2016.
- Seek additional state support to maintain access to a public honors college for all students. Responsibility: Chancellor, Associate Vice Chancellor for External Relations. Timing: Ongoing.
- Increase and strengthen relationships with potential benefactors and our increasing number of prominent and financially able alumni to leverage fiscal and non-fiscal resources. Responsibility: Associate Vice Chancellor for External Relations, Alumni Association.
- Develop sufficient capital building matching funds to meet legislative requirements for renovation and expansion projects. Continue to build legislative relationships to support capital investments. Responsibility: Chancellor, Associate Vice Chancellor for External Relations, Associate Vice Chancellor for Physical Plant and Master Planning, and others. Timing: Ongoing.
- Seek full University support for the unfunded Native American Student Tuition Waiver mandated in both the 1909 transfer of the campus grounds by Congress (Laws 1909. Chapter 184) to the state of Minnesota and in Minnesota statute establishing UMM on the site (Laws 1961, c. 312 § 1). This waiver amounts to over one million dollars in unrealized tuition revenue each year and continues to increase with improved retention and enrollment. Support University efforts to secure federal funding for the mandate. Responsibility: Chancellor. Timing: Immediate.
- Achieve energy self-sufficiency through wind generation, biomass heating and cooling, local foods initiative, green vehicles, recycling, and conservation. Invest resulting savings in strategic initiatives. Responsibility: Associate Vice Chancellor for Physical Plant and Master Planning, Senior Administrative Director for Finance and Administration, Campus Resources and Planning Committee. Timing: Initiatives have begun, additional steps beginning fall 2007.
- Aggressively pursue nontraditional revenue sources to provide scholarships, limit tuition cost increases**,** and enhance operating funds. These include the wind farm initiative to generate energy for resale, increased UMM summer programming, and increased facility rentals. Responsibility: Chancellor, Associate Vice Chancellor for Physical Plant and Master Planning, Senior Administrative Director for Finance and Administration, Associate Vice Chancellor for External Relations, Continuing Education and Regional Programs.

Academic Officer, Associate Vice Chancellor for Enrollment, Center for International Programs. Timing: Ongoing.

- Enhance existing research partnerships with federal, state, and University efforts like the West Central Research and Outreach Center while building our international research opportunities in the developing world and elsewhere. This will strengthen our commitment to undergraduate research, faculty scholarship and creative activity. Responsibility: Chief Academic Officer, Grants Development Office. Timing: Ongoing.

- Meet the needs of our community by developing partnerships with regional organizations like the Community Outreach Partnership Center Program and other University campuses and programs like the University of Minnesota's Office of Public Engagement. This will ensure access to educational opportunities for all University stakeholders and meet our obligations to incorporate engagement and outreach into research, teaching, and learning. Responsibility: Chief Academic Officer, Continuing Education and Regional Programs, Academic Center for Enrichment. Timing: Ongoing.

Capital Investments

Sufficient capital investments are essential for UMM to support academic and research requirements and meet student and community expectations. The Task Force recommends the following:

- Update and modernize residential life facilities to meet student expectations and needs. Responsibilities: Vice Chancellor for Student Affairs, Associate Vice Chancellor for Physical Plant and Master Planning, Office of Residential Life.

- Locate units whose primary interaction is with external audiences in a renovated Community Services Building. This will improve the efficiency and visibility of admissions and external relations by creating an attractive and welcoming entrance to campus. This enhancement will help us achieve our goal of increasing student enrollment and fund development. Responsibility: Chancellor, Associate Vice Chancellor for Physical Plant and Master Planning, Associate Vice Chancellor for External Relations, Associate Vice Chancellor for Enrollment.

- Renovate and modernize the Food Service Building to improve preparation and serving facilities to offer a greater variety of fresh, healthy, locally provided food of improved quality that is attractive to a more diverse student body. This was strongly recommended by the focus groups. Responsibility: Vice Chancellor for Student Affairs, Associate Vice Chancellor for Physical Plant and Master Planning, Senior Administrative Director for Finance and Administration.

- Renovate Briggs Library to enhance library services, provide more space for group collaboration, solitary study, expanding collections, special events and technological demands. This will support our goal of being a top tier national liberal arts college by providing the academic support for student and faculty instruction and research. Insurance carriers are citing this building for significant potential health and safety liability issues. Responsibility: Chancellor, Chief Academic Officer, Associate Vice Chancellor for Physical Plant and Master Planning, Associate Vice Chancellor for External Relations, Director of Rodney A. Briggs Library.

- Support the commitment to be a regional cultural center by completing the Humanities/Fine Arts complex. The project was repeatedly highlighted by campus and community focus groups. Responsibility: Chancellor, Associate Vice Chancellor for External Relations, Associate Vice Chancellor for Physical Plant and Master Planning.

- Update the Campus Master Plan to propose a prioritized timetable for renovation of all instructional space, offices, and other facilities. The Campus Master Plan should include a plan

- Seek external grants to support increased levels of faculty and student research. Responsibility: Chancellor, Chief Academic Officer, Grants Development Office, Senior Administrative Director for Finance and Administration.

Faculty and Staff Recruitment, Retention, Alignment, and Diversity

To achieve our objectives, UMM must have strong and diverse faculty and staff, appropriately aligned, with a strong commitment to teaching, research, and outreach. The Task Force recommends the following:

- Institute a more rigorous system for aligning and allocating faculty and staff with University needs and student body size. On a regular basis, analyze staffing levels across all units in order to identify areas where realignment is needed, and compare UMM staffing levels in all units to those of peer institutions. Also, regularly compile and analyze class sizes and student-faculty ratios in all disciplines to ensure efficiency and effectiveness and use this data to define priorities in hiring of new faculty and staff. Continue to support small class sizes by limiting classes with 50-plus students to no more than five percent of our total course offerings.[7] (See Appendix D) Responsibility: Chancellor, Chief Academic Officer, Senior Administrative Director for Finance and Administration, Division Chairs, Office of Human Resources, in consultation with Campus Resources and Planning Committee. Timing: Ongoing, began fall 2006.

- Develop a strong faculty community, as recommended by focus groups, by maintaining at least 85 percent tenure track positions. Retain personnel and enhance faculty and staff community by developing and supporting formal mentorship and professional development programs for all personnel. Responsibility: Chief Academic Officer, Division Chairs, Directors, Office of Human Resources. Timing: Ongoing.

- Intentionally attract diverse faculty and staff who enrich our campus and regional community. This supports University goals of intercultural competence. Responsibility: Chief Academic Officer, Division Chairs, Directors

- Enhance our recruitment efforts by creatively addressing consideration of joint appointments, spousal and partner needs, employee and family educational support, and transitions. Responsibility: Chief Academic Officer, Division Chairs, Directors, Office of Human Resources. Timing: Begin within a year of installation of the new Chief Academic Officer.

- Provide faculty and staff salaries comparable to the upper tier of the Morris 14 Comparison Group in order to reach our goal of becoming a top tier national liberal arts college. (See University of Minnesota, Morris Analysis and Background Data and Appendix J) Responsibility: Chancellor, Chief Academic Officer, Campus Resources and Planning Committee, Office of Human Resources, Faculty Affairs Committee. Timing: Beginning fall 2006.

Partnerships

Enhance academic, research, and community synergies through regional, national, and international partnerships. Continuing Education and Regional Programs, the Center for Small Towns, and other campus units will play a major role in forging these partnerships to serve the campus and regional communities. (See Appendix K) The Task Force recommends the following:

- Leverage regional and international academic partnerships that provide opportunities for program enhancement and continued commitment to meeting our mission. Strengthening relationships with other universities such as those in China, South Korea, Japan, and others around the world, as well as campuses of the University of Minnesota, will serve to sustain UMM and continue to foster an academic honors community. Responsibility: Chancellor, Chief

for future technology and utility upgrades. Responsibility: Chancellor, Associate Vice Chancellor for Physical Plant and Master Planning, Campus Resource and Planning Committee, Director of Computing Services, Director of Media Services.

Visibility

For our excellence to be recognized through higher enrollment, increased donations, and continued strong public funding, UMM must significantly improve our image and visibility. The Task Force recommends the following:

- Brand UMM as a top-tier, nationally recognized, public honors liberal arts college with uncompromising academic rigor in order to increase enrollment and financial support. Responsibilities: Associate Vice Chancellor for External Relations, Director of Communications. Timing: Immediate.
- Increase levels of student participation and success in national scholarships, and promote these in multiple venues.[8] Responsibility: Chief Academic Officer, Associate Vice Chancellor for External Relations. Timing: Expanded efforts with creation of Academic Center for Enrichment.
- Increase publicity for faculty and student research efforts and successes. Visibility of faculty scholarship, creative activity, and student research should be enhanced with greater publicity and the addition of a digital institutional repository which will aid in national recognition. Responsibility: Chief Academic Officer, Associate Vice Chancellor for External Relations. Timing: Immediate.
- Increase levels of faculty participation and success in external scholarly awards, honors, and grants. Promote these in multiple venues and provide sufficient institutional support. Responsibility: Chief Academic Officer, Associate Vice Chancellor for External Relations. Timing: Ongoing.
- Enhance summer and break programs to attract regional, national, and international groups and events that will build UMM's image as a leader in a variety of arenas. This will better serve our community and increase efficiency of facility use. Responsibility: Continuing Education and Regional Programs, Senior Administrative Director for Finance and Administration, Office of Residential Life, Regional Fitness Center. Timing: Ongoing.

Doing it Right: Teaching, Research, Outreach

To become the best public liberal arts college in the nation and remain consistent with the University's mission, we are committed to our focus on teaching, research, and outreach.

Academic Rigor and Innovation

The heart of UMM's work is our dedication to academic rigor and innovation. The Task Force recommends the following:

- Improve the student academic profile while expanding the range of measures to evaluate student likelihood of success. Retain selective admissions standards, admitting students in the top quarter of their graduating class with average ACT scores of at least 25, and students who reflect focus group priorities of diverse backgrounds and interests that contribute positively to the campus community. Responsibility: Chancellor, Associate Vice Chancellor for Enrollment, Scholastic Committee. Timing: Immediate.
- Create an Academic Center for Enrichment. This will build on our core values – a rigorous residential undergraduate education providing many enriching opportunities to our students,

which include superior student and faculty interaction and a high level of undergraduate research activity. The Academic Center would provide enhanced opportunities for visibility, participation, and program collaboration. It would oversee Undergraduate Research Opportunities Program, study abroad, National Student Exchange, support of national scholarship competitions, Undergraduate Research Symposium, Morris Academic Partners and Morris Student Administrative Fellows programs, Honors Program, civic engagement and outreach. It would serve as a resource to encourage students and faculty to initiate and engage in research and other academic enhancements. This initiative would require a recurring strategic investment for administrative programs and support to enrich and expand these programs to reach UMM's goal of being a top tier national liberal arts college. Responsibility: Chief Academic Officer. Timing: Immediate.

- Expect that all UMM students participate in first year and senior capstone seminars, as well as achieve higher participation in service learning and leadership experiences.[9] Our successful service learning program, which has a fifty percent student participation rate, is grant funded until 2007, and must have institutional support if we want to reach our goal of increased student participation. Further development and curricular integration of these innovative and rigorous components will ensure fulfillment of our responsibility to incorporate teaching, learning, and civic engagement in UMM's honors experience. This approach ensures a unique academic experience for all students regardless of their academic priorities and financial abilities. Responsibility: Chief Academic Officer, Vice Chancellor for Student Affairs. Timing: The service learning program is currently grant funded and will require institutional support beginning fiscal year 2008. Other academic, service, and leadership elements should be developed and evaluated continually.
- Provide opportunities for all students to study abroad which prepares them to be global citizens. Make this central to the curriculum by creating and supporting a new initiative providing mini grants to help defray student study abroad costs. This also boosts our ability to recruit students with increasingly demanding expectations of their undergraduate experience.[13] Responsibility: Chancellor, Chief Academic Officer, Center for International Programs, appropriate standing committees. Timing: Ongoing, with goal to be achieved by 2008.
- Sustain high teaching quality by hiring and supporting faculty with outstanding credentials and terminal degrees, improving our tenure review process, supporting new faculty to improve their teaching skills, and providing them with effective mentoring. This supports our commitment to being a nationally recognized public honors college. Responsibility: Chief Academic Officer, Division Chairs. Timing: Continual goals to be further implemented with installation of the new Chief Academic Officer.
- Enhance the academic curriculum of all majors by regularly evaluating all coursework to include effective written and oral communication skills across the discipline and encourage every discipline to promote service learning, study abroad programs and undergraduate research. Integrate sustainability principles, multicultural and international perspectives across the curriculum. This will help to better prepare students and strengthen our mission as a public honors college. Responsibility: Chief Academic Officer, Division Chairs, Curriculum and appropriate standing committees. Timing: Ongoing.
- Continue and enhance opportunities for all students to receive maximum benefit from UMM by continuing to support interdisciplinary students and those who pursue multiple majors and/or minors. This will support our role as a public honors college and help fulfill our mission of graduating students with a broad academic background and the potential for pursuing advanced studies in any field. Responsibility: Chief Academic Officer, Academic Advising, Registrar. Timing: Ongoing.

- Create a new scholarship initiative to provide new enrichment opportunities for outstanding UMM students who show significant potential. This supports our efforts to recruit and retain high ability students and to meet the research goals of the University. Additional resources will be required for this program. Responsibility: Chief Academic Officer. Timing: Groundwork to start in fall 2006 with expansion to follow.
- Provide sufficient institutional support to expand and improve the Undergraduate Research Symposium and other opportunities for students to present their research.[10] This increases research depth and highlights the success of our students. Promote giving to the Bos and Tate travel funds. Responsibility: Chief Academic Officer, Undergraduate Research Symposium Committee. Timing: Groundwork to start in fall 2006 with expansion to follow.
- Improve the Morris Academic Partnership and Morris Student Administrative Fellows programs that provide students with opportunities to partner with faculty on research.[11] This supports faculty scholarship and student research experiences in line with the University's strategic goal, and better prepares students for graduate-level research. Responsibility: Chief Academic Officer. Timing: Continual goals to be further expanded with the installation of the new Chief Academic Officer.
- Seek additional support for the Undergraduate Research Opportunities Program in order to expand these enriching and demanding opportunities for students and faculty. Responsibility: Chancellor, Chief Academic Officer. Timing: Immediate.
- Provide sufficient institutional funding and infrastructure to assist and expand research and creative activity. Enhanced library and information technology resources support vigorous and innovative undergraduate research, capstone seminars, course work, writing initiatives and information literacy skills. Responsibility: Chief Academic Officer, Director of Briggs Library, Director of Computing Services, Director of Media Services.

Faculty Scholarship and Creative Activity

Faculty scholarship and creative activity is essential to UMM's mission. If UMM is to position itself in the top tier of national liberal arts college, we must better support these efforts. The Task Force recommends the following:

- Provide institutional funding – such as internal grants, seed money, summer stipends and infrastructure – comparable to top tier liberal arts institutions, in order to assist and expand faculty scholarship and creative activity.[12] Responsibilities: Chief Academic Officer, Grants Development, Division Chairs. Timing: Continual goals to be further implemented with the installation of the new Chief Academic Officer.
- Improve opportunities for and increase participation in single semester and sabbatical leaves to support faculty scholarship and creative activity.[12] Responsibilities: Chief Academic Officer, Division Chairs. Timing: Continual goals to be further implemented with the installation of the new Chief Academic Officer.
- Increase recognition and visibility of faculty scholarship and creative activity, both on and off campus, by expanding travel support and providing opportunities for collaborative work. Responsibilities: Chief Academic Officer, Division Chairs. Timing: Continual goals to be further implemented with the installation of the new Chief Academic Officer.

Outreach: Relationships, Connections, and Contributions

Building relationships and connections helps prepare our students to contribute in meaningful ways by being interculturally competent, socially responsible, and effective stewards of their environments. These

form the core of what makes the UMM experience exceptional both on campus and in the broader community. The Task Force recommends the following:

- Increase U.S. students of color from 15 to 25 percent of total enrollment. UMM has a long tradition of attracting diverse students, faculty, and staff, who enrich our campus and regional community in countless ways. This supports UMM and University goals and commitments to diversity and intercultural competence. Responsibility: Associate Vice Chancellor for Enrollment and Multi-Ethnic Student Program, in consultation with appropriate committees. Timing: Ongoing, with goal to be achieved by 2016.
- Actively recruit more international students and visiting faculty who will enrich campus life, help create a sense of an international campus, and improve the intercultural competence of the campus and broader community. Appropriately support recruitment efforts, academic performance, and transition to reach our campus goal of five percent international students. Responsibility: Chief Academic Officer, Associate Vice Chancellor for Enrollment, Center for International Programs, appropriate standing committees. Timing: Ongoing, with goal to be achieved by 2016.
- Integrate civic engagement, a strength of our campus community, and needs to be further integrated into our teaching, learning, and research responsibilities through opportunities for students and faculty to serve the local, national or global community. Expand institutional support for partnerships that transfer university knowledge and resources to support the public and private sectors, enrich our mission, and contribute to the pubic good through formalized civic engagement and service learning and informal community service and volunteerism. Responsibility: Vice Chancellor for Student Affairs, Chief Academic Officer, Center for Small Towns, University of Minnesota Associate Vice President for Public Engagement. Timing: Beginning fall 2006.
- Explore opportunities for partnerships, development opportunities, and expanded programming for a cultural center for west central Minnesota. To best serve our region and honors college mission, top tier creative and performing arts events and facilities should be available at UMM. Responsibility: Chief Academic Officer, Vice Chancellor for Student Affairs, Associate Vice Chancellor for External Relations, Associate Vice Chancellor for Physical Plant and Master Planning, and appropriate standing committees. Timing: Development to begin immediately with capital project in 2010 bonding.
- Provide opportunities to meet the current and lifelong educational goals of area residents, high school students, and other stakeholders. Continuing Education and Regional Programs will actively work to develop programs to meet these needs.[14] Responsibility: Chief Academic Officer, Director of Continuing Education and Regional Programs. Timing: Ongoing.
- Enhance our direct engagement with the community of west central Minnesota by providing outreach to benefit the public and private sectors through our Center for Small Towns.[15] This will provide our students, faculty and staff the opportunity to actively collaborate with the community and build experiences to prepare them for ongoing success. Responsibility: Director of Center for Small Towns. Timing: Ongoing.
- Collaborate for the benefit of area residents through academic support and mentoring relationships provided by UMM students to PK-12 students. This will support the University's mission of engaging in support of PK-12 education and provide a broader experience for UMM students. Responsibility: Chief Academic Officer, Vice Chancellor for Student Affairs. Timing: Ongoing.

equip graduates for lives of leadership and service in a diverse, global society. This will improve the climate both on campus and in the community, help achieve our mission, enhance campus life, and increase student retention. Responsibility: Vice Chancellor for Student Affairs. Timing: To begin fall 2006.

- Develop campus and community partnerships to meet the needs of students, faculty, and staff from communities underrepresented in west central Minnesota. Address needs from travel to personal care products and services to provide a respectful and comfortable environment that fosters diversity. Responsibility*:* Vice Chancellor for Student Affairs. Timing: To begin fall 2006.
- Enhance academic support and environmental transition services for international students. These will improve the experience of all students, faculty, and staff by ensuring opportunities for success to a diverse student body. A supportive infrastructure, requiring additional staff, will be necessary to best serve an increasing international student population. Responsibility: Vice Chancellor for Student Affairs, Chief Academic Officer. Timing: To begin fall 2006.
- Promote activities on campus and in the community that meet the expectations of contemporary students. As mentioned extensively in focus group discussions, given our location, the campus community requires more weekend activity variety for students. This will help to enrich student life and preserve a close campus community while meeting our student retention and graduation goals. Responsibility: Vice Chancellor for Student Affairs. Timing: To begin fall 2006.
- Evaluate and improve effectiveness and modernity of student life services including housing, health care, transportation, and dining. These programs are integral to undergraduate life at UMM and need to continue to improve support for all students. This will help to better serve international and out-of-state students as well as improve the campus experience while meeting matriculation, retention, and graduation goals. Responsibility: Vice Chancellor for Student Affairs. Timing: To begin fall 2006.
- Improve student credentials upon graduation by offering a student involvement portfolio to support students' out-of-class experience. Recording leadership activities as well as academic, media, social, political, arts, athletic, cultural, religious, governing, service, and honorary activities could be used in conjunction with academic transcripts, resumes, and career portfolios to provide prospective employers with a multi-faceted record of student accomplishments. This will serve to better equip UMM graduates with the tools needed for success, while creating a measure for accomplishing our multi-faceted mission. Responsibility: Vice Chancellor for Student Affairs, Registrar. Timing: To begin 2007.

Commitment to Diversity

The campus commitment to educating a diverse student body and building a respectful inclusive culture is rooted in the public liberal arts college mission articulated in the 1960s and in the campus history as an American Indian Boarding School (established in the 1890s). Diversity (including but not limited to GLBT, individuals with disabilities, international, veterans, racial and multi-ethnic, and spirituality) in students, faculty and staff is an important commitment for the University. To maintain and strengthen this commitment, we have interwoven strategies and goals within this document.

Over the past decade, UMM has expanded efforts to build an inclusive respectful campus community in partnership with the Anti-Defamation League's *A World of Difference Institute,* established an annual Multicultural Student Leadership Retreat and created the Diversity Community Outreach Program.

Making it Happen: Organization and Operations

Strong organizational and operational support is required to ensure success of the strategic goals and initiatives outlined in this document.

Organization

Organizational support provides faculty, staff, and students with the administrative infrastructure necessary to meet UMM's mission and strategic goal.

Faculty and Staff Support

To help faculty and staff accomplish their professional goals while advancing UMM's mission, it is necessary to provide adequate resources, programming, and encouragement. The Task Force recommends the following:

- Promote intercultural awareness, respect, and appreciation throughout the campus community. Highlight the importance of this effort and provide faculty and staff with incentives to participate in learning opportunities and actively practice their skills. This will improve the climate both on campus and in the community, help achieve both the University's and UMM's missions, improve student campus life, and increase faculty, staff, and student retention. Responsibility: Chief Academic Officer, Vice Chancellor for Student Affairs, Division Chairs, Directors, Office of Human Resources. Timing: Immediate.
- Offer in-depth opportunities for professional development in order to ensure that personnel are able to exert leadership in their areas of expertise, deliver strong research programs, and become better teachers and service providers. Reallocate internal funds to support this effort. Responsibility: Chief Academic Officer, Division Chairs, Directors, Office of Human Resources. Timing: Ongoing.
- Provide effective mentoring, guidance, peer support, and opportunities for faculty and staff to advance within UMM's employment system. Focus particularly on new employees, but also offer ongoing assistance to improve performance and enhance opportunities for all employees. This promotes good morale, increases productivity, and improves retention of high-performing personnel. Responsibility: Chief Academic Officer, Division Chairs, Directors, Office of Human Resources. Timing: Ongoing.

Student Support

In order for UMM to retain and graduate outstanding students, we must ensure that they are represented in our campus shared governance structure, acclimated to our rural campus setting, and comfortable with campus life, social atmosphere, and intercultural competencies. To continue to lead the University system in student satisfaction ratings, the Task Force recommends the following:

- Offer 'life planning' support to students entering college who have limited recognition of the relevance of a liberal arts education, including top quality academic counseling such as *The Deciding Project*[16], career guidance, internships, mentoring programs, alumni networking, campus community building programs, and other resources. This will improve student retention, satisfaction, graduation rates, and future success. Responsibility: Chief Academic Officer, Vice Chancellor for Student Affairs. Timing: Ongoing, with expansion to begin fall 2006.
- Promote intercultural awareness, respect, and appreciation throughout the campus community. As a campus, assess, design, and implement an inclusive, contemporary multicultural campus life structure and lead campus-wide strategies to advance participation as a multicultural leader, like those offered by the Multicultural Student Leadership Retreat.[17] Actively advance efforts to

Implementation of Recommendations

In order to position ourselves for the future, we must provide an exceptional student experience, reach our graduation rate goals, increase student enrollment and maintain a balanced budget. To achieve these goals and deliverables, the campus should undertake the initiatives outlined below, developed through an extensive and open campus process. Decisions regarding administrative responsibilities for implementation will be made by the Chancellor, with ongoing input from the Strategic Positioning Task Force and relevant campus committees and constituents.

Teaching & Outreach Initiatives

Initiatives	Timeline	Consultation	Measurement
Integrate green initiatives into curriculum through interdisciplinary activity	Planning to begin Spring 2007	Curriculum Comm., Campus Resources & Planning Comm. (CRPC), West Central Research & Outreach Center (WCROC)	Increased campus recognition from external rating organizations and through broad integration into curriculum
Broad integration of liberal learning outcomes just as writing, speaking, and critical thinking	Planning to begin Spring 2007	Curriculum, Disciplines, Scholastic, First Year Seminar (FYS)	Improved NSSE results and graduate exit survey results
Improve participation in and documentation of civic engagement, public service, and leadership	Plan to be developed Fall 2007	Curriculum, Disciplines, Student Affairs, FYS	Increased participation, Improved NSSE results and graduate exit survey results
Integration of current global perspectives across curriculum	Part started (Bush Grant), Develop plan for Fall 2007	Curriculum, CRPC, Scholastic Comm., IPC, DSAAG	Integration into curriculum, improved NSSE results and graduate exit survey results

Our future will build on this strong foundation to sustain a position of leadership in Minnesota's higher education while educating a diverse student population for intercultural competence and leadership in a global community. The task force recommends the following:

- Affirm a campus mission statement that more specifically articulates our commitment to diversity in a small, rural residential academic setting.
- Endorse the idea that bridging academic and student life is necessary to build a truly inclusive campus that educates interculturally competent graduates.
- Operationalize our goal to increase US students of color from 15 to 25% of total enrollment.
- Expand campus and community efforts to meet student needs and provide a respectful and comfortable environment that fosters diversity.
- Adopt and fully implement a plan to promote intercultural awareness, respect, and appreciation throughout the campus community, including professional development for faculty and staff.
- Assess, design and implement an inclusive, contemporary multicultural campus life structure and lead campus-wide strategies to advance participation as a multicultural leader.

Operations and Structure

In order to maximize the efficiency with which we can deliver a strong set of programs, we continue to rely on a proven model of shared governance[18] that enhances our academic curriculum, provides comfortable facilities, and ensures financial stability, the Task Force recommends the following:

- Given the increasing complexity of budgets in higher education, the need to strategically reallocate resources in key areas, and seek new sources of revenue, UMM needs to invest resources in the area of strategic and analytical management of financial resource allocation across campus. Responsibility: Chancellor. Timing: Ongoing.
- As we seek to become a top tier national liberal arts college, we must offer facilities that are comparable to our peers. We must have a well-maintained, safe, and accessible physical plant, an aesthetically appealing campus landscape, and create a physical UMM identity. Several of our buildings are in need of renovation and modernization including Briggs Library, Multi-Ethnic Resource Center, Education building, Camden Hall, Humanities building, and Residential Life facilities. We must revitalize our Campus Master Plan to encompass appropriate expansion of academic and service buildings. Responsibility: Chancellor, Associate Vice Chancellor for Physical Plant and Master Planning, Campus Resources and Planning Committee.
- To enhance our financial resources, we must better utilize our existing facilities during the summer and breaks. The future renovation of Blakely Hall will allow for the use of our existing facilities for non-credit residential programming to off campus constituents. Also, garnering non-residential programs such as marching band practices, sports camps, and Regional Fitness Center programming would capitalize on many of our strengths. Responsibility: Chief Academic Officer, Vice Chancellor for Student Affairs, Associate Vice Chancellor for Physical Plant and Master Planning, and collaboration between academic programs, student life, and athletic departments.
- Support the entire educational enterprise by regularly analyzing and updating a technology plan to ensure efficient and effective use of campus resources consistent with our mission to be a top tier national liberal arts college. Responsibility: Chief Academic Officer, Associate Vice Chancellor for Physical Plant and Master Planning, in consultation with appropriate directors and the Morris Campus Student Association.

Faculty & Staff Initiatives

Initiatives	Timeline	Consultation	Measurement
Increase support, recognition and visibility of Faculty Scholarship	Continual implementation	Faculty Center, Faculty Affairs & Consultative Committee	Number of external grants received, number of national presentations supported and number of publications, exhibitions, and performances
Develop professional development and mentoring opportunities	Ongoing	Division Chairs, Administrative Committee	Retention of faculty and staff, attendance at conferences, hosting relevant campus workshops and meetings
Provide comparable salaries for faculty and staff	Beginning Fall 2006	CRPC, Faculty Affairs, Consultative, USA	Increase standing on salary listing in Minnesota
Develop and implement a campus-wide technology plan	Beginning Spring 2007	Appropriate directors, MCSA, CRPC	Secure ongoing funds to improve and maintain our technology advantage

Student Initiatives

Initiatives	Timeline	Consultation	Measurement
Develop cohesive year-long "First Year Experience"	Begin Discussions Fall 2006 (Reestablishment of the FYE Subcommittee)	Scholastic, Curriculum, FYS, Residential Life, Student Services	Increased retention, improved experience, improved graduation rate
Integrated Multi-cultural Campus Life and Interculturally competent graduates	Fall 2007	Faculty Development, Multi-Ethnic Experience, Student Services, IPC, etc.	Increase recruitment and retention of traditionally underserved students, improve student satisfaction survey results for this group
Create academic enrichment office	Task Force formed Fall 2006	CRPC, Scholastic, Curriculum, Consultative, Honors Program, CIP, etc.	Increased awareness (internally and externally) and success in research, study abroad, etc.
Strengthen "life planning" student support	Discussions begin immediately	Student Services, Scholastic, Retention Work Group, External Relations and Alumni Office	Increased satisfaction in life planning area of the graduate exit survey, Increased % of students using alumni career networks

Viability & Sustainability

Initiatives	Timeline	Consultation	Measurement
Create a scholarship program for additional merit scholarship funds and enrichment opportunities	Beginning Fall 2006	CRPC, Retention Work Group, SAP	Increase percentage of high ability students enrolled and graduated, endowed funds to support these scholarships
Increase non-traditional revenue – private donors, facility use, grants, wind energy funds, etc.	Ongoing	CRPC, CERP, Student Affairs, Administrative Committee, Student Services, Consultative, Physical Plant	Increased percentage of total budget supported from these sources
Develop additional green energy initiatives and integrate into master plan	Ongoing	CRPC	Increased energy self-sufficiency, increased research opportunities
Secure full funding for Native American Tuition Waiver	Fall 2007	CRPC, Enrollment Area, American Indian Advisory Committee, MSP, CERP	Ongoing secured funds to cover tuition to improve graduation rates of Native American students

Visibility Initiatives

Initiatives	Timeline	Consultation	Measurement
Brand development - market research, e.g. honors college, honors experience	Immediately begin research and plan	CRPC, Curriculum, External Relations, IMG, CCG	External recognition and understanding of brand
Recruit and retain national and International students	Immediately	CRPC, Scholastic, Retention Work Group, IPC,	Increased numbers of students and graduates from these markets, track cohorts
Implement campus-wide integrated marketing plan	Immediately following market research	CRPC, IMG, CCG, Athletics, Student Affairs	External recognition and understanding of UMM experience
Update Campus Master Plan to align with strategic initiatives	Fall 2007	CRPC, Divisions, ASSC	Better understanding of use and renovation of physical facilities, increased pride in campus facilities

Capital Plan

Initiatives	Timeline	Consultation	Measurement
Gateway to Campus: Community Services Building	2008 Capital Request	CRPC	Inclusion in U of M Capital Request, lobby efforts, secure funds
Residential Facility and Conference Center: Blakely, Food Service	2008 Capital Request	CRPC, Blakely Hall Planning Committee	Inclusion in U of M Capital Request, lobby efforts, secure funds
HEAPR Funds to make all buildings accessible	2008 Capital Request and beyond	CRPC	Secure funds, accessible and modern space across campus
Briggs Library Renovation	2010 Capital Request	CRPC, Library planning committee	Inclusion in U of M Capital Request, lobby efforts, fundraising goals achieved, secure funds
HFA Phase III	2012 Capital Request	CRPC, HFA Phase III planning committee	Inclusion in U of M Capital Request, lobby efforts, fundraising goals achieved, secure funds

Endnotes

Citations and References

Below are listed internet addresses and other resources used by the Task Force.

1. The framing goal, vision, mission, and values of the University's Strategic Positioning process are outlined in *The University of Minnesota: Advancing the Public Good*, available at: http://www1.umn.edu/systemwide/strategic_positioning/goal.html
2. A complete reporting of kick off, focus groups, survey, and interview feedback, available at: http://www.morris.umn.edu/strategic/
3. A current version of the University of Minnesota, Morris Mission, available on page six at: http://www.catalogs.umn.edu/download/UMM/mrsgeninfo07.pdf
4. The framing concepts for respective coordinate campuses are outlined in *The University of Minnesota: Advancing the Public Good*, available at: http://www1.umn.edu/systemwide/strategic_positioning/campuses.html
5. A comprehensive review of existing Green Campus Initiatives, available at: http://www.morris.umn.edu/greencampus/
6. Complete enrollment, retention, and graduation statistics prepared by UMM Institutional Research, available at: http://www.morris.umn.edu/academic/reports.html
7. Complete enrollment and staffing statistics prepared by UMM Institutional Research, available at: http://www.morris.umn.edu/academic/reports.html
8. Comprehension data regarding national scholarship opportunities at UMM, available at: http://www.morris.umn.edu/cerp/abroad/
9. Information regarding the UMM First Year Seminar program, available at: http://www.morris.umn.edu/academic/is1001/
   Information regarding the UMM Service Learning program, available at: http://www.morris.umn.edu/academic/sl/
10. Information regarding the UMM Undergraduate Research Symposium, available at: http://www.morris.umn.edu/urs/
11. Information regarding the Morris Academic Partnership program, available at: http://www.morris.umn.edu/services/acad_affairs/aavarious.html
12. Information regarding faculty research and creative activity, see survey results of Faculty Opinion of Administration Survey, Faculty Quality of Life Survey, and Faculty Affairs Committee Research & Scholarship Survey. Information regarding UMM faculty leaves, available at: http://www.morris.umn.edu/services/acad_affairs/leaves.html
13. Information regarding study abroad opportunities at UMM, available at: http://www.morris.umn.edu/cerp/abroad/
14. Complete information regarding Continuing Education and Regional Programs, available at: http://www.morris.umn.edu/cerp/
15. Complete information regarding the Center for Small Towns, available at: http://www.morris.umn.edu/cst/
16. Information regarding *The Deciding Project*, a UMM program geared toward students with undecided major in order to help with retention efforts, available at: http://www.morris.umn.edu/academic/advising/undecidedmajor.htm
17. Information regarding the annual UMM Multicultural Student Leadership Retreat, available at: http://www.morris.umn.edu/services/stac/mslr.html
18. Informational regarding shared governance at UMM, available at: http://www.morris.umn.edu/committees/

Appendix A

Strategic Positioning Task Force Membership

The Morris campus chose the Campus Resources and Planning Committee, one of five standing Campus Assembly committees, to fill the role of the Strategic Positioning Task Force. The Committee has a broad membership of faculty, staff, students, and administrators, so using this existing committee reduced the workload for members while ensuring a diverse range of insights.

Task Force Chair

- Angel (Andy) Lopez, *Professor of Computer Science*

Task Force Members

- James (Jim) Carlson, *Professor of Music (2005-2006)*
- Joseph Basel, *Student, Economics and Management (2006-2007)*
- Jonathan Bringewatt, *Student, Political Science and History (2006-2007)*
- LeAnn Dean, *Director, Rodney A. Briggs Library*
- Michele Handlin, *Student, Environmental Science and Social Science (Spring Semester 2006)*
- Sara Haugen, *Coordinator, Commission on Women*
- Bryan Herrmann, *Assistant Director of Admissions*
- Kenneth Hodgson, *Associate Professor of Music (2006-2007)*
- Kristi Kehrwald, *Student, Global Studies and Political Science (Fall Semester 2005)*
- Arne Kildegaard, *Associate Professor of Economics*
- Pareena Lawrence, *Associate Professor of Economics & Management*
- Tim Lindberg, *Student, History and Political Science (2005-2006)*
- Sarah Mattson, *Human Resource Director*
- Madeline (Maddy) Maxeiner, *Associate Vice Chancellor for External Relations*
- Cassie McMahon, *Student, Environmental Studies and Economics (2006-2007)*
- Daniel Moore, *Student, Global Business and World Politics*
- Lowell Rasmussen, *Associate Vice Chancellor for Physical Plant and Master Planning*
- Tim Soderberg, *Assistant Professor of Chemistry (2005-2006)*
- Sharon Van Eps, Program *Advisor, Center for International Programs*
- Roger Wareham, *Pre-Award Coordinator, Grants Development Office (Fall Semester 2006)*
- Theresa Wivinus, *Student, Sociology and Women's Studies (2005-2006)*
- Peter Wyckoff, *Associate Professor of Biology*

Index of Appendices

Appended Materials for Task Force Final Recommendations

The following documents have been included for further reference.

Appendix B

Task Force Charge Letter

DATE: September 13, 2005

MEMO TO: Members of the UMM Strategic Positioning Task Force

FROM: Sam Schuman, Chancellor

RE: UMM Strategic Positioning Task Force Charge

Thank you for agreeing to serve on the University of Minnesota, Morris Strategic Positioning Task Force. The University's Strategic Positioning process presents a remarkable opportunity for our campus to reaffirm its mission and set a new direction that will build upon its excellence and ensure its future vitality. With your help, we will identify what Morris' unique contribution can be to the University's goal of becoming one of the top three public research universities in the world, and recommend new ways to serve our students and the state. As you pursue your charge, I ask that you engage in bold and visionary thinking and identify strategies that will propel us forward.

President Bruininks has asked that each strategic positioning task force consider the following strategic action areas that were identified in the University's strategic positioning recommendations, Transforming the University of Minnesota, endorsed by the Board of Regents on June 10, 2005.

- Recruit, nurture, challenge, and educate outstanding students who are bright, curious and highly motivated.
- Recruit, mentor, reward and retain world-class faculty and staff who are innovative, energetic, and dedicated to the highest standards of excellence.
- Promote an effective organizational culture that is committed to excellence and responsive to change.
- Exercise responsible stewardship by setting priorities and enhancing and effectively utilizing resources and infrastructure.
- Communicate clearly and credibly with all of our constituencies and practice public engagement responsive to the public good.

During the development of the University's strategic positioning plan, certain common themes have been identified and are important to keep in mind as we begin our work. The themes are:

- Strong academic programs and leadership.
- Improved access to success for students demonstrating that a better education leads directly to better results.
- Excellence in research.
- Lowered economic costs through improved services and strengthened core investments.
- Greater alignment across all programs and services.

As you pursue your work, please also keep in mind the following questions:

- What role should the Morris campus play as part of the University's goal of being a top 3 public research institution?
- What strategic directions will Morris need to take to maximize this role?

- What are the actions recommended to achieve these directions, including opportunities for reallocation of resources?
- What special contributions should the Morris campus make to our region of the state?
- How will demographic, economic, and enrollment trends affect the future of UMM and what steps must be taken as a result?
- What are our areas of excellence and/or comparative advantage?
- What are the measures of progress and expected impact?
- What are the incentives necessary to achieve success?
- What are the barriers to success? What strategies exist to overcome the barriers?

The Task Force Charge

Each campus in the University system has a responsibility, consistent with its history and mission, to move toward making the University one of the top three public research institutions in the world. This task force is asked to conduct a thorough evaluation of the mission, priorities, strengths, and future direction of the Morris campus as part of this institutional commitment. This evaluation should carefully examine the current status of the campus and its programs, and determine where change is needed to address current trends and anticipate future needs. The task force is asked to conduct this evaluation under the following operating principles:

- Recognition and attribution of full costs and cost increases;
- Rationalization of level of state support;
- Revenue expectations and enhancements;
- Academic enhancement and accountability;
- Enrollment models, expectations, and plan;
- Enhanced regional service and programs;
- Increased connection with relevant Twin Cities campus initiatives and resources.

Specifically, the task force should:

- Evaluate background data about demographic, programmatic, and fiscal issues facing the campus;
- Address enrollment issues and associated financial considerations;
- Identify ways to partner with the other campuses and with Twin Cities campus colleges and units to leverage complementary strengths and identify efficiencies;
- Establish a financial and academic accountability framework under which the campus will operate;
- Develop operating assumptions that lead to successful implementation of goals;
- Develop measures by which progress toward goals will be assessed.

Appendix C

University Criteria for Review of Programs

The following distinct criteria that have been established over the past 20 years at the University were identified to review programs and establish new priorities:

- Centrality to Mission: A program or service is more highly valued if it contributes significantly to the core mission of the University.
- Quality, Productivity, and Impact: A program or service should meet objective and evaluative standards of high quality, productivity, public engagement, and impact.
- Uniqueness and Comparative Advantage: A program should be evaluated based on characteristics that make it an exceptional strength for the University compared to other programs in Minnesota or at other peer institutions.
- Enhancement of Academic Synergies: A program/service should be organized to promote and facilitate synergies that build relationships and interdisciplinary, multicultural, international and other collaborations.
- Demand and Resources: Evaluation of a program or service should consider current and projected demand and the potential and real availability of resources for funding program or service costs.
- Efficiency and Effectiveness: A program or service should be evaluated based on its effectiveness and how efficiently it operates.
- Development and Leveraging of Resources: Any new or existing program or service should be evaluated on its potential to develop new resources and leveraging existing resources.

Appendix D: University of Minnesota, Morris Background Data

The Task Force reviewed the following data, prepared by Institutional Research and Reporting and supplemented with data from UMM's Institutional Research Office, February 2006.

UNIVERSITY OF MINNESOTA MORRIS CAMPUS										14-Feb-06	UMNMO	Page 1 of 4
Fiscal Year	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	
Total Headcount Students (Fall)	**1,952**	**1,970**	**1,908**	**1,917**	**1,867**	**1,842**	**1,927**	**1,910**	**1,861**	**1,839**	**1,684**	
Undergraduate	1,944	1,959	1,900	1,913	1,789	1,758	1,813	1,789	1,728	1,685	1,533	
Graduate	0	0	0	0	0	0	0	0	0	0	0	
Professional	0	0	0	0	0	0	0	0	0	0	0	
Unclassified	8	11	8	4	78	84	114	121	133	154	151	
New Freshmen (NHS)	**534**	**550**	**495**	**549**	**457**	**474**	**480**	**477**	**412**	**387**	**358**	
High School Rank	83.9	82.7	81.0	82.7	82.1	82.4	77.3	78.5	77.9	78.5	75.7	
ACT Score	24.9	25.0	24.7	24.3	24.1	24.7	24.4	24.6	24.8	25.1	24.6	
AAR Score	133.6	133.1	130.7	132.0	130.0	132.5	125.6	127.3	127.5	128.0	118.5	
Total Headcount Students by Ethnicity (%)												
American Indian	3.9%	5.0%	5.5%	6.5%	6.7%	5.9%	6.4%	6.5%	7.2%	7.8%	8.8%	
Asian/Pacific Islander	3.8%	3.1%	2.4%	2.7%	2.5%	2.6%	2.9%	2.7%	3.1%	3.1%	2.7%	
African American	4.3%	4.2%	5.6%	5.5%	5.2%	5.6%	4.7%	3.4%	2.8%	2.2%	1.9%	
Chicano/Hispanic	1.5%	1.9%	1.6%	1.5%	1.1%	1.4%	1.4%	1.6%	1.5%	1.5%	1.4%	
International	0.9%	0.9%	1.3%	0.4%	0.8%	0.3%	0.8%	1.1%	1.1%	1.2%	1.1%	
Caucasian	85.0%	84.4%	83.3%	82.8%	82.9%	81.5%	80.4%	80.7%	80.4%	79.3%	78.0%	
Not Reported	0.6%	0.5%	0.4%	0.9%	0.7%	2.7%	3.4%	3.9%	3.9%	4.8%	6.1%	
Total Headcount Students by Gender (%)												
Female	55.5%	56.7%	57.3%	59.6%	58.6%	57.2%	59.3%	60.4%	60.0%	60.4%	59.9%	
Male	44.5%	43.3%	42.7%	40.4%	41.1%	42.1%	40.6%	39.5%	39.8%	39.4%	39.7%	
Unknown	0.0%	0.0%	0.0%	0.0%	0.3%	0.7%	0.2%	0.1%	0.2%	0.2%	0.4%	
Total Post-Doctoral Associates	na	na	na	na	na	na	0	0	0	0	0	
Total FYE Students	**1,910**	**1,897**	**1,841**	**1,907**	**1,825**	**1,804**	**1,831**	**1,789**	**1,872**	**1,794**		
Lower Division	1,185	1,166	1,112	1,180	977	972	991	940	916	840		
Upper Division	725	731	729	727	848	832	839	849	956	955		
Graduate & Professional	0	0	0	0	0	0	0	0	0	0		
Total Degrees Awarded	**362**	**371**	**384**	**347**	**340**	**315**	**304**	**325**	**350**	**348**		
Undergraduate Degrees	362	371	384	347	340	315	304	325	350	348		
Masters Degrees	0	0	0	0	0	0	0	0	0	0		
Doctoral and 1st Prof Degrees	0	0	0	0	0	0	0	0	0	0		
Retention Rates (for Freshmen Admitted Fall of Fiscal Year)												
First Year Retention	81.1%	86.0%	83.1%	81.6%	80.4%	85.0%	82.5%	79.6%	86.7%	85.6%		
Second Year Retention	71.0%	74.9%	71.6%	66.7%	69.3%	71.7%	70.0%	74.3%	76.7%	na		
Graduation Rates (for Freshmen Admitted Fall of Fiscal Year)												
Four-Year Graduation Rate	45.3%	45.4%	38.2%	39.7%	40.2%	40.9%	44.1%	na	na	na		
Five-Year Graduation Rate	59.0%	61.7%	55.7%	53.6%	55.8%	56.3%	na	na	na	na		
Six-Year Graduation Rate	61.4%	63.2%	60.3%	57.1%	58.7%	na	na	na	na	na		

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Fiscal Year	**FY1996**	**FY1997**	**FY1998**	**FY1999**	**FY2000**	**FY2001**	**FY2002**	**FY2003**	**FY2004**	**FY2005**
Total FTE Employees	**296**	**330**	**319**	**307**	**356**	**380**	**388**	**391**	**378**	**373**
Civil Service	145	156	152	131	174	188	190	191	182	179
Administrative	27	34	36	34	34	33	36	38	37	35
Tenured/Tenure Track Faculty	74	90	84	85	90	97	89	102	110	107
Other Faculty	32	27	26	28	26	27	36	23	14	14
Professional	18	23	22	29	31	35	37	38	36	39
Total Head Count Employees	**318**	**358**	**344**	**365**	**383**	**417**	**420**	**429**	**407**	**407**
Civil Service	159	172	170	177	188	203	205	207	194	191
Administrative	27	36	37	34	35	34	37	39	38	36
Tenured/Tenure Track Faculty	74	90	84	85	90	97	90	102	110	108
Other Faculty	33	28	26	28	27	29	38	25	15	17
Professional	25	32	27	41	43	54	50	56	50	55
Tenured/Tenure Track Faculty HC	**74**	**90**	**84**	**85**	**90**	**97**	**90**	**102**	**110**	**108**
Professor	26	26	23	25	23	23	20	23	24	22
Associate Professor	25	26	25	32	33	32	36	37	41	42
Assistant Professor	23	35	31	25	31	37	32	37	39	42
Instructor	0	3	5	3	3	5	2	5	6	2
Employees of Color (% Tot HC)	**7.2%**	**8.7%**	**8.1%**	**7.9%**	**6.3%**	**7.7%**	**7.9%**	**7.7%**	**6.4%**	**7.6%**
Civil Service	3.8%	4.1%	3.5%	4.0%	3.2%	3.9%	4.9%	3.9%	2.6%	4.2%
Administrative	11.1%	16.7%	18.9%	14.7%	8.6%	8.8%	5.4%	7.7%	5.3%	8.3%
Tenured/Tenure Track Faculty	12.2%	11.1%	10.7%	11.8%	8.9%	11.3%	12.2%	14.7%	11.8%	12.0%
Other Faculty	9.1%	14.3%	7.7%	7.1%	7.4%	10.3%	13.2%	4.0%	6.7%	5.9%
Professional	8.0%	12.5%	14.8%	12.2%	11.6%	13.0%	10.0%	10.7%	10.0%	10.9%
Total Student Employees (HC)	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**368**	**324**
Non-Academic	na	na	na	na	na	na	na	na	368	324
Academic	na	na	na	na	na	na	na	na	0	0
Tuition Revenue	**na**	**na**	**na**	**na**	**$7,242,357**	**$7,590,451**	**$8,564,807**	**$9,504,118**	**$10,355,491**	**$10,876,328**
Registration Activity (25%)	na	na	na	na	$1,834,553	$1,943,466	$2,167,360	$2,412,635	$2,581,178	$2,719,085
Instructional Activity (75%)	na	na	na	na	$5,407,804	$5,646,985	$6,397,447	$7,091,483	$7,774,313	$8,157,243
Expenditures by Fund Source	**$26,225,904**	**$25,794,951**	**$27,114,859**	**$29,628,443**	**$31,838,857**	**$33,534,380**	**$36,511,729**	**$36,906,827**	**$36,219,565**	**$36,084,884**
State General Appropriation	$16,466,483	$16,793,410	$17,563,685	$19,525,322	$21,203,648	$23,025,282	$23,945,403	$25,226,824	$24,606,755	$25,580,263
Indirect Cost Recovery	$43,588	$57,977	$50,064	$59,727	$58,858	$60,418	$72,385	$73,461	$76,478	$82,953
Central Reserves	$0	$0	$0	$0	$0	$0	$0	$0	$0	$26,509
Auxiliaries & ISOs	$4,758,224	$4,381,549	$4,502,253	$4,631,607	$4,919,041	$4,953,864	$6,031,284	$5,720,184	$5,297,798	$4,060,808
Other Current Unrestricted Funds	$445,870	$218,671	$395,879	$299,642	$589,515	$282,844	$828,860	$366,426	$524,066	$950,179
Federal Appr; Grants & Contracts	$1,899,799	$1,931,138	$2,028,696	$2,249,828	$2,272,871	$2,505,069	$2,661,168	$2,810,175	$2,621,937	$2,292,060
State Special Appropriations	$194,757	$156,927	$131,548	$25,546	$29,371	$147,121	$157,816	$77,556	$163,705	$117,889
State of MN Grants & Contracts	$1,508,680	$1,481,008	$1,674,054	$1,957,955	$1,845,930	$1,912,722	$1,994,599	$1,858,401	$1,983,251	$2,042,421
Other Current Restricted Funds	$908,504	$774,270	$768,680	$878,816	$919,623	$647,059	$820,216	$773,799	$945,575	$931,803

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Fiscal Year	**FY1996**	**FY1997**	**FY1998**	**FY1999**	**FY2000**	**FY2001**	**FY2002**	**FY2003**	**FY2004**	**FY2005**
Expenditures by Function	**$26,225,904**	**$25,794,951**	**$27,114,859**	**$29,628,443**	**$31,838,857**	**$33,534,380**	**$36,511,729**	**$36,906,827**	**$36,219,565**	**$36,084,884**
Instruction	$7,567,506	$7,828,762	$8,217,603	$8,879,096	$9,683,663	$9,941,381	$10,581,386	$11,507,890	$10,913,062	$11,278,197
Research	$183,294	$178,766	$215,031	$219,410	$195,274	$227,431	$175,948	$141,448	$198,949	$275,620
Public Service	$321,692	$165,143	$142,160	$322,631	$546,567	$518,746	$736,618	$758,096	$915,202	$719,002
Academic Support	$2,445,625	$2,575,179	$2,741,246	$2,683,848	$3,041,293	$3,473,213	$3,537,737	$4,119,890	$4,242,320	$4,285,964
Student Services	$2,565,708	$2,474,713	$2,828,015	$3,149,984	$3,280,162	$3,908,321	$3,826,914	$3,232,134	$3,085,823	$3,308,685
Student Financial Aid	$3,963,433	$4,012,742	$4,215,870	$5,037,017	$4,674,881	$4,430,987	$4,902,864	$5,457,355	$5,778,365	$5,716,869
Institutional Support	$1,346,298	$1,423,164	$1,274,329	$1,410,813	$1,799,679	$2,183,274	$2,393,971	$1,819,467	$1,958,452	$2,203,836
Plant	$2,534,010	$2,409,588	$2,556,225	$2,976,226	$3,478,491	$3,607,315	$3,776,479	$3,646,891	$3,405,149	$3,886,135
Other	$5,298,339	$4,726,894	$4,924,381	$4,949,417	$5,138,847	$5,243,713	$6,579,812	$6,223,654	$5,722,243	$4,410,578
Expenditures by Object	**$26,225,904**	**$25,794,951**	**$27,114,859**	**$29,628,443**	**$31,838,857**	**$33,534,380**	**$36,511,729**	**$36,906,827**	**$36,219,565**	**$36,084,884**
Professor	$1,392,423	$1,496,081	$1,508,059	$1,660,866	$1,827,630	$1,585,750	$1,412,978	$1,695,066	$1,661,858	$1,565,414
Associate	$1,002,423	$1,122,320	$1,346,476	$1,692,072	$1,787,957	$1,860,929	$2,027,093	$2,228,119	$2,351,609	$2,433,782
Assistant	$1,944,874	$1,878,613	$1,871,319	$1,804,404	$1,975,851	$2,141,150	$2,288,649	$2,187,127	$2,213,136	$2,340,883
Instructor	$453,650	$492,042	$473,435	$471,781	$356,218	$462,456	$460,857	$538,924	$439,878	$241,808
Teaching/Research Assistants	$0	$250	$4,621	$0	$1,300	$1,776	$2,203	$0	$0	$0
Other Academic Salaries	$0	$260,933	$246,868	$336,956	$446,012	$416,602	$449,737	$534,026	$517,512	$584,763
Other Salaries	$8,321,855	$7,587,728	$7,766,401	$8,279,919	$8,785,073	$9,696,134	$10,278,258	$10,280,779	$10,126,928	$10,036,126
HERDB/CUFS Accrual Adj	-$1,826	$693	-$18,500	-$554	$522	-$6,408	$29,523	-$11,750	$26,565	-$590,854
Total Salaries	$13,113,399	$12,838,660	$13,198,679	$14,245,444	$15,180,563	$16,158,389	$16,949,298	$17,452,291	$17,337,485	$16,611,923
Fringe Benefits	$2,884,136	$3,084,175	$3,121,498	$3,186,861	$3,338,225	$3,701,962	$4,415,783	$4,834,781	$4,668,820	$4,794,383
Student Financial Aid	$3,911,864	$4,061,613	$4,215,201	$5,149,644	$4,802,032	$4,488,257	$5,006,158	$5,612,907	$5,982,694	$6,098,802
Indirect Costs	$61,573	$81,411	$189,811	$109,752	$470,073	$280,998	$229,976	$233,891	$241,738	$241,756
Other Expenditures	$7,116,842	$6,501,535	$7,118,234	$7,579,972	$8,649,831	$9,517,452	$10,488,672	$9,323,776	$8,593,254	$8,836,035
Internal Sales	-$861,911	-$772,444	-$728,563	-$643,231	-$601,868	-$612,678	-$578,159	-$550,819	-$604,426	-$498,015
Total Non-Salary	$13,112,505	$12,956,291	$13,916,181	$15,382,999	$16,658,294	$17,375,991	$19,562,431	$19,454,536	$18,882,080	$19,472,962
Exp for Salary/Fringe Benefits (%)	61.0%	61.7%	60.2%	58.8%	58.2%	59.2%	58.5%	60.4%	60.8%	59.3%
Other Expenditures (%)	39.0%	38.3%	39.8%	41.2%	41.8%	40.8%	41.5%	39.6%	39.2%	40.7%
Grant & Contract Proposals										
Dollars	$423,936	$665,678	$693,312	$1,102,539	$4,033,099	$2,772,346	$1,185,161	$2,872,061	$4,365,965	$3,444,201
Number of Proposals	28	23	33	33	20	30	28	19	28	27
Grant & Contract Awards										
Dollars	$497,495	$123,089	$198,088	$120,280	$677,851	$125,728	$700,017	$559,174	$533,414	$646,616
Number of Awards	20	13	17	15	18	12	18	14	12	13
Voluntary Support										
Gift Production	na	na	na	$749,771	$2,077,348	$1,029,681	$1,652,910	$1,212,522	$255,865	$1,099,933
Gifts Receipted	na	na	na	$834,256	$603,809	$502,698	$571,600	$511,647	$485,824	$687,752
Carry Forward (Non-Sponsored)	na	na	$1,473,882	$2,960,064	$2,824,894	$1,536,198	$2,426,596	$2,364,769	$2,560,266	$2,702,181
Carry Forward (Central Funds)	na	na	na	na	na	$472,945	$1,475,072	$1,433,595	$1,588,726	$1,798,168

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Fiscal Year	**FY1996**	**FY1997**	**FY1998**	**FY1999**	**FY2000**	**FY2001**	**FY2002**	**FY2003**	**FY2004**	**FY2005**
Trends and Ratios										
Employee Groups as % of Total Employees (Head Count)										
Civil Service	50.0%	48.0%	49.4%	48.5%	49.1%	48.7%	48.8%	48.3%	47.7%	46.9%
Administrative	8.5%	10.1%	10.8%	9.3%	9.1%	8.2%	8.8%	9.1%	9.3%	8.8%
Tenured/Tenure Track Faculty	23.3%	25.1%	24.4%	23.3%	23.5%	23.3%	21.4%	23.8%	27.0%	26.5%
Other Faculty	10.4%	7.8%	7.6%	7.7%	7.0%	7.0%	9.0%	5.8%	3.7%	4.2%
Professional	7.9%	8.9%	7.8%	11.2%	11.2%	12.9%	11.9%	13.1%	12.3%	13.5%
HC T/TT Faculty as % of Tot Fac	69.2%	76.3%	76.4%	75.2%	76.9%	77.0%	70.3%	80.3%	88.0%	86.4%
Measures per T/TT Head Count Faculty										
Undergraduate Students	26.3	21.8	22.6	22.5	19.9	18.1	20.1	17.5	15.7	15.6
Graduate/Professional Students	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lower Division FYE Students	16.0	13.0	13.2	13.9	10.9	10.0	11.0	9.2	8.3	7.8
Upper Division FYE Students	9.8	8.1	8.7	8.6	9.4	8.6	9.3	8.3	8.7	8.8
Grad & Prof FYE Students	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total FYE Students	25.8	21.1	21.9	22.4	20.3	18.6	20.3	17.5	17.0	16.6
Civil Service Staff	2.15	1.91	2.02	2.08	2.09	2.09	2.28	2.03	1.76	1.77
Administrative Staff	0.36	0.40	0.44	0.40	0.39	0.35	0.41	0.38	0.35	0.33
Other Faculty	0.45	0.31	0.31	0.33	0.30	0.30	0.42	0.25	0.14	0.16
Professional Staff	0.34	0.36	0.32	0.48	0.48	0.56	0.56	0.55	0.45	0.51
Total Other Staff	3.30	2.98	3.10	3.29	3.26	3.30	3.67	3.21	2.70	2.77
Grant & Contract Proposals: $s	$5,729	$7,396	$8,254	$12,971	$44,812	$28,581	$13,168	$28,157	$39,691	$31,891
Grant & Contract Proposals: #	0.38	0.26	0.39	0.39	0.22	0.31	0.31	0.19	0.25	0.25
Grant & Contract Awards: $s	$6,723	$1,368	$2,358	$1,415	$7,532	$1,296	$7,778	$5,482	$4,849	$5,987
Grant & Contract Awards: #	0.27	0.14	0.20	0.18	0.20	0.12	0.20	0.14	0.11	0.12
Undergraduate Degrees	4.9	4.1	4.6	4.1	3.8	3.2	3.4	3.2	3.2	3.2
Graduate/Professional Degrees	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Degrees	4.9	4.1	4.6	4.1	3.8	3.2	3.4	3.2	3.2	3.2
Measures per Total Head Count Faculty										
Undergraduate Students	18.2	16.6	17.3	16.9	15.3	14.0	14.2	14.1	13.8	13.5
Graduate/Professional Students	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lower Division FYE Students	11.1	9.9	10.1	10.4	8.4	7.7	7.7	7.4	7.3	6.7
Upper Division FYE Students	6.8	6.2	6.6	6.4	7.2	6.6	6.6	6.7	7.6	7.6
Grad & Prof FYE Students	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total FYE Students	17.9	16.1	16.7	16.9	15.6	14.3	14.3	14.1	15.0	14.4
Non-Sponsored Carry Forward as % of Total Unrestricted Expenditures										
	na	na	6.5%	12.1%	10.6%	5.4%	7.9%	7.5%	8.4%	8.8%

Appendix E: Strategic Comparisons to Peer Institutions

The following list compares institutions sharing membership in the Council of Public Liberal Arts Colleges (COPLAC), prepared by Pareena Lawrence, Associate Professor of Economics & Management, assisted by Adam Turgeon, student.

Institution	State	Distance from Metro Area (miles) (city over 50,000)	Population of Town	Student Population	Number of Progams/ Majors	Graduate Programs?	Professional Programs?	Year Established
Ramapo College of NJ	NJ	33.1	26,000	5,500	38	yes	yes	1969
Sonoma State University	CA	44.3	42,236	6,481	41	yes	no	1960
Eastern CT State University	CT	21.7	15,823	4,606	31	yes	no	1889
Keene State College	NH	92.9	22,563	4,370	35	yes	no	1909
St. Mary's College of MD	MD	47.7	2,290	1,656	21	yes	yes	1840
New College of Florida	FL	0.0	52,715	761	30	no	no	1960
Mass. College of Lib. Arts	MA	45.8	14,681	1,430	15	yes	no	1894
U of NC, Asheville	NC	0.0	68,889	3,124	31	yes	no	1961
SUNY College at Geneseo	NY	29.0	9,654	5,292	54	yes	no	1867
College of Charleston	SC	0.0	96,650	9,501	45	yes	no	1770
University of Wis.-Superior	WI	5.5	27,368	2,507	40	yes	no	1893
Truman State University	MO	87.8	16,988	5,474	45	yes	yes	1867
Georgia College & State U	GA	33.6	18,757	4,782	40	yes	no	1889
U of Minnesota, Morris	MN	99.2	5,068	1,700	30	no	no	1964
Henderson State University	AR	66.0	10,912	2,728	29	yes	yes	1914
Southern Oregon University	OR	14.7	19,522	4,238	35	yes	no	1926
U of Maine at Farmington	ME	70.0	7,410	2,278	32	no	no	1864
University of Montevallo	AL	37.0	4,869	2,557	25	yes	yes	1896
Fort Lewis College	CO	160.6	13,922	3,829	25	no	no	1964
Evergreen State College	WA	26.6	42,514	3,962	48	yes	no	1971
Mary Washington College	VA	52.7	19,279	3,951	33	yes	no	1938

Appendix F

Admitted Student Questionnaire

Prepared by The College Board, a study of students admitted to UMM who chose to attend other institutions. Questionnaire results for fall 2003 and fall 2005.

ASQ Plus 2003 Summary – Non-Enrolling Students

Number of Students Surveyed: 383/Respondents: 87/Percent: 23%

Gender: 72% female/28% male

Race/Ethnicity: 86% White/6% Asian American/5% African American

Median Income: $69,000

Geographic Origin: 82% Twin Cities/6% Northern Minnesota/4% Western South Dakota

Top Zip Codes: 553/554/551/550/563

Median ACT Score: 28

Most Important College Characteristics:	Least Important College Characteristics:
1. Availability of Majors	1. Availability of recreational facilities
2. Personal Attention	2. Attractiveness of campus
3. Value for the Price	3. Special academic programs
4. Cost of Attendance	4. Access to off-campus activities

Ratings for UMM on Certain College Characteristics:

	Excellent	Very Good	Good	Poor/Fair
1. Surroundings:	10%	19%	29%	42%
2. Quality of Campus Housing:	N/A	N/A	N/A	N/A
3. Access to Off-Campus Activities:	N/A	N/A	N/A	N/A
4. Availability of Majors:	N/A	N/A	N/A	N/A

Images Most Frequently Associated with our College:

2. Friendly
3. Isolated
4. Intellectual
5. Inexpensive

Average Aid Awarded:	By Our College (Enrolling)	By College Attending (Non-Enrolling)
Work Study:	$1,418	$1,868
Loans:	$4,676	$5,446
Need-Based Aid:	$3,162	$9,731
Merit Aid:	$3,902	$7,044
Total Award:	$7,287	$15,983

The following list compares institutions included in the "Morris 14" peer comparison group.

Institution	State	Distance from Metro Area (miles) (city over 50,000)	Population of Town	Student Population	Number of Progams/ Majors	Graduate Programs?	Professional Programs?	Year Established
Carleton College	MN	34.6	17,147	1,936	34	no	no	1866
Ramapo Coll New Jersey	NJ	33.1	26,000	5,500	38	yes	yes	1969
Macalester College	MN	0.0	287,151	1,843	35	no	no	1874
St. Mary's Coll.of Maryland	MD	47.7	2,290	1,656	21	yes	yes	1840
Saint John's U	MN	11.3	3,516	1,842	40	yes	no	1870
St. Olaf College	MN	34.6	17,147	3,007	44	no	no	1874
Gustavus Adolphus Coll	MN	65.0	9,747	2,545	75	no	no	1862
U North Carolina-Asheville	NC	0.0	68,889	3,124	31	yes	no	1961
Coll Saint Benedict	MN	9.7	4,400	1,992	40	no	no	1961
Hamline U	MN	0.0	287,151	1,944	29	yes	yes	1854
Concordia Coll-Moorhead	MN	3.5	32,177	2,686	78	yes	no	1891
U Minnesota-Morris	MN	99.2	5,068	1,700	30	no	no	1964
U Maine-Farmington	ME	70.0	7,410	2,278	32	no	no	1864
Mary Washington Coll	VA	52.7	19,279	3,951	33	yes	no	1938

Appendix G

University of Minnesota, Morris Enrollment Growth Projections

Prepared by James Morales, Associate Vice Chancellor for Enrollment, February 2006.

Year	NHS	NAS	Non-Degree	Total New	Total Continuing	Total UMM Enrollment
1983-84	476	58	26	560	1043	1603
1984-85	490	67	26	583	1082	1665
1985-86	468	78	33	579	1103	1682
1986-87	527	83	17	627	1147	1774
1987-88	660	86	13	759	1208	1967
1988-89	582	64	4	650	1371	2021
1989-90	520	51	7	578	1463	2041
1990-91	493	43	1	537	1484	2021
1991-92	511	38	2	551	1364	1915
1992-93	582	42	0	624	1299	1923
1993-94	596	43	1	640	1293	1933
1994-95	549	46	4	599	1325	1924
1995-96	534	73	5	612	1340	1952
1996-97	550	67	5	622	1348	1970
1997-98	495	78	2	575	1333	1908
1998-99	549	100	2	651	1266	1917
1999-00	457	78	68	603	1264	1867
2000-01	474	94	63	631	1211	1842
2001-02	480	82	85	647	1280	1927
2002-03	477	67	83	627	1283	1910
2003-04	412	74	103	589	1272	1861
2004-05	387	63	115	565	1274	1839
2005-06	358	56	115	529	1155	1684
2006-07	***410***	***75***	***110***	***595***	***1111***	***1706***
2007-08	***435***	***80***	***110***	***625***	***1132***	***1757***
2008-09	***450***	***80***	***110***	***640***	***1189***	***1829***
2009-10	***465***	***85***	***110***	***660***	***1265***	***1925***
2010-11	***480***	***90***	***110***	***680***	***1309***	***1989***
2011-12	***495***	***90***	***110***	***695***	***1346***	***2041***
2012-13	***510***	***100***	***110***	***720***	***1384***	***2104***

ASQ Plus 2005 Summary – Non-Enrolling Students

Number of Students Surveyed: 435/Respondents: 30/Percent: 7%

Gender: 68% female/32% male

Race/Ethnicity: 90% White/5% American Indian/5% Hispanic

Median Income: $68,000

Geographic Origin: 75% Twin Cities/20% Northern Minnesota/5% Central Minnesota

Top Zip Codes: 553/562/563/551/566

Median ACT Score: 26

Most Important College Characteristics:

1. Availability of Majors
2. Quality of Academic Facilities
3. Academic Reputation
4. Personal Attention

Least Important College Characteristics:

1. Availability of recreational facilities
2. Attractiveness of campus
3. Special academic programs
4. Access to off-campus activities

Ratings for UMM on Certain College Characteristics:

	Excellent	Very Good	Good	Poor/Fair
1. Surroundings:	14%	14%	41%	32%
2. Quality of Campus Housing:	0%	63%	25%	13%
3. Access to Off-Campus Activities:	5%	42%	26%	26%
4. Availability of Majors:	28%	52%	8%	12%

Images Most Frequently Associated with our College:

1. Friendly
2. Isolated
3. Intellectual
4. Comfortable

Average Aid Awarded:	By Our College (Enrolling)	By College Attending (Non-Enrolling)
Work Study:	$2,737	$2,100
Loans:	$7,962	$2,998
Need-Based Aid:	$5,226	$8,194
Merit Aid:	$3,696	$8,833
Total Award:	$10,432	$15,409

Appendix H

University of Minnesota, Morris Endowment Growth Projections

Prepared by Maddy Maxeiner, Associate Vice Chancellor for External Relations, assisted by Pareena Lawrence, Associate Professor of Economics & Management, March 2006. These projections are based on figures that include UMM's fundraising efforts and the performance of our endowment from 1992 to 2005. Assuming a similar average rate of growth, we project the following endowment growth:

Year	Projected Total Endowment
2006	$8.8 million
2007	$10.0 million
2008	$11.3 million
2009	$12.9 million
2010	$14.6 million
2011	$16.6 million
2012	$18.8 million
2013	$21.4 million
2014	$24.3 million
2015	$27.6 million

Appendix I: Review of External Relations Staffing Resources

Prepared by UMM's Office of External Relations, a comparison of external relations, alumni relations, and development staff resources at other small colleges and universities.

Institution	Enrollment	Alumni Base[1]	Alumni Relations[2]	Annual Giving[2]	Development[2]	Communications[2]	Annual Giving Dollars Raised FY05
University of North Carolina, Asheville	3,572	12,000	2	2	6	5	$155,000-phonathon & direct mail & $150,000-scholarships and personal solicitations
College of Charleston	9,866	36,000	7.5	4	9	6	$1,000,000
Concordia College, Moorhead	2,812	20,000	4	6	13	12	$3,227,749-unrestricted
University of Maine, Farmington	2,349	15,000	4	AR/AG	1	5	$3.3 million total over 2 years of campaign, $1.5 million from alumni
Gustavus Adolphus	2,577	30,000	4	4	20	10	$951,000 unrestricted
Mary Washington University	4,130	28,000	3	5.5	8	10	$2,057,774-unrestricted and restricted for current use $1,088,945-specifically to the Fund for Mary Washington
Ramapo College of New Jersey	5,278	17,000	4	AR/AG	12	6	$183,000
University of Minnesota, Morris	**1,684**	**16,688**	**2.75**	**AR/AG**	**3**	**3**	**$374,571**
College of St. Benedict/St. John's University	CSB-2,033 SJU-1,895	CSB-12,921 grads 4,091 non-grads addressable SJU-22,000	CSB-2 SJU-7(AR/AG combined)	CSB-2	CSB-16 SJU-10	12	CSB-$916,971-unrestricted, $1,320,603-restricted(incl. annual giving to scholarship funds) SJU-$2,163,000-unrestricted to the Annual Fund
St. Mary's College of Maryland	1,935	9,000	2	2	10	5.5	$40,000,000-Completed campaign total. Annual giving figures rolled into campaign totals.
St. Olaf College	3,046	30,000	5	6	21	8	$3.5 million-unrestricted
Truman State University	5,616	47,936	2	2	8	4	$750,000
Virginia Military Institute	1,300	17,000	4	8	20	6	$2.1 million annual giving dollars raised

NOTES: [1]Alumni base is defined as living, addressable alumni.
[2]Head counts include professional and support staff. Head counts may include individuals with responsibilities in multiple departments.

Appendix J

Summary of "Morris 14" Comparison Group

Below are listed the institutions that the University of Minnesota, Morris considers to be our peers.

- Ramapo College of New Jersey
- Macalester College, Minnesota
- Careleton College, Minnesota
- St. Mary's College of Maryland
- Hamline University, Minnesota
- University of North Carolina at Ashville
- St. Olaf College, Minnesota
- University of Mary Washington, Virginia
- Concordia College (Moorhead), Minnesota
- St. John's University, Minnesota
- Gustavas Adolphus College, Minnesota
- University of Maine at Farmington
- College of Saint Benedict, Minnesota
- Evergreen State College, Washington

Appendix K

Comprehensive Listing of Existing Partnerships

Below are listed a sampling of relationships between the University of Minnesota, Morris and academic, research, and outreach partners.

Academic Partners

- Beijing Union University, Beijing, China
- Capital Normal University, Beijing, China
- GenEdWeb Collaboration for Post Secondary Education Opportunities
- Shanghai University, Shanghai, China
- University of Minnesota China Center
- University of Minnesota, Duluth

Research Partners

- Agricultural Utilization Research Institute
- West Central Research and Outreach Center
- University of Minnesota College of Agriculture, Food, and Environmental Sciences
- USDA North Central Soil Conservation Research Laboratory

Outreach Partners

- Center for Small Towns
- City of Morris
- Community Outreach Partnership Center Program
- Henjum Institute for Creative Study
- Minnesota Public Radio
- Minnesota State Arts Board
- Morris Area School District
- Morris Chamber of Commerce
- Pioneer Public Television
- Pride of the Prairie Local Foods Initiative
- Rodney A. Briggs Library
- Stevens County Medical Center
- TREC (Tutoring, Reading, Enabling Children) Program
- UMM Big Friend/Little Friend Program
- University of Minnesota Regional Sustainable Development Partnership

Strategic Positioning At UMM

Presentation for Information

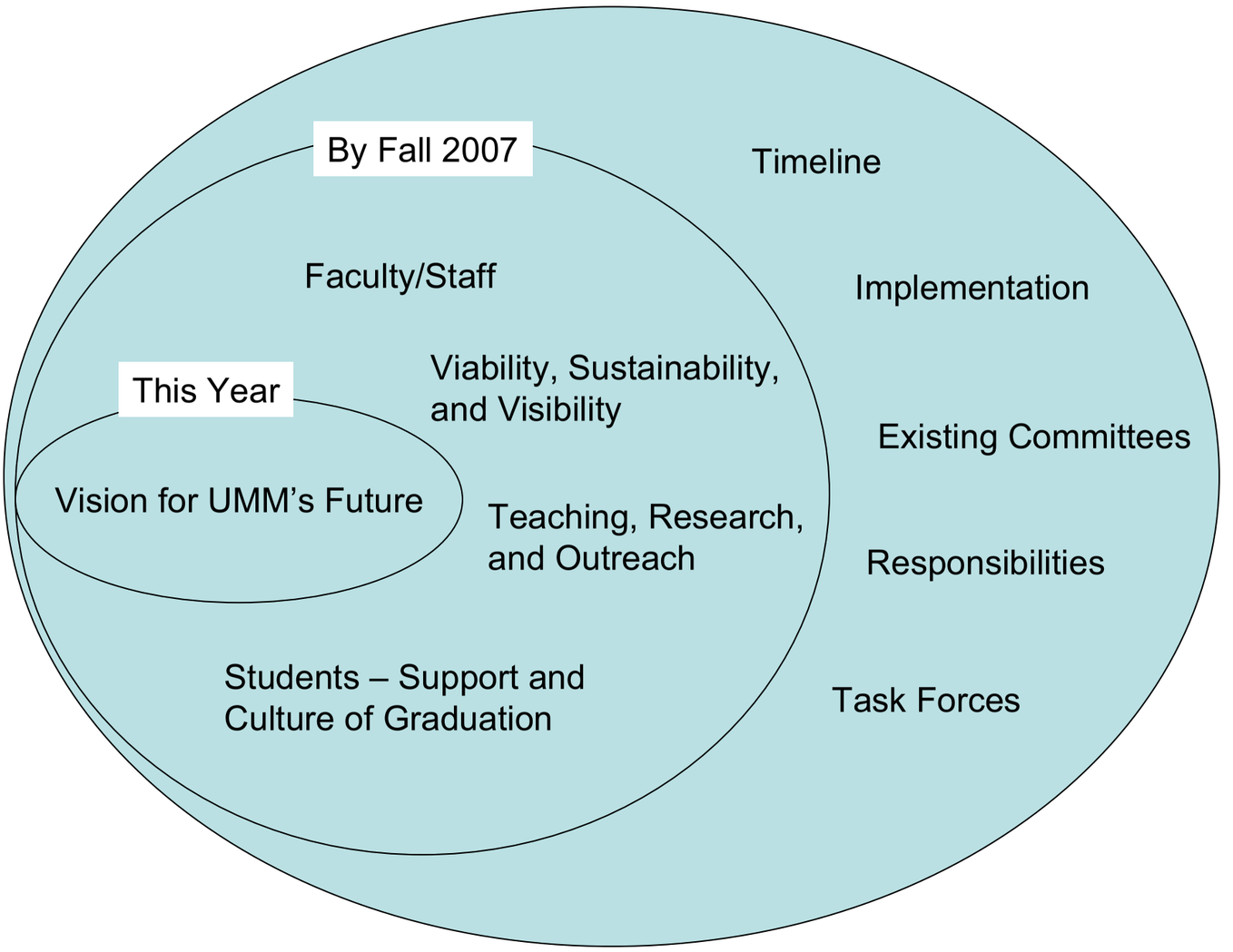
at

October 4, 2006

Campus Assembly

Background

- U of M Initial Strategic Planning – August 2004
- UMM Strategic Planning began Summer 2005
- Kickoff event, focus groups, consultant, open forums, online surveys, consultation with external audiences – Fall 2005
- Initial Report submitted March 31, 2006
- Feedback from Central Administration - August 2006
- Response to feedback - September 15, 2006
- Consultation with all assembly committees, MCSA, divisions.
- Upcoming open forum - October 9, 2006
- Revised Report due November 1, 2006
- Implementation Phase - ongoing



Vision for UMM's Future

- The University of Minnesota, Morris provides an undergraduate liberal arts education of uncompromising rigor for a diverse student body. As a public honors college, UMM is committed to outstanding teaching and learning, faculty scholarship and undergraduate research, genuine outreach and engagement. Our small, residential academic setting fosters authentic relationships, and the University serves as an educational and cultural resource for the region, nation, and world. A personalized educational experience prepares graduates to be global citizens who are interculturally competent, civically engaged, and effective stewards of their environments.

Strategic Goal

- To position the University of Minnesota, Morris as the best public liberal arts college in the nation, in the top tier of national liberal arts colleges, and as a public honors college.

Defined Deliverables

- Exceptional student experience
- Goal for 4 Year graduation rate is 60% (currently 44%), 5 Year graduation rate is 75% (currently 56%)
- A student body of 2100 students
- A balanced budget

To achieve these goals and deliverables the strategic positioning process suggests undertaking the following initiatives

Teaching and Outreach Initiatives

Initiatives	Administrative & Implementation Responsibility	Timeline	Consultation Process	Metrics and Measurement
Integrate Green Initiatives – Interdisciplinary Activity	Dean, AVC Physical Plant, Divisions, Curriculum, Sustainability Coordinator	Begin Planning Spring 2007	Curriculum, CRPC, WCROC,	Increased recognition from external rating organizations, Integration into curriculum
Integration of liberal learning outcomes - Writing, speaking and critical thinking	Dean, Divisions, Curriculum	Begin Planning Spring 2007	Curriculum, Disciplines, Scholastic, FYS	Improved NSSE results and graduate exit survey results
Improve participation in and documentation of civic engagement, public service, and leadership	Dean, VCSA, Curriculum	Develop plan Fall 2007	Curriculum, Disciplines, Student Affairs, FYS	Increased participation, Improved NSSE results and graduate exit survey results
Integration of current global perspectives across curriculum	Chancellor, Dean, Curriculum	Part started (Bush Grant), Develop plan for Fall 2007	Curriculum, CRPC, Scholastic, IPC, DSAAG	Integration into curriculum, improved NSSE results and graduate exit survey results

Faculty and Staff Initiatives

Initiatives	Administrative & Implementation Responsibility	Timeline	Consultation Process	Metrics and Measurements
Increase support, recognition and visibility of Faculty Scholarship	Chancellor, Dean, Division Chairs, Grants Development	Continual implementation	Faculty Center, Faculty Affairs & Consultative Committee	Number of external grants received, number of national presentations supported
Develop professional development and mentoring opportunities	Chancellor, Dean, Human Resources, Division Chairs, Directors	Ongoing	Division Chairs, Administrative Committee	Retention of faculty and staff, attendance at conferences, hosting relevant campus workshops and meetings
Provide comparable salaries for faculty and staff	Chancellor, Dean, Division Chairs, Directors, Human Resources	Beginning Fall 2006	CRPC, Faculty Affairs, Consultative, USA	Increase standing on salary listing in Minnesota
Develop and implement a campus-wide technology plan	Chancellor, Dean, AVC for Physical Plant, Computing Services, Media Services, Library	Beginning Spring 2007	Appropriate directors, MCSA, CRPC	Secure ongoing funds to improve and maintain our technology advantage

Student Initiatives

Initiatives	Administrative & Implementation Responsibility	Timeline	Consultation Process	Metrics and Measurement
Develop cohesive year-long “First Year Experience”	VCSA, Dean, AVC Student Life, Student Activities, Residential Life	Begin Discussions Fall 2006 (Reestablishment of the FYE Subcommittee)	Scholastic, Curriculum, FYS, Residential Life, Student Services	Increased retention, improved experience, improved graduation rate
Integrated Multi-cultural Campus Life and Interculturally competent graduates	Chancellor, VCSA, Dean,	Fall 2007	Faculty Development, Multi-Ethnic Experience, Student Services, IPC, etc.	Increase recruitment and retention of traditionally underserved students, improve student satisfaction survey results for this group
Create academic enrichment office	Dean, Discussion Committee on Academic Enrichment	Task Force formed Fall 2006	CRPC, Scholastic, Curriculum, Consultative, Honors Program, CIP, etc.	Increased awareness (internally and externally) and success in research, study abroad, etc.
Strengthen “life planning” student support	VCSA, Dean, Advising, Career Center, Counseling	Discussions begin immediately	Student Services, Scholastic, Retention Work Group, External Relations and Alumni Office	Increased satisfaction in life planning area of the graduate exit survey, Increased % of students using alumni career networks

Viability and Sustainability Initiatives

Initiatives	Administrative & Implementation Responsibility	Timeline	Consultation Process	Metrics and Measurement
Increase Morris Scholars Program (additional merit scholarship funds and for enrichment opportunities)	Chancellor, Enrollment, AVC External Relations, Fund Development	Beginning Fall 2006	CRPC, Retention Work Group, SAP	Increase percentage of high ability students enrolled and graduated, endowed funds to support these scholarships
Increase non-traditional revenue – private donors, facility use, grants, wind energy funds, etc.	AVC External Relations, Fund Development, CERP, VCSA, AVC Physical Plant	Ongoing	CRPC, CERP, Student Affairs, Administrative Committee, Student Services, Consultative	Increased percentage of total budget supported from these sources
Develop additional green energy initiatives and integrate into master plan	Chancellor, AVC Physical Plant	Ongoing	CRPC	Increased energy self-sufficiency, increased research opportunities
Secure full funding for Native American Tuition Waiver	Chancellor, Institutional Research	Fall 2007	CRPC, Enrollment Area, American Indian Advisory Committee, MSP	Ongoing secured funds to cover tuition to improve graduation rates of Native American students

Visibility Initiatives

Initiatives	Administrative & Implementation Responsibility	Timeline	Consultation Process	Metrics and Measurements
Brand development - market research, e.g. honors college, honors experience	Chancellor, Dean, Division Chairs, Enrollment, AVC External Relations, Communications	Immediately begin research and plan	CRPC, Curriculum, External Relations, IMG, CCG	External recognition and understanding of brand
Recruit and retain national and International students	Enrollment Area, CIP, Dean, Student Affairs	Immediately	CRPC, Scholastic, Retention Work Group, IPC,	Increased numbers of students and graduates from these markets, track cohorts
Implement campus-wide integrated marketing plan	AVC External Relations, Enrollment Area, Athletics, Communications	Immediately following market research	CRPC, IMG, CCG, Athletics, Student Affairs	External recognition and understanding of UMM experience
Update Campus Master Plan to align with strategic initiatives	AVC Physical Plant, VCSA, Dean, AVC External Relations, Communications	Fall 2007	CRPC, Divisions, ASSC	Better understanding of use and renovation of physical facilities, increased pride in campus facilities

Capital Plan

Initiatives	Administrative & Implementation Responsibility	Timeline	Consultation Process	Metrics and Measurements
Gateway to Campus: Community Services Building	AVC Physical Plant, Chancellor	2008 Capital Request	CRPC	Inclusion in U of M Capital Request, lobby efforts, secure funds
Residential Facility and Conference Center: Blakely, Food Service	AVC Physical Plant, VCSA, Residential Life, Chancellor, Finance Officer	2008 Capital Request	CRPC, Blakely Hall Planning Committee	Inclusion in U of M Capital Request, lobby efforts, secure funds
HEAPR Funds to make all buildings accessible	AVC Physical Plant, Chancellor	2008 Capital Request and beyond	CRPC	Secure funds, accessible and modern space across campus
Briggs Library Renovation	AVC Physical Plant, Library Director, Chancellor	2010 Capital Request	CRPC, Library planning committee	Inclusion in U of M Capital Request, lobby efforts, fundraising goals achieved, secure funds
HFA Phase III	AVC Physical Plant, Humanities Division, Chancellor	2012 Capital Request	CRPC, HFA Phase III planning committee	Inclusion in U of M Capital Request, lobby efforts, fundraising goals achieved, secure funds

Feedback

Attend the campus forum hosted
by the
Executive Committee,
October 9, 2006 at 4:30pm
in the
Science Auditorium

2007 CAMPUS ENERGY ANALYSIS

UNIVERSITY OF MINNESOTA MORRIS

CAMPUS ENERGY ANALYSIS

NOVEMBER 2, 2007

Prepared For:

UNIVERSITY OF MINNESOTA MORRIS

Prepared By:

McKinstry For The Life Of Your Building

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

McKinstry was commissioned by the University of Minnesota Morris to perform an analysis of their campus energy supply and demand. This analysis consisted of four components;

1. An analysis of the campus energy demand
2. An analysis of campus energy supply scenarios
3. Development of a plan for energy education and awareness on campus
4. A plan for actively managing energy on campus.

The analysis of campus energy demand consisted of an energy audit of each of the University's buildings. This audit resulted in the identification of nine (9) major energy conservation measures, which upon implementation, would result in an estimated $269,000 of annual utility savings, and an annual reduction in carbon emissions of 9,400 metric tons, with a payback of just over thirteen (13) years.

The analysis of campus energy supply scenarios focused on the current energy supply sources; natural gas, grid sourced electricity, and the existing wind turbine. It then incorporated possible future energy supply sources such as the biomass gassifier and boiler, additional wind turbines, thermal storage, a steam powered chiller for cooling, wind to hydrogen, and wind to ammonia sources. This analysis also addresses the current campus shortage of cooling capacity. Ultimately, this analysis was combined with the demand side conservation measures to provide a comprehensive solution set which will move the University towards their goal of carbon neutrality and energy independence, while simultaneously solving their cooling capacity issues.

This analysis of campus energy also incorporated a plan for energy education and awareness, and a plan for actively managing energy on campus. The education and awareness plan will provide a means to help educate energy users regarding the different types of energy being used on campus, and the impact that each of them have on the environment. Additionally, it will help support the University's mission of education and research by providing access to real time and historical data regarding the campus energy consumption and supply scenarios. The plan for actively managing energy on campus will provide a means for monitoring and controlling all the energy supply and storage components used by the campus. Actively managing these systems is necessary to ensure that they work collectively and to maximize system efficiencies.

This analysis of campus energy supply and demand provides four concrete benefits to the University of Minnesota Morris. First, it provides a cost effective, long term solution to the existing campus cooling shortage. Secondly, it provides a vehicle to move the University well down the path towards carbon neutrality and energy independence, ultimately reducing their carbon footprint by over 75%. Thirdly, it provides a plan for using these solutions to help educate students and staff, and fostering research by collecting and making available real time and historical data. Lastly, it provides a plan for the University to actively manage and control all the different supply and storage systems in an efficient and productive manner. Most importantly it provides all four of these benefits in a comprehensive package that will pay for itself from utility savings, allowing the University to move forward with all these solutions with their existing budgets in place, and without the need for additional funding or resources.

SECTION 1 – ENERGY AUDIT

A preliminary energy audit was performed on the University of Minnesota – Morris (UMM) Campus in conjunction with evaluating the various supply side scenarios which will ultimately help UMM achieve carbon neutrality on a path towards energy independence. Three major components make up this preliminary energy audit:

- Site Visits
- Energy Consumption Overview
- Identification / Analysis of Energy Conservation Measures (ECM's)

Site Visits

Multiple site visits occurred during the months of August 2007 and September 2007 to both identify ECM's and to start the inventory process of the various ECM components.

Energy Consumption Overview

Utility information was provided by both UMM Staff and through the electrical utility company's website. This information was consolidated and is presented below for calendar year 2006.

UMM 2006 Data 915,968 Gross Square Feet

Month	kWh	kW	Therms	Water/Sewer (gal)	Electrical	Gas	Water	Sewer	Total
JAN	731,958	1,590	129,517		$42,536	$157,391			$199,927
FEB	767,460	1,581	134,911	3,689,360	$45,710	$163,103	$9,125	$9,371	$227,310
MAR	790,749	1,598	119,391		$42,005	$98,399			$140,404
APR	799,329	1,910	66,843	3,780,691	$45,114	$48,827	$9,351	$9,603	$112,895
MAY	726,581	1,920	37,109		$42,076	$27,895			$69,971
JUN	726,635	1,756	22,951	3,776,278	$44,634	$14,903	$9,340	$9,592	$78,468
JUL	856,904	1,988	22,340		$53,451	$15,598			$69,049
AUG	879,506	2,244	31,380	2,427,484	$54,320	$24,413	$6,004	$6,166	$90,903
SEP	847,149	2,318	48,644		$47,448	$37,214			$84,662
OCT	753,701	2,005	89,139	2,781,812	$45,578	$46,055	$6,880	$7,066	$105,579
NOV	717,452	1,625	108,823		$47,717	$94,837			$142,554
DEC	719,323	1,623	125,594	6,578,436	$44,829	$119,292	$16,270	$16,710	$197,101
	9,316,747	22,157	936,642	23,034,062	$555,419	$847,927	$56,969	$58,509	$1,518,824

136,972 Btu/GSF

$ 1.66 /GSF

Once this data was consolidated, further analysis allowed us to compare UMM's Btu/Gross Square Foot (GSF) with that of other campuses on a regional basis. Based on the database average of 132,200 Btu/GSF, UMM is about average at 136,900 Btu/GSF when compared to other campuses. Therefore, based both on the site visit and the utility analysis, additional energy savings can be achieved by implementing specific Energy Conservation Measures (ECM's).

Energy Conservation Measures

Based on the site visits and feedback obtained from the UMM Staff, the following list of preliminary ECM's was identified in each corresponding building:

Energy Conservation Measures		Interior Lighting	Exterior Lighting	Vending Machines	Plumbing Systems	VFD/Cntls	Pool Vent'l	Pool Solar Htg	Sump Pump Mod	Steam Turbine	Clg Sys Mod
Bldg No.	Building Name										
NA	Campus Wide		X								
721	Behmler Hall			X							
724	Blakely Hall	X		X							
752	Briggs Library (Library)	X			X	X					
716	Camden Hall	X		X	X						
717	Community Services			X							
732	Education				X						
756	Food Service	X			X	X					
749	Gay Hall	X		X							
745	Humanities	X		X	X	X					
745A	Humanities (Annex)	X									
758	Humanities Fine Arts (HFA)	X		X	X	X					
725	Imholte Hall (was Soc. Sci.)			X							
755	Independence Hall	X		X							
TBD	Maintenance	X									
702	Multi-Ethnic Resource Center			X	X						
753	Physical Education Center	X		X	X	X					
734	Pine Hall	X		X							
763	Regional Fitness Center (RFC)	X		X							
708	Saddle Club Barn										
750	Science and Math										
750A	Science and Math Annex										
751	New Science			X							
715	Spooner Hall			X							
747	Student Center/Imholte Aud			X		X					
754	Heating Plant	X							X	X	X
760	Shops	X									
759	Swimming Pool						X	X			
757	Apartments (A-M)	X									

The following list of Energy Conservation Measures (ECM's) that described in more detail:

- Interior Lighting
- Exterior Lighting
- Vending Machines
- Plumbing Systems
- VFD/Controls
- Pool Ventilation
- Pool Solar Heating
- Sump Pump Modifications
- Steam Turbine
- Cooling System Modifications

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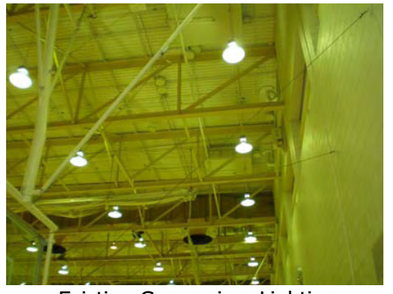
Interior Lighting

An interior lighting audit was performed on the campus to ascertain which areas might benefit from a lighting upgrade. Many of the older buildings are still utilizing T12 lamps and magnetic ballasts. In the case of the main gymnasium all sixty-four (64) 400 watt metal halide fixtures were operating while the space was unoccupied.



Existing Gymnasium Lighting

Existing Lighting in Humanities

It is recommended that all remaining T12 lamps and magnetic fluorescent lighting be upgraded to electronic ballasts and T8 lamp technology consistent with the newer buildings on the campus. High Intensity Discharge (HID) metal halide lighting should be replaced with fluorescent high bay fixtures capable of being turned on/off without any 'warm-up' time. Any remaining incandescent fixtures will be replaced with either a new fluorescent or a compact fluorescent fixture. All campus exit fixtures will be evaluated to ensure that they are using LED technology.

Exterior Lighting

Although some exterior lighting within the UMM Campus is owned and operated by the utility company, many of the exterior light fixtures along campus sidewalks and in the parking lots is owned and operated by the campus. An opportunity exists to upgrade this lighting to a more efficient technology.

Lighting along Sidewalk

Parking Lot "Cobra Head" Fixture

Two particular technologies that are under investigation include induction lighting and LED lighting. Each of these technologies has their advantages and disadvantages, however both will provide considerable energy reduction.

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Technology	Advantages	Disadvantages
Induction	Energy Savings, Lower First Cost Compared to LED, Anticipated Long Life Expectancy, Electrodeless Technology, Good Lighting Quality	Long Life Expectancy is Suspect in Cold Climates, Ballast and Starter Still Required Compared to LED
LED	Considerable Energy Savings, Very Long Life Expectancy, No Starter or Ballast Required, Excellent Lighting Quality	Higher First Costs

Induction Lighting

LED "Cobra Head" Fixture

As a component to a more detailed analysis in the Detailed Engineering Study (DES) phase, a few of these fixtures will be installed and evaluated. The individual characteristics and performance will ultimately help UMM determine a future direction associated with exterior lighting.

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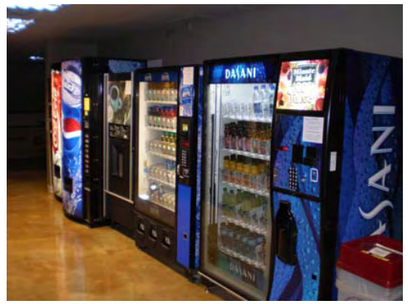
Vending Machines

It was noted during the site visit that approximately forty (40) cold drink vending machines were in operation throughout the campus. An energy savings opportunity exists through the implementation of Vending Miser devices. Vending Misers power equipment up when someone approaches the machine, and power it down to a lower setpoint when the area is unoccupied. The Vending Miser measures ambient temperature and compressor current, re-powering the vending machine as needed to ensure that cold product temperature is maintained. The Vending Miser has been tested by The Coca-Cola Company and The Pepsi-Cola Company, and each has concluded that the Vending Miser has no impact on product quality or on the vending machine.



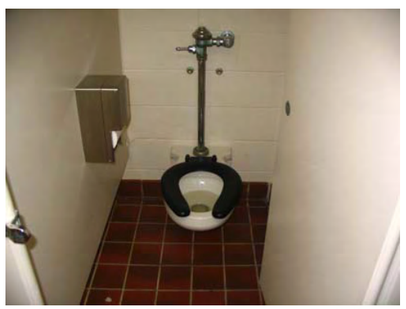
Student Center Vending Machines

Blakely Hall Vending Machines

It is recommended that the Vending Miser product be installed. We are aware that UMM is in the process of obtaining a new vending machine vendor. This particular measure will be dependent upon the capabilities of the vending machines utilized by this new vendor.

Plumbing

Most of the older buildings have plumbing fixtures that are original to the building. As a component to the Detailed Energy Study (DES), a comprehensive plumbing survey will be performed to determine which areas might benefit from a plumbing fixture upgrade.



Toilet Fixture in Food Services Building

Bank of Urinals in HFA

Upgrading toilet and urinal flushometers, and in some cases the associated porcelain fixture itself to improve toilet performance, results in water savings. Upgrading to low-flow shower fixtures and public use sinks result in both water and water heating savings.

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VFD/Controls

The UMM campus has in place an existing Invensys Energy Management System (EMS) with the majority of the major campus HVAC equipment controlled and monitored via a graphic head-end display located in the Boiler Plant. Additionally, the conscientious UMM Maintenance Staff continuously update day/night HVAC schedules as activities on campus necessitate. During the site visit it was observed that many large vacant rooms throughout the campus were continuously ventilated and either cooled or heated as though they were fully occupied. This provides an opportunity to utilize both CO_2 controls, or what is called Demand Control Ventilation (DCV) and variable frequency drives (VFD's) to optimize the heating/cooling and ventilation for both occupied and unoccupied periods.

Vacant Edson Auditorium – Student Center

Vacant Gymnasium – Physical Ed. Center

It is recommended that the necessary temperature control modifications be made primarily in buildings which have fairly large wide-open spaces with varying occupancy patterns.

Pool Ventilation

The competition swimming pool and diving pool areas (natatorium) is ventilated by a heating only air handling unit (AHU) located in the natatorium mezzanine. Regardless of swimming pool/diving pool occupancy, humidity levels in the natatorium are controlled via the infusion of outside air into the AHU that is then heated and then ultimately exhausted.

Competition Swimming Pool

Natatorium Vent'l System – OA Dampers

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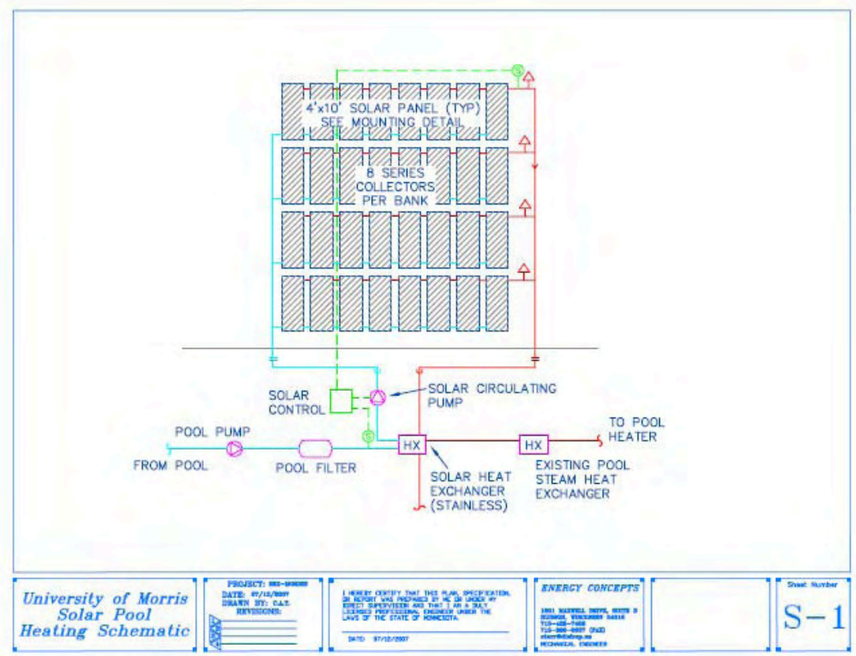
A more efficient method for controlling pool humidity is by the use of a de-humidification system. A de-humidification system will extract humidity from the natatorium and can reject this heat back into the swimming pool water as a pre-heater. This also reduces the amount of outside air that is required and hence heated. It is recommended that a de-humidification system be further evaluated during the Detailed Energy Study (DES) phase.

Pool Solar Heating

Both of the competition pool and the recreation pool are currently heated via heat exchangers with steam from the campus central boiler plant. An alternative system for preheating pool water is through the use of a thermal solar system. Given the roof area and the piping configurations, both of these pools are conducive to having thermal solar systems installed. A previous study has been developed that evaluates the feasibility of utilizing thermal solar. It indicates that eighty (80) collectors (3,200 SF) would be required for the competition pool and that sixty-four (64) collectors (2,560 SF) would be required for the recreation pool. The following is an excerpt illustrating a basic schematic of the solar array interfaced with a pool heat exchanger.



As a component to the Detailed Energy Study (DES), this particular measure will be further evaluated including any further structure requirements to handle the wind load of solar panels on the roof.

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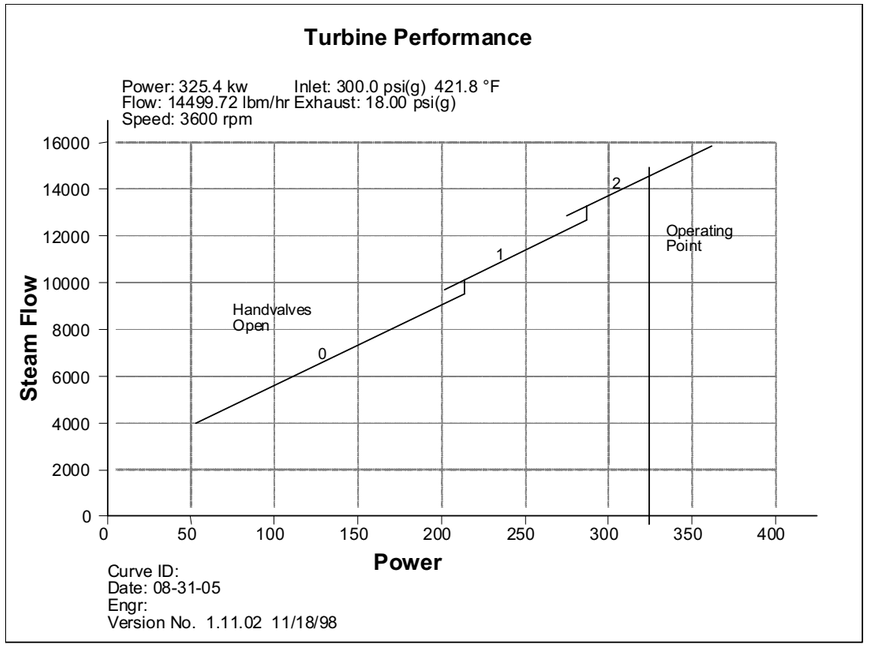
Sump Pump Modifications

Currently the sump pumps located in the basement of the chiller room at the Heating Plant run twenty-four (24) hours a day throughout the year to pump out water which enters the storm water system. Based on a preliminary analysis, it is recommended that this water be pre-treated and used as make-up water in the plant instead of simply pumping it into the storm water system.

Steam Turbine

The new biomass boiler is designed to operate at roughly 300 psi saturated steam. Because all steam loads on the UMM Campus are 18 psi or less, an opportunity exists to install a new back pressure steam turbine to produce additional electrical power. A new steam turbine would operate with an inlet of roughly 300 psi and exhaust at 18 psi to satisfy UMM Campus steam loads.

The following is a graph illustrating the performance of a new steam turbine under these conditions:



Steam turbines cannot operate intermittently and therefore, need to have sufficient enough load to operate at peak efficiency.

Cooling System Modifications

As a general guideline, UMM Staff had indicated that the chilled water plant typically operates from April through October each year. Additionally, as more buildings on the UMM campus have been converted from direct expansion (DX) cooling systems over to the central plant chilled water system, it has become apparent that there is no additional chilled water capacity available.

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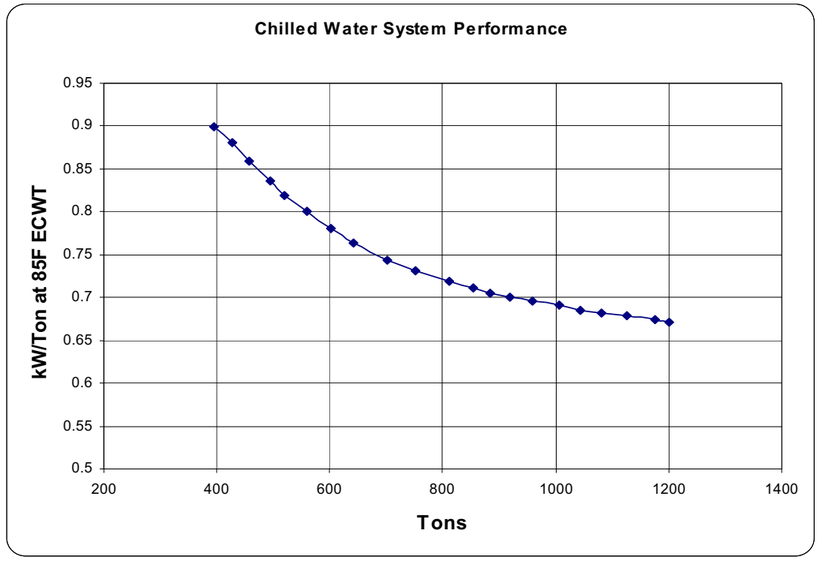
The compilation of this collected data/information was used to quantify an hourly cooling load profile with an associated chilled water system performance curve to help determine the cooling impact on the overall electrical consumption on campus. The following is the performance curve that was used in the analysis:



Due to the lack of cooling capacity available on the UMM Campus, two alternative systems were evaluated to determine the impact on the overall campus electrical, steam and cooling loads, these two systems were:

- Chilled Water Storage System Utilizing a Phase Change Material (Novanergy Unit)
- Steam Absorption Chiller

A separate in depth analysis was performed on the Novanergy Unit to determine performance and impact on the chilled water system. This analysis concluded that although some additional cooling capacity could be obtained throughout the cooling season, that due to the existing electrical rate structure, the benefits of this type of system could not be completely realized. The primary benefit of a thermal storage unit on the UMM campus would be to utilize excess electricity produced by wind turbines at night, and store that energy for use during the day. This benefit will be studied in more detail during our directed engineering study (DES).

With the need for an additional steam load in the summer to operate both the biomass boiler and a new steam turbine, and the need for additional chilled water capacity, a new absorption steam driven chiller appears to be the more favorable alternative.

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Conclusion

The following is a matrix defining both a budgetary investment and estimated savings associated with each recommended ECM. The next step towards implementation of these measures is a Detailed Engineering Study (DES) that will include complete inventories of lighting and plumbing equipment, additional engineering on system components and installation of some 'test' fixtures on the exterior lighting, resulting in a defined scope of work with price quotes and annual savings figures.

Energy Conservation Measures		Lighting *		Plumbing		Vending		VFD/Cntls		Pool Vent'l		Pool Solar Htg		Sump Pump Mod		Steam Turbine **		Clg Sys Mod **	
Bldg No.	Building Name	Investment	Savings	Investment	Savings	Investment	Savings	Investment	Savings	Investment	Savings	Investment	Savings	Investment	Savings	Investment	Savings	Investment	Savings
721	Behmler Hall	$ -	$ -	$ -	$ -	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
724	Blakely Hall	$ 11,600	$ 700	$ -	$ -	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
752	Briggs Library (Library)	$ 47,000	$ 3,000	$ 3,500	$ 800	$ -	$ -	$ 30,300	$ 1,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
716	Camden Hall	$ 12,900	$ 1,100	$ 3,400	$ 200	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
717	Community Services	$ -	$ -	$ -	$ -	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
737	Education	$ -	$ -	$ 1,700	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
756	Food Service	$ 22,000	$ 2,600	$ 6,400	$ 500	$ -	$ -	$ 40,000	$ 2,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
749	Gay Hall	$ 17,500	$ 1,300	$ -	$ -	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
745	Humanities	$ 11,900	$ 800	$ 1,600	$ 200	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
745A	Humanities (Annex)	$ 2,600	$ 200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
750	Humanities Fine Arts (HFA)	$ 56,400	$ 9,000	$ 11,600	$ 1,000	$ 600	$ 200	$ 67,600	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
725	Imholte Hall (was Soc. Sci.)	$ -	$ -	$ -	$ -	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
755	Independence Hall	$ 15,800	$ 1,100	$ -	$ -	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NA	Maintenance	$ 2,900	$ 3,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
702	Multi Ethnic Resource Center	$ -	$ -	$ 800	$ 200	$ 200	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
753	Physical Education Center	$ 67,700	$ 10,400	$ 14,100	$ 600	$ 400	$ 100	$ 88,600	$ 5,900	$ -	$ -	$ 153,600	$ 6,000	$ -	$ -	$ -	$ -	$ -	$ -
734	Pine Hall	$ 1,900	$ 100	$ -	$ -	$ 200	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
763	Regional Fitness Center (RFC)	$ 11,800	$ 1,600	$ -	$ -	$ 1,000	$ 300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
708	Saddle Club Barn	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
750	Science and Math	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
750A	Science and Math Annex	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
751	New Science	$ -	$ -	$ -	$ -	$ 800	$ 200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
715	Spooner Hall	$ -	$ -	$ -	$ -	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
747	Student Center/Imholte Aud	$ -	$ -	$ -	$ -	$ 800	$ 200	$ 42,800	$ 3,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
754	Heating Plant	$ 6,700	$ 1,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$100,000	$ 20,000	$1,000,000	$ 72,000	$ 1,200,000	$ 88,000
760	Shops	$ 5,300	$ 200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
759	Swimming Pool	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 252,000	$ 10,500	$ 192,000	$ 8,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
757	Apartments (A,M)	$ 2,600	$ 200	$ -	$ -	$ 400	$ 100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
		$298,100	$ 37,900	$ 43,100	$ 3,600	$ 8,000	$ 2,200	$ 267,300	$ 19,100	$ 252,000	$ 10,500	$ 345,600	$ 15,700	$100,000	$ 20,000	$1,000,000	$ 72,000	$ 1,200,000	$ 88,000

General Notes: All Investments are Budgetary and All Savings are Preliminary Estimates. Final Investment and Savings Figures will Developed and Presented during the Detailed Engineering Study (DES)
Analysis Assumes the Cost of Corn Stover is Offset by Natural Gas Reduction
Budget Investments have not Taken Into Consideration ANY Available Rebates/Incentives/Grants

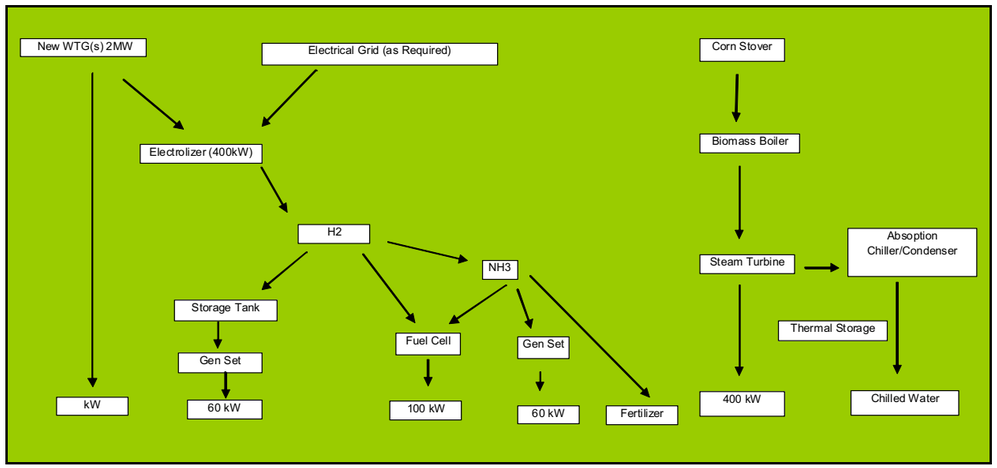
INVESTMENT: $ 3,514,100
SAVINGS: $ 269,000
PAYBACK: 13.06

* Note: Exterior lighting investment and savings have not been incorporated into the matrix, but will be future evaluated during the Detailed Engineering Study (DES)
** Note: Significant interactions occur between these two measures, therefore the savings for each individual ECM is an estimate.

SECTION 2 – UNIVERSITY ENERGY SUPPLY SCENARIOS

The University of Minnesota Morris is currently pursuing their goal of carbon neutrality on a path towards energy independence. Soon the University will have multiple methods of utility generation and possibly even multiple methods of energy storage. The proposed systems will be located on adjoining campuses of the University of Minnesota, Morris (UMM) and West Central Research and Outreach Center (WCROC) and will be capable of using wind, biomass, biodiesel, hydrogen, and ammonia to supply energy to the UMM campus, distribution, and transmission grid. Excess generation will be managed through production of hydrogen, ammonia, and thermal energy storage. Peak power will be provided with hydrogen, ammonia, biofuel, producer gas and steam power generation.

The following is a graphical representation of how many of these systems will interact with each other:



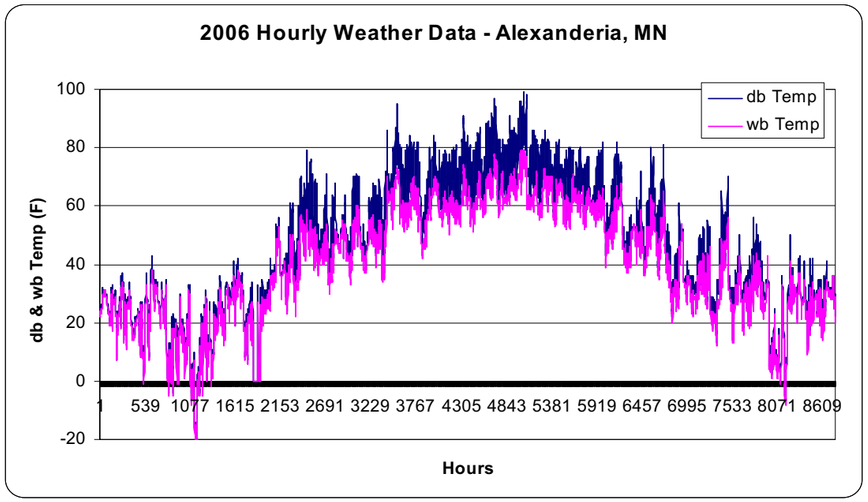
A Microsoft Excel workbook was developed to quantify the hourly interactions that occur when evaluating these various sustainable systems with the existing heating, cooling and electrical loads on the campus. This workbook; called the Sustainable Energy Management Profiler, consists of the following major components:

- Time And Weather Data
- Electrical Data
- Cooling System Data & Analysis
- Heating System Data & Analysis
- Steam Turbine – Analysis
- Sustainability Systems – Analysis
- Energy Conservation Measures (ECM's)
- Environmental

From the Sustainable Energy Management Profiler, a variety of conclusions were made which include recommendations for helping UMM achieve carbon neutrality on a path towards the goal of energy independence.

Time and Weather Data

Hourly weather data for calendar year 2006 - Alexandria, MN was obtained from the National Oceanic and Atmospheric Administration (NOAA - http://lwf.ncdc.noaa.gov/oa/ncdc.html). Hourly wind data was obtained directly from WCROC Staff from the existing 1.65 MW Wind Turbine Generator (WTG) at 70 m Hub Height. The following graph illustrates the hourly 2006 drybulb and wetbulb temperatures (deg-F).



Electrical Data

Fifteen minute interval kW data from calendar year 2006 for the UMM Campus was obtained directly from the Ottertail Power Company (OTPCO) website using a program called Power Profiler (http://www.otpco.com/YourElectricAccount/MainYourElectricAccount.asp). This annual data incorporated the following:

- Electrical power provided by OTPCO and used by UMM Campus
- Electrical power provided by the existing 1.65 MW WTG and used by UMM Campus
- Excess electrical power produced by the existing 1.65 MW WTG and sold back to OTPCO.

Cooling System Data & Analysis

Where possible, chiller operational load data was obtained from the existing energy management system (EMS) and was reconciled against corresponding weather data. Additionally previous chilled water system reports were provided by the UMM Staff and pump and motor information was collected while on-site.

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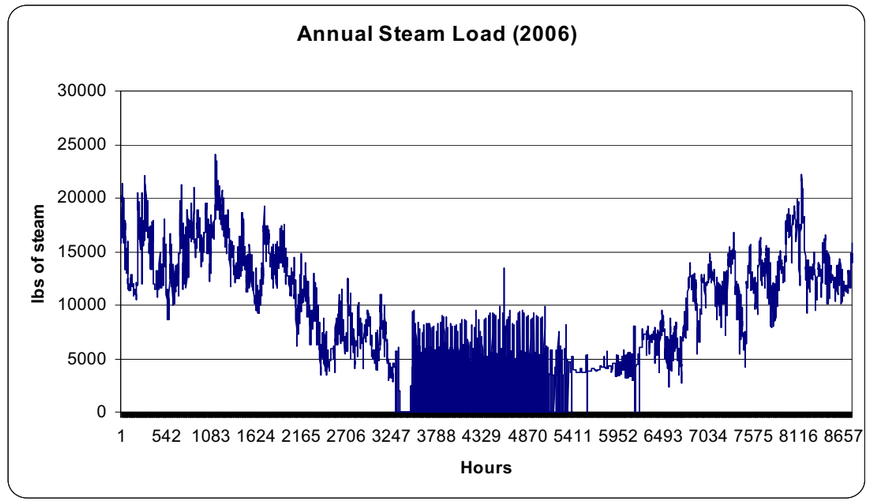
The impact of modifications on the cooling system on both overall campus electrical loads and steam loads were also taken into consideration. This analysis was also performed on an hourly basis. See ***Section 1 - Energy Audit*** for more information on modifications to the cooling system.

Heating System Data & Analysis

Daily and monthly 2006 natural gas invoices along with the 2006 daily boiler records containing hourly steam load in graphical format were provided by the UMM Campus Staff. The hourly steam loads were reconciled against the daily natural gas consumption utilizing the 'goal seek' function in Microsoft Excel. The following is a graphical representation of the annual steam load on the UMM Campus.



Evident in this graph is the low steam load in the summer time, which in most cases, according to the UMM Staff drops to zero (0) lbs/hr during the evening hours. The dilemma is that in conjunction with the installation of the new biomass boiler, WCROC / UMM would like the ability to operate the biomass boiler during the summer time for research and demonstration. This dilemma can be reconciled with the installation of a new absorption chiller which will provide both a steam load in the summer and much needed chilled water capacity on the UMM Campus.

For purposes of analysis within the Sustainable Energy Management Profiler, it was assumed that the biomass boiler will be the primary boiler operating continuously throughout the year (24/7/52) with the supplemental heat source provided by the existing natural gas boilers when required. The following graph illustrates that under these conditions, 97% of the annual steam load requirements can be supplied by the new 15,000 pph biomass boiler. This would leave only 3% of the "remaining" annual load being provided by the existing natural gas boilers.

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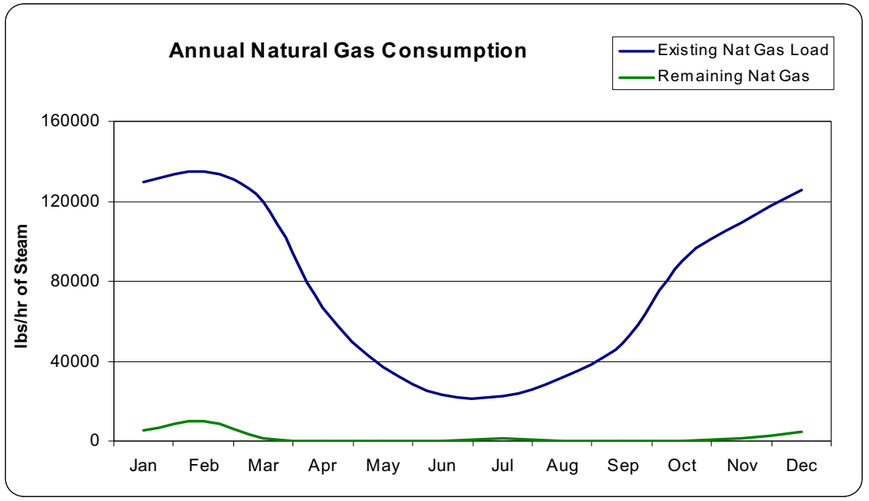

Steam Turbine - Analysis

The interaction that a new steam turbine would have on the overall campus electrical loads was also taken into consideration. This analysis was also performed on an hour basis. See ***Section 1 - Energy Audit*** for more information on this specific system.

For purposes of analysis within the Sustainable Energy Management Profiler, a new steam turbine was modeled with a "floor" (default 200 lbs/hr) to prevent the steam turbine operating intermittently during the summer.

Sustainability Systems - Analysis

The Sustainable Energy Management Profiler can accommodate the analysis and interaction of multiple sustainable systems. At present, the analysis has incorporated the following systems:

- Existing 1.65 MW WTG
- One (1) New 2.0 MW WTG
- One (1) Additional New 2.0 MW WTG
- One (1) New 400 kW Electrolyzer for Producing H_2
- One (1) New 160 kW Genset

The performance curve associated with a new 2.0 MW WTG that was used in the analysis is illustrated below:

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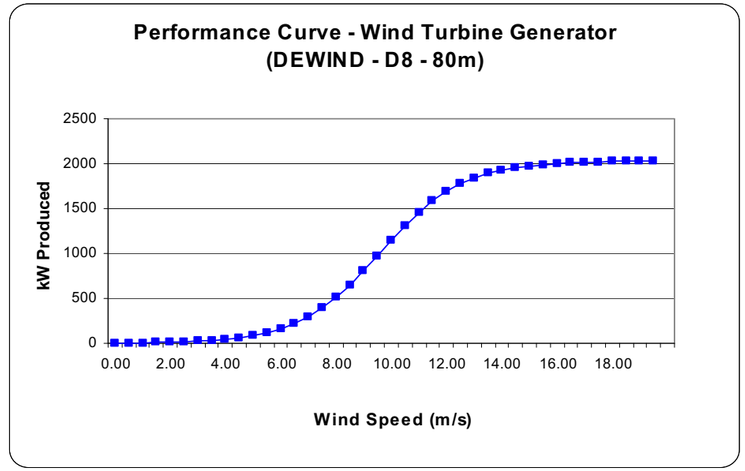

The interaction that the WTG(s) have on the overall UMM Campus electrical load is easily quantifiable by utilizing wind data provided by the WCROC Staff to determine the electrical power produced by the WTG(s) and the electrical power consumed by the UMM Campus. Quantifying this same type of interaction with a new electrolyzer and new genset(s) is a function of both storage capacity and functional use. For purposes of the analysis, and based on some preliminary feedback from WCROC, the following was assumed:

- The electrolyzer would operate continuously for six (6) weeks at time, 50% of the calendar year.
- When the electrolyzer is operating, a new 2.0 MW WTG will simultaneously operate to provide electrical power to the new 400 kW electrolyzer.
- Any excess electrical power generated by the 2.0 MW WTG that is NOT used by the electrolyzer will be utilized by the UMM Campus.
- Any additional hourly electric power requirements of the electrolyzer that are NOT provided by a new 2.0 MW WTG will be supplied by the utility company with the invoice going directly to WCROC (which was not included in this analysis).
- Any operation of a new 160 kW genset is assumed to correspond simultaneously with the operation of the new 400 kW electrolyzer.

Energy Conservation Measures (ECM's)

The interaction that Energy Conservation Measures (ECM's) have on the overall campus electrical and steam loads was also taken into consideration. This analysis was also performed on an hourly basis. See ***Section 1 - Energy Audit*** for more information on the specific ECM's.

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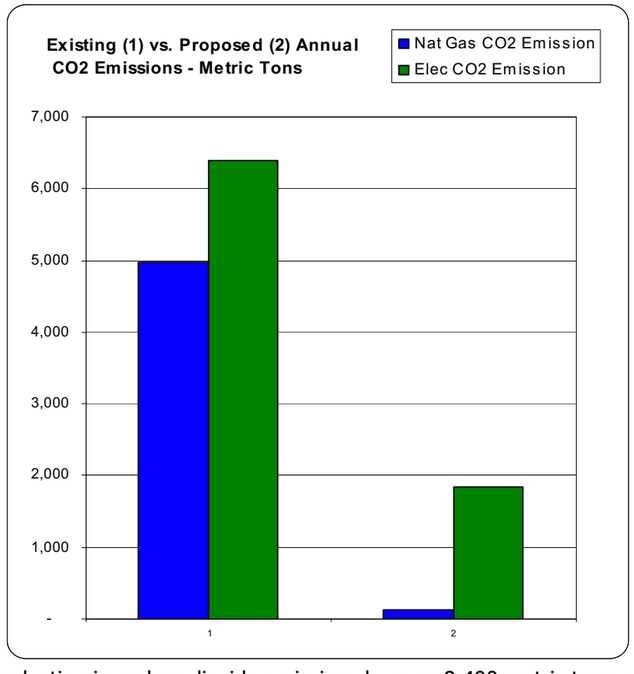
Environmental

Working towards the goal of energy independence, a simulation was performed which took into consideration the full operation of the following systems:

- Biomass Boiler
- Absorption Chiller
- Back Pressure Steam Turbine Generator
- Existing 1.65 MW WTG
- One (1) Future 2.0 MW WTG
- Implementation of Energy Conservation Measures (ECM's)

This yields a very favorable environmental impact in the form of reduced atmospheric discharge, specifically carbon dioxide (CO_2). The following is a graphical representation that illustrates the amount of Existing (1) CO2 emissions compared to Proposed (2) CO2 emissions with these systems fully operational:



This accounts for reduction in carbon dioxide emissions by over 9,400 metric tons per year.

Based on information from the U.S. Climate Technology Cooperation Gateway (http://www.usctcgateway.net/tool), this reduction in carbon dioxide emissions is equivalent to any one of the following:

- 2,035 Passenger cars not driven for one year.
- 21,860 Barrels of oil
- 48 Railcars of coal burned

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CONCLUSION

Based on the interactions of the multiple energy sources that will be available, some readily identifiable conclusions resulted from the interactive analysis. The following identifies these conclusions:

- Converting the remaining UMM Campus electrical transformers over to the 7200 volt service will result in an approximate 14% electrical power increase (from the existing 1.65 MW WTG output) directly to the UMM Campus.
- Installation of additional WTG's only incrementally contribute to the overall UMM campus electrical load. Increasing the power generation from additional WTG's results in greater contribution of selling power back to the utility company.

WTG (MW)	WTG % Electrical Contribution to UMM's Total Annual Electrical Consumption	Existing Annual Revenue Selling Back to Utility*	Future Annual Revenue Selling Back to Utility*	Action Taken
Existing 1.65	33%	$66,821	$66,821	Existing Conditions Based on 2006 Data
Existing 1.65	47%	$66,821	$28,602	Convert All X-formers to 7200 V Service to Take Full Advantage of Existing 1.65 MW WTG
Future 2.0	61%	$28,602	$153,686	Installation of One (1) New 2.0 MW WTG
Future 2.0	67%	$153,686	$299,606	Installation of One (1) Additional New 2.0 MW WTG

* Note: Assumes Summer PPA of $0.023/kW & Winter PPA 0f $0.0299

- Operation of a new steam turbine generator requires a sustained load to condense the steam. During the summer time a new absorption chiller will significantly contribute to this load while simultaneously providing much needed campus chilled water capacity. However, there will be periods of time particularly during the shoulder months (i.e. April, May, September, October) when there are both insufficiently cooling and heating loads to continuously operate a new back pressure steam turbine.
- Based on correspondence with WCROC, it is understood that a new 2.0 MW WTG will provide the primary power for a new 400 kW electrolyzer. Since the surplus of the 2.0 MW WTG will provide power directly to the UMM Campus, it is recommended that, if at possible, minimize the use of the electrolyzer during the months of July, August and September when peak kW demand loads on the campus are at the highest. This will also need to be re-evaluated based on implementation of other sustainable energy systems.
- Operation of the solid fuel biomass boiler is the one single component that provides the most significant contribution towards energy independence. It is recommended that this boiler be used whenever possible and minimize downtime for de-ashing and maintenance.
- Once more information related to the operation of energy supply components (i.e. gensets, fuel cells, and electrolyzer) becomes available, additional analysis leveraging the Sustainable

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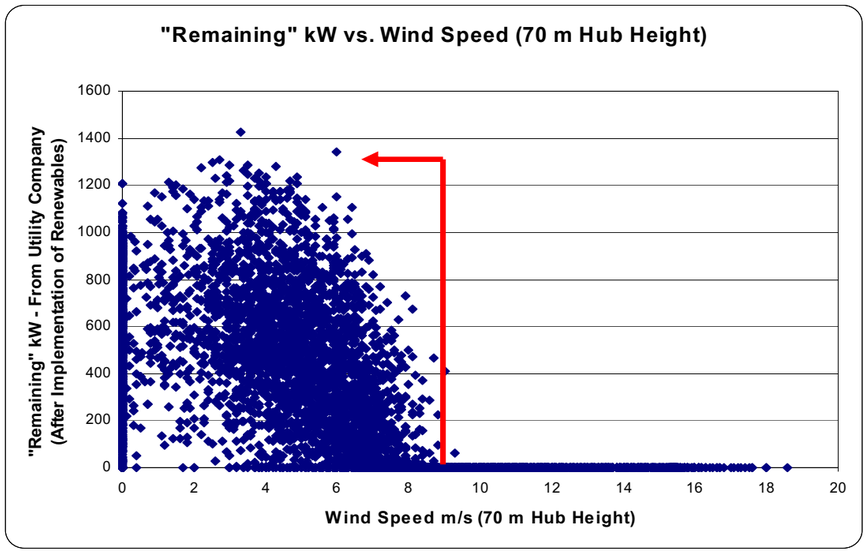
Energy Management Profiler will help determine the interactions and impact associated with the campus energy plan.

- Working towards the goal of energy independence, a simulation was performed which took into consideration the full operation of the following systems:
    - Biomass Boiler
    - Absorption Chiller
    - Back Pressure Steam Turbine Generator
    - Existing 1.65 MW WTG
    - One (1) Future 2.0 MW WTG
    - Implementation of Energy Conservation Measures (ECM's)

In the simulation, these components provide 80% of the electrical power either directly or indirectly to the UMM Campus with the "remaining" 20% of the electrical power still provided by the utility company. The best correlation of this "remaining" electricity is taken against the annual hourly wind data. The following graph illustrates this correlation:



As evident by this graph, purchasing power from the utility company ("Remaining" kW) will still be required below wind speeds of approximately 9 m/s at a 70 meter hub height unless some sort of storage capacity can be utilized. Therefore, utilizing H_2 storage produced by a "WTG/electrolyzer system" for future use by a genset when the wind density is below 9 m/s, will significantly help reduce peak demand (kW) and help the UMM Campus towards it's goal of energy independence.

SECTION 3 - ENERGY AWARENESS AND EDUCATION PLAN

In recognition of the University of Minnesota, Morris' (UMM) primary function of education, and their leadership position in renewable energy sources and sustainability, we have developed an energy awareness and education plan. This plan outlines a system which could be put into place on the University campus, and which would be accessible via touchscreen monitors, and through the internet. This system would be made available to all students and campus occupants. The purpose of this system would be to help foster behavioral modifications, enhance the learning environment in regards to sustainability and renewable energy sources, and to help attract and retain students and staff.

In order to help foster behavioral modifications, we have outlined the system to provide real time, quantitative data. Our belief is that educated decision makers will make better choices, and voluntarily curtail at least some of their energy impacts. The information provided to the students and staff will show:

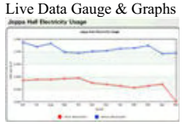
1. The current energy mix being utilized on campus, clearly identifying each energy supply and storage source on a real time basis.
2. The environmental impact of each energy source and compare them against the impact of the local utility mix. In this way the public will see the real time impact of their energy use and the impact of the different energy sources. The impact time of day energy use has on emissions will also be highlighted since most members of the public are unaware of the differences in environmental impact that time of day energy use has.
3. That in order to meet peak demand loads, the utility has to use different energy sources with different emission profiles (coal baseline plants versus gas peaking plants) than they use to meet baseline loads.
4. That the impact of conserving energy during peak demand times has a significantly higher impact financially and environmentally than saving energy during non-peak times.

This system is also intended to enhance the learning environment in regards to sustainability and renewable energy sources. In the intermediate and advanced levels of this system, we have included the ability for staff and students to query this system for both real time and historical data. This includes the ability to export, graph, and manipulate data, along with the ability to modify the system and publish results. It is our intention that in the intermediate and advanced levels, that this system could be used as a teaching tool in classes, and as a data source for research and thesis work for advanced degrees.

In this competitive climate for student and staff attraction, sustainability is an area of interest for more and more of the general public. Because of this increased interest in sustainability and renewable resources, it only makes sense to highlight investments and achievements in these areas. This system has been designed to communicate to both current and potential campus occupants, the important steps that UMM has been taken.

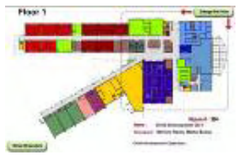
The following pages outline three different levels of an Energy Awareness and Education System.

	Components	Samples

1st level Basic
 	
$35,000 Budget
 	
$3,000 Annual Maintenance
	• Basic template Design
	• Green Energy Features Map
	• Basic dorm competition – static competition
	  ○ Comparison of building performance between buildings
	  ○ Comparison by % improvement per sq ft and total usage
	• Basic system animation
	• Basic current weather
	• Basic energy supply information pages that describe, gauge, and graph energy supply sources:
	  ○ Wind turbine
	  ○ Biomass Boiler
	  ○ Ottertail Power Electric grid
	  ○ Steam turbine generating electricity
	  ○ Natural gas boiler system
	  ○ Thermal storage
	• Integration to 5 existing kiosks
	  ○ 2 in Science Building
	  ○ 1 in Food Service Building
	  ○ 1 in Humanities Fine Arts (HFA)
	  ○ 1 in Student Center
	• One new touchscreen station (to be located)
	
		
		Basic
		 
		 
		Live Data Gauge & Graphs
		 

	Components	Samples

2nd level Intermediate
 	
$120,000 Budget
 	
$3,000 Annual Maintenance
 	
$1,500 Monthly Subscription
	All of the above and…
	• Customized web interface design matching existing UMM marketing /source materials
	• Robust dorm competition – dynamic competitions
	  1. *Comparison of building performance between buildings*
	  2. *Comparison by % improvement per sq ft and total usage*
	  3. Ability for multiple tiered competition ie: floor to floor competition within a dorm as well as ability to engage in competitions with other dorm buildings
	  4. Administrative logon and password provided to set up and establish different types of competitions at will
	  5. Ability to run multiple competitions simultaneously
	• Basic donor recognition
	• Campus map
	• Ability for students to interact with live building data, publish results and design components (monthly subscription fee)
	• One additional workstation in lobby of each dorm (Qty 6)– assuming 32” in each dorm
	 
		
		Custom Interface
		 
		Site Map
		 
		Data Portal

	Components	Samples
3rd level Advanced **$200,000 Budget** **$3,000 Annual Maintenance** **$2,500 Monthly Subscription**	All of the above and… • Foreign language • Weather forecasting – robust and complete • Robust and searchable building and campus directories with site map integration and room scheduling • Robust Donor Recognition – including 'donate now' feature and Donated Items Map • Points of interest map • Additional system animations and BAS integration points 1. 2nd wind turbine 2. 3rd wind turbine 3. hydrogen fuel cell, 4. hydrogen gen set, 5. ammonia fuel cell, 6. ammonia gen set 7. Hydrogen storage 8. Ammonia storage 9. Dynamic display of each sub-metered building showing consumption of electricity, steam, and chilled water 	 Campus Map  Points of interest  Campus Directory

SECTION 4 – ACTIVE ENERGY MANAGEMENT PLAN

As the University of Minnesota Morris (UMM) continues down the path towards energy independence, it is important to maximize the operating conditions of the different energy supply sources. The operation of the existing wind turbine has highlighted some challenges with becoming energy independent. As wind and weather conditions change, the campus demand for energy, and the generation of energy both change. Some of these changes are currently outside of the control of the operations staff, but there will be energy supply and demand systems which will be within the control of the University in short order. These systems which are within the control of the University must be controlled in a real time fashion in order to optimize the campus energy efficiencies, and to achieve the goal of energy independence.

This plan focuses on achieving active energy management on campus. With the existing and future planned wind turbines, the campus can be electrically self sufficient and even export electricity on windy days. On days where the wind is not blowing however, the campus will be largely dependent upon the electrical grid for their electrical consumption needs. There is a plan in place to supplement the wind turbines with other energy supply and storage systems which will have the ability to complement the wind turbines and help move the campus towards energy independence. The key is to minimize the amount of electricity which gets sold back to the local utility, and to utilize other energy supply and storage solutions on days when the wind is not available, to minimize the amount of electricity consumed from the local utility.

To effectively accomplish this management of both energy supply and storage solutions will require both technology and human interfaces. The most effective technology to manage these resources is an automated controls system. This automation system would be a PLC based controls system which interfaces with, and manages each of the energy supply and storage solutions. Ideally it would take a predictive look at weather conditions, and using historical data, predict campus energy load and ultimately manage the multiple energy sources and storage devices with their independent efficiency profiles to meet the campus energy needs.

In addition to a PLC based control system, it is important to recognize that human interface will be necessary for successful operation of the campus energy systems. This human interface would optimally include on-site supervision and monitoring by the existing campus facilities staff, and would be supplemented by remote expertise. It is important to leverage the efficiencies inherent with existing on-site staff in order to keep operating costs as low as possible. There will be times however, when situations arise which will be outside of the capabilities of the existing staff, either because of a lack of skills in a specific area, or a lack of available time. It is because of those situations that there must be expertise that the University can draw on when needed. This expertise would ideally incorporate the operation of these assets on a scheduled basis and be available on an as needed basis for emergency situations. It is important to have a regularly scheduled involvement in order to proactively identify and handle emerging issues, as well as identify and handle training needs within the campus operations staff. Without this regularly scheduled involvement small problems will have a tendency to go unnoticed and unchecked until they become large issues.

The design and implementation of an active energy management system will be heavily dependent upon the quantities and types of energy supply and storage systems and components. We have developed two different levels of active energy management for this plan.

Active Energy Management – Basic Level

The first level is based on the following energy supply and storage systems being in place:

- Biomass boiler
- Two wind turbines
- Steam turbine
- Thermal storage unit or absorption chiller

The basic level consists of incorporating the campus DDC system into the above listed energy components for monitoring and trending. The control of the biomass boiler, wind turbines, and steam turbine will be local operators. The thermal storage unit, or absorption chiller will have automated controls and will work in conjunction with the other existing chilled water system components. In addition to the automated controls and existing campus operations staff, we will be supplementing them with remote expertise. This remote expertise will have regular scheduled interface with the systems and operational staff on a weekly basis. This remote access will accomplish the following activities:

- Perform system check up to identify any potential issues
- Establish responsibilities and action plan for any potential issues found
- Gather and back up trend data
- Analyze trend data to establish operating efficiencies
- Identify any efficiency improvements and develop action plan for them
- Report back to campus point of contact with activities performed and outcomes

Every quarter a report will be generated and delivered to UMM. This report will highlight the operating efficiencies which have been achieved, and any potential efficiency improvements which have been identified. This quarterly report will serve a report card function in regards to the operation of the energy supply and storage mediums. It will highlight achievements, as well as outline plans and methods for improving operations.

The budget for this level of active energy management has a one time implementation budget of $20,000 and a budget of $ 36,000 annually for the remote expertise.

Active Energy Management – Advanced Level

The second level is a more advanced energy management solution, and is based upon the following energy supply and storage components being in place:

- Biomass boiler
- Three wind turbines
- Steam turbine
- Thermal storage unit or absorption chiller
- Hydrogen electrolyzer
- Hydrogen storage tank
- Ammonia storage tank
- Hydrogen / ammonia fuel cell
- Hydrogen generator set
- Ammonia generator set
- Bio-fuel generator set

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During the implementation of this advanced level of active energy management, the first step will be to gather the historical energy consumption data for the campus and overlay it onto the historical weather data in order to determine the impact of weather on energy consumption. Once this database has been created and loaded into a server, the server will start to access public sites on the internet to gather weather forecasts. Once the weather forecast has been determined for the campus, the server will then compare the forecasted weather to the historical usage database in order to predict the energy consumption of the campus for each given time period. This solution will use fuzzy logic in order to look at the predicted load and compare it to all of the available storage and supply sources in order to optimize the supply side energy efficiency of the campus. For example, the predictive nature of this solution will allow, in periods of mild weather and low energy demand, for the charging of various storage solutions to the necessary level instead of wasting energy trying to fully charge them and then not utilizing the full charge of energy.

This fuzzy logic also compares the efficiency curves of each energy supply source, along with their predicted output based upon predicted wind speed and direction, to then plot out an energy supply scenario which maximizes the efficiency of the entire system by mixing and matching the individual supply and storage sources. The first supply side output in this solution will be the wind turbines. Based upon the forecasted wind speed and direction, the predicted wind turbine output will be calculated throughout the day. This will then provide the campus a predicted gross energy demand curve throughout the day, along with the portions of this demand curve which will be supplied by the wind turbine. After this net demand curve is known, the solution will then use fuzzy logic to compare each of the other supply side storage components and their availability, along with each of the available supply side electrical generation sources. Each of these generation sources will have an efficiency curve which will be taken into account in order to provide to the campus a daily plan showing what the optimal mix of storage and generation will be in order to meet their predicted demand. The campus energy systems will be provided with this daily plan, and can then execute it, or override it if needed in order to meet some of the other research needs of these various energy sources.

In addition to the automated controls, we will be supplementing the existing campus operations staff with on-site expertise. This on-site expertise will be having regular scheduled interface with the systems on a weekly basis. This on-site expertise will be at the UMM campus no less than two days per week, and will accomplish the following activities:

- Assist in the development and modification of standard and emergency operating procedures
- Assist in the operation of the energy supply and storage devices
- Perform system check up to identify any potential issues
- Establish responsibilities and action plan for any potential issues found
- Gather and back up trend data
- Analyze trend data to establish operating efficiencies
- Identify any efficiency improvements and develop action plan for them
- Provide monthly report with activities performed and outcomes

Every quarter a summary report will be generated and delivered to UMM. This report will highlight the operating efficiencies which have been achieved, and any potential efficiency improvements identified. This quarterly report will serve a report card function in regards to the operation of the energy supply and storage mediums. It will highlight achievements, as well as outline plans and methods for improving operations.

The budget for this level of active energy management has a one time implementation budget of $400,000 and a budget of $ 104,000 annually for the remote expertise.

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POST GATEWAY SPACE PLANNING TASK FORCE REPORT

Post Gateway Space Planning Task Force
Report
Fall 2008

Committee members: Brenda Boever, LeAnn Dean (Chair), Tom Mahoney, Michelle Page, Andrew Sharpe, David Swenson.

Executive Summary

The Post Gateway Space Planning Task Force (PGSP) is pleased to submit its report on future space planning to VC for Finance and Facilities, Lowell Rasmussen and CRPC members. The task force's recommendations are framed in both short-term and long-term perspectives. Both are organized by campus building and are intended to elicit broader campus discussions.

PGSP members created a list of all campus units and offices and developed a survey to obtain information about current and future physical space, infrastructure, and office co-location needs. Student input was provided by holding listening sessions at two MCSA meetings. The information collected allowed the task force to frame its recommendations in general terms, while utilizing certain assumptions about the campus.

PGSP utilized concept mapping software to visualize physical groupings as indicated by offices via the survey. Along with this tool, PGSP undertook a comprehensive review of academic space planning literature, campus plans of other institutions of higher education, and the Minnesota Facilities Model. This report does not provide specific recommendations about square footage requirements, technology infrastructure, or structural realities. Analysis and further review of these details must be handled by appropriate professional personnel.

Consideration for office co-location should be based upon what type of service provided to students and the UMM community at large. Collaborative office clusters offer students the opportunity to access "like" services more efficiently and staff will be able to make quick, easy referrals for students. This One-Stop concept is in use on all other U of M campuses, and PGSP suggests that it could be extended beyond the traditional "business service" functions, potentially to One-Stop locations whose focus would include research and learning services, academic development, and counseling services.

Finally, PGSP recommends that campus governance include the formation of a permanent sub-committee to address these space planning issues in an ongoing effort.

Background

The Post Gateway Space Planning Task Force was charged by the Campus Resources and Planning Committee and Vice-Chancellor for Finance and Facilities, Lowell Rasmussen to study existing office and administrative space utilization on campus and make suggestions as to changes in location and configurations that would inform both short term and long term planning. The approval of the Community Services building renovation and the series of office relocations set in motion by the opportunities afforded by the new Gateway Center prompted the request for such an effort.

Efficient space planning has implications for student recruitment and retention through enhanced service and convenience, faculty and staff recruitment and retention, sustainability and energy conservation, staff and faculty productivity, outreach initiatives, revenue generation for summer facility use by outside entities and partnerships with other educational and research organizations. The task force intends that this report be seen as an internal building space document that could serve as a supplement to the Campus Master Plan. The recommendations are also intended to be consistent with the UMM Strategic Positioning document (http://www.morris.umn.edu/strategic/Nov12006-Final.pdf). The Capital Investments section of the Strategic Plan is directly relevant for this report.

Methodology

The Task Force began its work by creating a list of all campus units and offices. In order to collect information on individual departmental needs a survey was developed and distributed to all units on campus (see Appendix A). Lists of the offices destined to move to the Gateway Center as well as those moving to Blakely were obtained. The Gateway Center list not only informed the task force of the units already planned for that space, but also the areas vacated that opened up possibilities for other occupants. Concept mapping was used to help the task force understand relationships between offices and identify those units where co-location or close proximity made sense. (See Appendix D) Student input was provided by an initial open-ended listening session at a MCSA meeting in late April and another session in September. (see Appendix B and Appendix C).

The task force members undertook a literature review of academic space planning, examined plans of other higher education institutions and consulted the Minnesota Facilities Model. However, our difficulty in determining complete information for such aspects as square footage requirements of specific offices, technology needs and other structural realities leads us to frame our report in more general terms with specifics handled by the UMM facilities staff whose knowledge and responsibilities make them the appropriate agents for implementation of these decisions.

Assumptions

The Task Force acknowledges there are many factors that must be considered in space planning and allocation. Due to time and information constraints, many of those factors were not included in the committee's discussion. For example, there are many staffing considerations which were unknown to the task force. The PGTF does not presume to have as complete an understanding of individual unit needs as the department itself. Costs of building remodelling and office relocations will be prime considerations but specific financial information was beyond the time and research abilities of this task force. Therefore, this report should not be considered more than a vehicle for a wider discussion.

- These proposals do not deal with classroom, performance, studio or large group venues.

- The proposals outlined in this report should be considered as extensions of the UMM Strategic Plan
- The number of campus departments or number of employees will not increase significantly.
- Proposals made in this report are based upon overall program function rather than considerations of individuals in those programs.
- UMM services relocation efforts should be based on concepts of affirmative functional clustering.
- All space planning discussions must include ADA considerations.
- The Briggs Library renovation project proceeds within two to three years.
- Blakely hall continues to be used as swing space until the library renovation is complete.
- The Division of Education will relocate to Blakely when that building is no longer needed for swing space for other construction projects on campus.
- It is important to ensure that conference rooms are either contained in or located in close proximity to departments. Committees and groups need to have rooms available for meetings and activities and there needs to be an efficient mechanism for scheduling of space.
- A decrease in the space allotted to the campus Bookstore should be considered.
- The impact of delivery related traffic on the core mall area (Cougar Circle) must be considered when relocating services

Results and Recommendations

The following is a list of unit location recommendations developed by examination of the survey responses, other input from UMM community members and discussion by members of the Task Force. Two lists are created—one from a short term perspective from the completion of the Gateway project to 2012 (when Blakely is no longer as swing space) and the second from a long term planning perspective. These scenarios are intended as a place to begin extended campus discussions. The suggestions are organized by campus building. The buildings are listed in alphabetical order.

Short Term (2008-2012)

Behmler

3rd Floor

Chancellor's Office
Vice-Chancellor for Academic Affairs and Dean Office
Vice-Chancellor for Finance and Facilities Office
Vice-Chancellor for Student Affairs Office
Human Resources
Payroll Office

2nd Floor

Business Office
Director of Finance
Financial Aid
Institutional Research
Veterans Service Office

1st Floor

Academic Assistance
Advising
Career Center
Disability Services
Registrar
Student Counseling & Testing
Wellness Center

Basement

Campus Security
Computing Services

The One-Stop concept for campus service to students has long been discussed at UMM. The Behmler Hall location would be convenient for students to utilize these services as they move from the primary residence hall area of campus to classroom locations.

Recommendations for the Behmler Hall One-Stop concept are based on input from students and the co-location requests of a number of offices via the campus survey. Students currently view Behmler as an administration building and are comfortable handling business-related functions there. To further improve the efficiency and user-friendliness of these services, it seems reasonable to maintain the current services within Behmler, but to rearrange physical locations. For example, responses from the campus survey indicated that the Financial Aid Office, Business Office (Cashier/Accounts Receivable portion), and Veterans Service Office had close proximity needs. By combining these services into one floor, students would be able to take care of related functions in a more efficient manner. The Financial Aid Office has requested to be as near as possible to Admissions (Gateway), which does not rule out their Behmler location.

Another office cluster that emerged from the surveys included Advising, Registrar, Career Center, Academic Assistance and Disability Services. All of these offices interact directly with students and interact frequently with each other. Co-location of these offices on one floor of Behmler may also be advantageous. The Task Force also recommends further discussion on the benefit of co-locating Disability Services and Student Counseling because both offices provide confidential services to students. These services also both need designated quiet testing space that could perhaps be shared with programming needs from other offices.

It should be noted that while the Academic Assistance program is suggested for a proposed move to Behmler, this program currently operates in several locations and we expect that it will continue to function in that way. The administrative functions and individual conferences with students will occur in their home office with group tutoring sessions, study tables and study skills courses offered in other campus locations. In this proposal, we envision many of these activities will be offered in the Learning Commons area of the library. A future consideration for another service point in this location is a Student Support Services/TRIO area that would ideally be in close proximity to Academic Assistance and Advising.

When creating this One-Stop facility, consideration must be given to providing adequate meeting space, reception areas for each service cluster, technology enhanced areas for seminars or workshops, and private office space for staff.

The Business Office is currently in a state of significant change and responsibilities due to changes resulting from EFS implementation. Some discussion emanating both from UMM unit and student comments differentiated two main Business Office responsibilities: student centered / accounts receivable and financial centered / accounts payable. The question remains if a physical separation of the two functions is advisable or if cross-training and staffing realities would make such a separation inadvisable.

Additional consideration for office co-location should be based upon what type of service it provides students and UMM community at large. For example, offices that promote student academic development services should be clustered (Advising, Career Center, Academic Assistance Center); offices that provide business services such as the Veteran's Affairs, Financial Aid and the Business office would benefit from being located near one another. These clusters offer students the opportunity to access "like" services and these offices will be able to make quick, easy referrals for students.

The current location of the UMM computing and telecommunications hub in the basement of Behmler is problematic for many reasons. Water problems or activated sprinklers on floors above could be disastrous for all network and telecommunications activity on campus. However, a consideration that counters moving Computing Services out of Behmler is the fact that it is a service point for new students and new employees as they set up e-mail accounts and receive an orientation to other technology based services. The space for a more secure and redundant framework is a general consideration of this task force but such discussions are properly the province of other campus units and administrators. There is currently a task force charged with making recommendations for current technology leadership at UMM and their findings will inform space allocation and location for the Computing Services department.

Neither students at the listening sessions nor the campus survey respondents had issues with the current location of VC and Chancellor offices on the 3rd floor of Behmler.

Blakely Hall

Faculty Center for Teaching and Learning
Service Learning
TREC (Teaching Reading Empowering Children)
Swing space for library service points and administration during renovation

Briggs Library

Renovation of Briggs library is scheduled for inclusion on the 2010 capital bonding request. Co-location and coordination between the library and the Student Center should be integral part of this renovation project. The goal of this coordination of effort and space is to enhance the sense of community by creating a central, convenient, welcoming location for study, research, collaboration and social interaction. Through a creative redesign engineered to blend the two buildings there is hope to create new convenient entrances, open common lounge space and 24-hour computer and study space. Central to this concept will be greater access to information and services with a projected coffee bar and the potential relocation of the UMM Bookstore.

The concept of a Learning Commons as a core service point and physical space within a renovated library is under serious consideration. Also a type of "One Stop" research and learning service, this model would include the following portions of other service units: Library reference and research assistance, Writing Room, Academic Assistance (Learning to Learn, tutoring assistance, study tables, study groups), Computing Services Help Desk (equipment, software and assistance for students, faculty and staff) and Media Services Help Desk (equipment, software and assistance). The Learning Commons would also include rooms and areas appropriate both for individual and group activities. First and foremost, this model creates learning spaces consistent with current and future recommended educational and pedagogical precepts. Secondly, it results in effective student support and efficient use of space and personnel resources.

The renovated library could also be the location of a back-up computing services server room. For business continuity concerns, having a second data center on campus has been recommended. The library could be the location of this second data center equipped with its own UPS system, backup power and air conditioning system.

Camden

Social Science division office
Humanities division office (either a permanent location or temporary during a Humanities building renovation)
Faculty offices

Food Service

Dining Hall
Sodexo administration
Conference and meeting space

Gateway Center

Admissions
Alumni Relations
Center for Small Towns
Continuing Education and Regional Programs
Associate Vice-Chancellor for External Relations
Fund Development
University Relations
Associate Vice-Chancellor for Enrollment

Gay Hall

Health Center
Center for Violence Prevention
Wellness Center
ORL

Heating Plant

Pick-up and drop-off activities of Fleet Services

HFA
Media Services
Grants Development (space vacated by Alumni Relations)

Humanities
Hasselmo Center – LTC
Humanities division office (possible relocation to Camden during renovation)

LaFave House
Special Events administration

Multi-Ethnic Resource Center
Multi-Ethnic Student Program
Center for Gender & Sexuality

P.E. Center
Athletics department
Wellness and Sports Science faculty and staff

Some Wellness and Sports Science faculty and staff currently occupy offices in one of the newly relocated portable buildings (Fish Houses). Ideally, there should be office and meeting spaces within the P.E. Center for all personnel.

Science East
Plant Services
Environmental Health and Safety
Office of Sustainability
Duplicating Services
Post Office
UMMRA

If the bookstore space becomes available, there would be advantages to having the physical plant and planning personnel relocated to that area. For example, the need for plant services staff to have a place to park vehicles on a short term basis while checking on details of a project would be facilitated by West Lot parking. Delivery of supplies would be facilitated with the adjacent loading dock.

Science West
Science and Mathematics division office

Student Center
ACE Office
Bookstore
U-Card Office and Passport photo service
Student Activities
Student Government
Student publications (U Register, Counterweight, other publications)
KUMM

The committee discussed the concept of an expanded Info Desk that would stock convenience store type items, including snacks like frozen pizza and other food items. The expanded hours would make it possible for students studying late in the Student Center/Library complex to purchase beverages or food as well as utilizing the other Info Desk services.

Future space needs for consideration:

Sustainability Research Center
Research labs and classroom/meeting rooms
Offices for collaborative project or visiting research personnel

Plant Services Facilities
Recycling Facility
Large warehouse type facility to house portions of the library collection during renovation with eventual use for fleet service or other plant services functions in the future.

Portal -- Welcome Center
Though an exact name for this agency is yet to be determined, there has been discussion of a need for physical space for regional informational purposes. This might be a receptionist or information triage center directing inquiries (and informed by an online repository of shared resources and activities) about the various collaborative research and service projects in which UMM is a partner (ARS, WCROC and others).

Teleconference Center
Also suggested for consideration is a Teleconferencing Center to facilitate effective participation in meetings and events held at other locations. This topic interfaces with technology planning and should be also considered by the Computing Services Advisory Task Force.

Horse Barn and Saddle Club Facility
The future utilization of the remaining barn on the campus and location for Saddle Club horses requires consideration in the planning process.

Finally, in addition to addressing physical locations of units, the PGSP recommends the formation of a standing sub-committee of CRPC (current UMM Constitution) or the Planning Committee (as envisioned by the proposed Constitution) that would serve as a continuing resource and discussion venue for ongoing campus facility planning.

LONG TERM SUGGESTIONS (2012 and beyond)

This section of the report addresses placement of campus offices and services after the Gateway and library renovation projects are completed and when Blakely is no longer needed as swing space.

Behmler Hall

3rd Floor

Chancellor's Office
Vice-Chancellor for Academic Affairs and Dean Office
Vice-Chancellor for Finance and Facilities Office
Vice-Chancellor for Student Affairs Office
Human Resources
Payroll Office

2nd Floor

Business Office
Director of Finance
Financial Aid
Institutional Research
Veterans Service Office

1st Floor

Academic Assistance administration
Advising
Career Center
Disability Services
Registrar
Student Counseling & Testing
Wellness Center

Basement

Campus Security
Computing Services

Blakely Hall

Education division office
Education faculty offices.
TREC
Faculty Center for Teaching and Learning
Service Learning

The Education space in Blakely is envisioned as providing laboratory classrooms large enough to teach 30+ students as well as two smaller classrooms. All would ideally be equipped with equipment to record and analyze sample lessons and to experiment with new instructional technologies. In addition, providing appropriate space for housing instructional materials (long term loans from the Briggs Library Teacher Education Collection) would be efficient and beneficial for convenience and ease of use by faculty and students. Since the Faculty Center has been instrumental in the past in working

with new instructional technologies, the geographical co-location of the FCLT and Education would be helpful. The combination of the FCLT, Service Learning and perhaps, Grants Development would, in essence, provide a type of Faculty One Stop consisting of resources that support the faculty's mission of teaching and research.

The Blakely space could be configured not only to meet the academic year needs of the offices listed above but to serve as an outreach space as well, particularly during summer. For example, area teachers could be hosted for continuing education and learning activities and could use the facilities, particularly the lab classrooms and curriculum library.

Briggs Library

Library service points, collections and administration
Learning Commons
Academic Assistance (Learning to Learn, study groups, tutoring)
Technology Assistance Help Desk and equipment (Media Services and Computing Services)
Writing Room
All night study areas in transition area between Student Center and library

Camden Hall

Social Science Division Office
Humanities Division Office
Conference room (suitable for receptions and division meetings)
Social Science and Humanities faculty offices

As an alternative to having a student One-Stop located permanently in Behmler, the PGTF discussed housing such a service cluster in a renovated Camden. This suggested placement is based upon its proximity to the Gateway Center and central location. Visitors entering the campus through the Gateway Center are often referred to departments included in the One-Stop cluster. Camden's convenient location next to the Gateway Center would allow visitors to quickly and easily access centralized services. Units relocating to this space include: Career Center, Student Counseling, Disability Services, ACE, Academic Assistance, Advising and Registrar.
Consideration should also be given to providing access to a cashier and financial aid information in this location because services provided by the One-Stop often carry financial implications.
As discussed earlier, this One-Stop cluster provides access to all essential services for students and the campus community at large. Referrals from one unit to another will be convenient for both students and staff with this arrangement. Space allocation within the building should consider needs for creating a true One-Stop center: central reception area identified service clusters, meeting space, technology enhanced areas for seminars or workshops, career and advising resource area, student lounge/comfortable seating area, and private staff offices. Additional space addressing the needs for confidential services offered by Student Counseling and Disability Services must also included.

Current Education Building / WCMSA Infirmary

Student organization offices
Campus publications space (Prairie Gate Press as well as student publications)

Food Services Building

Create areas for group or individual study available 24 hours.
Meeting and conference rooms

HFA

Grants Development
Media Services administration and production.

HFA III
Details of administrative units and office located in HFA will be folded into planning process as the project develops.

Humanities

The Humanities building is in need of physical and instructional technology upgrades. Both Camden and Blakely could be considered for swing space while Humanities is being renovated.

Multi-Ethnic Resource Center

Multi-Ethnic Student Program
Center for Gender & Sexuality

P.E. Center

Athletics administration
Wellness and Sports Science instruction areas and faculty/staff offices

Prairie Living and Learning Center

Science East

Duplicating Services
Environmental Health and Safety
Office of Sustainability
Plant Services
Post Office
UMMRA

Science West

Science and Mathematics division office

Student Center

Units described in short-term planning section, with expansion of InfoDesk to include coffee, snacks and miscellaneous convenience store retail items.
U-Card Office / Passport Photo service
All night study areas in transition area between Student Center and library
Bookstore

Appendix A
Post Gateway Space Planning Task Force
Survey of Units and Departments

The members of the task force appreciate your cooperation in completing the following survey that will inform discussion and planning of space utilization on the UMM campus.

Name of Office:

Name of person completing the survey:

Current location:

Staff information

Number of permanent staff:
Number of student workstations:

Primary clientele:

Secondary clientele (if applicable):

List other UMM units with whom you often interact and briefly explain the nature of this interaction.

For space planning discussions, list other units with whom close proximity would improve efficiency and service.

Other than standard office equipment, list unique physical space needs required by your unit. (For example, specialized technology or security equipment).

Additional comments: (Optional)

Thank you!
Members of the task force: Brenda Boever, LeAnn Dean (Chair), Ken Hodgson, Tom Mahoney, Michelle Page, Andy Sharpe, Dave Swenson.

Appendix B
MCSA Space Planning Listening Session
April 28, 2008

We should consider moving the University Register office out of the MSP basement
(or unlock room with secret access)
Reasons: poor office conditions, need for a better facility that permits/facilitates late hours.

Move some Media Services activities out of basement of HFA
Reasons: seems 'hidden away,' hard to access, though perhaps for structural reasons. Also, HFA ramp difficult to move technology through.

Move book store to the renovated Gateway building or Blakely
Reasons: need for central location for bookstore
a. some negative reactions to possibility of moving it;
b. positive reasons include difficulty directing parents to the current location

Move book store to current area of Louie's Lower Level?
No—it is too dark and dismal
No—bookstore should not take such a central location, can be more remote
Yes—it's hard to direct people to the book store from the Info Desk

Advising should be near the Registrar and Dean offices, all in Behmler
Reasons: course approval/independent study issues

Media Services should be near Computing Services

Question of still planning to use Blakely for swing space for the library

Where is ACE going to be located? Blue Stem room?
Reasons: move ACE to a central location; no clear response to possibility of ACE being located in the Bluestem room

It's good that Plant Services and Campus Police be co-located, but not necessarily in Camden, where they're locked on weekends

Campus Police should be located in Behmler, near Student Services and other units for communication during emergencies

Is it conceivable that we'll have too much space for our needs?

Move the Outdoor Center back to an area more visible
Reasons:
a. request to move to make more visible
b. opposed by sentiment that location in rfc makes logical sense

Rethink the 24 hour study lounge in Student Center
Reason: Too many computers? More space for studying that doesn't require campus computers

Keep tunnel open 24 hours and locate 24 hour study lounge near tunnel for warmer and safer exit of campus late at night

What is the logic of the Study Abroad office in Student Center?
Have Study Abroad office co-located with International Programs?
It would make sense to have ACE and Study Abroad offices close to each other

Move Career Center close to ACE?

Some like Louie's Lower Level the way it is
Louie's Lower Level is the worst space on campus

Should we consider moving the Wellness Center close to Student Counseling?
Additionally, a suggestion to co-locate health center, counseling, and violence prevention program

Appendix
MCSA Space Planning Listening Session
September 29, 2008

What offices and departments do you visit the most?
Few responses as to what offices they visited most frequently.

Financial aid
ORL – complaints about how difficult they are to find and it would be nice if they were in a different location than Gay;
Improve signage

What offices or services should near each other? Where is physical proximity advantageous?

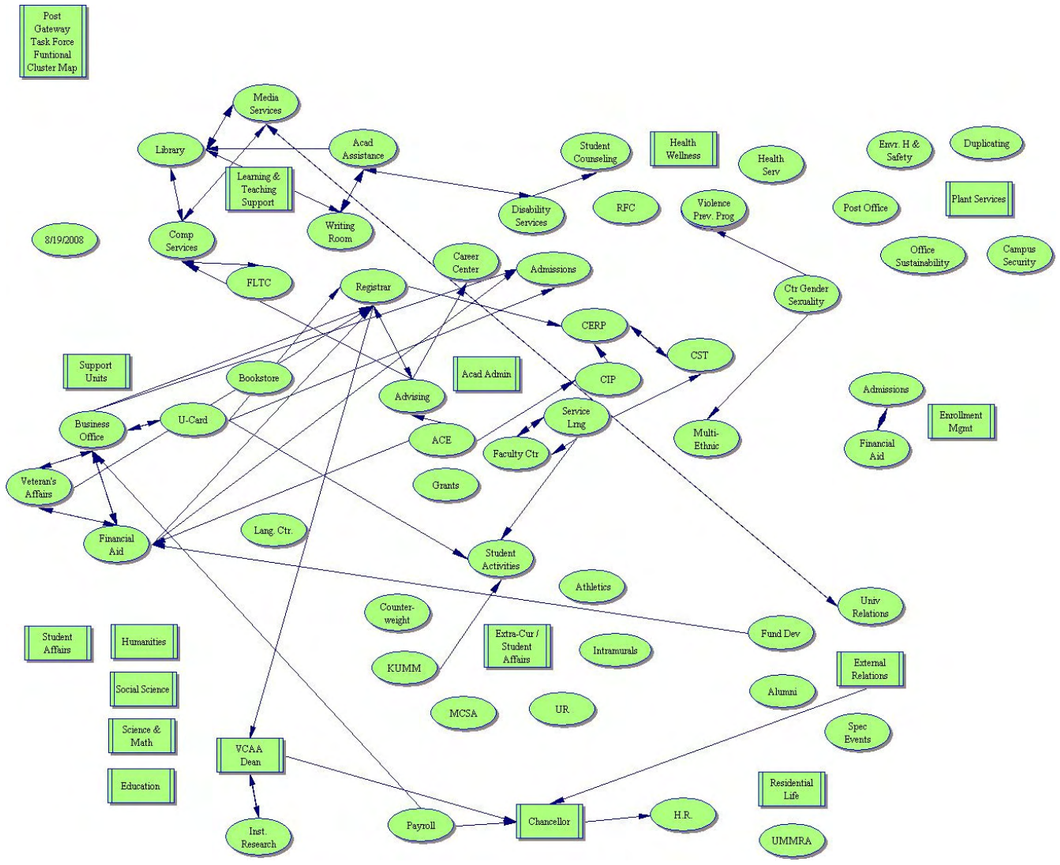
Behmler is set up well now---main administration offices all together there
One 24-hour computer lab in Student Center/Library area
Computing Services adjacent to a 24 hour lab in a central location
Advising, Registrar, Career Center, Counseling near each other
Counseling, Violence Prevention Center and Health Service together, all near the ORL office; Campus Police near as well;

What changes/improvements would you like to see?

Get Computing Services out of Behmler basement; their current location out of the way
Condense computers into fewer labs that are more accessible
Move Campus police out of Camden basement – increase their hours to include weekends and increase accessibility
Need more structure or directories in Camden basement – confusing now
Perhaps Camden basement could be used for a division office
Blakely seems like a good place for offices
Health Service in a poor location; should be more centrally located and needs renovation
Move all Humanities faculty offices to one building
Move all Social Science faculty offices to the same building
Move Education offices and classroom(s) to Blakely; that would open up the classroom that's currently in MRC
Make the current Education building into student organization offices (MCSA, UR, Counterweight, etc.)
Make all buildings ADA compliant
Increase hours of the LTC—move it to a location more accessible and with longer hours; add that software to other campus computers
Make entrances to library more convenient;
More study spaces on campus
More conference rooms on campus ; more options for meetings and groups
Design student center/library entrances so you can easily get in from many directions
Make bookstore closer to the center of campus
Bookstore on main level of Student Center
Make Student Counseling easier to find—it's an under-used resource

Move Math room to Science building
Place a small computer lab in each residence hall
All offices should have a receptionist or main desk very visible; greeting area; hard to know where to go when you first enter
Better signage
Directories in each building
Make maps after changes so people know where to go
Move Plant Services out of Camden

Appendix D
Functional Analysis Cluster Map



Appendix III

campus master plan 2008

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