Concept Master Plan

For the University of Minnesota’s New Sustainable Community at UMore Park

January 2009

Prepared by:

DESIGNWORKSHOP

Design Workshop, Inc. • Hoisington Koegler Group Inc. • Urban Design Associates • Applied Ecological Services, Inc. • RLK Incorporated • Short Elliott Hendrickson, Inc. • Avant Energy • Robert Charles Lesser & Co. • Broadband Group
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LEED ND
The Design Workshop team commends the University of Minnesota for the forethought in addressing the future of its land assets. The development of the UMore Park property offers the opportunity to help finance the mission of the University into the future, but more importantly it provides a venue to apply University research, education and public engagement in a way that provides a model for sustainable development in the state of Minnesota and the nation. By creatively advancing goals for environmental and renewable energy, innovative education and wellness practices, and transportation alternatives, the new sustainable community at UMore Park will establish a model for development in the 21st Century. Through the creation and implementation of the Concept Master Plan, the University of Minnesota is demonstrating its leadership as a top public research university.

The Concept Master Plan outlines the recommendations of the consultant team led by Design Workshop, Inc. We emphasize that the guidelines contained herein represent recommendations by the consultant team based upon our experience in designing communities and our analysis of the UMore Park project and the surrounding region. The University’s tripartite mission of research, education and public engagement; the Board of Regent’s principles and the recommendations of the six Academic Mission Task Forces have strongly informed our recommendations. The Concept Master Plan is designed to guide the development of the project moving forward and ensure that the mission and goals of the University of Minnesota carry through to the eventual development of the new sustainable community.

Sincerely,

(Kurt Culbertson)

Kurt Culbertson
Design Workshop, Inc.
January 2009
Mixed-use urban character
In December 2006 the University of Minnesota’s Board of Regents voted unanimously to pursue concept master planning of the 5,000-acre University-owned parcel of land in Dakota County known as UMore Park. The goal of this effort was to transform the property into a unique, vibrant, intellectually and culturally rich, sustainable community with a variety of amenities.

This concept master planning effort has built upon the University’s vision for the property as described in the November 2006 report *Creating the Vision: The Future of UMore Park*. Design Workshop, Inc. of Aspen, Colorado was selected to lead the University’s consulting team in conducting concept master planning for the property. This Concept Master Plan draws from the expertise of a diverse team of local, regional and national experts in land use planning, community design, engineering, market analysis, finance, and energy and environmental analysis and planning.

The results of the concept master planning and visioning process can provide a road map for the eventual development of the UMore Park property. The University can use the Concept Master Plan as a tool to describe the vision for the community to prospective development partners, local and regional community members and decision makers and to eventual residents and business owners in the community. The plan can inform the entitlement approval process with local jurisdictions. In the future, the University would work with development partners to determine the process to complete and fund initial infrastructure for the community and to prepare the first phase of the project for development. The Concept Master Plan illustrated on the following page is the result of an extensive, collaborative effort to envision a form and land-use allocation for the new community. The physical and programmatic elements of the plan are described within the pages of this document.
Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
Purpose of the Document

The Concept Master Plan provides a guide for development of the UMore Park property over the next 25 to 30 years. It can serve as the basis for formal entitlement proceedings with local jurisdictions and governmental agencies. It can assist the University of Minnesota in its pursuit of a vision of stewardship, mission, legacy and contributions to economic development in the region.

The Concept Master Plan outlines land use designations for the 5,000-acre UMore Park property north of 170th Street, located within the City of Rosemount and Empire Township. The relationship to the Vermillion Highlands property to the south of this site is also described in this document. More information about Vermillion Highlands: A Research, Recreation and Wildlife Management Area is provided in a separate draft concept master plan report prepared by the Center for Rural Design for the Vermillion Highlands joint steering committee.

This document provides an overview of the various land use ideas conceived for the new community and the logic employed in narrowing various development options and selecting the preferred land use plan for the property. The Concept Master Plan describes the environmental issues pertaining to the site, including aspects of the Gopher Ordnance Works (GOW), efforts to maximize energy efficiency and conservation, and issues such as hydrology, the natural habitat, soils and geology, cultural resources and air quality. This document outlines planning frameworks pertaining to community, including education, learning centers/libraries, parks and recreation, and health and wellness. It describes how the new community could enhance the aesthetic and artistic experience for residents and visitors, including provisions for public art, art programs and education, and artistic expression. The Concept Master Plan discusses the potential economic viability of the new community located at UMore Park, including financial and fiscal analyses and economic development strategies.
The consultant team recommends that a portion of the ongoing research at UMore Park concern the continual enhancement of the new community. The University and its partners could utilize the metrics identified throughout the Concept Master Plan to monitor the aspirations of the community. Ongoing research may suggest alternative measures to achieve the recommended metrics. Importantly, the consultant team suggests a key principle that “what gets measured achieves success.” Ongoing measurement and evaluation of success pertains to the economic performance of the community, as well as its performance in meeting metrics tied to the environment, community, and the arts.

The Concept Master Plan for UMore Park presents an aspirational and comprehensive vision for the community, incorporating the best practices of new community development. The plan is also rooted in a solid understanding of markets and financial reality, and considers the University of Minnesota’s overall objectives for the UMore Park property. Given the scale of the new community, it will endure several economic cycles during the course of development. This document helps to provide the flexibility to respond to changing circumstances while articulating the principles and intent that should drive the community’s development.

HOW DOES THIS DOCUMENT EVOLVE OVER TIME?

The consultant team anticipates that over time new information will come to light and developments concerning technology, partnering opportunities, and market conditions will require adjustment and adaptation to the plan. The Concept Master Plan is intended to be flexible and adaptable to changing circumstances.

Neighboring jurisdictions will help to shape the future master plan for the new community at UMore Park over time. As the University selects one or more development partners, the entrepreneurial visions of these partners will further evolve the plan. The actions of federal, state and local authorities, particularly in regard to the provision of transit to the UMore Park property, will also shape the community. Most importantly, the needs and desires of the open market will play a key role in the new community’s evolution.

The consultant team recommends that the stewards of the UMore Park property view this document as the beginning of the ongoing process to create a wonderful community. The University and its partners should make a long-term commitment toward continual improvement to ensure that the development grows better and better with each passing year.
Description of the Property

UMore Park is an eight square mile site located 25 miles southeast of the Twin Cities and the University’s Minneapolis and St. Paul campuses at the suburban-rural interface, in Dakota County. The property is located partially within the City of Rosemount and partially within Empire Township. A Property Aerial Map on the following page provides an aerial photograph of the property. The property has sat largely undeveloped since the University was deeded the land by the U.S. War Department in 1947–1948.

Vermillion Highlands is a research, recreation and wildlife management area located adjacent and to the south of the UMore Park property. The 2,822-acre property is currently owned by the University, but jointly managed with the Minnesota Department of Natural Resources (DNR) in conjunction with Dakota County. Following a 25-year joint management period which culminates in 2032, Vermillion Highlands will become the property of the DNR. However, the University retains its right to use the land for its research, education and public engagement mission in perpetuity.

The Center for Rural Design completed a draft concept master plan for Vermillion Highlands in June 2008. The Vermillion Highlands joint steering committee is undertaking its planning separately from the planning effort for the new community to the north of the Vermillion Highlands acreage. The Vermillion Highlands draft concept master plan assumes that the property will be collaboratively managed to maintain or improve its environmental character and level of ecological function. It will incorporate multiple public uses and offer benefits to citizens in the region and the state. Vermillion Highlands is being planned to connect with natural spaces in the region including Dakota County regional parks, wildlife and aquatic management areas managed by the DNR, Metropolitan Council land, and the new community at UMore Park.

Vermillion Highlands, with its varied uses, natural beauty and public access, provides amenities that will add significant value to the new community at UMore Park. To this end, concept planning to address the common characteristics and interconnectedness of the two properties has proceeded in tandem. Key connections between the new community and Vermillion Highlands include greenways, wildlife corridors and trails that ensure connectivity, and mechanisms to provide ease of access for the public. Anticipated public uses at Vermillion Highlands include education and lifelong learning, research, and recreation including hiking, horseback riding, cross country skiing, biking, and hunting and trapping.
VISION FOR THE SITE

A New Approach

The UMore Park property is among the largest contiguous properties in the United States owned by a land grant university. Careful and wise planning and development of the new community will allow the University to successfully fulfill the mission for the UMore Park property as outlined by the Board of Regents. The mission includes the following four tenets:

- **Stewardship**: Best management of the property, its natural resources and future uses;
- **Legacy**: University research, education and public engagement that extends over generations;
- **Mission**: Return on University investments that will finance its mission in perpetuity; and
- **Economic Development**: Adding value to the region through job creation, workforce development, business development, entrepreneurial opportunities and education.

The development of the UMore Park property represents an unusual opportunity for a public university to participate in community planning and development at a larger scale. All planning to date, including the strategic planning phase launched by the University with Sasaki Associates, Inc. of Boston in February 2006, is consistent with the University’s commitment to quality as a public institution. The vision of the new community has been developed in discussion with the public and the University community. Clearly stating its goals allows the University to articulate its imprimatur and thereby add value to the property through its actions.

The development of the new sustainable community at UMore Park will span several decades. The planning and execution of the vision will change the face of Dakota County, the greater Twin Cities region and the State of Minnesota for generations. UMore Park represents a tremendous opportunity for the University of Minnesota to create a model for sustainable development.

The illustration above shows the possibility for a community to take form surrounding the new lakes. This plan builds on the popular Minneapolis chain of lakes design with trails and parks surrounding the lakes, providing connections from the residential neighborhoods, shops and civic buildings.

*Illustration by Urban Design Associates, Inc.*
The new community at UMore Park has the potential to help transform the regional economy. It has an opportunity to preserve the heritage and environmental quality of the local area and create an exciting new center of activity in the Twin Cities region.

Over time, a series of neighborhood centers, employment centers, and integrated open spaces will emerge on the property. The planning of all of these assets will enhance the environmental quality of the site and the surrounding neighborhoods, connect the community to surrounding areas and will help build the economy of the region.

With proper planning and ongoing stewardship, the community at UMore Park will become a University legacy. Fulfilling this vision requires innovation and creativity on the part of the consultant team and the University. Achieving success will furthermore involve outlining design standards and expectations for subsequent development partners and builders engaged in creating the community over the next several decades. Maintaining the long-term goals and ideas of the new community will require implementing a governance strategy, including forging agreements with local jurisdictions.

The University of Minnesota

Founded in 1851, the University of Minnesota is one of the world’s leading public research universities and serves as the state’s official land grant institution. The University’s strategic positioning goal is to become one of the top three public research universities in the world. It strives toward “improving the human condition through the advancement of knowledge” through extraordinary education, breakthrough research, and dynamic public engagement.

The University’s academic mission, carried out throughout the state, is threefold:

Research and Discovery: Generate and preserve knowledge, understanding, and creativity by conducting high-quality research, scholarship, and artistic activity that benefits students, scholars, and communities across the state, the nation and the world.

Teaching and Learning: Share that knowledge, understanding, and creativity by providing a broad range of educational programs in a strong and diverse community of learners and teachers, and prepare graduate, professional, and undergraduate students, as well as non-degree-seeking students interested in continuing education and lifelong learning, for active roles in a multi-racial and multi-cultural world.

Outreach and Public Service: Extend, apply, and exchange knowledge between the University and society by applying scholarly expertise to community problems, by helping organizations and individuals respond to their changing environments, and by making the knowledge and resources created and preserved at the University accessible to the citizens of the state, nation, and the world.
The infusion of the academic mission in the planning and development of the community at UMore Park will differentiate the new community from all others. The community will be unique, vibrant, intellectually and culturally rich, diverse and sustainable, in keeping with the imprimatur of the University of Minnesota.

Universities have long engaged in their surrounding communities. However, this project will represent an unprecedented development of a significant new community, given the size and location of the UMore Park property and the University’s emphasis on infusing research, education and public engagement into the fabric of the new community.

The community will be a place for the University and its partners in the public and private sectors to advance the research, discovery, and design of new technologies to increase environmental, social, and economic sustainability. The community at UMore Park will create and promote new technologies, forms of renewable energy, energy-conserving systems for cold climates, and the delivery of more sustainable community services.

The Board of Regents in February 2006 articulated the following principles to guide deliberations and decisions regarding the UMore Park property:

» Protect and enhance the value of the UMore Park property through timely planning and action;
» Advance the University’s research, education, and engagement mission through the physical and financial resources that the community at UMore Park will provide over the long term;
» Improve the long-term financial health of the University through application of sound fiscal principles and stewardship, including investing the income generated through the development of the UMore Park property in ways that support academic priorities to complement, supplement, and leverage state and private support;
» Retain oversight of the planning and development of the UMore Park property and remain accountable for the Concept Master Plan;
» Plan in such a way so as to optimize the value of the UMore Park property utilizing short-term strategies without restricting options for long-term strategies;
» Utilize market value as a benchmark in assessing alternative development strategies;
» Ensure that all planning and development activities are conducted with the highest standards of fairness, integrity, and sound business practice; and
» Respect the needs of neighboring communities and local, regional, and state governments.
Previous Studies

Active planning for the property began in 2005 when the Board of Regents recognized the potential of UMore Park as an asset that supports the University’s goal of becoming one of the top three public research institutions in the world. The Regents discussed “the need to determine the highest and best land use consistent with the institution’s academic mission” and to explore opportunities that can ensure revenues that will further support the long-term mission of the University—research, education and public engagement.

The strategic planning report, *UMore Park Strategic Plan* by Sasaki Associates, was completed in October 2006. It concluded that three distinct scenarios for the management of the UMore Park property could be considered plausible options: (A) delay action and hold the asset as a land bank; (B) immediately begin selling undeveloped land in small parcels at wholesale prices; and, (C) initiate master planning to develop a new community. The document addressed the strategic planning process, site analysis, market analysis, development strategy, and the program and physical plan for the community.

Subsequently, the Board of Regents accepted the report documenting the recommendations of the UMore Park Strategic Planning Steering Committee, entitled *Creating the Vision: The Future of UMore Park*, in November 2006. Both reports and related information on the UMore Park property are available at [www.umorepark.umn.edu](http://www.umorepark.umn.edu).
Academic Mission

Nearly 100 members of the University community participated in six academic mission task forces from May 2007 through December 2007 to explore ways that University research, education and public engagement could add value to the envisioned new community at UMore Park. The task forces engaged citizens via six public listening sessions in September 2007 and faculty, students and staff through two Twin Cities campus forums in November 2007.

More than 450 citizens and nearly 300 members of the University community engaged with the task forces and offered their perspectives. University participants considered ways that research, teaching and learning, and public engagement – especially as related to education, energy, the environment, transportation, health and interdisciplinary opportunities – could improve the quality of life for citizens of the new community and the broader region.

The University articulated its academic mission vision for the community in a March 2008 publication, Distinctiveness through Academic Mission: A Vision for a University-Founded Community at the University of Minnesota Outreach, Research and Education Park. The publication includes the six academic mission task force reports, an executive report, and the compiled comments from the public listening sessions.

As the state’s sole public research university, the University of Minnesota’s stewardship responsibilities include pursuing opportunities to maximize the value of the UMore Park property and the property’s benefits to Minnesotans through research, education and public engagement.

The new community at UMore Park should generate a wealth of academic, intellectual, economic and social benefits to the University, the State of Minnesota and the world. Given the imprimatur of the University, the new community at UMore Park should represent a lasting legacy of the institution that benefits each generation of Minnesotans through cutting-edge research and discovery.
The emerging principles for the new community at UMore Park and details are available in each of the six task force reports online at www.umorepark.umn.edu. In addition to the brief emerging principles stated below, the task forces made recommendations on research, student opportunities, public education and engagement, and the social fabric of the new sustainable community.

FOR INTERDISCIPLINARY OPPORTUNITIES
The planning process: The refinement of the vision, the planning and the development of this University-founded, master planned community must be conducted with the quality, integrity, inclusiveness and transparency befitting the University of Minnesota as a renowned public research institution that strives to be among the top three in the world.

» Arts and culture: The arts and culture will permeate the new community, offering learning, social interactions, entertainment and inspiration as well as economic development.

» International emphases, global issues: The residents of the community will see themselves as citizens of the world who experience countries and cultures both first hand and through technology, establish entrepreneurial global businesses, and find opportunity through international connections.

» Research: As Minnesota’s sole public research institution, the University should ensure that research and research-based innovation benefit the community and its residents in exciting, life-enhancing and non-intrusive ways.

» Education and public engagement: Research-based education and public engagement should infuse the new community with learning opportunities for all ages and community programs that delight the mind, body and spirit.

» Diversity: The new community at UMore Park should be a community that is multicultural and diverse in all ways – in age, gender, ethnicity, race, income, housing, work and recreation opportunities and lifestyles.

» Housing: The new community will offer a range of housing that includes single-family detached homes and multi-family units, owned and rented, that are affordable to a wide range of income levels and accommodate individuals and “families,” defined broadly.

» Emerging technologies: Next-generation technologies will support the community and its residents in multiple ways, throughout the evolution of development and beyond.

» Partnerships: To best serve the community, the University should actively engage organizations in the public and private sector as partners to best achieve innovation, economic development and quality of life in the community.
FOR EDUCATION

Education and lifelong learning in the new community will be grounded in knowledge creation and knowledge sharing. Everyone will be a teacher and a learner, with all related responsibilities and personal rewards. Diversity of all types will be seen as an asset. Visionary partnerships will ensure extraordinary teaching and learning across the lifespan. Education will take place in both the natural and virtual worlds. The system will strive for coherence. With the foundation of guiding principles, education and lifelong learning in the new community will fulfill the following goals at each stage of the continuum of learning:

» Pre-natal and early childhood learning and development will prepare our youngest learners academically and developmentally for success in elementary school.

» PreK-12 education and community learning opportunities will ensure that all students go beyond the basics to master “21st century skills” such as critical thinking, creativity and collaboration.

» Post-secondary education will prepare every learner for a career that will enable him or her to support a family and realize personal goals and dreams.

» Adult and continuing education will enable community members to continually enhance their knowledge and skills through personal enrichment, vocational advancement and civic engagement.

FOR ENERGY

Develop an economically viable, sustainable community that optimizes self-sufficient energy production and minimizes carbon emissions. Key elements of the community should include:

» Minimizing energy use and maximizing renewable generation;

» Moving beyond zero impact on the environment to restore and enhance the overall environment;

» Using a systems approach to the design of the community;

» Creating policies, administrative structures, and financing to enable and support the energy and research goals of the community;

» Create a world class energy research park; and

» Utilize the energy use patterns and technologies at UMore Park as a vehicle for education at all levels.
FOR ENVIRONMENT

» Research will serve as the basis for defining sustainable development.

» Resource recovery priorities will address the reduction or elimination of waste, the inception of aggressive recycling programs, and the use of renewable materials in construction, with the goal of zero waste.

» The community will feature healthy indoor and outdoor environments that do not contribute to greenhouse gases, maintain indoor environmental quality and minimize light pollution.

» Water quality will be preserved, conserved, and protected in and around the new community. Technologies will be employed to reduce water use by at least 30 percent compared to typical developments.

» Energy efficiency will be maximized in every way. The goal is to try to achieve a carbon neutral or negative community, with greenhouse gas emissions 80 percent below the 2005 levels (consistent with state of Minnesota goals).

» The new community will feature the highest sustainability standards for the built environment and provide models for education. Designs should meet or exceed the Leadership in Energy and Environmental Design (LEED) Gold Standard for all buildings and site plans.

» The design of the new community will maximize connected systems across built areas and natural areas while minimizing negative impacts.

» The new community will incorporate research-based education into living, working and recreation.

» The new community will protect, conserve and enhance ecosystem services.

» The new community will integrate the production of a range of foods for the broader region, including livestock, to the degree that it is practical and economical to do so. The element of local foods can also contribute to the social fabric of the community.
FOR HEALTH

» Social connectedness: The intentional design of the community to foster the physical and virtual interactions of individuals, families and the overall community will promote health through social connectedness.

» Access: Health and wellness in the new community will be defined by principles of excellence, innovation and universal access.

» Food: Health and wellness will be supported in the community through the availability of a variety of high-quality and healthy foods and education and information on food, nutrition and lifestyle choices.

» Recreation and relaxation: The new community will provide for recreation and relaxation opportunities that are accessible to all members of this diverse community throughout their life spans.

» Safety: Through design, technology, public education, public services and the enforcement of the highest standards for the built and natural environment, the community will be a safe and comfortable place for people to live, work and play.

FOR TRANSPORTATION

» Modal integration and prioritization: All transportation modes should be provided so as to be complementary and mutually supportive, giving priority, first, to pedestrians and bicyclists; second, to users of transit and inter-modal transfer facilities; and third, to auto and parking facility users.

» Resiliency, flexibility and adaptability: The transportation system should be able to react to changes in travel patterns, behavior, and infrastructure conditions; adapt to changing demographics and technological advances; and accommodate growth in local, regional and global markets.

» Maximize accessibility, reliability and mobility: The system should be designed to minimize transportation system and user costs, and maximize accessibility, reliability, and mobility choices for people of all ages and for freight.

» Community enhancing: The transportation system should promote quality of life, health and safety, economic development, environmental protection and aesthetics.

» Supportive of research and innovation: The system should allow demonstration of emerging transportation technologies and strategies and evaluation of experimental approaches.
The University of Minnesota envisions the new community at UMore Park contributing to:

- A unique and lasting University legacy of discovery and research-based education that helps to sustain people and communities in the region over the generations;
- A vital regional economy that is characterized by enriched communities, thriving businesses, and educational, social and natural amenities;
- An attractive locale to live in, work in and visit that incorporates University research and education to achieve quality of life, innovation, a sense of place, close connections with the natural environment and a commitment to sustainability; and
- A growing University endowment that supports the academic mission in perpetuity.

**Incorporation of the Task Force Recommendations**

The six academic mission task force reports informed the consultant team in the development of the Concept Master Plan. The consultant team evaluated the task force reports by sorting the recommendations into three categories 1) “Current Best Practices” for community design, 2) “Emerging Technologies” in which there are existing models for some of the more innovative ideas, but these models are not widely used or tested, and 3) “Future Potentials” that are new or have not been tried in a similar application and thus are considered higher risk at this time. Over time, however, emerging technologies will be perfected and become “Current Best Practices,” “Future Potentials” will be refined to become “Emerging Technologies” and, eventually, “Current Best Practices” in an ongoing process of continual improvement. The [Academic Task Force Ideas Influencing the Concept Master Plan Table](#) on the following page summarizes this evaluation.

The “Current Best Practices” would likely have immediate implications for the development and could be accommodated within the plan. The ideas in the other two categories would have more near-term or long-term possibilities for implementation as technologies advance. The conclusion of this evaluation was that the majority of the Task Force recommendations guided the plan. Others would bring an element of innovation to the development, yet may present unique challenges or risks to potential developers. In addition, the consultant team developed aspiration statements to help define the desired outcome for each of the topics. It further analyzed some of these topics concerning the balance of costs versus benefits, potential institutional barriers, and potential measurements for success.
<table>
<thead>
<tr>
<th>TOPIC</th>
<th>IMMEDIATELY POSSIBLE Current Best Practices</th>
<th>NEAR-TERM POSSIBILITY Emerging Technologies</th>
<th>LONG TERM POSSIBILITY Future Potentials</th>
<th>ASPIRATION STATEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat Planning</td>
<td>√</td>
<td>√</td>
<td></td>
<td>Provide for wildlife corridors of adequate dimension to support key species, and have an urban wildlife plan to encourage habitat development and to manage the urban/wild lands interface. Coordination for habitat management will occur with Vermillion Highlands and adjacent public properties.</td>
</tr>
<tr>
<td>Stormwater Management</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Create a non-degradation and enhancement water management policy.</td>
</tr>
<tr>
<td>Water Quality</td>
<td>√</td>
<td>√</td>
<td></td>
<td>Water quality will be equal to pre-contact quality.</td>
</tr>
<tr>
<td>Constructed Wetlands/Sanitary Sewage Treatment</td>
<td>√</td>
<td></td>
<td>√</td>
<td>Consider constructed wetlands sewer treatment in lieu of mechanical treatment to minimize energy demand. Consider compost and recycling alternatives.</td>
</tr>
<tr>
<td>Water Conservation/ Recycling</td>
<td>√</td>
<td>√</td>
<td></td>
<td>Reduce water use by a certain percentage below current usage in the Twin Cities.</td>
</tr>
<tr>
<td>Human Interface with Nature</td>
<td>√</td>
<td></td>
<td>√</td>
<td>Integrate environmental education into living, working and recreation.</td>
</tr>
<tr>
<td>Environmental Education</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Integrate environmental education into living, working and recreation.</td>
</tr>
<tr>
<td>LEED Neighborhood Development</td>
<td>√</td>
<td>√</td>
<td></td>
<td>Become nationally recognized as an exemplary project that performs well in terms of smart growth, new urbanism, sustainability and green building.</td>
</tr>
<tr>
<td>Green Building Standards</td>
<td>√</td>
<td></td>
<td></td>
<td>All public facilities will be LEED certified and incentives will be provided for private buildings to be LEED certified. Create healthy indoor environments.</td>
</tr>
<tr>
<td>Non-toxic, Conservation, Re-use of Materials</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Minimize material waste compared to typical development. Use “Green” low toxicity materials for buildings.</td>
</tr>
<tr>
<td>Native Plant Use</td>
<td>√</td>
<td></td>
<td></td>
<td>Create defined landscape concepts which identify where native and non-natives are appropriate, provide an approved planting list which includes prohibitions against the plantings of invasive species, and incorporates a heavy emphasis of native plant use for habitat and water conservation values.</td>
</tr>
<tr>
<td>Local Foods</td>
<td>√</td>
<td></td>
<td></td>
<td>Provide community gardens, a farmer’s market, and community orchards as sources of local foods and as an element of the social fabric.</td>
</tr>
<tr>
<td>Recycling Programs</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Set a target for the percentage of waste that is recycled. Consider Plasma Arc Gasification and composting of vegetative waste.</td>
</tr>
<tr>
<td>Air Quality</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Positively contribute to air quality.</td>
</tr>
<tr>
<td>Noise Standards</td>
<td>√</td>
<td></td>
<td>√</td>
<td>Set noise standards for activities and community design.</td>
</tr>
<tr>
<td>Environmental Protection during Construction</td>
<td>√</td>
<td>√</td>
<td></td>
<td>Create standards for air, water, and site protection during construction.</td>
</tr>
<tr>
<td>Mining Reclamation</td>
<td>√</td>
<td>√</td>
<td></td>
<td>Shape land for development through the aggregate extraction process, including building water amenities and creating wetlands for habitat values.</td>
</tr>
</tbody>
</table>

**EDUCATION**

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>IMMEDIATELY POSSIBLE Current Best Practices</th>
<th>NEAR-TERM POSSIBILITY Emerging Technologies</th>
<th>LONG TERM POSSIBILITY Future Potentials</th>
<th>ASPIRATION STATEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Formal Education</td>
<td>√</td>
<td></td>
<td>√</td>
<td>Create the best early childhood, PreK-12 and post-secondary and continuing education opportunities in Minnesota.</td>
</tr>
<tr>
<td>Education Facilities</td>
<td>√</td>
<td></td>
<td>√</td>
<td>Create an environment that promotes lifelong learning as a personal and community investment. Consider partnerships with the school district and local post-secondary institutions. All homes should be located within 1/2 mile walking distance of schools.</td>
</tr>
<tr>
<td>Joint School/Park Agreements</td>
<td>√</td>
<td></td>
<td>√</td>
<td>Negotiate school/park development and management agreements to minimize land requirements and operating costs and expand learning opportunities. Provide educational opportunities at Vermillion Highlands.</td>
</tr>
<tr>
<td>Technology</td>
<td>√</td>
<td></td>
<td>√</td>
<td>Establish an Information Technology Plan to provide wi-fi and fiber optic connectivity to homes.</td>
</tr>
<tr>
<td>Arts Education/Centers</td>
<td>√</td>
<td></td>
<td></td>
<td>Support a community arts center through facilities and University programming.</td>
</tr>
<tr>
<td>Research Opportunities</td>
<td>√</td>
<td></td>
<td>√</td>
<td>Generate revenues for the University mission, provide opportunities for ongoing academic research, and continually improve quality of life through ongoing research and development.</td>
</tr>
</tbody>
</table>
## Academic Task Force Ideas Influencing the Concept Master Plan Table

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>IMMEDIATELY POSSIBLE Current Best Practices</th>
<th>NEAR-TERM POSSIBILITY Emerging Technologies</th>
<th>LONG TERM POSSIBILITY Future Potentials</th>
<th>ASPIRATION STATEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HEALTH AND WELLNESS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foster Social Interaction</td>
<td>√</td>
<td></td>
<td></td>
<td>Integrate University programming and Extension services.</td>
</tr>
<tr>
<td>Access to Health - Wellness Systems</td>
<td>√</td>
<td></td>
<td></td>
<td>Develop a health - wellness master plan and budget. Provide sites for clinics and wellness centers.</td>
</tr>
<tr>
<td>Local Foods</td>
<td>√</td>
<td>⬜</td>
<td></td>
<td>Create community facilities for gardens, local foods and farmers' markets.</td>
</tr>
<tr>
<td>Parks and Recreation</td>
<td>√</td>
<td></td>
<td></td>
<td>Create recreation and relaxation opportunities. Meet or exceed National Recreation and Park Association standards.</td>
</tr>
<tr>
<td>Community Lifestyle</td>
<td>⬜</td>
<td></td>
<td></td>
<td>Develop a comprehensive system of hiking and biking trails and sidewalks that connect to regional systems. Create an accessible community in compliance with the Americans with Disabilities Act.</td>
</tr>
<tr>
<td>Crime Prevention</td>
<td>√</td>
<td></td>
<td></td>
<td>Design to meet Crime Prevention Through Environmental Design Standards.</td>
</tr>
<tr>
<td>Public Health Through Community Design</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Reduce dependence on automobiles. Integrate nature into the community.</td>
</tr>
<tr>
<td><strong>ENERGY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Generation</td>
<td>√</td>
<td>⬜</td>
<td>⬜</td>
<td>Use a systems approach to generate clean energy for the community through the use of wind turbines, geothermal wells, biogas, sewage to energy transfer, solar collector, and future technologies.</td>
</tr>
<tr>
<td>Zero-Net Energy Community</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Strive to become a zero-net energy community by 2030. Investigate on-site and off-site energy generation possibilities and reduce energy demands.</td>
</tr>
<tr>
<td>Zero Carbon Emissions Community</td>
<td>⬜</td>
<td></td>
<td>⬜</td>
<td>Strive to become a zero carbon emission community by 2030. Utilize clean energy.</td>
</tr>
<tr>
<td>Building Energy Efficiency</td>
<td>√</td>
<td></td>
<td>⬜</td>
<td>All public facilities will be LEED certified and incentives will be provided for private buildings to meet current or future certifications.</td>
</tr>
<tr>
<td>Energy Use</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Establish an energy plan and budget for the community with the goal of reducing average energy consumption.</td>
</tr>
<tr>
<td>Research, Funding, Technology</td>
<td>⬜</td>
<td></td>
<td>⬜</td>
<td>Incorporate research and demonstration of multiple technologies and processes.</td>
</tr>
<tr>
<td><strong>TRANSPORTATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility Choice</td>
<td>√</td>
<td>⬜</td>
<td>⬜</td>
<td>Drive to bring bus rapid transit, commuter rail and light rail transit to the site. Implement a car and bike share system.</td>
</tr>
<tr>
<td>Mixed-Use Community</td>
<td>⬜</td>
<td></td>
<td>⬜</td>
<td>Locate public buildings, shops, and services within walking distance of homes to reduce automobile trips. Create the necessary density to support transit.</td>
</tr>
<tr>
<td>Job/Housing Balance</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Create a ratio of one job to one home by the year 2020 in the community - thus reducing the number and/or length of automobile trips.</td>
</tr>
<tr>
<td>Alternative Fuels/Vehicles</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Provide designated parking spaces for alternative energy vehicles and ensure that all fleet vehicles use alternative energy. Create a car-share program. Demonstrate emerging technologies on-site.</td>
</tr>
<tr>
<td>Accessibility/ Connectivity</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Design a comprehensive and interconnected system of trails, bikeways, sidewalks, and transit systems.</td>
</tr>
<tr>
<td>Flexible Infrastructure</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>The transportation system should be able to react to changes in travel patterns, behaviors and infrastructure conditions; adapt to changing demographics and technological advances; accommodate growth in local, regional and global markets.</td>
</tr>
<tr>
<td><strong>INTERDISCIPLINARY OPPORTUNITIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Create opportunities for a full range of economic levels, ages, ethnicities, nationalities, and lifestyles. Provide diverse housing products of varying sizes, types and prices. Encourage job creation that spans a range of opportunities. Create international exchange opportunities.</td>
</tr>
<tr>
<td>Interfaith</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Support efforts within the existing and future community to develop and implement an interfaith community plan.</td>
</tr>
<tr>
<td>Social Services</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Collaborate with local governments, non-profits, and faith-based organizations to provide social services to meet the needs of the community including family crisis counseling and related programs.</td>
</tr>
<tr>
<td>Research Opportunities</td>
<td>⬜</td>
<td>⬜</td>
<td></td>
<td>Research-based education and public engagement should infuse the new community with learning opportunities for all ages. Social sciences, languages, arts and cultural research offer community enrichment.</td>
</tr>
<tr>
<td>Arts and Culture</td>
<td>⬜</td>
<td></td>
<td></td>
<td>The arts and culture will permeate the new community offering learning, social interactions, entertainment and inspiration as well as economic development.</td>
</tr>
<tr>
<td>Learning Center/Library</td>
<td>⬜</td>
<td></td>
<td></td>
<td>Support a learning center-library with programming and technology. Create an Information Technology Plan.</td>
</tr>
<tr>
<td>Emergency Protection</td>
<td>⬜</td>
<td></td>
<td></td>
<td>Provide funding and a site for police stations and fire protection stations.</td>
</tr>
<tr>
<td>Historic Preservation/Cultural Landscape</td>
<td>⬜</td>
<td></td>
<td></td>
<td>Incorporate facilities, signage and programming to celebrate the history of the land and its relationship to people on the landscape.</td>
</tr>
</tbody>
</table>
Planning Framework: Environment, Community, Economics, and Art

LEGACY DESIGN

Design Workshop has developed an approach to its work referred to as Legacy Design. We believe that the best places achieve success in terms of economics, the environment, the community, and aesthetics. This follows the traditional “triple bottom line” model of sustainable development but adds a fourth dimension, art, to the equation. Art, in this sense, represents not only the physical beauty of the community at UMore Park but also the creation of a place that speaks to the highest aspirations of the human soul. The development of the UMore Park property should meet the economic objectives of the University and also enhance the surrounding communities and the broader Twin Cities region. The community at UMore Park should not only protect the environment but also enhance it. It should be beautiful and the process of developing the community should be both civil and elegant in its affairs.

THE USE OF METRICS IN PLANNING A NEW COMMUNITY

Design Workshop has developed a system of metrics for the Concept Master Plan to evaluate how the plan for the new community satisfies the goals and vision for the development with respect to the four legacy planning circles of environment, economics, community, and art. Master planned communities too often fail to meet the goals of planners and original development teams because they do not possess the tools necessary to monitor success over time. The consultant team believes that measuring the success of planning and development will result in the achievement of the goals and vision the University has established for the community at UMore Park. The University has a tremendous opportunity to conduct groundbreaking research in achieving the metrics established in the Concept Master Plan and to make a significant contribution to the knowledge of urban development in this country.

In order to leverage the potential of the metrics system, the consultant team has gathered data and established the baseline condition of the property and the surrounding community in order to monitor its evolution over time. Each element of the Concept Master Plan contains a set of metrics. The consultant team anticipates that ongoing research efforts at UMore Park and the process of implementing the community may suggest additional or alternative metrics for measuring the success of the new community at UMore Park.

Design Workshop recommends that planning and development of the new community at UMore Park strive to address challenges and achieve goals tied to the Legacy planning framework of Environment, Community, Economics, and Art or Aesthetics.
Urban density and character is softened by plant materials and natural treatment of rain water.
PLAN SUMMARY

Vision

The University of Minnesota's stewardship responsibilities as a public research institution include the pursuit of opportunities to maximize the value of its assets and increase the benefits to citizens through research, education and public engagement. The nearly 5,000-acre University of Minnesota Outreach, Research and Education (UMore) Park property offers a unique and unprecedented opportunity for the University to transport its land grant mission into the future. The property is an asset that could generate a wealth of academic, intellectual, economic and social benefits for the University, the local region, the state of Minnesota and the world. With the imprimatur of the University, the new community at UMore Park would be the lasting legacy that is refreshed over the generations through cutting-edge research and discovery.

Purpose of the Plan

The Concept Master Plan will provide a guide for development of the UMore Park property over the next 25 to 30 years (see the Concept Master Plan illustration on the following page). It will ensure that the vision of the University for the property is reflected in the eventual development of the property. It will serve as the basis for formal entitlement proceedings with local jurisdictions and governmental agencies. The Concept Master Plan will also assist the University in soliciting interest from development partners and in marketing the community to the greater region and potential buyers and renters.

The Concept Master Plan is essential in charting the core elements of a robust future community. It is also flexible and allows for change and unanticipated opportunities in future decades.

It is anticipated that new information will come to light over time and circumstances such as technology, partnership opportunities, and market conditions will require adjustment and adaptation of the plan.

Introduction to the Plan

The Concept Master Plan shown on the following page addresses the nearly 5,000-acre UMore Park property and its connectivity and synergistic relationships to the 2,822-acre Vermillion Highlands property to the south. The plan captures the intent for a diverse community with a range of single and multi-family dwellings, significant open space and natural amenities, neighborhood commercial and retail, office and light industrial space, recreation and relaxation, energy efficiencies and emphases on education, health and sustainability. The Design Workshop consultant team’s comprehensive approach of addressing environment, community, economics, and art is the planning framework by which the sustainability and legacy of the new community can be achieved.

The Design Workshop consultant team considered a range of development options for the new community. The Concept Master Plan combines elements of several initial planning concepts and features two main components:

» A master planned community with housing for as many as 30,000 people, neighborhood commercial, retail centers, civic buildings, and community amenities interspersed with man-made lakes and open space.

» An Eco-Industrial Park in which businesses collaborate with the community to reduce waste and pollution, share resources, provide opportunities for job creation and help achieve sustainable development.
The shades of color on the Vermillion Highlands indicates intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
DISTINCTIVE ELEMENTS

The application of University research and innovation as well as the public information and education that can enrich the new community at UMore Park permeates the elements of the Concept Master Plan. Additionally, the land grant university tripartite mission of research, education and public engagement has driven the creation of this Concept Master Plan. More specifically, the Design Workshop consultant team has drawn from the work of the six University academic mission task forces (Distinctiveness through Academic Mission report, March 2008). The task forces provided detailed analyses and recommendations on ways that the University, in partnership with numerous organizations in the public and private sectors, can infuse unique benefits into the community and create models that can be applied elsewhere. This plan strives to exceed the qualities of conventional master planned communities, especially through University programming and collaborations, with particular attention paid to:

» **Sustainability.** The plan integrates environmental, socio-cultural and economic opportunities with a specific focus on innovation in education and lifelong learning, health and wellness, renewable energy, the natural environment, quality of life and regional economic development.

» **Energy.** The renewable resource goal for the community is to generate production of its own energy from sun, wind and biomass. Dwellings and other buildings would be constructed with materials and technologies that are energy efficient, energy producing and that conserve water.

» **Health and wellness.** With an emphasis on prevention, the opportunity to nurture, sustain and enhance human health and well-being can be addressed through a core focus on community, family and home – the bases of social connectedness.

» **Education and lifelong learning.** From early childhood through the older adult years, this learning community would offer its members an array of educational opportunities, all of which will reflect the commitment to educational excellence and equity for all.

» **Environmental stewardship.** The plan reflects the University’s vision to create a community over time that would simultaneously implement sustainable practices on the landscape, be a platform for ongoing University research in natural resources and ecology, and educate the public about the benefits that can be derived from a focus on environmental quality and sustainability.

» **Balance of housing, jobs, amenities, services and open space.** Consistent with University aspirations, the new community should be diverse in all ways – in age, gender, ethnicity, race, income, housing, employment and recreation opportunities and lifestyles. The creation of jobs and the commitment to open space help to ensure that residents can work and play in the community where they live.

» **Walkable and connected neighborhoods with innovations to reduce automobile dependency.** The academic mission focus on health and wellness inspires a plan where all ages can walk to schools, work and retail shops through safe pathways that take advantage of natural landscapes and vegetation.

» **Economic contributions.** The new community will contribute to regional economic development through unique community characteristics that are linked to University discovery, programming and lifelong learning as well as opportunities to locate light industry, businesses and service providers and support entrepreneurs.
The Concept Master Plan has evolved from earlier concept scenario plans shown in June 2008. Public forums, open houses and other public sessions reinforced the plan direction. The following is a summary of the significant shapers that have influenced the form of the community design.

### University Academic Mission

The distinctiveness of the new community is defined by the quality research, education and public engagement activities of the University. Through all phases of planning and development University faculty and students can engage with current and future residents in the region to help ensure that research is a seamless “infrastructure” that benefits the community and contributes to quality of life. Research across disciplines will translate into learning opportunities, recreation, entertainment, cultural enrichment, job creation, economic development, energy efficiencies, and a healthy environment. The location of the University’s existing Rosemount Research and Outreach Center near the southern edge of the property will become the focal point for demonstration and education that fosters engagement and participation in research and its benefits to the community.

### Aggregate Resources

The report "Geological Assessment: UMore Park" (September, 2008) provides information about the eventual shape the land may take following potential aggregate mining activities and informs the potential timing of development and mining. The aggregate resources data provides a preliminary understanding of where the lower lying areas of the property will be following mining and the locations in which water bodies may form as a result. These low-lying areas form the framework of the stormwater management system and the parks and open space system of the new community.

### Environmental Stewardship

The University is a responsible landowner and steward of its valuable asset. Planning and future development take into account the University’s ongoing discussions with the federal government regarding the remnants of the former Gopher Ordnance Works, a smokeless gunpowder production facility that was established on a portion of the property during World War II. Ideally, ongoing discussions and a phased development of the property that spans several years would address the nearly 263,000 tons of concrete that remain on the property and any potential need for remediation at the site of the former War Department production facility.
Vermillion Highlands

The University has long recognized the 2,822-acre property on the southern border of its nearly 5,000-acres as an ecological jewel that should be preserved as it integrates into the fabric of the larger property and the surrounding region. Vermillion Highlands: A Research, Recreation and Wildlife Management Area is jointly managed by the University and the Minnesota Department of Natural Resources, in conjunction with Dakota County, as described by legislation in May 2006. Vermillion Highlands is a unique amenity to the new community on the UMore Park property. The Concept Master Plan creates trails and open space (approximately 1,000 acres of the nearly 5,000-acre UMore Park property) that flow northward from Vermillion Highlands. Cyclists and walkers can safely and conveniently connect to recreational areas in Vermillion Highlands from the new community. In addition, wildlife corridors extend northward from Vermillion Highlands to support native species.

Roadways

The consultant team carefully explored intersection dynamics along County Roads 42 and 46 and Biscayne Avenue in the planning of future roads that would connect through the new community. Additionally, the Concept Master Plan reflects the orientation of the street pattern to optimize the potential for harnessing the sun for energy creation and thermal comfort.

Compact, Complete and Connected Community

The locations of schools, recreation and civic facilities, places of worship, retail, transit stops, and commercial, mixed-use, and higher-density development were carefully designed to be within walking distance of places of employment and residences (see the Walking Distance Plan on the following page). Small neighborhood commercial centers are also located to provide a gathering place for those living within walking distance. The spacing of transit stops particularly shaped the locations of the dense centers. The Concept Master Plan calls for a series of bus rapid transit (BRT) lines to connect the UMore Park property with other suburban destinations in the southeastern portion of the Twin Cities region. The plan calls for two transit stations for BRT along the northern edge of the UMore Park property, and its route would divert to the south of the Dakota County Technical College campus to accommodate student traffic from the campus as well as nearby high schools and civic facilities in the community. A proposed light rail line, running from the eastern neighborhood center of the UMore Park property through the western neighborhood center and west toward Minnesota Highway 3, would eventually connect the community with the proposed Robert Street corridor light rail line and a comprehensive mass transit system serving the Twin Cities region. The consultant team recommends three transit stations along the line, to be developed over time.
Walking Distance Plan

Legend
- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest
- Transit Stop
- Transit Line
- BRT (Bus Rapid Transit) Stop
- BRT Line
- Half Mile Walking Radius

VERMILLION HIGHLANDS

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
Land Uses

The Concept Master Plan and its component land use plan provide for zoning categories and districts, neighborhoods and development patterns necessary to create a more vibrant community that will stand in contrast to typical suburban developments in the Twin Cities region. The large size of the property and lack of current development allow the University and its future development partner(s) to have the opportunity to create a land-use plan from the outset that considers the interaction of various neighborhoods and community centers, various programmatic elements, and the phasing of development to create a community of legacy for the Twin Cities region. The following section describes some unique or inventive land uses including an Eco-Industrial Park, an office and wellness complex, regional retail, lifelong learning facilities, regional recreation amenities, and energy infrastructure.

ECO-INDUSTRIAL PARK

An Eco-Industrial Park is described as a community “of manufacturing and service businesses that cooperate closely to improve their environmental and economic performance by reducing waste and increasing resource efficiency. Firms coordinate their activities to increase the efficient use of raw materials, reduce outputs of waste, conserve energy and water resources, and reduce transportation requirements. This resource efficiency translates into economic gains for the businesses while the local community benefits from the resulting improvements in its environment and from the creation of new jobs.”

The Eco-Industrial Park anchors the eastern end of the UMore Park property and provides facilities or potential locations for companies and industries that have interest in pursuing green or sustainable practices.

The proposed size of the Eco-Industrial Park shown in the Concept Master Plan is similar to those of facilities in comparable metropolitan areas around the country.

The plan locates the Eco-Industrial Park in the eastern portion of the property to place these light industrial and related uses close to U.S. 52 and along the primary wildlife corridor. Locating industrial uses close to U.S. 52 allows for ease in the shipment of goods to regional markets and would reduce the level of truck traffic passing through the heart of the new community. Industrial uses are most compatible with adjacent wildlife corridors because they do not involve the presence of domestic pets and residential lighting that often conflict with wildlife movement. This location also places industrial uses closer to office and retail uses. The Concept Master Plan suggests that the land designated as an Eco-Industrial Park and related light industrial uses should remain flexible to reflect market conditions during the development of the new community.

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OFFICE AND WELLNESS COMPLEX

To the north of the proposed Eco-Industrial Park, the Concept Master Plan locates an office and wellness complex at County Road 42 and Blaine Avenue. The land on either side of this intersection features rolling hills and extensive tree cover. Land uses such as corporate headquarters, professional office buildings, and health and wellness facilities usually integrate well with relatively hilly parcels, and other developments around the country have successfully introduced these uses and while preserving significant areas of woodland. A creative development integrating professional uses with the natural features of this portion of the property would create an attractive gateway to the new community from the north and east.

REGIONAL RETAIL

The plan integrates auto-oriented uses along the major thoroughfares serving the community, including County Road 42 and County Road 46. Larger format retail centers along these routes provide space for businesses including big-box retailers, discount outlets, supermarkets and service facilities that serve the greater area. In addition, these regional retail uses provide for improved transitions between land uses within the new community and adjacent land to the north of County Road 42.

Along County Road 42, between the Dakota County Technical College and the proposed professional office and wellness complex, an area of primarily big-box retail would generate significant commercial activity for the new community and serve the larger Dakota County market. Although the consultant team has not undertaken a detailed market investigation of potential retail uses on the property, the projected population of the new community and surrounding developments would likely justify a significant retail program at this location. The sale or lease of retail property along County Road 42 would produce significant revenues for the University and/or its development partner(s) and represent a logical first step in the development of sections of the property over time. Two full-service intersections along County Road 42 (at Blaine Avenue, and at another proposed arterial located to the west) would serve this retail area, providing significant traffic to stimulate commercial activity. Also, one of the three proposed light rail stops in the new community would serve this retail area. The recommended location for retail along County Road 42 includes relatively flat land well suited for parking areas serving big-box tenants.

The plan configures retail buildings to maximize visibility from County Road 42 while minimizing the size of parking lots separating the retail program from the highway. It is recommended that smaller in-line retail tenants line a grid of streets in the proposed retail district to separate the inventory of parking spaces into smaller areas and form a more attractive character and pedestrian scale. The size of the proposed retail complex is similar to the areas of big-box retail that helped to drive the initial development of master planned communities similar in size to this new community.

LIFELONG LEARNING

The University vision for the new community includes a unique focus on opportunities for people of all ages through lifelong learning – a special distinction that comes to the community and the region through its relationship to this first-tier public research institution. The Concept Master Plan incorporates the vision for a comprehensive learning community that addresses early childhood learning and development, preK-12 education, post-secondary education
and adult and continuing education, as described by the Academic Mission Task Force on Education. In addition to schools (and in partnership with the existing school district), the plan includes a learning center/library; public facilities that could provide venues for community classes, seminars and lectures sponsored by the University; and a new University Rosemount Research and Outreach Center location that would create new public information and public education opportunities. Further, the location of Dakota County Technical College adjacent to the northern boundary of the property offers the backdrop for academic collaborations that would enrich the community and provide opportunities for faculty members and students at the University and within the Minnesota State Colleges and Universities (MnSCU) system.

REGIONAL RECREATION
Dakota County Technical College and the City of Rosemount have begun a joint project to create sports fields adjacent to the college. The consultant team recommends building upon this idea and creating a recreation center sports complex. The complex would be ideally located adjacent to County Road 42 in order to capture traffic without bringing it through the community. Locating the complex adjacent to the Dakota County Technical College provides visibility for this center. It would also be accessible to residents of Rosemount who may not live within the UMore Park development. Linkages to recreational sports, wellness programs and other University activities could enrich the lives of children and adults.

ENERGY INFRASTRUCTURE
The Concept Master Plan considers multiple avenues for producing energy on-site. This includes an energy innovation center with a biomass gasification facility that has the potential to provide district heating to two of the three village centers using a minimum of piping and other infrastructure components. The University could leverage the proximity of the energy innovation center to Dakota County Technical College and County Road 42 by creating potential educational opportunities for University and Minnesota State Colleges and Universities (MnSCU) students concerning the development and maintenance of alternative energy systems.

The energy innovation center could also serve as a research and demonstration focal point, benefitting from University faculty involvement in a variety of renewable energy investigations. This location also allows for the transport of biomass fuels to the facility without routing truck traffic through the heart of the community. Additionally, ground source heat pumps could provide energy to different zones of the residential areas. Demonstration-size wind turbines within the open space surrounding the Eco-Industrial Park and other areas could be used for University research and education, and as a potential source of energy.

SOFTWARE INFRASTRUCTURE
Although not visible on an image, it will be the “soft infrastructure” – the University-linked programming for lifelong learning, wellness, arts and culture and sustainability, for example – that supports the social fabric of the community. Relationships to University strengths in education, public health, design, technology, food and natural resources and business, to name but a few areas, relate directly to features of the Concept Master Plan – including public facilities, open space and landscaping, the wellness complex and the Eco-Industrial Park.
Districts

The Concept Master Plan for the new community at the UMore Park property organizes land uses to create six distinct districts and a series of neighborhoods that should develop their own sense of character and identity over 25 to 30 years (see the Districts Plan on the following page). The phasing of development would be determined in conjunction with the University and potential development partner(s), based on the market. Highlights of these districts are as follows:

» Sports fields and other public facilities for community education and enrichment create a focal point for recreation and public events that draw people from the community and the surrounding region.

» The Eco-Industrial Park district on the eastern portion of the property would serve as a primary employment center for the new community and for the larger region. It would represent a significant center of commerce and innovation and help establish a brand identity for the community.

» The three mixed-use, transit-oriented neighborhood centers along the light-rail corridor would serve as nodes for neighborhood activity.

» The presence of significant bodies of water in the western and eastern portions of the community would create a number of “lakes districts” incorporating residential and open space uses.

» The transition area between the UMore Park property and the Vermillion Highlands property to the south would represent a district for local foods demonstrations and research drawing on University expertise and offering community benefits. A new University Rosemount Research and Outreach Center facility would engage residents in learning activities and programming from across the University.

» All residential neighborhoods would be oriented around schools, mixed-use commercial centers, parks and open spaces.
Vermillion Highlands
A Research, Recreation and Wildlife Management Area

Plan outlining the six districts as well as open space corridors. Open space includes parks, gardens, walking and bike trails and wildlife corridors that flow from the Vermillion Highlands property.
**District I**

District I will serve as a hallmark of this sustainable community. Mixed-use, mixed income housing will adjoin retail uses, cultural assets, educational facilities, an energy innovation center, the Eco-Industrial Park and the gateway to a parkway system. Neighborhood parks and greens would connect tree-lined streets into the parkway system that circulates throughout the community. Regional recreational amenities and educational facilities would anchor this first phase of development.

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**ESSENTIAL ELEMENTS**

» Wide spectrum of uses including civic, commercial, educational, residential, eco-industrial, and recreational

» “Front door” of the sustainable community along County Road 42

» At the nexus of an expansive trail network and parkway system

» Full range of housing types

» Transit-oriented eastern village

» Walkable streets
District II

District II would serve as the mixed-use employment core of the new community, incorporating the Eco-Industrial Park, larger scale employers, and a commercial center along 160th Street. Plazas, malls, and courts would create internal public spaces and connect to the greenway system. District II's proximity to the wildlife habitat corridor contributes to its less formal landscape character and unique edges. Mixed-use streets, varied building types, and residential styles animate the life of the district and provide opportunities for supporting retail uses to thrive. The attraction of major employers to the new community contributes to the intellectual development of emerging ideas and trends in sustainability and increases the possibilities for residents to work in the same community in which they live.

ESSENTIAL ELEMENTS

» Employment center of the new community
» Diverse architecture in several building types
» Transit oriented
» Walkable streets
» Informal landscape creates urban green network
» Edges relate to the regional open space network, including the wildlife habitat corridor

Habitat corridor illustration
District III

District III would serve as the garden suburb to the northwest, near one of the larger lakes in the community. Its amenity derives from its proximity to the lake and recreation amenities on the perimeter, and its character is found in the spaces within. An intimate neighborhood retail street runs parallel to the lake edge, accommodating destination retail, shops and restaurants. A variety of spaces link the retail activity centers back to the water’s edge through residential neighborhoods. Blocks and streets respond to topography and natural edges.

ESSENTIAL ELEMENTS

» Organic neighborhoods in a primarily lake-oriented setting
» Interconnected system of parks, parkways, community facilities, and institutions
» Primarily single-family homes on several different lot types
» Small neighborhood retail centers are embedded in the neighborhood fabric and linked to the water and each other through a sequence of civic spaces
**District IV**

District IV would provide the urban, civic, and entertainment core of the new community. A clear network of public spaces connect to the regional open space framework allowing users to circulate throughout the district and beyond. The community’s regional amenities include the lakes, proximity to other districts, and civic and educational facilities. The streets are vibrant around the clock with commercial and entertainment activity, and shops and eateries spill out into the public spaces. District VI’s neighborhoods are urban and provide diversity in building types.

**ESSENTIAL ELEMENTS**

- Urban, civic, and commercial core
- Vibrant nightlife and entertainment hub
- Neighborhoods centered around parks and institutions
- Formal landscape creates urban green network
- Diverse building types and densities
- Walkable streets that connect to other districts and to trail heads and inter-modal centers.

*Urban core illustration*

*School and neighborhood illustration*
District V

District V encompasses neighborhoods with a distinctly different feel than the other districts. District V is the ‘small town,’ slightly more independent from the central areas of the community both in function and location. The main commercial street leads directly to a marina and park at the lake’s edge, creating a strong visual axis to the water and its recreational and civic amenities. The neighborhood-scale retail can help foster a sense of community and strengthen the social fabric. The neighborhood blocks create a fabric of primarily single-family homes, while details begin to speak to a less formal and relaxed style of life.

**ESSENTIAL ELEMENTS**

- Directly oriented to the lake and waterfront life
- Marina is the focal point of a main commercial street and serves as the civic center for the district
- Urban fabric tends to be looser with larger lots and deeper setbacks

Marina and neighborhood illustration
District VI

District VI’s neighborhoods serve as the transition zones between the central community and Vermillion Highlands. The edges of the district are defined to the north by the realigned and expanded County Road 46 and less so in the south as it decreases in density of residences towards Vermillion Highlands. Recreational and educational amenities central to District VI capitalize on the proximity to Vermillion Highlands and the community-wide parkway system.

**ESSENTIAL ELEMENTS**

» Primarily residential with small neighborhood retail centers

» Amenities built around proximity to natural areas of Vermilion Highlands

» Low-scaled, walkable streets connecting to regional trail networks

» Transition zone between the community and Vermillion Highlands

» The new University Rosemount Research and Outreach Center facility is a hub for learning and public engagement around all aspects of University research that permeates the community and adds value to the lives of residents and others.

» Rural southern edge

"Rural" southern boundary illustration
Commercial Centers

Two commercial centers including more intense retail and civic uses and higher densities are located along high volume travel corridors including the future light rail and bus rapid transit corridor and County Road 44 (see the Centers Plan on the following page). Commercial centers would serve multiple surrounding neighborhoods and contain a greater variety and intensity of office and retail uses as compared to neighborhood centers. This strategy places the greatest number of residents and workers within walking distance of transit and commercial centers.

Villages

Residential uses in village centers would include higher density, multi-story properties with 30 or more dwelling units per acre. The likelihood of extending mass transit to the community would dictate the ultimate density of the village centers. While smaller neighborhood parks and parks associated with elementary schools would service neighborhood centers, larger parks of community scale would serve village centers. In terms of educational planning, village centers should include a middle school and three or four associated elementary schools.

EAST VILLAGE

East Village is located centrally to serve the eastern portions of the new community, including the big-box retail areas, the professional office and wellness complex, the existing Dakota County Technical College, and the Eco-Industrial Park. All four of these nearby land uses will be located within walking distance of a transit station. The Concept Master Plan outlines the development of a mixed-use district adjacent to the transit station, including buildings featuring residential housing units above office or retail space located at street level.

This mixed-use center would be an ideal location for affordable housing units serving the new community including low-cost apartments and homes. The mixed-use district would front a large community park. A small “transit mall” forms the central spine of the East Village and connects District I to major open space systems in the area. This arrangement provides residents the ability to move throughout the park system of trails and paths without having to cross major roads.

VILLAGE CENTER

The Village Center borders the west side of the central open space corridor in the new community. It features a major open space amenity as well as the transit stops along the light rail or bus rapid transit corridor. Residents within the Village Center would enjoy access to the community’s open space system and to the network of paths and trails without having to cross major roadways. Furthermore, a park is located within a short walking distance of a major portion of the residential development. The proposed high school site for the community lies just to the north of this Village Center, within a short walking distance of transit. The high school’s location within walking distance of Dakota County Technical College and the regional recreation center and sports complex could further facilitate linkages between the high school and Dakota County Technical College and offer students easy access to sporting and recreational activities. In addition, given the high school’s location the community may also use the auditorium of the school as a performing arts center. University performances and programming in theater, dance, art and culture would incorporate entertainment and lifelong learning into the community. Evening and weekend concerts and performances at the high school would add to the vitality of the Village Center.
Thirteen centers concentrate the density of development and provide services, jobs, and civic uses within walking distance of less dense residential areas.
WES T VILLAGE

The third village center borders the large lake on the western portion of the property. Its location is determined by the proximity to the lake and the desired spacing of light rail or bus rapid transit stations with the community. In addition, West Village also borders a major stand of existing trees, which the plan recommends to be preserved and designed to serve as a nature park. West Village also borders the major community park that will surround the lake. As a result a marina facility with lakeshore restaurants will form the focus of this village.

N eighborhood Centers

Eight neighborhood centers serve as focal points for commercial and civic activity and anchor large residential areas. The Concept Master Plan locates these centers at the intersections of collector roads and at the intersections of selected arterial roadways (County Roads 42 and 46) and collector roadways. Retail uses within neighborhood centers depend on traffic volumes to survive, and as a result the neighborhood centers along County Roads 42 and 46 include full intersections with these arterials to provide enhanced access. Wherever possible, the Concept Master Plan locates neighborhood centers adjacent to water bodies and open spaces, including wetlands and parks, to allow residents easy access to parks and trails without crossing major roadways. The neighborhood centers represent the focal points for elementary schools, neighborhood-scale parks, and convenient retail amenities. Neighborhoods include a mix of townhomes, rowhouses, apartments, and other higher-density residential products at densities of up to 24 dwelling units per acre. Areas of less dense residential uses flow outward from the neighborhood centers, toward the outer edges of the property. They serve as areas of transition from higher density zones to nearby open space areas, including Vermillion Highlands.

Circulation Plan

The recommended circulation plan for the community includes routes for vehicular, bicycle, equestrian and pedestrian traffic as well as mass transit in and around the new community (see the Circulation Plan on the following page). Vehicular circulation includes a hierarchy of roadways, including primary arterials such as County Road 42 and County Road 46, secondary arterials such as Blaine and Biscayne Avenues, and a series of collectors, parkways and streets for commercial areas and residential districts. The plan provides for the re-routing of County Road 46 through the community to provide viewing corridors to open space amenities and the neighborhood centers. Arterials, in the form of divided parkways with planted medians, would connect different districts within the community. Parkways, collector streets, and commercial and local residential streets would include on-street parking to meet parking demands and create safer street environments for pedestrians and bicyclists. The street widths of commercial and residential streets would be reduced to minimum standards in order to calm traffic and reduce the footprint of impermeable surfaces in the community.

A light rail corridor would eventually provide mass transit circulation from County Road 46 through the neighborhood centers, terminating at the Eco-Industrial Park on the eastern edge of the community. In addition to light rail transit, the plan anticipates incorporation of a circulator shuttle system to connect community residents and employees to the county’s proposed bus rapid transit routes along County Road 42 that terminates at U.S. 52.
Circulation Plan

*The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.*
Bicycle routes and lanes would connect the street system and parks, parkways, and open space corridors, offering an alternative to automobile use. Each transit station would include bike parking facilities to encourage bicycle use within the community. The Concept Master Plan provides for pedestrian connectivity through the provision of sidewalks on all streets, and multi-use pedestrian trails within all parks and open spaces. The consultant team recommends that a continuous system of sidewalks be constructed throughout the community and that the number of curb cuts be minimized to reduce both interruptions to pedestrian movements and hazards for walkers and runners.

The University of Minnesota’s vision for a new community is unique, given the size and location of its property and the foundational emphasis on infusing University research, education and public engagement into the fabric of the community. The University envisions that technology and facilities will spark lifelong learning. Open space and programming will help to ensure active and healthy living. The application of cutting-edge research will contribute to economical and environmentally sensitive energy production and use.

The Design Workshop consultant team has strived to bring the vision to reality through the Concept Master Plan. Our work has grounded elements of neighborhoods, village centers, connectivity, transportation and transit, employment opportunities and open space in the University’s strengths in research, education and public engagement.

This plan allows flexibility over the anticipated 25 to 30 years of development and growth. It will accommodate market forces and consumer preferences over time. It also sets the stage for achieving the highest standards for community life and providing a model that can be replicated elsewhere in the United States and the world.

The Concept Master Plan is just the beginning of a long and promising pathway to a new University-founded sustainable community.
APPENDIX: SITE BACKGROUND AND ANALYSIS

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The GOW Structures .............................................. 73
History

In 1942 and 1943, the U.S. War Department acquired about 12,000 acres of farmland in Dakota County for the construction of the Gopher Ordnance Works (GOW). The GOW facility was designed to manufacture smokeless gun powder and related products, assisting the war effort by producing a propellant for American military ordnance. Production began in January 1945, and ceased in October 1945.

Title to 8,000 acres of the property was transferred to the University of Minnesota in two stages: Approximately 4,700 acres in August 1947 and another 3,320 acres in March 1948. The 1947 parcel includes the land south of 170th Street and the western third of the land north of 170th Street. The 1948 parcel includes the eastern two-thirds of the land north of 170th Street. University research, including aeronautical, medical and agricultural projects, began on sections of the land immediately, frequently making use of some of the remaining 298 GOW buildings for studies and storage.

Influenced by a New York state report regarding World War II-era munitions facilities, the Minnesota Pollution Control Agency (MPCA) inspected the property in 1981 and concluded on the basis of its limited investigation that there was no contamination of concern. Under a federal law that provides funding for environmental restoration of former defense sites, the U.S. Army Corps of Engineers has conducted several inspections and evaluations of the property, beginning in 1985. In a 1999 report, the Corps determined that the entire property was eligible for restoration funds. In 2005 the Corps revised its position and for the first time stated that only the land transferred in 1947 (south of 170th Street) is eligible for federally funded investigation and restoration.
Regional Orientation

UMore Park’s location in southern Dakota County places the site at the edge of suburban development in the Twin Cities region as shown on the Regional Orientation Site Map. Areas of traditional suburban growth have emerged over the last twenty years in the communities just to the west, including Rosemount, Farmington, Apple Valley, and Lakeville.

Outlying small towns along the Mississippi River to the north and east of UMore Park, including Hastings and Cottage Grove, have also experienced significant growth. The Flint Hills refinery and other industrial uses along U.S. 52 to the north of UMore Park have provided a buffer zone between the site and older suburban communities to the north. Given its status as a large undeveloped block of land, UMore Park has served as a barrier to connected growth between Rosemount and the rural areas of Dakota County to the south and east.
DEVELOPMENT GROWTH

The Metropolitan Urban Service Area (MUSA) boundary outlines anticipated areas for suburban growth given infrastructure assets and suitability for development. The Metropolitan Urban Service Area Map on the following page shows that the anticipated boundary will include areas to the west and north of UMore Park, as well as outlying communities including Hastings.

The MUSA boundary touches the north and west boundaries of UMore Park, and the current status of the property as a University research center has prevented the inclusion of UMore Park in the MUSA boundary in the past. Development of the property would require a formal change of this boundary to encompass the UMore Park acreage. The consultant team recommends that this process occur as soon as possible.

Dakota County and the southeastern suburbs have recently emerged as a new focal point for suburban growth. As noted in a recent article in the Minneapolis Star-Tribune, this shift places UMore Park in the “eye of the needle” for potential new suburban growth. While the Metropolitan Council and a variety of individuals and groups have advocated for more compact development of the Twin Cities and redevelopment of the urban core, the Twin Cities today is a fairly dispersed and sprawl-oriented metropolitan region.

Citizens and government leaders from throughout the region have highlighted the increased costs of unchecked suburban expansion in all directions from Minneapolis and St. Paul, including longer commute times, greater consumption of gasoline and other fossil fuels to support residents living on the edges of development, increased pollution, loss of farmland and open space, and lack of a sense of place.

However, the increase in suburban growth in Dakota County and the southeastern portion of the metropolitan area presents an opportunity for the University and its development partners to establish a significant new community that will help counteract the negative impacts of sprawl.

The new community at UMore Park will promote strategies involving compact development, a sustainable balance of jobs and housing, the provision of mass transit and multiple modes of transportation, and overall environmental sustainability to establish a good example of new community development in the Twin Cities region. As the largest master planned community in Minnesota, the property provides an opportunity like no other to undertake all of these strategies.

The development of the new community at UMore Park involves planning strategies designed to address the many problems created by traditional suburban sprawl.

The northwestern boundary of the UMore Park property abuts urban development in the City of Rosemount. Agricultural research and farming activities have traditionally occurred on the UMore Park property in close proximity to residential neighborhoods.
Metropolitan Urban Service Area (MUSA) Map

Source 1
Local Context

The UMore Park property is divided between two jurisdictions: the City of Rosemount to the north of County Road 46, and Empire Township to the south. Rosemount is a growing community that doubled in size from 1990 to the year 2000 to a population of 14,619 within its 35 square mile area. Empire Township is more rural, with a population of 1,638 spread over nearly 34 square miles of land.

By 2020 the Metropolitan Council projects the City of Rosemount will grow to 38,400 people without the development of a new community at UMore Park. The town of Coates (including a land area of 1.4 square miles and a population of 163 in the year 2000) borders the UMore Park property to the east. The Local Orientation Site Map shows the suburban cities of Eagan, Inver Grove Heights, Apple Valley, Lakeville and Farmington to the north and west of the property.
Existing Assets

The assets around UMore Park present an ideal location for the creation of a new community. UMore Park enjoys a strategic location near significant regional open space facilities and may serve as a key connector between these amenities and other nearby environmental assets.

The Regionally Significant Parks and Recreation Map on the following page identifies the existing, planned, and proposed significant parks and trails surrounding the UMore Park property. It also shows the potential locations of greenways as proposed by Dakota County. The County’s Office of Planning has published a greenway plan that considers the opportunities for potential non-motorized access between various parks and open spaces. Plans for new regional parks and wildlife management areas to the south of the site complement UMore Park’s development potential. Vermillion Highlands: A Research, Recreation and Wildlife Management Area is a 2,822-acre property adjacent to the southern edge of UMore Park. It will be maintained in perpetuity to preserve its woodlands, wetlands, and other natural resources, and to provide public access and University research and education.

The new Dakota County regional park is near the southern boundary of the UMore Park property, and additional conservation lands flank the areas to the south and west of Vermillion Highlands. Significant opportunities exist to connect the new community with these open space resources through trails and park linkages and to provide wildlife corridors connecting the regional parks with nearby natural systems, including the Mississippi River floodplain and other creeks and wetlands in the area.

The Vermillion River to the south of the UMore Park property is a high quality river with a significant trout population.

BIOLOGICAL AND ECOLOGICAL AREAS

UMore Park lies in proximity to several Regionally Significant Ecological Areas (RSEAs) established by the Minnesota Department of Natural Resources (DNR). The Regionally Significant Biological and Ecological Areas Map shows that these RSEAs occur within one to three miles of the UMore Park property in every direction with the exception of due west. RSEAs are described by the DNR as “tools to help (communities) identify natural areas for conservation and protection.” These areas make up 15 percent of the total land area in the seven-county metropolitan region and are under a variety of ownership and protection categories. However, these designated areas currently do not hold any official legal status as significant environmental assets.

The DNR has also created Metro Conservation Corridors as a method for understanding and working toward preservation of key natural lands. The eastern 60 percent of UMore Park is designated as a Metro Conservation Corridor (2007, DNR). Connectivity between Pine Bend Bluffs Scenic and Natural Area and RSEAs to the south of UMore Park necessitates the creation of functioning regional and local habitat corridors within the UMore Park property.
Regionally Significant Parks and Recreation Map

Legend
- Regional Parks (Dakota County data, 2006)
- Pine Bend Bluffs Scenic and Natural Area
- City Greenway (Dakota County data, 2007)
- Existing and Planned Regional Greenways (Dakota County data, 2007)
- Rivers and water bodies

Dakota County Proposed and existing regional parks and greenways; Source 2.
Regionally Significant Biological and Ecological Areas Map

Legend
- Regional Parks
- Mississippi River Critical Area
- Metropolitan Conservation Corridors
- Pine Bend Bluffs Scenic and Natural Area
- Wildlife Management Area
- Metropolitan Council Land

Regionally Significant Ecological Areas (MNDNR)
- 3: Higher Value
- 2: Moderate Value
- 1: Lower Value

Greenways and ecological areas as proposed by Dakota County and the Department of Natural Resources; Source 3
The Minnesota Land Cover Classification System (MLCCS) provides information regarding the current land surface and its use. Leased farmland (planted or cultivated vegetation) covers a significant percentage of the property, including agronomic crops. Artificial Surfaces and Associated Areas (primarily from the GOW remnants) represent the second largest percentage of the land cover on the property. The Land Cover Classifications Table for the UMore Park Property below explains the total acreage and percent of the site as classified by the MLCCS.

The site also includes two areas of exceptional native plant communities: a 43-acre oak forest and a 1.2-acre mixed emergent marsh. The Land Cover, Wetlands and Streams Map on the following page identifies these locations. With the exception of the limited areas of woodland, the UMore Park property faces few development constraints with respect to land cover.

**WETLANDS AND STREAMS**

In 2007, field work by Bonestroo, a local planning and engineering firm, confirmed wetlands at UMore Park totaling 4.88 acres. These areas likely include Type 1 and Type 2 wetlands (ranging from temporarily flooded to saturated) and may contain small areas of Type 3 wetlands (shallow marsh). The potential wetlands at UMore Park total 109.18 acres, but field work will likely document a smaller acreage total. Streams on the property mainly flow to the south and east, toward the Vermillion River. Most of these streams are relatively small in size and pose few constraints on development. The Concept Master Plan accounts for the presence of these wetlands and streams, but these water features do not pose significant barriers to the development of the UMore Park property.

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<tr>
<td>Planted or Cultivated Vegetation</td>
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Land Cover, Wetlands and Streams Map

Legend
- Wetlands and Potential Wetland Areas (adapted from Bonestroo)
- Native Plant Communities (MLCCS data)
- FEMA Floodplain
- 10 foot contours

MLCCS Land Cover
- Artificial Surfaces and Associated Areas
- Planted or Cultivated Vegetation
- Forests
- Woodland
- Shrubland
- Herbaceous
- Water

Source 4
LAND USE

The Existing Land Use Map on the next page outlines current land uses for the areas surrounding UMore Park. This map does not outline zoning classifications, but instead depicts the current and actual use of the land by property owners. This information provides base line information for understanding the physical assets and land uses for areas around the property. The map depicts land use designations identified by the City of Rosemount, within the community’s borders, and by the Metropolitan Council for the rest of the map.

Traditional suburban land uses, including strip shopping centers and lower density single family residential developments, dominate the areas to the west of UMore Park. Rosemount’s downtown and its original core of residential neighborhoods is located just to the northwest of the site near Minnesota Highway 3 and County Road 42. Light industrial land uses, including warehouses and small business parks, cover the area immediately adjacent to the west side of UMore Park. The Flint Hills refinery and its buffer zones occupy the majority of the territory to the north. A mixture of light industrial, retail and agricultural lands line U.S. 52 near the eastern boundary of the site.

Agricultural uses cover the areas to the south and east of UMore Park throughout Dakota County. Dakota County Technical College, adjacent to the site on County Road 42, is one of the larger educational campuses in the southeastern portion of the Twin Cities region. Several jurisdictions including Rosemount, Empire Township and Coates surround the UMore Park property. In contrast to the largely segregated land use patterns present throughout this portion of Dakota County, the new community could present a creative mix of residential, commercial, and open space areas and therefore create an improved sense of community.
**Legend**

**City of Rosemount Land Use 2007**
- Agriculture
- Agricultural Research
- Business Park
- Commercial
- FP
- General Industrial
- High Density Residential
- Industrial/Mixed Use
- Medium Density Residential
- Public/Institutional
- Existing Parks/Open Space
- Rural Residential
- Transitional Residential
- Urban Residential
- Waste Management
- Lakes
- Streams

**Metropolitan Council Land Use 2005**
- Farmstead
- Seasonal/Vacation
- Single Family Detached
- Manufactured Housing Park
- Single Family Attached
- Multifamily
- Office
- Retail and Other Commercial
- Mixed Use Residential
- Mixed Use Industrial
- Mixed Use Commercial and Other
- Industrial and Utility
- Extractive
- Institutional
- Park, Recreational or Preserve
- Golf Course
- Road
- Major Highway
- Telephone
- Railway
- Airport

*NOTE: Land Use coding shown for City of Rosemount is within the dashed boundary line. Remainder of exhibit depicts Land Use from the Metropolitan Council.*
TRANSPORTATION

Transportation represents one of the key factors determining the development potential of a given site. The Regional Transportation Map displays proposed and existing transportation routes. U.S. 52, a four lane expressway, runs north-south just to the east of the site and connects St. Paul and the Interstate 494 loop to Inver Grove Heights and other southeastern suburbs. This highway also connects the Twin Cities with the Rochester area in southeastern Minnesota. Rochester is the home to a University of Minnesota coordinate campus and the Mayo Clinic, which has a significant research partnership with the University. County Roads 42 and 46 provide east-west access from suburbs near Interstate 35, including Burnsville and Lakeville, through UMore Park and connect to the Hastings area to the east. Minnesota Highway 3 follows a north-south alignment just to the west of UMore Park and connects the Farmington area with St. Paul. A number of local arterials in the vicinity of the property would require upgrades and expansions to accommodate growth at UMore Park, and several new arterial roads within the property would be required.

Notably, transit authorities have recently begun to consider the potential of extending mass transit from downtown St. Paul to the UMore Park site. Regional transit authorities have explored a variety of alternative transportation modes to serve the UMore Park property in the future including a bus rapid transit service along County Road 42 as well as an extension of the Robert Street Corridor from the St. Paul area southward to Rosemount. The Dakota County Regional Railroad Authority (DCRRA) is currently evaluating the Robert Street Corridor as one part of a planned comprehensive transit network serving the Twin Cities and the UMore Park property. The preferred transit alternative for the Robert Street Corridor as identified by the DCRRA includes Light Rail Transit (LRT), Express Bus Service and Bus Rapid Transit. Local and regional governments have not yet funded the Robert Street Corridor, but are proceeding with planning and design exercises for the corridor at this time.

The interchange between County Road 42 and U.S. 52 lies about one-half mile east of the eastern edge of the UMore Park property. This connectivity to a major highway is an important asset for the development of the property.
Regional Transportation Map

Source 6
INFRASTRUCTURE

Given UMore Park’s location at the interface between suburban areas of the Twin Cities and rural areas of Dakota County, the site is located on the periphery of local and regional infrastructure systems. The property is located near a number of infrastructure assets, but given its current use as the Rosemount Research and Outreach Center and for short-term leases, the interior of UMore Park would require significant investments in infrastructure to prepare for development.

The Existing Utilities Map on the following page identifies major utility lines currently servicing the property. A regional sewer line provided by Metropolitan Council Environmental Services (MCES) is currently located along the north side of the property, and an extension of the system is currently under construction along the north and west boundaries of UMore Park. In addition, the MCES recently upgraded Empire Township’s existing treatment facility, which is designed to accommodate 800 gallons of sanitary sewer flow per acre per day from the potential development at UMore Park.

Water lines servicing the City of Rosemount run along the north side of the property, along County Road 42, and a University-owned well and tower system currently services around 15 percent of the property. Further analysis will be needed to determine if the new community can use the existing water tower as part of the new water distribution system. Two major electric transmission lines cross UMore Park, one through the northwest corner of the site and another running north-south along the eastern boundary of the property. Major gas lines currently run along the extreme northwest and northeast corners of the property. Smaller profile utility lines and easements for dry utilities (including electrical, telephone, cable television, fiber optics and natural gas) are located in various areas of the UMore Park property. Development of the community at UMore Park would involve extending these infrastructure systems from the surrounding areas to the interior of the property and in some cases increasing the capacity of trunk lines servicing UMore Park to accommodate the eventual growth of a community to include 30,000 people.

The current UMore Park water tower is smaller in size compared to the three-to-four new towers recommended to supply the new community.
Legend

Sanitary Sewer (Existing and Proposed)
- Purple = Mid American Pipeline Company Pipeline
- Purple = Northern Natural Gas Pipeline
- Yellow = Empire Outfall
- Yellow = Empire Outfall Force Main
- Green = Proposed Gravity Sewer
- Green = Proposed Sewage Force Main

Source 7
ANALYSIS OF DEVELOPABLE AREAS

In addition to influences from the surrounding areas of Dakota County, a number of factors specific to the UMore Park property determine the development potential for the new community.

Aggregate Resources

Recognizing the regional significance of the sand and gravel resources on the UMore Park property, the University of Minnesota Board of Regents authorized the formulation of a Request for Proposal entitled *Geological Assessment University of Minnesota Outreach, Research & Education (UMore) Park* in August 2007. The University’s goals for the project were to achieve a sufficient understanding of the location, quality and quantity of marketable construction aggregates to inform decisions on potential extraction, operations and reclamation in conjunction with the future development of a master planned community on the property.

ProSource Technologies, Inc. in association with J.D. Lehr, PA, conducted a geological assessment via a Phase I drilling and testing program for the nearly 5,000 acres of the UMore Park property from September 2007 through May 2008.

The assessment program confirmed that the UMore Park site contains significant areas suitable for the extraction of sand and gravel assets, and this information helps inform the development strategy for the property. Aggregate has become such a valuable and needed resource in the Twin Cities that the University has initiated a gravel Environmental Impact Statement process that is scheduled for completion by the close of 2009. At that time the University will determine whether to mine gravel.

Analyses indicate that the western portion of the UMore Park property contains substantial sand and gravel resources. The Aggregate Resources Map on the following page represents a composite of the *Geological Assessment Report*, including an aerial image. The consultant team recommends that the University and its future development partner(s) consider pursuing mining operations before proceeding with eventual build-out of residential, commercial and open space uses in areas of gravel deposits. Quarries created by gravel mining would present opportunities to create man-made lakes and landforms that would serve as focal points for neighborhood centers and the community overall. The availability of sand and gravel resources and the ability to extract these assets is a key influence on the development plan and real estate strategy for the new community.

The consultant team further recommends that the Concept Master Plan provide the basis for an end use plan for the gravel mining operation. If properly coordinated, the movement of earth during mining can establish development zones for future real estate development. A Conceptual Grading Plan (see page 98) has been provided.
NOTE: This contouring method does not consider existing topography along the perimeter of the deposit. One hundred foot property line setbacks are shown.
Source 8
to demonstrate the topography desired at completion of the mining operation anticipating the real estate development that would follow. Topsoil stripped during the gravel mining process should be stockpiled and used to reclaim disturbed areas and to enhance landscaped areas such as parks and open space. Wetland areas created as a result of the mining operation would enhance the habitat values of the site. The availability of low cost sand and gravel through the mining process also provides the materials for the stormwater management techniques recommended in the Concept Master Plan.

Topography

The topography of the UMore Park site is generally flat as shown on the Land Topography Map and in the Property Topography Table below. Limited areas with slopes in excess of 30 percent exist, primarily in the north central portion of the property. With few exceptions topography presents very few constraints on development at UMore Park. Nearly all of the site (93.4 percent of all land) presents less than 10 percent change in grade and therefore requires little grading for development to take place. Given the potential decision to mine portions of the site, the resulting topography of the property following mining, rather than the existing topography, serves as a more significant element in shaping the community.

Property Topography Table

<table>
<thead>
<tr>
<th>Percent Topographic Slope</th>
<th>Total Acres</th>
<th>Percentage of the nearly 5,000 acre site</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 5%</td>
<td>4,119</td>
<td>84%</td>
</tr>
<tr>
<td>5 - 10%</td>
<td>458</td>
<td>9.5%</td>
</tr>
<tr>
<td>10 - 15%</td>
<td>164</td>
<td>3.5%</td>
</tr>
<tr>
<td>15 - 20%</td>
<td>81</td>
<td>1.7%</td>
</tr>
<tr>
<td>20 - 25%</td>
<td>35</td>
<td>0.7%</td>
</tr>
<tr>
<td>25 - 30%</td>
<td>14</td>
<td>0.3%</td>
</tr>
<tr>
<td>over 30%</td>
<td>16</td>
<td>0.3%</td>
</tr>
<tr>
<td>Total</td>
<td>4,887</td>
<td>100%</td>
</tr>
</tbody>
</table>

The relatively flat terrain of the property is ideal for future development.
Soils

Waukegan silt loam covers 54 percent of the UMore Park property as shown in the Soils Map. Although this soil formed on a sandy outwash plain, Waukegan silt loam is very dark brown, silty, and rich in organic matter from centuries of growth of prairie plants. The initial 13 inches of topsoil below the ground level provides for moderate drainage, but within the sandy subsoil drainage proceeds at rates of as high as six to 20 inches per hour. As a result, local farmers typically irrigate crops to increase productivity during normal crop years and to mitigate the negative effects of droughts. Waukegan silt loam yields, on average, four tons of grass-legume hay per acre. The soils at UMore Park provide solid foundations from which to build, but without providing for adequate vegetation on the site the risk of soil erosion increases significantly.

Prior to construction of the GOW smokeless gunpowder production facility, the soils beneath the site of the plant (24 percent of the property) also primarily consisted of Waukegan silt loam. However, the construction of the GOW, coupled with soil movement and other disturbances, changed the topsoil in this area of the UMore Park site. Today, the soils within the footprint of the GOW are classified as Urban Land Waukegan Complex soils, although residual amounts of Waukegan loam and other higher quality soils exist inside the GOW as well.
Built Environment

Nearly 800 remnant structures from the GOW remain on the site as shown in red on the Built Environment Map on the following page. Many of the remnants include only the foundation floors and some structural walls of the previous buildings. A number of these remnants are visually prominent, such as the “T” walls and the power plant stacks. Additionally, a number of University research and operational buildings remain on the property as highlighted in yellow on the Built Environment Map.

Many of the existing structures are leased as a source of revenue for the University or utilized for various research or civic functions. The consultant team recommends that these uses continue, keeping in mind the long-term plans for gravel mining and real estate development of the property. Similarly, the University should continue leasing land for agricultural production and conducting research on UMore Park property until land is required for gravel mining and real estate development.
Environmental Remediation, Gopher Ordnance Works

Subsequent to the early history of the Gopher Ordnance Works, which was described on page 48, the U.S. Army Corps of Engineers agreed to perform a site investigation of the environmental condition of the 1947 parcel. In mid-2006, the University was informed that the Corps had selected a contractor to perform the site investigation. Site work commenced in August 2007. At this time, the MPCA is awaiting the final report of the site investigation from the Corps.

The University, the Corps and the MPCA continue discussions about the scope of federal financial responsibility for GOW-related contamination and debris on the 1947 and 1948 parcels. Most of the GOW manufacturing and industrial activities were located on the 1948 parcel. It also bears the majority of GOW building remnants.

Production of a propellant for American military ordnance at the Gopher Ordnance Works got underway in January 1945 and ceased in October 1945, with the end of World War II. Photograph courtesy of the University of Minnesota.
The GOW Structures

The Gopher Ordnance Works included 800 manufacturing buildings of wood and concrete, and the foundations of most of these structures remain in place on the UMore Park property. Based upon existing information the disposition of GOW assets and existing University buildings would not materially limit the extent of developable acreage at UMore Park.

The consultant team suggests that the potential development of gravel resources on the site offers the opportunity to address potential remediation in conjunction with the mining process.

*The GOW buildings have deteriorated to different degrees; some are still intact while others are collapsed.*
The consultant team considered a wide range of development themes in planning for the UMore Park property and proceeded through a set of iterations to arrive at the final Concept Master Plan for the community. This section outlines the process by which the team synthesized the ideas of a variety of planning concepts and arrived at the Concept Master Plan.

Inspired by the ideas of the six academic mission task forces and the comments made during the public listening sessions, the consultant team initially considered the following development themes:

» Town of Lakes
» Medical Employment Base
» Community in Nature
» Energy Exporter
» Alternative Vehicle Community
» Agrarian Community
» No-Waste Community
» Eco-Industrial Park
» High-Rise Housing
» Affordable Housing Community
» Retirement Community
» Community of Temporary Uses (greenhouse, windmills, etc.)
» Energy Production Community
» Community with University-Built Homes
» Energy Park and Continued Agriculture
» Air Cargo and Freight Terminal
» Nature Preserve
» Quarry-Based Recreation Community
» Huge Greenhouse Operations
» Silicon Chip Manufacturing Facility
» Waste Clean Facility
» Forest Harvesting Community
» Regional Sports Complexes
» Minnesota Golf Trail
» Significant Wetland Area
» Duck Hunting Sport Area
» Carbon Offset Woodlands
» Traditional Lower-Density Master Planned Community
» High-Density Community Around Transit
» Higher-Density Near Rosemount, Lower Density to the South
In conjunction with the UMore Park Management Team, the consultant team evaluated the pros and cons of each developed theme against the academic mission and long-term goals of the University. Four primary land use scenarios emerged, each containing some elements of the initial 30 themes.

» Traditional Master Planned Community
» New Urban Center
» Lifestyle Community
» A New Sustainable Community

The consultant team distilled elements of land use, transportation, livability, context and community along with goals for environmental and economic sustainability to create the four conceptual development scenarios. The team analyzed the potential to provide transit to the site and the resulting supportable density in the community at UMore Park. The consultant team also evaluated the potential generation of employment under each plan and how the community would interface with the Vermillion Highlands property to the south. The following summarizes some of the main design themes underlying each of the four scenarios. The four scenarios provide the means to evaluate important components of the University-founded community, particularly:

» Academic mission that adds value to the community;
» Density and population;
» Public transit;
» Land uses and their locations;
» Land use for amenities;
» Jobs/housing balance;
» Community facilities;
» Public infrastructure – roads, utilities, open space; and
» Gravel extraction and land development.

The following section summarizes the six main criteria that were used to evaluate the four concept scenarios.
Evaluation Criteria

The consultant team utilized six main criteria to evaluate the four development scenarios. Importantly, the criteria derived from principles the Board of Regents articulated for the planning and development of the property as well as input from local jurisdictions, a wide range of Minnesotans and the University community. The criteria also capture key ideas from the University’s academic mission task force reports. The criteria are:

**SUSTAINABILITY AND INNOVATION**

Sustainability is defined as the integration of environmental, socio-cultural and economic opportunities with a specific focus in design and programming on innovation in education and life-long learning, health and wellness and renewable energy. University education, research and public engagement can in particular support sustainability initiatives.

**NATURAL RESOURCE STEWARDSHIP**

The University is a responsible landowner and steward of its valuable asset. Planning and development at UMore Park must specifically address the removal of nearly 263,000 tons of concrete remnants and any potential contamination remaining from the World War II GOW. Glacial sand and gravel deposits are present on the property, and the extraction of these resources could help meet the need for this nearly depleted resource in the Twin Cities region. The University views green space as a valued amenity at UMore Park and is addressing its preservation through the design of parks, gardens, natural areas and trails. Land and water amenities could be created following the potential extraction of gravel and sand resources from portions of the site.

**ECONOMIC DEVELOPMENT IN THE REGION**

The resources of the University and its imprimatur provide unique strengths to attract and expand businesses and services, and therefore create jobs. Workforce development and job training should be incorporated into community programs. The fostering of unique public-private partnerships, entrepreneurial opportunities and characteristics that create a “destination” community will contribute to economic development in the region.
PARTNERSHIPS

The success of the community at UMore Park will be based on the University’s ability to work collaboratively and innovatively with local jurisdictions and with multiple public and private entities. These partnerships should serve as catalysts for improving quality of life and enhancing regional economic development, including business development and job creation. Public and private partnerships should contribute to amenities and services in the areas of energy, health and lifestyle facilities, recreational and cultural features and a lifelong learning system that integrates across the community through schools, technology services and other learning facilities.

FINANCIAL RETURNS TO THE UNIVERSITY

In addition to creating significant economic development for the community and the larger region, the University should also derive value from this unique project, both financially and through the creation of new opportunities for students and faculty members. The University must recover investments made during the initial planning and development phase of the venture. The University should, furthermore, maximize its long-term financial returns in the form of substantial increases to a University endowment. Such proceeds would support the institution’s academic mission, including providing for student scholarships and research programs and initiatives that are not sufficiently supported by state or private funds.

UNIVERSITY LEGACY

Since 1851 the University has placed graduates in Minnesota businesses and services, created new jobs, converted research into new applications, leveraged additional funds and opportunities for the state, and created knowledge for an ever-changing world. It will continue this mission over the generations. The development at UMore Park is an unprecedented opportunity to refresh the land grant mission for today and tomorrow and contribute to the public good through research, education and public engagement.

The following section describes how the four concept scenarios were evaluated against these criteria.
Scenario One: Traditional Master Planned Community

Scenario One reflects the current development standards and best practices in the suburbs of the Twin Cities region. It includes residential and commercial space of densities similar to those of traditional suburban developments and therefore would not support an extension of light rail transit to the site. The residential program would emphasize single family detached homes, with a smaller number of single family attached, multi-family senior, condominium and apartment housing types. This scenario does not anticipate the new community attracting a major employment center such as a corporate headquarters, a hospital or wellness facility, or an industrial park. It assumes that the GOW would be remediated to residential development standards and that a moderately sized sand and gravel operation would exist on the site and later provide the basis for wetlands, lakes and other landforms that would enhance real estate values.

The Traditional Master Planned Community scenario might gain greater acceptance from surrounding communities. This scenario would provide homes generally priced for middle class consumers, would demand less in terms of infrastructure requirements, and would avoid the challenges of attracting transit and larger employment centers to the community. However, this prototypical suburban model does not meet the University’s goals for sustainability and innovation, would provide a limited housing mix for the region, would not provide transit opportunities and would incur significant costs tied to the cleanup of the GOW to residential standards. For these reasons, this scenario was not selected.
Scenario One – Traditional Master Planned Community Plan

Legend
- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands

Vermillion Highlands
A Research, Recreation and Wildlife Management Area

Evolution of the Planning Process | January, 2009
**Scenario Two: New Urban Center**

This scenario focuses on the creation of a significant village center in the middle of the community with sufficient densities of residential growth to support bus rapid transit (BRT) and light rail transit (LRT). This urban center would feature multi-story mixed-use buildings and greater residential densities. The presence of a major transit corridor would enhance the community’s ability to attract significant employment centers. More urban uses in the village center would include office, ground floor retail and structured parking.

The more concentrated residential densities of the New Urban Center scenario would allow for additional open space within the community, and the village center would provide an opportunity for the University to apply its brand to a unique real estate development in the southern suburbs of the Twin Cities. However, bringing the New Urban Center to fruition would require significant and sustained efforts to bring regional transit facilities to the Rosemount area and the challenge of marketing a more urban development program in a highly suburban setting. This scenario was determined to lack the desirable mix of uses necessary to diversify the community and create a desirable jobs-to-housing balance. Other scenarios provided greater opportunities for University research, education, and public engagement.
Scenario Two – New Urban Center Plan

Legend
- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
Scenario Three: Lifestyle Community

This scenario emphasizes the incorporation of major amenities into the new community. Significant sand and gravel extraction activities would create numerous lakes on the property that would serve as highly attractive residential and commercial real estate development sites. The lifestyle community would also include large community gardens and parks and two municipal golf courses. The plan would emphasize lower-density, more upscale housing and would not attract mass transit or significant employment centers.

This scenario would also emphasize environmentally responsible design of lakes and community amenities. The Lifestyle Community could serve as a model of environmental development. Given its emphasis on amenities and activities, this scenario would also present opportunities to create a retirement community on the property. However, the consultant team did not select this scenario due to the lack of social and economic diversity of the planned community and the lack of sufficient employment centers. It also does not fully take advantage of opportunities for University research, education, and public engagement.
Scenario Three – Lifestyle Community Plan

Legend
- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Golf
- Water
- Wetlands

*The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.*
Scenario Four: A New Sustainable Community

This scenario proposes the creation of an Eco-Industrial Business Park, emphasizing companies and technologies oriented to sustainable or “green” technologies, as a key component of the master planned community. The community would work to attract a light rail line and BRT facilities that would connect the Eco-Industrial Business Park and the new community with St. Paul and other key nodes in the Twin Cities region. The scenario would emphasize the development of a significant new employment center for the southeast suburbs and would therefore provide a more equitable jobs-to-housing balance.

A significant neighborhood center in the new community would provide a diverse mix of housing choices including single family detached, single family attached, multi-family, senior, condominium and apartment housing types. The provision of mass transit and significant employment centers would allow the community to develop housing at higher densities than the other three scenarios. Sand and gravel operations would provide for lakes and open spaces for the community. The Eco-Industrial Business Park in particular would provide opportunities for the University to promote and advance its sustainability initiatives on a larger scale.
Scenario Four – A New Sustainable Community Plan

Legend
- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
The Concept Master Plan incorporates the best elements of the four land use scenarios: open space connectivity, the provision of transit that works in tandem with density, a variety of residential and other land uses, and a range of employment opportunities including environmental industries. The Concept Master Plan also significantly satisfies the higher expectations of the evaluation criteria, and maximizes the complementary value of the Vermillion Highlands property. Most importantly, it provides the most varied and comprehensive linkages to the University’s academic mission. It is important to note, as well, the flexibility built into the Concept Master Plan to accommodate future change in the region.

Elements of all four preleminary scenarios informed the final Concept Master Plan. However, the illustration of the Concept Master Plan on the following page most closely resembles Scenario Four (A New Sustainable Community). The consultant team recommends the University work with the local development community to launch the Eco-Industrial Park on the eastern portion of the property. This venture would nurture and promote companies and industries advancing ideas of sustainability and would create a significant new employment center to stimulate ongoing residential and commercial growth in the new community and throughout the region.

The Concept Master Plan recommends that the University work to launch gravel and sand mining operations on western portions of the property that would, in time, become the landform foundations for lakes and related open space amenities serving a new master planned community. The University should actively work to provide for mass transit to the community at UMore Park, including both BRT and light rail lines, to stimulate employment center growth in the community and further the University’s goals related to sustainability.

As outlined in subsequent sections, the Concept Master Plan provides recommendations concerning a variety of programmatic and design elements based on Design Workshop’s four dimensions of Legacy Design: Economics, Environment, Art, and Community. It also illustrates potential returns to the University, and provides general frameworks for the implementation of the community and its ongoing operations.

Drawing from years of planning and design efforts, the Concept Master Plan provides a flexible development plan and strategy for the community at UMore Park that can guide decision making over time. This document provides greater details concerning the plan and assists the University in bringing the new community to life.
Concept Master Plan

Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest

VERMILLION HIGHLANDS

- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.

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APPENDIX: ENVIRONMENT

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CONNECTIONS TO VERMILLION HIGHLANDS

The University has a tremendous opportunity to leverage the environmental assets of Vermillion Highlands to enhance the environmental quality of the new community at UMore Park. Vermillion Highlands is more than three times larger than New York’s Central Park and will likely serve as an oasis of nature for the public over the generations as the Twin Cities continues to expand to the south and east. The property, jointly managed by the University and the DNR in conjunction with Dakota County, is designated for multiple public uses that include research, recreation (hiking, cross country skiing, equestrian trails, bird watching) and hunting and trapping. By law, the University will deed the property to the DNR in 2032.

The consultant team recommends that the UMore Park recreation and open space plan include trail and wildlife corridor linkages with Vermillion Highlands in order to provide connectivity in terms of both human and wildlife traffic. In addition, potential agricultural research areas within the Vermillion Highlands would dovetail with community gardens and local foods efforts within the community.

As the University, the DNR and Dakota County finalize the concept master plan for Vermillion Highlands and address implementation goals they should ensure effective connectivity with the community at UMore Park. The three partners should engage citizens to help ensure that plans for Vermillion Highlands provide substantial amenities and activities for humans, in addition to preserving the natural assets and wildlife on the property. The environmental assets in Vermillion Highlands will enhance the natural assets present on the UMore Park property and help to connect the new community with other natural resources further to the south, including the Vermillion River basin. The University, the DNR and Dakota County, together, can ensure that the plans for the community at UMore Park and for Vermillion Highlands integrate to serve the interests of the new community and the entire region.
Creating an environmentally sustainable community involves more than developing parks, open spaces, wildlife corridors, and other physical plans and improvements. The University can draw upon its faculty and students through multiple colleges and interdisciplinary centers such as the Institute on the Environment and initiatives in preK-12 and post-secondary education to achieve new levels of environmental education. The new community in conjunction with Vermillion Highlands is the unique seed bed for new approaches to lifelong learning and research that engages the public. The University should promote environmental education in the new community to ensure that every generation learns about the natural ecosystems and environmental assets of Minnesota and how they as citizens can preserve these resources and enhance the natural environment for future generations. A number of articles in recent years have documented the lack of knowledge urban dwellers have of the natural world.

The University’s Rosemount Research and Outreach Center can host a variety of educational programs and exhibits in the community and on the Vermillion Highlands property. Partnerships with schools and community groups will be important. As a pristine and restored natural area of several thousand acres near the Twin Cities, Vermillion Highlands represents a huge classroom for environmental education. Schools in the new community could coordinate with the Research and Outreach Center on class field trips and exhibits in school buildings and community gathering places to showcase Vermillion Highlands as a public resource and further environmental education.

Wetlands provide unique learning opportunities about water, vegetation, and animal species.
In addition, the new community could feature a high school or middle school that especially focuses on the environment. Sustainable development and the creation of clean or green technologies are some of the fastest growing industries for the 21st century. The school could help prepare students for careers in expanding industries tied to clean fuel development, environmental resource management, and sustainable agriculture. It would benefit from partnerships among the existing school district, the University and the neighboring Dakota County Technical College.

**METRICS FOR ENVIRONMENTAL EDUCATION**

» Creation of ongoing environmental education programming on the UMore Park property including Vermillion Highlands, coordinated by the Rosemount Research and Outreach Center and engaging multiple University colleges and units.

» Participation of primary and secondary students in the new community in environmental education programs.

» Increasing annual participation of adults in the new community in environmental education programs.
Soils and Water Management

The consultant team recommends that the construction of the new community strip and stockpile any topsoil from areas mined or disturbed for real estate development. This topsoil could be used to enhance landscaped areas such as parks, road right of ways and residential areas.

The nature of the soils at UMore Park would allow stormwater runoff to be successfully managed with low impact development and conservation design techniques. The UMore Park soils would also accommodate properly designed and constructed wetlands for wastewater treatment. The new community can achieve infiltration goals for groundwater recharge on the Waukegan soils. The anticipated sand and gravel operation should stockpile the high quality topsoil for later use.

**METRICS FOR SOILS**

- Erosion should be a fraction of the tolerable level of soil replacement.
- All prime topsoil should be retained on the site.

**Aggregate Extraction**

Gravel deposits, groundwater, and plans for gravel extraction at UMore Park are intimately related. The University’s mapping of gravel deposits from borings revealed that nearly 60 percent of UMore Park’s land surface contains gravel deposits that are 14 to 144 feet deep. The Aggregate Resources Map on the following page illustrates these depths. About a third of the area with gravel deposits contains assets of significant economic value because deposits in these zones range from 55 to 144 feet in thickness. The areas of thicker gravel deposits are concentrated in the western quarter of the UMore Park property and are distributed in a more dispersed pattern in the northeast quarter of the property. In the western portion of the site the thickest deposits orient from northwest to southeast, while the orientation in the eastern portion of UMore Park is less defined. The deposits along the western flank of UMore Park are the most economically valuable because of their depth and extent. Given projected growth rates, the Twin Cities market would not fully absorb the accessible gravel deposits on the UMore Park property until at least 2040.

A phased approach to gravel mining and development would optimize revenues from gravel by mining the areas containing the best gravel deposits and would concentrate urban development on the most viable areas at UMore Park, from a real estate perspective. The gravel deposits act as conduits for the rapid movement of shallow groundwater to the Mississippi and Vermillion Rivers. The deposits nearest the Vermillion Highlands and the Dakota County Regional Park likely feed groundwater discharge to the Vermillion River, its tributaries, and wetlands.

Because the groundwater beneath the areas of gravel deposits on the western portion of UMore Park are only 50 feet deep in places and mining may lower the grade in these areas by 40 to 100 feet, extractive activities may affect groundwater and trout stream habitats. In some areas, the depth of mining would reach groundwater levels and create groundwater lakes. The University launched a gravel Environmental Impact Statement (EIS) process in June 2008, following a competitive bid process. The EIS process is tentatively scheduled to be completed before January 2010.
NOTE: This contouring method does not consider existing topography along the perimeter of deposits. A one hundred foot property line setback is shown, Source 8.
De-watering during a mining operation can be a significant groundwater issue because groundwater flows to nearby water bodies and the Vermillion River could be interrupted. The other significant issues related to water quality (temperature, total dissolved solids, nutrients) pertain to both surface water and groundwater. Should the University choose to mine gravel, stormwater management during mining and adoption of a stormwater plan upon completion of mining would help address these issues. The mitigation, mine closure, and reclamation plans should include initiatives for groundwater and surface water monitoring, final grading and topsoil replacement, and revegetation. Grading would be executed to prepare the mining area for development. See the Concept Grading Plan on the following page for an indication of the potential grading that is encouraged to result following the gravel extraction process that will allow for development of the community.

METRICS FOR POTENTIAL AGGREGATE EXTRACTION

» During extraction, the average groundwater discharge to nearby surface waters should decrease by less than one percent.

» Surface water discharge during extraction should meet all regulatory standards for temperature, dissolved solids, and nitrogen.

» To the greatest extent possible, all commercially viable aggregate deposits should be extracted.
Concept Grading Plan

Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Proposed Contour Lines

VERMILLION HIGHLANDS

Highest Intensity Use
Moderate Intensity Use
Low Intensity Use

*The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
Drainage Systems and Stormwater Management

A well-designed stormwater management system that is responsive to the site's hydrology and stormwater management goals is essential for sustainability in the community at UMore Park. Before 1850, UMore Park was covered by a mosaic of prairie and savanna. Even with a temperate climate and moderate precipitation, the flat and rolling land and well-drained soils produced little runoff. As a result wetlands and perennial streams were limited on the UMore Park property.

The stormwater management approach for the Concept Master Plan preserves the historical drainage patterns as part of the strategy to protect water resources. Proximity to the Vermillion River trout stream raises expectations for runoff management, particularly for thermal pollution and groundwater preservation, which thereby ensures cold, clean base flows to the river.

The recommended approach to stormwater management mimics the natural water cycle by using natural systems—vegetated swales, rain gardens, and created wetlands—with engineered systems that enhance infiltration and storage. Rainwater should be viewed as a valuable resource rather than a waste product. This approach opens various opportunities for environmental protection, conservation, cost savings, enhanced aesthetics, and place-making. The UMore Park Concept Master Plan shows attractive boulevards and streetscapes, dispersed pocket parks, vast expanses of natural open space, and large groundwater-fed lakes as illustrated on the Stormwater Concept Plan on the following page. These design elements work well with low impact development and alternative stormwater management.

The consultant team developed conceptual water budget calculations for the community to analyze the effects on stormwater and hydrology based upon conventional development patterns, versus development strategies that employ the latest conservation techniques and technologies. It is important to emphasize that this water budget is conceptual and should be used only for general guidance concerning water use and conservation. Water budgets are a one-day snapshot for a normal rainfall year and for a drought year. A given study area achieves sustainability when losses equal inputs. The following Conceptual Water Budget Table summarizes the findings for a normal year. Water inputs at UMore Park include precipitation, food and drink, and groundwater. Precipitation at UMore Park and the Vermillion Highlands totals 34.6 inches annually, or about 18.8 million gallons per day. If UMore Park were developed conventionally, without employing water conservation or re-use strategies, the needs of the community would be satisfied by pumping 9.6 million gallons from groundwater sources each day. The consultant team assumed use by 30,000 residents and 25,000 daily workers in the community located at UMore Park.
Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest

VERMILLION HIGHLANDS

- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

* The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
### Conceptual Water Budget Table

<table>
<thead>
<tr>
<th>Water Budget Element</th>
<th>Conventional Average Daily Use (Millions of Gallons)</th>
<th>Conservation Average Daily Use (Millions of Gallons)</th>
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</thead>
<tbody>
<tr>
<td><strong>Inputs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precipitation</td>
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<td>18.8</td>
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<tr>
<td>Food &amp; Drink</td>
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<td>0.04</td>
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<td>Well Water</td>
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<td>-2.9</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td>16.0</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
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<td></td>
</tr>
<tr>
<td>Runoff Storage</td>
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<td>1.2</td>
</tr>
<tr>
<td>Wetland/Aquatic (Lake) Storage</td>
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<td>0.2</td>
</tr>
<tr>
<td>Wastewater Storage</td>
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<td><strong>Subtotal</strong></td>
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<td>4.3</td>
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<tr>
<td><strong>Use</strong></td>
<td></td>
<td></td>
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<tr>
<td>Indoor Water Use</td>
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<tr>
<td>Irrigation Use</td>
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<td>2.5</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td>6.5</td>
</tr>
<tr>
<td><strong>Outputs</strong></td>
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<td>Evapotranspiration Loss</td>
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<td>6.9</td>
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<tr>
<td>Lake Evaporation Loss</td>
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<tr>
<td>Runoff Loss</td>
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<td>1.2</td>
</tr>
<tr>
<td>Infiltration/Recharge Loss</td>
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<td>2.0</td>
</tr>
<tr>
<td>Graywater Export</td>
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<td>1.1</td>
</tr>
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<td>Septic Water Export</td>
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</tr>
<tr>
<td>Indoor Water Use Loss</td>
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</tr>
<tr>
<td>Irrigation Loss</td>
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</tr>
<tr>
<td><strong>Subtotal</strong></td>
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<td>16.0</td>
</tr>
<tr>
<td><strong>Water Balance</strong></td>
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<td>0.0</td>
</tr>
</tbody>
</table>

*This water budget is conceptual and should be used only for general guidance concerning water use and conservation.*
The conservation-oriented water budget for the community at UMore Park assumes that water usage is balanced to equal the amount of water falling on the site, in the form of precipitation. The analysis indicates that irrigation would be a major consumer of water in the new community. Therefore, the consultant team recommends a variety of alternative approaches to maintain the community’s boulevards, parks, and open spaces. Applicable tools include pre-fabricated sub–irrigation chambers under recreational turf and passive irrigation of street plantings by runoff.

The recommended stormwater system is designed to harvest, treat, and disperse precipitation in a way that minimizes the financial and groundwater burdens of irrigation. In addition, indoor conservation techniques could reduce water use by 30 percent.

**INPUTS**

The sources of water to meet the needs of the new community:

- Precipitation: The annual amount of rain and snow falling on the new community and the Vermillion Highlands property, expressed on an average daily basis for a normal rainfall year.

- Well water: The water necessary to be pumped from groundwater aquifers located below the UMore Park property in order to meet the community’s water needs.

**USE**

Direct use of water by the community at UMore Park:

- Indoor Water Use: All indoor uses.

- Outside Irrigation Use: Water used to water lawns, parks, ballfields, and planting beds.

**LOSSES**

The ultimate destination for water entering the community

- Evapotranspiration: Water evaporating from land and transpired from the surfaces of leaves.

- Lake Evaporation: Water that evaporates from the surfaces of lakes.

- Runoff: Water that flows off the land and into drainages that leave the property.

- Infiltration / Recharge: Water that moves into the soil and then into the groundwater.

- Graywater Export: Water used indoors for washing clothes and for bathing and discharged to wastewater treatment plants.

- Septic Water Export: Water used indoors for flushing toilets and in sinks with disposal units and discharged as above.

- Indoor Water Use Leakage: Water that is lost inside buildings simply due to leakage, evaporation, and other factors.

- Irrigation: Irrigation draws water from the water supply system and results in losses due to evaporation, evapotranspiration, infiltration / recharge, and runoff.
A conservation approach to water uses only the precipitation that falls on the site, recharges the groundwater aquifer, and maintains ecosystem processes. As illustrated in the **Conceptual Water Diagram** below, key strategies include 1) returning purified wastewater to the groundwater (at left); 2) reducing indoor and irrigation water use (at center); and 3) harvesting rainfall and snowmelt (at right) to use indoors, fill up lakes and water towers, irrigate turf and trees, and recharge the groundwater for later pumping during periods of drought.

The Design Workshop team recommends different strategies at different locations in order to capture, convey, treat, and use precipitation. The strategies and techniques vary across the site based on land use and location. Dense urban areas require more engineered solutions, while low density areas may accommodate fully natural systems. The recommended stormwater system is designed to meet current criteria regarding degradation of waters and facilitate exceeding them when technology permits. The system would enhance surface water, preserve groundwater, and use passive, gravity-based conveyance to reduce operational and maintenance costs. Further, the stormwater system should be planned to address, to the extent possible, future criteria for groundwater and surface water protection.

**Conceptual Water Diagram**

![Conceptual Water Diagram](image)
Features of the recommended sustainable stormwater management system include:

» Harvested precipitation (roof water) and storage in cisterns for later treatment and potable use;

» Irrigation by conveying runoff to boulevards, streetscapes and open space via gently sloping vegetated swales and minimal piping and pumping. The system would provide exceptional water quality treatment through a stormwater treatment train of vegetated swales, prairies, and wetlands which deliver high quality water to lakes and streams;

» Replication of a natural hydrograph, with natural runoff rates and volumes, in water bodies downstream from the stormwater management system; Emphasis on infiltration to replenish lakes and groundwater resources; and,

» Recommending graywater use and/or “purple pipe” systems for landscape irrigation via tertiary-treated capillary irrigation systems to reduce energy use and water loss through evapotranspiration.

» Re-use or infiltration of 60 percent of water used in buildings.

» Groundwater should only be used when required during drought years with recharge of groundwater in normal rainfall years.

METRICS FOR STORMWATER

» Meet or exceed all of the thresholds of regulatory requirements concerning stormwater management established by local jurisdictions.

» The total runoff volume from the property into on-site and nearby streams should not exceed the pre-settlement levels of runoff volume.

» Levels of infiltration of drainage should at least match those of the pre-development condition.

» Site runoff should meet or exceed Vermillion River Watershed Joint Powers Organization (JPO) and University of Minnesota stormwater standards.

» The development of UMore Park should result in less impervious cover (as a percentage of total acreage) as compared to conventional suburban development in the Twin Cities region.

» The annual hydrograph for the water courses in the new community and the Vermillion Highlands property (reflected in the annual runoff volume and the sizing and timing of water flows) should be the same as that for pre-settlement conditions. This metric would meet the standards of the Vermillion River Watershed Joint Powers Organization (JPO) for runoff volume and water quality.

METRICS FOR HYDROLOGY AND STORMWATER MANAGEMENT

The conceptual water budget and associated conservation strategies are targeted to achieve the following:

» Reduction of indoor water use by 30 percent.

» Reduction of irrigation use by 40 percent.

» Re-use or infiltration of 50 percent of stormwater runoff.
Groundwater

With the recommended water management approach, the community at UMore Park should be able to close the loop on groundwater withdrawal and replenishment of aquifers. The groundwater setting helps to facilitate this process. Movement of precipitation into shallow groundwater—through infiltration and recharge—takes less than a month due to the presence of sandy soils and well-drained subsoils. Rainfall events of up to six to nine inches may infiltrate the soil naturally and may be used as groundwater. The recommended systems for stormwater management, wastewater, and water supply and re-use are designed to preserve and enhance this natural cycle of infiltration on the UMore Park property.

The shallow or surficial aquifer lies 50 to 120 feet beneath the land surface on the UMore Park property. Some areas of the aquifer emerge as springs, wetlands, and streams on the Vermillion Highlands property to the south. The shallow aquifer is contained in the sands and gravels of a vast outwash plain and braided stream system deposited by the Superior Lobe over 10,000 years ago. It lies above and feeds the St. Peter, Prairie du Chien, and Jordan bedrock aquifers. Groundwater in the bedrock aquifers then moves to the Mississippi River at a rate of dozens of feet per day. In the southern third of the UMore Park property, the shallow aquifer moves southeast to the Vermillion River, a designated trout stream and its tributaries, and wetlands. In the northern two-thirds of the UMore Park property, groundwater flows to the east, emerging in wetlands, other Vermillion tributaries, and the Mississippi River.

The shallow aquifer is used primarily for agricultural irrigation and is more acutely affected by drought and contamination than bedrock aquifers. Water use by municipal and other non-agricultural entities currently taps the more dependable Prairie du Chien and Jordan aquifers, as would the new community at UMore Park. The Prairie du Chien aquifer can yield hundreds of thousands of gallons per day from a single well.

METRIC FOR GROUNDWATER

» The depth to water table in the surficial (e.g., Quaternary) and deep aquifers (e.g., Prairie du Chien) should remain consistent with long-term trends through cycles of wet, normal, and dry years. Depth measurements would be obtained from wells in and around the new community.
Note: The surficial aquifer should maintain lake levels in the new community and Vermillion Highlands and provide much of the community’s water supply. The deep aquifer would be used as a reserve to fill lakes and provide drinking water during drought years. The surficial aquifer discharges to local wetlands, streams, and the Vermillion River, and recharges the Prairie du Chien aquifer. Thus, the depth to water table is the best metric to track trends in groundwater on the UMore Park property.

**Water Temperature**

The Minnesota Department of Natural Resources has designated the Vermillion River and some of its tributaries as official state trout streams. These streams receive stormwater runoff from UMore Park and Vermillion Highlands. The brown trout population does best when stream temperatures are below 18°C (64°F). Higher temperatures slow growth and affect reproduction. A single day of stream temperatures over 23°C (73°F) can kill young trout. In mid-summer, when the river is low and more easily heated, stream temperatures reach 23°C in the Vermillion River in the area below the Empire Wastewater Treatment Plant.

Besides trout, the food chain depends on aquatic insects that are also affected by stream temperature. The Minnesota Pollution Control Agency’s permit requirement for discharge from new development mandates “no material increase” in the temperature of runoff flowing to nearby streams. The Vermillion River Watershed JPO requires that nearly all rainfall be infiltrated to pre-development levels, thereby effectively protecting the river from heated surface runoff produced by new developments.

Much of the heat in stormwater runoff typically comes from flat rooftops, pavement, and unshaded stormwater ponds. Painting flat rooftops in reflective colors, shading pavement, infiltrating impervious surface runoff, storing runoff in wetlands, and using best management practices reduces heat export. The consultant team emphasizes infiltration and wetland storage in residential areas. In urban areas, shading pavement, painting rooftops, and storing runoff provide the main tools to control stormwater runoff temperature.

**METRIC FOR WATER TEMPERATURE**

» Water released from the new community and Vermillion Highlands into the Vermillion River should register the same temperature as water that would be released for a similar storm under pre-settlement conditions so as not to compromise the quality of trout streams.
Vegetation

UMore Park’s existing vegetation is dominated by cultural land covers such as agronomic crops. Natural and semi-natural land cover on the site includes vacated farm fields with and without invasive trees and shrubs, second-growth woodlands and forests, and several small depressional wetlands. Disturbed and second-growth plant communities are typically dominated by non-native and invasive species, such as smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), reed canary grass (*Phalaris arundinacea*), sumac (*Rhus spp*), prickly ash (*Zanthoxylum americanum*), boxelder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), and Siberian elm (*Ulmus pumila*).

Altered or severely degraded plant communities provide habitat for some wildlife but are limited in their capacities to provide food, foraging sites, nesting sites, and breeding sites for many native wildlife species, including endangered, threatened, and rare animals. University faculty and students could be involved in studies of ecological restoration and enhancements to improve these natural and semi-natural areas for native wildlife species, especially wildlife that are now rare or have vanished due to habitat destruction.

METRICS FOR VEGETATION

» The development should result in at least doubling the original acreage of vegetation on the property.

» The naturalized areas of the new community should include as many as 200 different native tree, shrub, and herbaceous plant species.

» Control non-native invasive plants and listed noxious weeds in the new community.

Single rows of trees separate farm fields, providing little vegetative cover for animal species.
Natural Areas

Few intact natural areas remain on the UMore Park property. The Minnesota Land Cover Classification System (MLCCS) mapping of the site identified two native plant communities: a mixed emergent marsh in the north-central portion of the site, and an oak forest in the far northeast corner of the site. The DNR County Biological Survey also mapped the forest, but classified it as falling below the minimum threshold for biodiversity significance. The marsh is poorly described in existing surveys but the oak forest is documented as highly disturbed, with few oaks, and has been invaded by non-native common buckthorn (*Rhamnus cathartica*), Tartarian honeysuckle (*Lonicera tatarica*), and garlic mustard (*Alliaria petiolata*). While these natural areas appear to be in poor condition, protection and restoration of the last remaining natural areas on the UMore Park property serves as a template for future regeneration of other areas on the site. The community has the potential, with restoration, to very quickly provide improved wildlife habitats and serve as a quality natural area destination for local residents.

**METRIC FOR NATURAL AREAS**

- The ecological conditions of natural areas that have deteriorated as a result of disrupted ecosystem processes and the presence of invasive species should be restored.

Wildlife Corridors

The Concept Master Plan provides for wildlife corridors inside the development and between Vermillion Highlands: a Research, Recreation, and Wildlife Management Area and the Pine Bend Bluffs Scenic and Natural Area (SNA), as shown on the *Proposed Regional Wildlife Corridor Connectivity Plan* on the following page. The SNA is a natural area along the Mississippi River in Inver Grove Heights, about three miles north of UMore Park, and includes mesic oak forests, a variety of dry prairies and rugged terrain, including bottomland along the river and nearby 200 foot bluffs.

The plan also outlines potential wildlife corridors between the community at UMore Park and the significant open space acreage surrounding the Flint Hills refinery facility along U.S. 52 about one mile north of the property. Wildlife corridors provide important connections between habitat areas. They make migration safer, enlarge small populations of wildlife, prevent inbreeding and the loss of genetic diversity, and increase regional population stability.

The consultant team recommends providing sufficiently wide and intact wildlife corridors in the new community to accommodate a diversity of species with different needs. Small mammals, amphibians and reptiles benefit from intact habitat, water, and food resources inside these corridors. The width of some of the corridors (up to 800 feet) makes them very conducive environments for specialist wildlife species, large mammals, and birds. Specialist species requiring large habitat blocks benefit from corridors of native plants.
Proposed Regional Wildlife Corridor Connectivity Plan
Natural plantings embedded in nearby developments increase the perceived width of wildlife corridors. Limiting trees in wildlife corridors benefits prime wildlife species. Native plantings in open space also create alternative routes through developments.

Road crossings are especially important in corridor design—the number of wildlife deaths at road crossings can exceed natural mortality rates and eliminate local populations. The greatest need for special wildlife crossings is along UMore Park’s eastern boundary as shown on the UMore Park Wildlife Corridors Plan on the following page. This crossing location provides for the shortest distance between Vermillion Highlands and Pine Bend Bluffs SNA. The consultant team recommends designing road crossings to allow for the needs of a diverse array of wildlife. For example, small mammals prefer small tunnels, but turtles use tunnels of at least 36 inches width with flat or elliptically-shaped bottoms. Birds and large mammals prefer large, habitat-like road crossings that are as open to sunlight as possible and cloaked with vegetation. Wildlife corridors should be near roadways and designed to be narrow, approached with a gradual slope, and fenced along roadways to guide animals to crossings. Major road underpasses are recommended for County Roads 42 and 46 along the east side of the UMore Park property. Minor road underpasses elsewhere are recommended to incorporate less expensive box culverts and barriers. Other at-grade road crossings could include traffic calming features (such as speed bumps and signage) and fencing to direct wildlife.

METRICS FOR WILDLIFE

» Regional wildlife corridors through the site should be 800 feet wide to ensure that prairie, savanna and wetland species include the normal, large population sizes needed to survive into the future.

» The University faculty and students should be engaged to use prairie and savanna wildlife species to indicate whether an ecosystem is healthy and wildlife populations are thriving. When habitat quality is poor, indicator species become rare or disappear. When conditions improve, indicators become more common. The presence of badger, upland sandpiper, and short-eared owl over several years in a row would indicate that habitat restoration work and wildlife protection is succeeding.

The consultant team identified wildlife species that should be used as indicators (as shown in the Wildlife Indicator Species Table). The Vermillion Highlands joint steering committee is managing the property to promote pheasant, turkey, and deer; these additional wildlife indicators would be compatible with game species. The consultant team selected the wildlife indicators for the new community from a list of the animal species that normally live in large, natural prairies, savannas, and wetlands. The consultants screened this list and made a final list of indicators based on the regional status of the animals, as determined by the DNR and the Audubon Society. These species should increase in abundance as wildlife habitat efforts move ahead.

The consultants recommend that the number populations of indicator species be increased up to the target population size. These population sizes were estimated by using the normal densities or territory sizes of the
The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
## Wildlife Indicator Species Table

<table>
<thead>
<tr>
<th>Group</th>
<th>Scientific name</th>
<th>Common name</th>
<th>List/state status</th>
<th>Present[1]</th>
<th>Indicator status</th>
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<tbody>
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<td>Ammodramus henslowii</td>
<td>Henslow’s Sparrow</td>
<td>SGCN/END</td>
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<td>Reptiles</td>
<td>Pituophis catenifer</td>
<td>Gopher Snake</td>
<td>SGCN/SPC</td>
<td>Yes</td>
<td>Indicator/top predator</td>
</tr>
</tbody>
</table>

[1] Present within region. Y = known presence within 10 miles from DNR Natural Heritage data or Audobon data. N = tracked by DNR and not known to be present within 10 miles of project site. Unk/pos = not tracked by DNR heritage program, listed in the MN plan for the Wild and Rare as present within the surrounding sub-ecoregions.

SGCN = Species in Greatest Conservation Need; SPC = Special Concern; END = Endangered; THR = Threatened; CAND = Candidate Species for Listing
<table>
<thead>
<tr>
<th>Group</th>
<th>Scientific name</th>
<th>Common name</th>
<th>Population target[1]</th>
</tr>
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<tr>
<td>Birds</td>
<td>Ammodramus henslowii</td>
<td>Henslowe’s Sparrow</td>
<td>100-200</td>
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<tr>
<td>Birds</td>
<td>Asio flammeus</td>
<td>Short-eared Owl</td>
<td>Occasional</td>
</tr>
<tr>
<td>Birds</td>
<td>Lanius ludovicianus</td>
<td>Loggerhead Shrike</td>
<td>20-100</td>
</tr>
<tr>
<td>Birds</td>
<td>Ammodramus savannarum</td>
<td>Grasshopper Sparrow</td>
<td>100-200</td>
</tr>
<tr>
<td>Birds</td>
<td>Bartramia longicauda</td>
<td>Upland Sandpiper</td>
<td>Present</td>
</tr>
<tr>
<td>Birds</td>
<td>Dolichonyx oryzivorus</td>
<td>Bobolink</td>
<td>50-200</td>
</tr>
<tr>
<td>Birds</td>
<td>Spiza Americana</td>
<td>Dickcissel</td>
<td>50-200</td>
</tr>
<tr>
<td>Birds</td>
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<td>Field Sparrow</td>
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<td>Birds</td>
<td>Sturnella magna</td>
<td>Eastern Meadowlark</td>
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<td>Microtus ochrogaster</td>
<td>Prairie Vole</td>
<td>1-100/acre in prairie</td>
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<tr>
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<td>2-4/ acre</td>
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<td>2-3/acre in prairie</td>
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<td>Taxidea taxus</td>
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<td>Reptiles</td>
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<td>Gopher Snake</td>
<td>Present</td>
</tr>
</tbody>
</table>

species and data concerning the potential available habitat at UMore Park and Vermillion Highlands, should restoration proceed as anticipated.

**METRICS FOR HABITATS AND CORRIDORS FOR SAVANNA AND PRAIRIE SPECIES**

Maintain and Enhance:

» The size and plant composition of restored prairie, savanna, and wetland habitat patches.

» The total number of wildlife species witnessed each year.

» The population size of the indicator species observed at the new community and Vermillion Highlands together.

**Wetlands/Ponds/Waterbodies**

UMore Park’s topography and soils limit the extent of lowland and aquatic resources present on the property.

Minnesota Land Cover Classification System (MLCCS) mapping of the site located a small pond in the northeastern portion of the site that appeared in a 2003 aerial photograph to be an emergent wetland. The MLCCS data did not map any other waterbodies or wetlands on the UMore Park property. In a separate survey, remote sensing data and field work conducted in 2007 confirmed that the proposed development area for UMore Park includes five wetlands totaling 4.88 acres.

These wetlands likely rank as either Type 1 (ephemeral wetland, wet prairie) or Type 2 wetlands (wet meadow) and may contain small areas of Type 3 wetlands (indicative of shallow marshes). The exact sizing of lakes and ponds in the new community would depend on the plan for aggregate extraction and on the water budget for the community, given consideration of evaporation and storage needs. In addition, four other areas within UMore Park, totaling just over 109 acres, may contain wetland patches. Drought conditions present in 2007 made the assessment of the wetland assets on the property difficult, and future field work is required to more accurately determine the acreage of wetlands on the UMore Park property. Based upon an examination of the current data and wetland patterns in the region, the consultant team estimates that existing wetland areas at UMore Park total less than 100 acres.

The consultant team recommends a stormwater management system and open space program that provides for several lakes and ponds and numerous lowland and aquatic amenities. The Concept Master Plan includes one proposed large lake in the western portion of the community that would be created from aggregate extraction areas and would represent a surface expression of the Quaternary (shallow) groundwater table. A near-term groundwater modeling project would aid in the design of lakes and ponds, but preliminary information suggests that limiting shallow groundwater extraction and maximizing infiltration around these lakes would be critical to sustaining water levels. A significant opportunity exists to create a substantial acreage of wetland bank credits given potential aggregate extraction activities, the ecological approach to stormwater management, and the conceptual open space plan.
METRICS FOR WETLANDS / PONDS / WATERBODIES

» Up to 400 acres of wetlands should be restored to benefit wildlife, water quality, recreation, stormwater management, and wetland mitigation.

» Stormwater management and groundwater protection should result in high water quality in lakes on the property and nearby.

People and Nature

The consultant team recommends that the community at UMore Park include extensive areas for wildlife viewing and natural area trails. These amenities would provide opportunities for healthy recreation and education to promote the restoration and conservation of the natural environment. University faculty and students should be involved in research that focuses on connecting water, green space, wildlife corridors, and adjacent lands with people. The Trails and Bikepaths Plan shows the connectivity for people throughout the new community.

Access to wildlife areas would allow the public to discover and appreciate nature’s beauty, and in turn would generate community support for efforts to protect and restore natural resources. Convenient access to the natural amenities of the property would create a venue for the study of wildlife and the interface between urban and wildlife areas, which represents a growing area of academic research.

Recommended natural area trails would promote exercise in the new community. Hiking, biking, and cross-country skiing all have positive physical effects and create only minimal disturbances of wildlife and wildlife habitats. Careful planning and management of trails would minimize negative impacts on wildlife while maximizing the enjoyment and recreational benefits for residents.

The Concept Master Plan provides for trails located primarily at the edges of wildlife habitat areas and corridors, protecting core habitats for sensitive species. Enclosed and elevated boardwalks and blinds would allow for limited access to core wildlife areas, but would prevent frequent and more significant excursions into sensitive zones by residents and visitors.

Educational signboards and kiosks would promote the overall experience of viewing the natural environment and encourage wise use of the community’s open space and natural resources. Community education, learning activities and other events could be coordinated through the University’s Rosemount Research and Outreach Center on the southern border of the property. The Center would serve as the mechanism to engage faculty and students with the community.
**Trails and Bikepaths Plan**

Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest
- Trails
- Designated Bike Lane/Route

VERMILLION HIGHLANDS

*The shades of color on the Vermillion Highlands indicates intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.*
The promotion of thick and un-mowed prairie vegetation in wildlife areas would limit excursions by pets, in particular cats. In addition, frequent mowing and weeding of disturbed areas (e.g. trails and gathering places such as picnic shelters) prevents the invasion of non-native weeds into sensitive environmental zones.

The recommended open space plan for the new community at UMore Park allows for motorized traffic (e.g. snowmobiles) and horses in limited areas, and only during certain times of the year. In order to limit disturbances to wildlife and enhance interactions between humans and wildlife, the consultant team recommends motorized traffic near core wildlife habitat be minimized, muffled, and limited to non-breeding wildlife seasons. The plan would retain a 200 foot buffer between roads and core habitat zones for specialist species. Because horses disperse seeds from weeds and invasive plants, the Concept Master Plan limits horse traffic to managed trails on the UMore Park property.

Urban/Wildlife Interface

A well-planned urban/wildlife interface promotes environmental education and builds support for resource protection and enhancement. The recommended open space program allows urban residents to discover and appreciate nature’s beauty, particularly through youth education and children’s activities. The urban / wildlife interface would also enhance existing wildlife habitats if executed properly.

Unique wildlife species living in Vermillion Highlands would be able to use additional areas for habitat in the recommended open space areas of the new community. Native plants provide nesting cover and food for butterflies and seed-eating birds. Created wetlands would add critical water sources in an otherwise dry environment.

The recommended open space program would also divert human traffic away from nearby wildlife corridors and Vermillion Highlands. Areas of interface between development and mixed wildlife habitats would provide food, cover and usable wildlife corridor habitats. These
interface zones include substantial native landscaping, and flower plantings would provide important nectar and pollen sources for butterflies and bees. Ornamental native grasses would provide habitat for birds, and wildflowers and grasses left standing through winter would provide seed and cover and greatly increase bird species diversity in the urban setting of the new community.

Because predation in prairie areas by tree perching hawks and falcons may occur up to a quarter-mile away, the community should limit tree plantings along wildlife corridors and core habitat areas. Recommended trails for walking and viewing wildlife in the vicinity of core habitat areas should be designed to minimize disturbances to sensitive wildlife.

**METRICS FOR COMPATIBILITY OF WILDLIFE, TRAILS, AND URBAN LAND USE**

- Invasive plant species should comprise less than five percent of vegetation in wildlife habitat cores and buffer zones and along trails in open space areas.
- The non-native bird species (house sparrow, house finch, European starling) that compete with native species should comprise less than one percent of the population of individual birds in core wildlife habitat areas.
- Mid-sized predators (striped skunk, raccoon and red fox) should have population densities in core wildlife habitat areas that are lower than typical for urban and rural areas.
EXTERNAL ENVIRONMENTAL IMPACTS

Urban Heat Island

The “urban heat island effect” refers to the tendency of built-up urban areas with high levels of impervious land cover, including central business districts of major cities, to register air temperatures several degrees higher than those recorded in outlying suburban or rural areas. This effect is typically strongest in winter and on summer evenings and contributes to lower overall air quality and to greenhouse warming. Land covers typically found in urban core areas, including commercial and industrial roofs, concrete pavement, and asphalt, heat the air more than other urban surfaces, such as the roofs of single-family residential houses and similar structures. Monitoring and recording of the urban heat island effect is complex, but some data sources in Minnesota allow for the measurement of success in countering urban heating. The St. Anthony Falls Laboratory at the University has measured and modeled air temperatures for urban structures, and the University has monitored temperatures at UMore Park for many years. As the new community develops, the University will be able to measure the change in air temperature at various times of day and for various seasons in order to document urban heat island effects stemming from development.

A variety of strategies to counter the urban heat island effect in the new community could be employed. Commercial and industrial structures in the development should employ more reflective coverings on roofs that have high thermal mass in order to reduce the heating of structures, and the community should use the latest technology to increase the reflectivity of asphalt and concrete surfaces.

The new community should also maximize the shading of impervious surfaces. Green roofs and the planting of trees and shrubs on roofs and next to buildings and impervious surfaces would reduce urban heating. In addition, the community should design traffic islands, cul-de-sacs, islands between parking lot lanes, boulevards, lawn areas, and streetscapes to minimize impervious surfaces and reduce urban heating.

The community should explore opportunities to minimize the footprints of impervious surfaces, to build vertically where feasible, and to minimize road widths. The new community’s design should also maximize vegetation layers, leaf surface area, and evapotranspirative cooling of the air to lower air temperature. Where feasible, trees should be planted above low-profile shrubs and herbs, and shrubs should be planted above herbs to maximize vegetation volume and its cooling effect.

METRIC FOR URBAN HEAT ISLAND EFFECT

- The average air temperature difference between the new community’s developed areas and the surrounding rural areas (measured at a height of five feet above the ground) should average less than one degree Fahrenheit.
Air Quality

The consultant team anticipates that pollution from vehicle use, power plants, and manufacturing facilities would present the primary air quality issues in the new community. Vehicles typically represent the largest source of emissions in residential and mixed-use developments and produce elevated levels of carbon dioxide and nitrogen and sulphur air pollutants that contribute to ground-level ozone, a regulated material considered to be a health hazard. The Minnesota Pollution Control Agency (MPCA), which tracks daily ground level ozone and issues air quality alerts, has issued a higher number of air quality alerts in the Twin Cities in recent years as the number of vehicles in the region has increased. The metropolitan area is approaching an Environmental Protection Agency (EPA) threshold that would trigger the region to complete a regional air quality management plan that would add regulatory oversight and increase costs to the regional economy.

Small-scale power plants and various manufacturing facilities would also contribute to air quality issues in the new community. Non-polluting wind turbines and ground-based heat pumps, which do not produce emissions, should provide a portion of the electricity resources for the new community. District heating plants that produce heat and electricity through the gasification of waste and biomass and the combustion of methane, thereby producing emissions, should provide a portion of the power for the new community at UMore Park.

Completion of Environmental Impact Statements and air quality permits would be required to construct the power facilities that generate emissions. Various manufacturing facilities located in and near the Eco-Industrial Park on the eastern portion of the property would produce emissions and require completion of air quality permits as well.

Various features of the new community would improve air quality. For example, creating a sustainable balance of jobs to housing in the community, a variety of options for retail and entertainment, and non-auto transportation options such as biking and walking trails would reduce vehicle trips in the development and thereby lower emissions. Planning the new community at UMore Park to accommodate non-emitting vehicles such as Neighborhood Electric Vehicles and Segways or other Human Transport Vehicles would further improve air quality. Installation of the latest technologies for pollution removal in power generation facilities and manufacturing facilities would improve air quality as well. Other sections of this document explore these elements of community design in greater detail.
**METRICS FOR AIR QUALITY**

- The new community should strive to produce an increase of no greater than one percent in the production of particulates contributing to ozone (including carbon monoxide and nitrogen and sulphur air pollutants).
- Wood stoves or fireplace inserts installed in homes should meet EPA certification for these appliances.
- Outdoor burning of household trash, including leaves, should be banned. Such waste will alternatively be composted.
- Emissions from painting, healthcare operations, and manufacturing processes should meet the latest standards from the EPA and related organizations.
- The new community’s power generation facilities and manufacturing facilities should strive to exceed federal and state standards for emissions of mercury, nitrogen and sulphur air pollutants, and other toxins.
- The new community at UMore Park should strive to offset emissions of carbon dioxide from the community.
- The number of car and truck trips involving the new community as a destination or point of origin should increase proportionally with the population growth of the community, as opposed to geometrically.

**Light Pollution**

The consultant team recommends that the new community develop using the standards of the International Night Sky Association in order to minimize light pollution emanating from the community. Energy can be conserved while providing for adequate lighting for public safety in neighborhoods and commercial centers. The new community at UMore Park should use the latest technologies, including lower intensity lighting and proper shielding, in order to preserve night views of the stars. University researchers could further study new technologies and programming around astronomy and the night sky to better inform and enrich residents.

**METRICS FOR LIGHT POLLUTION**

- The new community should require that all street, residential, business and municipal lighting limit spillover glare to 0.5 foot candles at the edge of the property and use full-cutoff fixtures out of doors, meeting LEED or other future standards.
- The new community should require that lighting for businesses be turned off one hour after close of business except for lighting needed for security and safety, meeting LEED or other future standards.
- The new community should limit overhead lighting within 200 feet of wildlife corridors in the open spaces of the new community, and require full cut off lighting with low pole heights in these areas.
Noise

Development at UMore Park would create noise from a variety of sources, including car and truck traffic, buses and trains, power generation operations, manufacturing facilities, and noises associated with human activity including lawn mowing, children playing, and dogs barking. Given the focus of the new community on residential uses, noise studies and mitigation efforts should focus on major transportation corridors including County Roads 42 and 46, major north-south arterials, and dedicated light rail and bus rapid transit corridors. In addition, noise control should focus on truck traffic generated from biomass plants near County Road 42 and the potential light manufacturing facilities planned for the Eco-Industrial Park.

Minnesota state statutes have established noise standards for communities that vary by time of day and different land uses. Residential, non-retail and non-manufacturing indoor uses require the lowest noise levels, and manufacturing and transportation uses allow the highest noise levels. The most important noise control measure in the new community involves shielding residential neighborhoods from the noise of transportation corridors. The Concept Master Plan provides for the separation of noisy land uses from residential and retail areas.

The recommended light rail corridor passes through higher density, mixed-use areas as opposed to primarily single-family residential neighborhoods. In tighter spaces, earthen barriers, wood and metal barriers, and vegetation barriers would help reduce noise levels. Rubber could also be added to the asphalt surfaces of major roads to reduce noise levels.

Recommendations to reduce noise include:

» Distances are maximized between residential and non-retail/ non-manufacturing uses (Noise Area Class 1), transport facilities, retail outlets and businesses (Noise Area Class 2), and manufacturing, transportation, and production corridors (Noise Class Area 3);

» Earthen berming for all residential areas located adjacent to arterial roadways should be provided;

» Results of a future Alternative Urban-Wide Area Review (AUAR) and the gravel mining EIS should be used to understand the baseline noise condition at UMore Park, the noise impacts of major transportation corridors, and to determine mitigation needs; and

» University researchers could access new technologies for noise abatement to reduce noise within the community.

METRICS FOR NOISE

» Minnesota motor vehicle noise limits (MN Rules 7030) should be met.

» Minnesota noise pollution control rules (MN Rules 7030.0040) should be met.

» Local noise ordinances should be followed during and after construction.

» Vegetation, open space, building insulation and local terrain (including the use of berms) should be the means of reducing noise impacts from vehicles and land-uses, rather than noise walls, to address aesthetic standards.
Solid Waste

The consultant team recommends that the new community at UMore Park promote innovative strategies to reduce solid waste production and to improve the management and treatment of the solid waste stream. The Twin Cities region currently produces 1.26 tons of solid waste per person, per year from all sources, including the industrial, commercial, and residential sectors. According to Dakota County, the metropolitan area produces enough trash in a year to fill the Metrodome 11 times over. Currently, landfills in the region receive 40 percent of this waste, recycling programs absorb an additional 40 percent, and programs to convert the waste stream to energy (including incineration) absorb the remaining 20 percent. Minnesota’s municipal solid waste recycling rate of 41 percent is the second best rate in the nation, next to Oregon’s. However, this rate has not increased significantly during the last ten years. The Minnesota Pollution Control Agency has established a goal of increasing the state’s recycling rate to 50 percent by 2011. The consultant team recommends that the new community work to achieve a 55 percent recycling rate through a focus on recycling of cans, bottles, paper and cardboard, and organic waste.

The consultant team recommends that the new community employ cutting edge “pre-consumer” programs to reduce solid waste generated by manufacturers and distributors during the process of creating and marketing products to residents in the area. Such programs could benefit from University research and demonstration. Programs could be developed and delivered by University Extension and other outreach centers.

The consultant team also recommends that the new community pursue cutting-edge programs to reduce the percentage of “post-consumer” waste entering area landfills. It is recommended that the community enter into agreements to maximize the diversion of waste to facilities providing for translation of the waste energy stream. The new community could also minimize the number of waste management companies and recycling haulers serving residents and businesses in order to increase the overall efficiency of waste management. The consultant team recommends the community organize the waste management program to collect items for recycling (such as paper, glass, and plastic) as well as general trash in order to minimize difficulty for residents and increase efficiency. The community could also limit the overall number of waste hauling vehicles as part of this streamlining process. There are a number of landfills and recycling centers within close driving distance to serve the new community as shown on the Waste and Recycling Locations Map.

Most importantly, the consultant team recommends that a “cradle to cradle” approach apply to the community. Under this approach, waste streams from one source within the community including water, energy, and materials would become the feedstock for other activities within the community. The Eco-Industrial Park, in particular, could utilize this method, as industries discover innovative reuse practices and benefit from the sharing of resources. Industries located within the Eco-Industrial Park could pledge to commit to “zero-landfill” operations. These facilities reduce, reuse and recycle their materials in such a way that no landfilling is required.
Waste and Recycling Locations Map

- Dakota County Eco-Site Recycling and Household Haz. Waste Collection Facility (open to public)
- Dawn Way Demolition Landfill (no public access)
- Pine Bend Sanitary Landfill (open to public)
- SKB Rosemount Demolition and Industrial Waste Landfill (no public access)
- SKB Rich Valley Demolition Landfill (open to public, no commercial)

Distances:
- 8 miles
- 6 miles
- 4 miles
- 2 miles
- 0 miles

UMore Park
Recycle/Re-Use

The new community should pursue strategies to increase recycling by all community members, including residents, local businesses and visitors. The community should offer the following recycling options:

» Traditional curbside recycling of items, including aluminum, plastic and paper products. The majority of suburbs in the Twin Cities, including Rosemount, offer curbside recycling programs. The new community would not face significant challenges in extending these programs or establishing a new one;

» Recycling centers throughout the community, primarily to collect larger items, including construction materials from work sites and renovation projects and household items, such as televisions and other larger appliances; and

» A center for recycling of organic materials, including the composting of household food waste and the mulching and composting of grass, plants, and leaves.

In addition, organic materials such as landscape and construction debris should be diverted to energy production facilities in the community. The Eco-Industrial Park may include industries that re-use waste products. The consultant team recommends that the community locate a recycling and composting center in the same location as the primary property management facility.

Sewer Sludge

Typically communities landfill sewer sludge (the solid waste from wastewater treatment operations) at considerable cost and environmental impact. Some communities, however, compost and reuse this material as amended soil for parks and other landscaped areas. Others pelletize this material and sell it commercially as landscape soil. The Twin Cities produces considerable quantities of this material, with the average resident in the region producing 0.2 pounds per day. This number increases to 0.22 pounds per person when waste from industrial uses is added to the equation. At anticipated build-out, the community at UMore Park should produce approximately three tons of sewer sludge per day. For these reasons the new community should compost all sewer sludge and reuse it as landscape material. This strategy would require negotiations with local jurisdictions as enhancements to their municipal facilities may be required.

METRICS FOR WASTE MANAGEMENT

» Achieve recycling rate of 55 percent for overall municipal solid waste created in the new community.

» Reduce the rate of solid waste production per person, per year by 20 percent as compared to the current rate for the Twin Cities region.

» Recycle and/or salvage at least 50 percent of non-hazardous construction and demolition debris.

» Operate the Eco-Industrial Park on a zero landfill basis.

» Compost and recycle 100 percent of the sewer sludge from wastewater treatment.
Performance Standards

In order to ensure that the community at UMore Park develops as an environmentally sustainable community, the consultant team recommends that the University and its development partner(s) work to promote standards for green building. University faculty and students affiliated with the Center for Sustainable Building Research and other units within the University can be instrumental in helping to achieve LEED Gold Standard or above in the built environment for buildings and site plans in the new community. According to the U.S. Green Building Council (USGBC), buildings in the United States consume one-third of the total energy consumed nationwide, including two-thirds of total electricity consumption and one-eighth of total water consumption. In addition to developing the overall community in a sustainable manner (including preserving open spaces and pursuing conservation-oriented stormwater strategies), builders should be recruited who follow the performance standards of the U.S. Green Building Council (the LEED-NC and LEED-ND standards) and the standards of the Minnesota Green Communities organization. Building standards for green design have a positive impact on public health and the environment but also reduce opportunity costs, enhance building and community marketability, potentially increase occupant productivity and help create an overall more sustainable community. Over the decades, new standards will emerge and should be used to attain the highest standards of quality and sustainability.

METRICS FOR NEW CONSTRUCTION

» All office, retail, industrial, multi-family buildings should be built to LEED or other standards that emerge in the future.

» 100 percent of single family residences should meet the requirements of the Minnesota Green Communities program.
The energy portion of the Concept Master Plan addresses two types of energy needs: 1) the community’s energy needs related to real estate development; and 2) the transportation energy needs of residents and visitors. The following sections describe the energy needs for buildings and the ongoing operation of the community with the exception of one section dedicated to the transportation energy needs associated with the movement of residents and visitors within and outside of the community. Industrial energy use is not addressed as it is highly dependent upon the type of activity taking place in industrial areas. At this time, the new development has not identified industrial tenants.

The overall energy system for the new community at UMore Park is depicted in the Energy Production Concept Plan on the following page. Key features of the system include a biogas facility, district heating and cooling zones, ground source heat pump zones, and potential placement of wind energy production. The following section describes each of these energy applications and their benefits.

The consultant team recommends that the new community achieve energy conservation goals through two methods: by implementing high efficiency building standards through the use of ground source heat pumps (GSHPs), and by meeting Leadership in Energy and Environmental Design (LEED) Standards for Neighborhood Development. Importantly, University faculty and students in the College of Design, the Institute of Technology, the Humphrey Institute of Public Affairs and multiple departments can contribute to energy conservation through sustainability research.

The consultant team recommends that the community’s building standards ensure that residential, commercial and industrial structures maximize their natural surroundings and use building materials and techniques that improve energy efficiency. The standards should incorporate thermal mass construction, solar orientation strategies, and glazing. The new community at UMore Park should achieve savings of at least 20 percent from these and other efficiency measures.

The consultant team recommends that the new community use GSHPs, most likely as part of a closed-loop vertical system, in residential and commercial areas to provide space heating and cooling. GSHPs are more efficient than traditional heating and cooling systems. Because GSHPs in the new community would substitute sustainable electricity for natural gas to provide space heating, they would reduce the carbon footprint for commercial and residential uses to zero. The carbon footprint is discussed in the subsequent section.
Eight demonstrated-sized wind turbines would be located within a radius from the Energy Innovation Center.

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
LEED STANDARDS

LEED standards for Neighborhood Development is one tool to measure the effectiveness of energy conservation efforts. In the energy category for design, the consultant team recommends that the new community meet LEED standards with respect to:

» Energy efficiency in buildings
» Solar orientation
» On-site renewable energy sources
» Infrastructure energy efficiency

Please refer to the Reference Materials section of this document for the LEED for Neighborhood Development Pilot Project Checklist.

METRICS FOR ENERGY CONSERVATION

The LEED standard for on-site renewable energy generation calls for five percent of the ultimate site electrical load to be provided by renewable generation. In this plan, approximately 30 percent will be provided with biogas-fueled district heating and 70 percent will be provided with wind-powered electric generation.

» Meet the State of Minnesota Sustainable Building Guideline E.3.: Efficient Equipment and Appliances, by meeting Energy Star program criteria.

» Locate all buildings such that long dimensions are perpendicular to an axis within 15 percent East of South to minimize heat gain and accommodate active solar applications.

» Exceed the State of Minnesota Sustainable Building Guideline E.2. for Renewable and Distributed Energy Evaluation. Strive to exceed standards and implement these systems during development.
SUSTAINABLE ENERGY PRODUCTION

The new community at UMore Park should incorporate an aggressive supplemental energy production program in conjunction with its development. The consultant team recommends that the community implement innovative techniques for energy production on a large scale. This strategy would provide a valuable testing ground for many emerging energy techniques and a venue for experimentation with cutting edge innovations that are still in development at the academic level. Proving the feasibility of these technologies on the scale of a larger community would set an example for master planned communities nationwide. In addition, by producing energy both on-site and on nearby acreage, the new community at UMore Park would reduce the strain on existing local infrastructure.

The University’s faculty have nationally-recognized expertise in cutting-edge technologies in energy production, storage and delivery as well as carbon sequestration (including solar, wind, bio-refinery, hydrogen from biomass and others). Faculty and students should be tapped to ensure that new knowledge benefits the community and provides opportunities for research-based education and lifelong learning that enriches the community through an understanding of sustainability. The consultant team recommends the use of the following methods of sustainable energy production in the new community: 1) electric production by wind; 2) electric production by a combined heat and power (CHP) plant fueled with biogas; and, 3) accommodation of solar hot water and photovoltaics through appropriate architectural design.

WIND

The new community should demonstrate small-scale wind generation facilities. The water-tower sized turbines should help define the sustainability of the new community without dominating the landscape. They should be sited in industrial areas and/or locations that pose the least physical and visual disruption. The image below compares a small-scale (250 kW) wind turbine to a typical municipal water tower. To meet the community’s electric needs, the consultant team recommends that utility-scale wind generation be sited at the periphery of the community.

If the community eventually requires additional wind generation to meet electricity demands, additional utility-scale wind turbines would be sited at a remote location. Production from the wind generation facilities should total 60MW at full build-out of the community.
SOLAR

The new community should orient and design all buildings in order to accommodate solar hot water heating and photovoltaic panels. Heating water accounts for approximately 10 percent of the energy needs in a typical single family home. Solar energy can satisfy this demand in the new community.

Production of Biogas for Combined Heat and Power

A combined heat and power (CHP) plant fueled with biogas provides another sustainable method of electricity production. A CHP plant is a more efficient method of electricity production than wind and would better serve high-density areas. The 10 MW facility would be fueled by biogas, a sustainable fuel, with a natural gas back-up. As the new community grows in size, so will its demand for electricity. The electric production system should be phased to match the growing demand.

Biogas should serve as a sustainable fuel source for the new community. The consultant team recommends that a biomass gasification facility be located on-site to produce biogas from agricultural residue and sewage. Residents and visitors would see a structure similar to the image on this page as part of the biomass gasification facility.

Biogas would be distributed to high-density areas to fuel the CHP plant. The preferred location for a biomass facility is on the northern portion of the property. This location provides important access to transportation and sewage distribution systems. Specifically, County Road 42 and a sewage line running along the northern edge of the property would allow for the delivery of biomass feedstock and sewage inputs to the gasification facility. The recommended biomass facility would provide opportunities for renewable energy education, research and public engagement.
Annual Electricity Budget

The annual electricity budget should be used to evaluate the production and consumption of electricity on the property. The Recommended Annual Electricity Budget Table describes the different sources and uses of electricity anticipated in the community at UMore Park. The second column shows typical electric consumption for a similarly sized development prior to enacting sustainability measures. The third column provides a suggested electricity budget for the community at UMore Park after applying several sustainability measures.

Rather than purchasing electricity generated off-site, electricity would be produced using sustainable methods. The production of electricity by wind generation and biogas reduces the fuel required and carbon dioxide emissions produced.

Electric demand in residential and commercial areas should be 20 percent lower than typical use because of the conservation efforts planned for the new community. In total, however, the electrical use for the new community would be higher than for a typical development because ground source heat pumps (GSHPs) would be used for space heating and cooling. GSHPs use electricity to heat and cool residential and commercial areas instead of natural gas. The displacement of fuel by electricity has a positive impact on the fuel and carbon dioxide budgets.

### Recommended Annual Electricity Budget Table: Residential and Commercial Electricity Generation (kWh000,000)

<table>
<thead>
<tr>
<th>Electricity Sources</th>
<th>Typical Consumption</th>
<th>Electricity Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility</td>
<td>176.2</td>
<td>–</td>
</tr>
<tr>
<td>Wind Generation</td>
<td>–</td>
<td>161.6</td>
</tr>
<tr>
<td>Biogas Generation</td>
<td>–</td>
<td>80.0</td>
</tr>
<tr>
<td><strong>Electricity Source Total</strong></td>
<td>176.2</td>
<td>241.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electricity Uses</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family Residential-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Density</td>
<td>83.5</td>
<td>66.8</td>
</tr>
<tr>
<td>Single Family Residential-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium Density</td>
<td>23.4</td>
<td>18.7</td>
</tr>
<tr>
<td>Multi-Family Residential-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Density</td>
<td>16.1</td>
<td>12.8</td>
</tr>
<tr>
<td>Commercial</td>
<td>53.3</td>
<td>42.6</td>
</tr>
<tr>
<td>Ground-Source Heat Pumps</td>
<td>–</td>
<td>100.6</td>
</tr>
<tr>
<td><strong>Electricity Use Total</strong></td>
<td>176.2</td>
<td>241.6</td>
</tr>
</tbody>
</table>
Annual Fuel Budget

The Recommended Annual Fuel Budget Table describes the sources and uses of fuel within the new community. Instead of meeting 100 percent of fuel needs through purchases of natural gas and other conventional sources, the new community would produce 75 percent of its fuel needs by converting biomass to biogas.

The most noticeable change in the fuel budget is on the use side. The implementation of GSHPs cuts residential fuel use to zero and reduces commercial fuel use by 50 percent. Replacing natural gas with a sustainable fuel source such as biogas eliminates the carbon dioxide emissions of electric generation and heating and cooling. The resulting fuel budget represents usage of 28 percent of normal rates.

Energy Distribution Systems

The consultant team recommends that the new community design an energy distribution system to accommodate current and future energy needs. While most of the community’s electricity needs may be satisfied through on-site generation, the community would need to connect to the regional transmission grid to receive electricity from wind and to ensure the overall reliability of power supplies.

The recommended CHP system would distribute hot water district heating and chilled water to high-density areas. A limited gas distribution system could supply syngas and landfill gas to high-density areas. Individual ground source heat pump (GSHP) systems would serve lower density areas.

Recommended Annual Fuel Budget Table:

<table>
<thead>
<tr>
<th>Fuel Sources</th>
<th>Typical Consumption</th>
<th>Fuel Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas</td>
<td>1,271</td>
<td>84</td>
</tr>
<tr>
<td>Biogas</td>
<td>–</td>
<td>273</td>
</tr>
<tr>
<td>Fuel Source Total</td>
<td>1,271</td>
<td>357</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fuel Users</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family Residential - Low Density</td>
<td>760</td>
<td>–</td>
</tr>
<tr>
<td>Single Family Residential - Medium Density</td>
<td>270</td>
<td>–</td>
</tr>
<tr>
<td>Multi-Family Residential - High Density</td>
<td>72</td>
<td>–</td>
</tr>
<tr>
<td>Commercial</td>
<td>169</td>
<td>84</td>
</tr>
<tr>
<td>Electric Generation/ District Heat</td>
<td>–</td>
<td>273</td>
</tr>
<tr>
<td>Fuel User Total</td>
<td>1,271</td>
<td>357</td>
</tr>
</tbody>
</table>

**METRICS FOR SUSTAINABLE ENERGY PRODUCTION**

» The LEED standard for on-site renewable energy generation calls for five percent of the ultimate site electrical load to be provided by renewable generation. This plan exceeds this metric by anticipating that approximately 30 percent of on-site renewable energy be provided with biogas-fueled district heating and 70 percent be provided with wind-powered electricity.

» All remaining energy needs should be contracted with a commercial provider to provide 100 percent of energy through renewable means.

» All buildings should be designed to accommodate the outfitting of active solar panels where market conditions support solar technology applications.
The consultant team recommends that the new community at UMore Park develop strategies with an overarching goal of approaching a zero-carbon footprint for residential and commercial uses. The sustainable production of electricity, the substitution of electricity for natural gas for space heating, and carbon sequestration techniques would help the community achieve a zero-carbon footprint. Of the community’s energy needs associated with real estate development, the production of electricity has the largest impact on the carbon footprint. To mitigate carbon dioxide emissions from electricity generation, the community should implement sustainable electricity production technologies. The development should use wind-powered electricity generation as well as a combined heat and power system fueled with biogas.

The community should use ground source heat pumps (GSHPs) for space heating and cooling in residential and commercial applications. GSHP systems may be installed with pipes buried vertically or horizontally underground. A closed loop vertical system, such as the image below, is the most likely GSHP application for the community at UMore Park because it requires the least amount of space.
The use of GSHPs increases electricity demand, but reduces the demand for natural gas to zero. This substitution should significantly reduce the carbon footprint of the community.

Carbon sequestration also helps to reduce the carbon footprint. The new community should feature perennial plants to sequester carbon in planted areas. Assuming the development allocates 1,000 acres for carbon sequestration and that on average, 0.4 tons of carbon can be sequestered per acre, it is estimated that the new community could sequester 400 tons of carbon per year through perennial plantings. To achieve a negative carbon footprint, carbon offsets could be purchased. However, the system described here does not include allocations for carbon offsets.

**Metrics for Carbon Footprint**

- Through sustainable energy production, including GSHPs powered by wind, the new community’s carbon footprint can be nearly eliminated for residential and commercial uses. Residential emissions should be cut to zero and commercial emissions cut in half through the use of GSHPs. The carbon footprint for electricity generation should also be reduced to zero by producing electricity with wind and biogas.

- Carbon sequestration further reduces the carbon budget by 400 tons annually, which leaves the development with a 7,700 ton carbon emission budget for residential and commercial electricity generation. This represents only three percent of the emissions seen in a typical development. The Recommended Annual CO2 Budget Table summarizes the carbon budget for the new community at UMore Park.
TRANSPORTATION AND ENERGY USE

The transportation energy needs of the community’s residents include the movement of people within and outside the development. Transportation energy needs have tremendous impacts on the fuel demand and carbon budget of the community. While community planners are unable to manage the movement of local residents outside of the community, the University and its partners may use several approaches to reduce energy use for transportation within the site. The Concept Master Plan encourages reduced use of automobiles by planning for compact, mixed-use development and alternative transportation modes such as light rail, bus, rapid transit and bicycles.

A sustainable transportation system for the new community should employ electric solutions. As the development is able to support it, electric mass transit on site would significantly reduce transportation-related energy use. In the interim, the use of electric circulator vehicles would reduce the number of trips per day within the property. The new community at UMore Park should encourage the use of electric vehicles by providing plug-in stations and preferential parking.

Infrastructure specific for alternative transportation is not needed in all cases. A shuttle bus can provide connections to shopping and job centers sharing existing roadways.
ACCOMMODATING FUTURE TECHNOLOGIES

The new community at UMore Park should undertake multiple efforts to create an energy efficient and sustainable development. However, the planning process should recognize that technology will continue to develop and new sustainable energy products will enter the market over time. The new community should be designed to accommodate such future technologies. Suggested accommodations include:

» The development should configure buildings for future photovoltaic (PV) solar installations;
» The biogas facility should support new gasification techniques;
» The community’s infrastructure should be designed to accommodate electric transportation in the future, including mass transit and electric vehicles; and
» The design of the electric distribution system should accommodate charging stations in long-term parking areas and at homes.

The plans should provide flexibility to increase the density of development following the construction of light rail to the community. Building infrastructure to anticipate tomorrow’s technology would save the community time and money and would allow it to enhance sustainability in the future.

METRICS FOR ACCOMMODATING FUTURE TECHNOLOGIES:

» The new community should exceed the State of Minnesota Sustainable Building Guideline E.2. for renewable and distributed energy evaluation. This guideline calls for the evaluation of renewable and distributed energy sources. The new community should go beyond these standards and actually implement these systems during development.

» The electric, fuel and carbon budgets provide the basis for measuring the net impact of sustainable systems planned for the new community.

Economic Impact of Energy Measures

Sustainable energy measures are expected to have lower operating costs and higher capital costs than non-sustainable methods. Energy conservation and ground source heat pumps are expected to have somewhat higher capital costs than non-sustainable methods. However, these higher capital costs should be offset by energy cost savings.

As planned, the project could also incur the capital costs of biogas production, electric generation using biogas, and district heating. The overall economics of these systems are expected to be competitive with conventional alternatives.

Electricity production using wind has a significant capital cost. At the ultimate build out of 60 MW, a capital investment of approximately $150 million would be required.

Overall, the economics of the proposed sustainable energy measures are expected to be positive, especially in an environment which attributes a cost to carbon dioxide emissions.

The consultant team underscores the unique potential for both the University and for the region, especially in the area of sustainable energy measures and economic impact. The focus on sustainable energy creates unique research and teaching opportunities for the University community. It also offers benefits to citizens and potential models that can be replicated elsewhere.
CONCLUSION

For the new community at UMore Park to be energy efficient and sustainable, the energy system should be planned to reduce energy use, reduce the carbon footprint and use sustainable energy production methods. A sustainable transportation system using electric solutions and promoting compacts, mixed-use development and alternative modes of transportation would augment the energy system. Finally, planning should include accommodations for future energy technologies.

The concept Eco-Industrial Park is envisioned to implement the latest technologies in energy production and efficiency and incorporate “green” building with minimal environmental impact and improved environmental conditions.
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The University of Minnesota is unique in its vision to create a University-founded community on an exceptionally large parcel of land. As a top-tier public institution, quality education must be inherent in every aspect of the new community. The consultant team placed high value on the work of the UMore Park Academic Task Force on Education. Because of the significance of the work of this task force, here, we excerpt verbatim from the task force report a discussion of the principles for education developed by the task force members.

This University-founded community must reflect educational best practices at every level. Both research and practice make it clear, however, that best practices need to be designed in collaboration with the people that they will serve. Given that this will be a community that develops over 25 to 30 years, it will be critical that principles of excellence and engagement guide education. As individuals and families are drawn to the community as it develops, they will need to be continuously engaged in the design and operation of the schools, community classes, programs, facilities and other learning opportunities. The active participation of those who live in the community over generations will help to ensure that the hallmark of lifelong learning is infused into the spirit and daily life of the community and refreshed again and again.

Principles for Education

Within the context of fast-moving and far-reaching change, the University – its faculty, students and staff members – must engage with the public to help shape a vision and educational values for the new community. It is important to underscore the point that the expectations of what must be achieved in this community of teachers and learners will need to emanate from the community itself. In such an intentional community, it is the people who will make learning come to life.

The creation of formal and informal educational systems and practices should be guided by the following overarching principles:

- **Education and lifelong learning in the new community will be grounded in knowledge, knowledge creation and knowledge sharing.** Teaching and learning in this community will be the model for excellence, with the highest standards that support all types of learning and all types of learners. The application of continuously evolving technologies will support teaching and learning in schools, community facilities, libraries and, most important, in the home. Educational innovation should be the norm rather than the exception, and the lessons learned will be continually shared with the state, the nation and the world.

- **Everyone will be a teacher and a learner, with all related responsibilities and personal rewards.** Everyone is also a volunteer, a leader, a follower and a true participant in the community. Parents, caregivers and other adults are supported as teachers. All learners are supported in developing their lifework plan that includes school-based learning, service-based learning and work-based learning.
Diversity – diversity in age, race, ethnicity, culture, income and experiences – will be seen as an asset. The talents and interests of all learners will be developed to the fullest, and the community will understand that the challenges posed by diversity also provide powerful opportunities for creation and collaboration. To meet the educational needs of multiple cultures and learning styles, excellent educational choices will be available to learners at every age, from early childhood to adult education.

Visionary partnerships will ensure extraordinary teaching and learning across the lifespan. Education and lifelong learning in the community will benefit from the integrated institutional approaches of the University of Minnesota, the Minnesota State Colleges and Universities system, private schools, the school district and related education and learning organizations. Equally important, learning will actively occur through community networks that include local businesses, health and service organizations, the faith community and citizens groups. Every effort should be made to ensure that the educators who serve learners in the new community at UMore Park can and do live in the community.

Education will take place in both the natural and virtual worlds. Given the green spaces within the community and Vermillion Highlands, the natural and ecologically fragile land adjacent to the development, the community should integrate the natural world into teaching and learning at every level. Similarly, the community’s connection to the University will make it possible to connect with state-of-the-art technology in many fields. Given both of these distinctive opportunities, learning can extend far beyond a physical structure.
In keeping with the imprimatur of the University of Minnesota, the consultant team recommends that the community at UMore Park pursue the creation of the highest quality education system. The quality of preK-12 education in a given community is perhaps the single greatest factor in determining the location of a single family home purchase.

UMore Park is located in Independent School District 196. District 196 services approximately 27,873 students (as of October 1, 2007) in grades early childhood through 12, and in special education programs.

The 110-square-mile school district currently contains roughly 53,000 households and includes all or parts of seven cities- Rosemount, Apple Valley, Eagan, Burnsville, Coates, Inver Grove Heights, Lakeville and rural Empire and Vermillion townships as shown in the School District Map. For 15 consecutive years, District 196...
has been recognized among the nation’s top school districts as having the qualities parents want most (What Parents Want Award) and for the past two years District 196 has been named a Gold Medal School District in Expansion Management Magazine’s annual “Education Quotient” report.

As shown on the School District Map, there are no K-12th grade schools currently located within a half-mile walking distance of the UMore Park site. Many authorities on smart growth, community design and school planning recommend that students live within a half-mile of schools. The Rosemount elementary, middle school, and high school are located within approximately one mile from the northwest corner of the UMore Park site.

The consultant team recommends the new community should eventually include sites for one high school, one or two middle schools, one private or one alternative school, and five or six elementary schools as appropriate based on student generation rates provided by the school district. These conclusions are based on general assumptions of 12,500 households at build-out, 0.6 students per household, and a capture rate of 0.91 across the entire community at UMore Park. The Range of Students for the New Community Table shows the current assumptions based on preliminary information from District 196 regarding student generation rates and the assumptions about the number and types of schools this will require.
Additional general recommendations for schools include:

» The University’s Academic Mission Task Force on Health called for schools in the new community to be located within a critical distance from most residences to promote walking as the primary mode of transportation. Elementary schools should be developed within a half-mile walking distance of residential units within the community as shown on the School Location Plan on the following page. In addition, the community should provide safe walking routes from each home to each school, sidewalks on both sides of all streets, and various traffic calming techniques.

» The University should work with future development partners to examine potential non-traditional funding sources for schools in the new community.

» The new schools should be built to LEED standards to maintain healthy living standards and minimize energy loads.

» Partnerships among the University and its departments and colleges, the school district, Dakota County Technical College and other MnSCU institutions and other education entities could result in quality and unique formal and informal education across the life span for residents of the new community.

» Day care and pre-school facilities should be provided in the community.

An outstanding educational system would enhance the community’s ability to attract new businesses and residents. The University’s strengths in state-of-the-art technologies and emerging approaches to education and research can be the foundation of education and lifelong learning that continuously reflects innovation to meet the needs of a growing and evolving community. The consultant team suggests that the new community support school-to-work programs that prepare young people for the labor market by integrating classroom-based learning in high school with structured learning experiences in the workplace.

Other innovative programs that may be applicable include family resource schools, magnet schools, charter schools, fundamental academies, career education centers, extended day programs, programs for challenged and highly gifted students, and arts academies.

Public schools and related educational facilities should represent important centers for community life. The consultant team recommends that the community prominently site schools to serve the population and design school facilities to serve as civic landmarks. In addition, schools should anchor neighborhood centers located within walking distance of where students live.

The community should locate schools adjacent to joint-use park sites with multi-purpose fields or open space corridors, thereby providing opportunities for environmental education as well as safe and convenient off-street pedestrian and bicycle access routes to schools. Schools could share facilities with other users, including local sports organizations. These shared facilities could provide private child care, adult education classes, health care, elder care, recreational opportunities and other services to the surrounding community. The sharing of facilities would support a commitment of the community to cross-generational teaching and lifelong learning.
The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
The Continuum of Education

The UMore Park Academic Mission Task Force on Education addressed the significance to the community of the full continuum of education across the life span. Once again, we excerpt verbatim the vision for teaching and learning at all ages that the task force members conveyed in their report.

Key strategies for education and lifelong learning are addressed below in four age-related segments of the life continuum: (1) Pre-natal care and early childhood learning and development, (2) preK-12, (3) post-secondary, and (4) adult and continuing education. However, the community will be framed by the intent of an encompassing education that weaves together multiple learning opportunities across all ages. The community will appreciate that multiple pathways will lead to holistic approaches to teaching and learning. An encompassing education can be achieved through the commitment of the University, community residents and the future community’s public and private partners, local businesses and the service industry. Ultimately, the residents of the new community and the surrounding area will not only have the opportunity to benefit from learning opportunities, but also will have the responsibility to contribute to the ever-growing variety of opportunities needed to support a strong, healthy and dynamic learning environment for all.

With the foundation of guiding principles, education and lifelong learning in the new community will fulfill the following goals at each stage of the continuum of learning:

1. **Pre-natal and early childhood education** will prepare our youngest learners academically and developmentally for success in elementary school.

2. **PreK-12 education** will ensure that all students go beyond the basics to master “21st century skills” such as critical thinking, creativity and collaboration.

3. **Post-secondary education** will prepare every learner for a career that will enable him or her to support a family and realize personal goals and dreams.

4. **Adult and continuing education** will enable community members to continually enhance their knowledge and skills through personal enrichment, vocational advancement and civic engagement.
Pre-natal Care and Early Childhood Learning and Development

Research has expanded our knowledge of basic mechanisms of brain and behavioral development during the earliest years and the ways these developments serve as an essential foundation for later success as children enter school. Research has also demonstrated the increased power of new programs aimed at enhancing young children’s language development, early literacy and socio-emotional development.

Concurrently, the publicly stated interest in early childhood learning and development among civic and business leaders in Minnesota is expanding advocacy and program design. The confluence of basic and applied research and civic action sets the stage for rapid changes in early childhood education and development and offers the cornerstone for effective programs for the new community at UMore Park.

**STRATEGIES**

Key strategies for pre-natal care and early childhood learning and development include:

- Family life is the cornerstone of educational achievement. Parents will be supported through pre-natal and ongoing classes and other learning opportunities as the core component of the educational system.

- Most of a child’s aptitude for educational success is determined in the family before the child reaches the preK-12 system, largely through the quality of parent-child interactions that are in turn influenced by family structure and the educational level of the parents. The community will recognize the importance—and outcomes—of helping families and others to nurture every child’s early development to prepare them socially, emotionally, cognitively, and physically for elementary school.

- Community support systems outside the home—businesses, faith communities, profit and non-profit agencies, and others—will provide a supportive network that puts children first and helps to ensure choices for child care and educational opportunities.

- Intergenerational strategies, including co-located facilities, can benefit both the community’s very young and its older citizens.

Note that the consultant team recommends that child care facilities would be located in close proximity to schools, at interfaith facilities and near places of employment, as shown in **Child Care Facilities Plan**.
Childcare Facilities Plan

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
PreK-12 Education

The educational system arguably will be the single most unifying institution in the new community. It will be the focal point for a promising future – for parents, educators and adult volunteers, local businesses and for children and youth.

The preK-12 education system in the new community will be founded on excellence. All aspects of education will be firmly grounded in current research on teaching and learning and will incorporate best practices from across the United States and around the world.

The mission of education is to prepare students for democratic and civic engagement. Students of the next generation have the opportunity to create a new vision of a future of personal growth, contributions to communities of place and of interest, social justice and global interaction. Adults often underestimate and undervalue the potential of young people to contribute to society. However, service learning has demonstrated over the last 30 years that students have the capacity to make a difference today. From elementary schools to college, students are engaged in their communities identifying problems, envisioning solutions and implementing plans to improve the status quo.

The combination of the highest quality educational system and opportunities for service learning will support academic success and build skills, attitudes and behaviors that connect students to their community and create a lifelong pattern of active citizenship.

Geographically, the location of the new community is wholly contained within the existing Independent School District 196. The new community will capitalize upon the existing schools and infrastructure while also creating new opportunities that help students attain educational goals. It will benefit from partnerships with the business community, other teaching and learning institutions and a range of public and private organizations.

STRATEGIES

More specifically, key strategies include:

» The educational system should prioritize the needs of learners over the needs of educational providers. It should expect and help each learner to guide his or her own educational journey. That journey should seek to build upon the learner’s assets and interests rather than focusing on deficits and deficiencies.

» Educational opportunities should provide all students with the knowledge, skills and habits for success in the global information age.

» The overarching commitment is to individual learning. School-community learning interrelationships support personal growth in a comprehensive way; the focus is not on academics alone. Learning will focus on the number of opportunities per child that are provided through school-community interrelationships. All children will be supported in recognizing opportunities for learning and participation in other activities that challenge their interests and their talents.

» The educational system should embrace new types of schools, centers, programs and learning networks, as well as new educational strategies at the classroom level.
The development of the educational system should never be seen as finished but should continue to evolve through creative direction from the community.

Learning is founded on the high-quality relationships between adults and youth.

All students will complete a post-secondary challenge class while in high school. Choices might include Advanced Placement, College in the Schools, International Baccalaureate classes or a Post-Secondary Enrollment Option class. All students should also be encouraged to take at least one post-secondary admissions exam.

Outdoor natural areas and facilities will be integrated into the educational system to maximize learning opportunities. Such learning opportunities are most obvious in, but should not be limited to, the life sciences. For example, learners could investigate the history of Native Americans and early explorers in far more multi-dimensional ways than traditional settings might provide. Another powerful opportunity for learning exists in the history of the Gopher Ordnance Works and the impact on families who lived and worked on the property during that time.

In addition to hands-on experiential learning, outdoor activities can contribute to a positive lifestyle that thwarts diet-related chronic disease. Research also shows that exposure to learning and activities in green space areas reduces the impact of attention deficit disorder in children. The new community offers a unique opportunity to design green space into daily living and learning. Easy access to the Vermillion Highlands area to the south should be included in the community master plan.

Post-Secondary Education

In today’s economy, it is estimated that the graduate of a four-year college will earn about $1 million more than a high school graduate over the course of the student’s lifetime, according to U.S. Department of Education. A four-year college experience is not the pathway for all individuals. However, youth in the new community, from the early childhood years forward, should be supported, encouraged and prepared for a post-secondary education. This could be through a technical school, community college or a four-year institution. The academic rigor provided through education and lifelong learning in all its forms in the new community will prepare young men and women for post-secondary success.

STRATEGIES

Key strategies to help achieve goals for post-secondary education include:

» Every student will be supported toward the goal of continuing to a post-secondary educational experience.

» Partnerships across educational institutions will provide a unique yet complementary post-secondary opportunity for students living in the new community and for others. For example, the University of Minnesota; the Minnesota State Colleges and Universities system, especially the neighboring Dakota County Technical College; and private educational institutions should create a combination of classroom and on-line courses and degree programs that meet the needs of students today and in the future.
Because Dakota County is the most populous area in Minnesota in which there is no four-year college or university, the community at UMore Park should find ways to make University courses and programs available in the community.

Educational institutions and the business community should create unique programs that enhance course and degree work but also incorporate job opportunities that ultimately benefit businesses and students. For example, a business and industry partnership with educational institutions could serve a role for economic development in the region.

University undergraduate and graduate learning experiences should be integrated into the development of the community at UMore Park. Research and learning that engages classes as well as individual students or teams through projects offers mutual benefits – to students and to the community.

Adult and Continuing Education

The new community will include adult basic education and continuing education and lifelong learning as key components of its educational system.

According to the 2000 U.S. Census, 12 percent of Minnesotans over age 25 (381,345 adults) lack high school equivalency. The Minnesota Department of Education reports that the numbers of parents whose lack of basic skills are barriers to the success of their children are increasing. Adult basic education in the new community will address workforce preparation such as literacy skills and instruction in the ‘soft skills’ that are desired by employers: basic skills enhancement, English as a Second Language and General Educational Development diplomas, for example.

In Minnesota, 811,000 Twin Cities baby boomers and 1.3 million statewide over the next two decades will undergo the transitions that can bring renewed opportunities to themselves and their communities. Importantly, numerous research studies show that active education is a key factor in staving off memory loss, lethargy and loneliness in older adults. In addition, the demand for older adult education programs has more than doubled nationally, from 8 percent in 1991 to 20 percent in 1999.

By 2030, individuals age 60 and older will represent 22 percent of the total metropolitan area population, according to the Metropolitan Council. Currently older adults (60+ years) represent 10.3 percent of the population in Dakota County.
STRATEGIES

Key strategies for adult basic education and continuing education in the new community include:

» The new community, through the design of neighborhoods, facilities and programming, will address the growth trend in adult learning. It will create an environment that promotes lifelong learning as a personal and community investment.

» Members of the community are supported in their desire to come together to share experience, wisdom, talent and personal support – the lifelong learning that heightens personal enrichment, vocational advancement and civic engagement.

» Older adults will be engaged in shaping curricula, drawing upon their own expertise and life experiences, participating in the governance of this and other components of the educational system and serving in ways that satisfy their desires for a renewed sense of community.

» The community, through information resources, technology and business and industry linkages, will support the individual entrepreneur of any age in transforming individual creativity and knowledge into a business.

The intergenerational fabric of the community will be supported by the intentional design that brings people together in indoor and outdoor settings to learn together, learn from each other and share interests, meals, and creativity. Whenever possible, multiple educational programs should share space, facilitating collaboration across both generations and disciplines.

METRICS FOR EDUCATION

» A child care facility should be located within a half mile walking distance radius of all residences within the new community.

» Early childhood learning and development programs should be available to every family in the new community.

» Schools serving pre-K through 6th grade should offer before- and after-school programs.

» Multiple education programs, such as early childhood learning and development and adult continuing education programs, should share facilities when possible.

» Every student should live within one-half mile of an elementary school.

» All schools and educational programs should have strong linkages to the University of Minnesota and to local technical and community colleges as well.

» All schools and educational programs should integrate the natural world into teaching and learning, making best use of school property and adjacent parks, open space and natural settings in the new community and Vermillion Highlands.

» Every school facility should be located within one mile of a community garden, park, or plaza.

» Adult learning facilities should be located within one-half mile of residential areas with significant concentrations of older adults.

» The University and other local post-secondary institutions, including Dakota County Technical College, should collaborate with the school district to innovate curriculum that spans the continuum of education: pre-natal care and early childhood learning and development, preK- 12, post-secondary, and adult and continuing education.
The City of Rosemount is currently undergoing the construction of a new state-of-the-art library. As a branch of the Dakota County Library System, the community’s new Robert Trail Library will include 22,000 square feet with an additional 1,200 square feet devoted to a license center. The new library will continue to meet traditional needs of patrons with a library collection, but will transition reference materials into digital formats, thereby creating additional space for computer labs and other digital technologies. The design of the Robert Trail Library allows for a future building expansion of 10,000 square feet. According to Dakota County standards and projections, the new community located at UMore Park may not need an additional county library facility. The consultant team recommends that the new community leverage the resources of the Robert Trail Library and provide additional community centers within the development that support and provide learning, community education and access to technology within commercial nodes or mixed-use neighborhood centers as shown on the Learning Centers/ Libraries Plan. The University, the County and other potential partners could jointly create a comprehensive resource that supports technology-enhanced learning across the lifespan for residents of the new community and the surrounding region.

**Connection to the University of Minnesota**

The consultant team recommends that local libraries in and near the new community leverage relationships with the University library system to enhance their offerings to the local population. For example, local patrons could access materials from the University libraries. In turn, the learning centers/libraries in the new community could be a venue for University writers and researchers to more prominently display and publicize their research findings and writings to local residents. The learning centers/libraries could host University programming on a range of topics.

**Community Facilities**

The learning centers/libraries in the new community should represent significant community facilities for local residents. The facilities should include break out or meeting space for use by local community groups. Combined uses would provide cost savings and synergies between the range of resources and community programs. For example, school children could use learning centers/library resources to supplement the research capabilities of their individual schools. The learning centers/libraries, together with other community facilities, should represent some of the key focal points of civic life and help provide greater connectedness for residents. Learning centers/libraries provide key amenities in master planned communities.
Learning Centers/Libraries Plan

Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industry/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest

VERMILLION HIGHLANDS

- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

* The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.

Half Mile Walking Radius

VERMILLION HIGHLANDS
A Research, Recreation and Wildlife Management Area

Elementary School
Middle School
Learning Center/Library
School of the Arts
High School
Technology

The learning centers/libraries in the new community should offer the latest in technological enhancements, both to support learning and to help residents become aware of new advances in technology as they occur.

In addition to providing applications specifically geared for the new community’s learning centers/libraries, technology provides for significant contributions throughout the community. The UMore Park Academic Mission Task Force on Interdisciplinary Opportunities appropriately addressed the expansive nature of new technologies as they evolve. Here we excerpt verbatim key aspects of technology that the task force addressed in its report.

Next-generation technologies will support the community and its residents in multiple ways, throughout the evolution of the community’s development and beyond.

The University can offer added value to the community through its commitment to technology. The University can extend its information and learning technologies to the new community, increasing interaction with the University and with the world. Moreover, the technologies can provide lifelong learning connections for all community members. University research can add value in the area of technology by investigating its social effects, developing new educational models that take into account individual differences, and by demonstrating the uses of technology (for example, in delivering health care and health care information). A whole host of other significant topics can be researched in the new community, with community members helping to set the research agendas.

Most importantly, the community must be designed for tomorrow in order to avoid expensive retrofitting when new technologies enter the market (for example, with respect to heating and cooling, ventilation, telecommunications, and water and sewer. Reliance on experts at the University and beyond is critical.

Technology will provide life-enhancing innovations such as telemedicine and educational opportunities. It will enhance productivity, leisure time and quality of life. It will facilitate business creation and entrepreneurship, as well as foster computer literacy across the generations.

EMERGING STRATEGIES

» The University must establish as a guiding principle of development the flexibility to accommodate tomorrow’s technologies in all structures and infrastructures.

» Technology is a cross-cutting theme. As such, it should be incorporated into all aspects of planning and development.

» Technology will affect learning at all levels and will be ubiquitous and mobile.

» Technology can be employed to facilitate and enhance social structures and interactions.
METRICS FOR LEARNING CENTERS/ LIBRARIES:

» Learning centers/ library facilities should provide “mobile library services” (including mobile vans that travel around the community a few times each week) for each neighborhood center of the new community.

» Learning centers/ libraries should conduct outreach and joint educational programs with local schools in the new community.

» Learning centers/libraries should incorporate state-of-the-art technology and easy access to computers, databases and other resources for learning for use by community members. These centers can help support community initiatives regarding workforce development and job training and retraining in conjunction with the University and other local educational institutions.
The concept master plan for the new community places high value on open space and the integration of natural areas, trails and parks into the overall plan. In addition, the 2,822-acre Vermillion Highlands is an unequalled complement as a natural area. Overall, about 1,000 of the nearly 5,000 acres of the UMore Park property are designated as open space.

The Open Space, Parks and Recreation Plan on the following page shows the locations of parks, open space, and recreation. The parks program should represent a significant factor in maintaining a healthy community with a high quality of life. Parks define neighborhoods, offer recreation opportunities, and provide valued open space and wildlife habitats. Parks should provide important neighborhood gathering areas and strengthen the sense of community.

The University's commitment to open space goes well beyond the norm for community development. For example, City of Rosemount ordinances require dedication of 1/25 of an acre of land for each residential dwelling unit or a per-unit fee as established by the City Council. New commercial, industrial, and business park development and residential subdivisions are required to dedicate 10 percent of total land area or an equivalent value in a cash payment, as shown in the Parks Dedication Requirements Table. It provides details of this calculation and shows the park acreage that may be required for the UMore Park property is approximately 500 acres.

The total amount of dedicated active recreation and parks space proposed in the concept master plan is 570 acres, which exceeds the Rosemount Ordinance for Park dedication. Open space in the new community far exceeds current local requirements as shown in the New Community Acreage for Open Space Table with 1,630 total acres in the Concept Master Plan dedicated for open space.

<table>
<thead>
<tr>
<th>Parks Dedication Requirements Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosemount City Ordinance Parks Dedication Requirements</td>
</tr>
<tr>
<td>Residential Dwelling Units</td>
</tr>
<tr>
<td>New Commercial, Industrial, Business Park and Other Subdivisions</td>
</tr>
<tr>
<td>* 2008 Rosemount Parks, Trails and Open Space System Plan specifications</td>
</tr>
</tbody>
</table>

Together the designated open space acreage equates to roughly 34 percent of the total UMore Park property. This allocation is consistent with other national models of similar size such as the Stapleton development in Denver. In addition, greenways should be provided along a number of roadways, contributing to the open space system.
Open Space, Parks and Recreation Plan

Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Local Foods Open Space
- Forest
- Water

VERMILLION HIGHLANDS

- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.

NOTE: Mini parks (0.5 to 3 acres) are not labeled due to page space constraints.

N.P. = Neighborhood Park
would allow for important connections to a variety of community destinations.

The consultant team recommends an open space system in the new community comprised of a hierarchy of natural and developed spaces to serve the various needs of the community. In addition to providing venues for gathering, recreating, and enjoying the natural landscape, the parks and open space system would provide connections between neighborhoods and community destinations through the strategic placement of trails and paths within open space corridors and extensive open space buffers.

**METRICS FOR OPEN SPACES:**

- The local requirements for open space, parks, and recreation for the new community should be exceeded.
- Active open space facilities (including general playfields and sports fields) should be located within a one-half mile walking distance of 90 percent of the dwelling units and business entrances in the community.
- Parks, green plazas or squares should be at least one-sixth acre in area, and at least 150 feet in width.
- The parks within the new community should average at least 1/2 acre in size.

### Park Variety

The Open Space, Parks and Recreation Plan shown previously features a variety of park types. The **Concept Master Plan Parks Table** identifies the acreage and number of these different parks.

<table>
<thead>
<tr>
<th>Park Classification *</th>
<th>Total Acres</th>
<th>Number of Parks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini-Park</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>Neighborhood Park/Playfield</td>
<td>110</td>
<td>14</td>
</tr>
<tr>
<td>Athletic Complex</td>
<td>40</td>
<td>1</td>
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<tr>
<td>Community Park</td>
<td>240</td>
<td>4</td>
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<tr>
<td>Linear Park</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>Special Use/Historic Sites</td>
<td>70</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL PROGRAMMED PARKS</strong></td>
<td><strong>570</strong></td>
<td><strong>52</strong></td>
</tr>
<tr>
<td>Natural Open Space/ Greenways</td>
<td>740</td>
<td></td>
</tr>
</tbody>
</table>

* 2008 Rosemount Parks, Trails and Open Space System Plan Specifications

**MINI-PARK (HALF ACRE TO 3 ACRES)**

Mini-parks are small parks that are designed to supplement neighborhood parks. They typically contain children’s play equipment and may also include a small open play area and/or seating areas. They typically do not include athletic fields. They are too small to be shown on the Concept Master Plan but are intended to be located within the residential neighborhoods. With the addition of mini-parks the recommendation is to have some form of open space within two blocks of every home.
NEIGHBORHOOD PARKS (4-10 ACRES)

Neighborhood parks represent the cornerstone of the recommended parks system in the new community, providing passive recreation for residents within a one-third mile radius, representing a safe and realistic distance to walk for most people. Neighborhood parks are small parks that serve their immediate vicinity. These well-programmed spaces consist of playground equipment, a small multi-purpose field and opportunities for walking. These parks would provide the ideal venue for neighbors to meet and would help to establish neighborhood identity. In many instances, neighborhood parks may be located adjacent to elementary schools, providing additional opportunities for school-age children to recreate and form bonds with other children in the neighborhood. By sharing facilities, the total acreage required for parks and recreation facilities and education programs and schools can be reduced. In turn the cost of upfront capital and ongoing maintenance should decline for both the park and school system.

COMMUNITY AND REGIONAL PARKS (25 TO 80 ACRES)

The recommended community program system includes several community parks. The focus of community parks is active recreation but they may also include areas for passive recreation. These parks would accommodate large numbers of people and their presence in the community would relieve demand for school and neighborhood park facilities. The community parks could include playing fields for soccer, baseball and football, skating rinks, pools, tennis courts, playgrounds and large multi-purpose fields for passive recreation, picnicking, and community events.

Regional parks serve an important role in providing access to major recreational facilities and natural open spaces for residents. The consultant team recommends that these parks represent large landmark civic spaces designed to accommodate large numbers of people and a variety of active and passive activities.

The sizes of regional parks may vary widely, but they would be distinguished by their diverse programs and significant status in the region. The regional parks may include large sports complexes with venues for various types of indoor and outdoor active recreation. They may also contain large natural open spaces for passive recreation and educational opportunities, as well as for green stormwater management.
**NATURAL OPEN SPACE**

The recommended open space system for the new community includes several natural areas (existing or re-established) that provide relief from the built environment. This includes greenways that are corridors of open space that follow natural land or water features and are primarily managed to protect and enhance natural resources. The Concept Master Plan establishes open space corridors for several reasons:

- To bring the natural, pre-settlement landscape of prairie and oak savanna into developed areas of the site, providing visual relief and reinforcing a sense of place;
- To provide a seamless relationship between the openness of Vermillion Highlands and development on the UMore Park property;
- To buffer new development from adjacent properties;
- To provide naturalistic corridors for trails, water management, and establishing plant and wildlife habitat; and
- To provide natural outdoor venues for education and interpretive opportunities.

**ATHLETIC COMPLEXES**

The consultant team recommends that the early phases of the new development include the creation of a regional sports complex that would be jointly shared by the new community, Dakota Community Technical College, and Rosemount. It would build upon the local recreational parks and facilities that are currently under construction. This complex would attract people from around the region for league tournaments and other sporting events and would help familiarize them with the new community at its early stages. Its location along County Road 42 would provide the new community an attractive entrance on a main arterial and would reinforce the project’s dedication to recreational amenities for residents. This location would also direct the bulk of traffic from sporting events to arterial roads on the perimeter of the community.

**SPECIAL USE PARKS**

The Concept Master Plan includes several specialty parks for residents and visitors. The parks would provide facilities for a diverse set of activities, including community gardens, equestrian centers, historical and interpretive sites, museums, outdoor performance venues, and lakes. For example, community gardens located throughout the community would provide residents with opportunities to grow their own fruits, vegetables and flowers. Lakes and ponds and associated parks created as a result of the aggregate extraction process would provide opportunities for enhanced water recreation.

Open space managed for native plant communities can provide an opportunity for learning about the Minnesota ecosystem.
VERMILLION HIGHLANDS

Vermillion Highlands lies directly adjacent to the UMore Park property and offers future residents unparalleled access to nearly 3,000 acres of natural open space, agricultural landscapes, trails, wetlands and wildlife areas. The Concept Master Plan recognizes this tremendous asset and provides several open space connections that extend north from Vermillion Highlands University agricultural research lands. In addition, regional trails and wildlife corridors connect Vermillion Highlands to the new community at UMore Park.

PARK MANAGEMENT

The consultant team recommends that the new community develop joint use agreements with the local school district and with places of worship in order to create synergies in the use of parking lots, play areas and ball fields. The Concept Master Plan provides for park lands, for example, near schools and places of worship in addition to near major neighborhood centers. The plan calls for greater residential densities near parks, schools and places of worship in order to locate as many residents as possible within walking distances of these facilities, thus reducing energy use and traffic generation. A comprehensive network of hiking, biking, and equestrian trails would link all parks and major community facilities together. The University and its future development partner(s) should establish management strategies for open space as the community develops.

The consultant team recommends that the community establish maintenance, irrigation and planting standards for all parks in order to meet the recommended water budget and wildlife management criteria for the community. This would suggest that irrigated turf be limited to sports field areas and places where people walk on grass (as opposed to locations where grass serves as ornamentation). A large percentage of each park should include native plant materials requiring minimal irrigation.

Public Spaces

Midwestern cities and towns have traditionally featured plazas and town greens. The Concept Master Plan incorporates these and other public spaces as organizing features and open space amenities. The design of plazas should foster social gathering and establish or reinforce the identity of the locale. Each neighborhood center should include a public space specifically designed to provide a central gathering space and establish neighborhood identity. In addition, the consultant team recommends that the new community construct an amphitheater of between 10,000 and 15,000 seats for theatrical and musical performances geared to the larger Twin Cities region. Comparable large-scale facilities include Fiddler's Green outside Denver, the Alpine Valley Music Theater in Wisconsin, and Wolftrap Farm in northern Virginia. The community should locate this larger and louder facility near village centers and employment centers in order to increase overall vitality and to diminish potentially negative impacts in terms of noise and traffic on nearby residential neighborhoods.
Trail Systems

Trails, sidewalks and pathways have become popular open space features in new communities. Trails provide safe and convenient access to parks, open space, neighborhoods, community centers, and regional destinations. Residents of the community would value a complete and connected system of sidewalks, trails and bikeways for leisure use and transportation. Trails would help local residents maintain a healthy community and a high quality of life.

Trail users have differing needs depending on their skill levels and purpose for using the trail system. To accommodate the full range of trail users, the consulting team recommends that on- and off-road trail systems provide connectivity to destinations throughout the community as shown on the Trails and Bikepaths Plan on the following page. The trail system would include sidewalks in most street rights-of-way, on-street bike lanes/routes, off-road multi-use trails (paved and unpaved), and equestrian and hiking trails that would link to Vermillion Highlands to the south. The consultant team recommends that the trail system connect via regional trail systems to Vermillion Highlands, Lebanon Hills in Eagan and the Mississippi River valley to the east.
Trails and Bikepaths Plan

Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
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- Wetlands
- Forest

VERMILLION HIGHLANDS

- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

*The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allows for habitat restoration.*
Health and wellness pertain to a variety of aspects of daily life, and in turn planning for the overall health of a new community involves addressing issues tied to access to health care, public safety, lifestyle, relationships between people and nature, and the presence of faith communities. The consultant team suggests that the Concept Master Plan incorporate the majority of the recommendations of the National Institute of Health’s publications on Community Design and Public Health.

Key Principles for Health and Wellness
With a focus on health promotion and disease prevention the UMore Park Academic Mission Task Force on Health articulated key principles for the new community and potential strategies for implementation. The principles include: (1) social connectedness, (2) access, (3) food and (4) recreation and relaxation. Here, we excerpt verbatim the discussion presented in the task force report.

SOCIAL CONNECTEDNESS
The intentional design of the community to foster the physical and virtual interactions of individuals, families and the community will promote health through social connectedness.

Although physical and mental health are shaped by genetic and biological factors, it is human interaction with the environment that plays a critical role in nurturing and sustaining health, or in placing an individual at risk for poor health. Physical and psychological isolation from others may not only produce psychological stress negatively impacting mental health, but also physical conditions that are at least partly linked to psychological factors. Being connected to others enhances health and protects a person from a variety of ills.

The family, as a unit, also experiences health, well-being, stress, and dysfunction. The health of individuals within the family affects family functioning, and family functioning affects an individual family members’ physical and mental well-being. As with individuals, the family’s health and emotional well-being are influenced by the social environment in which it functions.

Social capital is the idea that an individual’s location within a network of relationships provides certain advantages. Likewise, advantage is created for families when they are able to situate themselves within supportive social networks. Entire communities can create social capital when support, communication, caring and cooperation are shared among community members. Not only is the mental and physical health of individuals and families promoted and ailments prevented, but support systems are in place and can be activated to assist in situations requiring long-term care or rapid response to health crises.

Potential Strategies
The physical design of a community can help individuals and families connect in positive ways to communicate, support, or cooperate – to create social capital. In designing the new community, attention will be paid to the ways that physical spaces, transportation systems and technology contribute to fitness, physical health promotion and health care access. Potential strategies for achieving this include:

» Housing and landscape designs that encourage social interaction – front porches, common lawns, cul-de-sac arrangements, and neighborhood streets, sidewalks and trails that lead to social destinations.

» Homes and public buildings equipped with technology that supports rapid interaction and interaction among multiple users. The community’s technology
will have the capacity to support a variety of web-based communication tools that can contribute to social connectedness.

» Various types of social gathering places to increase and strengthen the social capital and fabric of the community. Space for spiritual and faith-based services, as well as other gathering places that encourage coming together for a purpose will be a part of the community.

» Transportation systems – from “concierge” service and ride sharing to public transportation – will provide the easy access that allows all residents to engage in community activities.

**Distinctiveness**
The University of Minnesota is uniquely positioned to positively impact this new community. The depth and breadth of the University’s expertise in the health and wellness arena will benefit the community. University assets in the area of social connectedness that will be of assistance are:

» Cutting-edge research on holistic conceptualizations of health and the interaction between health and the built environment, via the social environment.

» Multidisciplinary approaches to creating health through the physical and social environments.

» Ability to strategically connect the needs of diverse Minnesota citizens to University of Minnesota resources in design, architecture, housing, transportation, health and mental health.

**ACCESS**

*Health and wellness in the new community will be defined by principles of excellence, innovation and universal access.*

Access to high-quality systems – not just health delivery, but systems that support and sustain health and wellness with informatics and technology – is essential to this University-founded community. Towns, cities and states struggle with the key issues of access to the timely delivery of quality healthcare services, support services and healthcare coverage to citizens. Unfortunately, those with the most limited access to services are individuals, often children of color, living in economic disadvantage. This results in the creation and maintenance of significant health disparities. It also causes individuals and families to delay or postpone care until circumstances and increasing risk force them to seek the most expensive and inefficient “downstream services,” that is, the hospital emergency room, for example. In addition, the public is well aware that the current healthcare system is disjointed, difficult to access, overburdened, and unfocused on prevention, which often leads to poorer health outcomes.

According to the National Institute of Medicine, 45 million Americans do not have health insurance. About 80 percent of uninsured Americans come from working families, and about 20 percent are children. Each year, about 18,000 Americans die prematurely because they lack health coverage and either delay or decide not to seek medical care.

When the opportunity to establish a new community emerges, there is an occasion to examine healthcare from public health, family-centered and community-based vantage points rather than traditional indemnity insurance models alone. Access then becomes not only an
issue of access to coverage and “downstream” healthcare delivery mechanisms, but access to health promotion and preventive services delivered through new paradigms – taking advantage of advanced technology in the home and access to physical and mental health-promoting contexts within the community. With the development of the new community at UMore Park comes the opportunity for a more planned approach to health, healthcare and wellness.

**Potential Strategies**

With the imprimatur of this major research university adding value and context to the new community, health and wellness will be grounded in state-of-the-art science, best practices and the continuous applications and innovation of next-generation technologies. Strategies to accomplish this could incorporate:

- Community members actively engaged in the design of health and wellness emphases and programs in the community – including health literacy and personal participation in one’s own health goals.
- Access to healthcare that will overcome cultural, economic and social barriers.
- Quality information on health and wellness that is presented in culturally appropriate and accessible language. Alternative formats would be available around the clock in the home, schools, community agencies and places of business. In essence, the new community would provide the equivalent of “the Weather Channel” of health. This will accentuate prevention and increase wellness, physical and mental health.
- A community goal to ensure some level of universal healthcare as part of the health infrastructure provided by the University.

**Distinctiveness**

The University’s involvement with the community could provide value-added health and wellness benefits, including:

- Access for community residents to participate in University health research projects and programs.
- An integrated health and wellness model that places health in a community and social context providing the support, education and understanding of the importance of health and prevention to the family and the community. An engaged and informed community may be more interested in participating in a community health system, and ultimately in longitudinal studies that track population health. (Such an example is the community of Framingham, Massachusetts, and the well-known Framingham Heart Study, which was initiated in 1948. The study, which focuses on cardiovascular disease and its major contributing risk factors, has involved thousands of residents from the community.)
- Engagement of external funders to support research on models and cost-benefit analyses of the new community pursuing a universal healthcare strategy that includes wellness, diet and early intervention.

**FOOD**

*Health and wellness will be supported in the community through the availability of a variety of high-quality and healthy foods and education and information on food, nutrition and lifestyle choices.*

Safe and healthy foods, along with wise food choices and smart eating habits, are essential to the quality of life for individuals, their families and overall community health. Diet-related chronic diseases – diabetes, heart disease,
stroke, cancer, obesity and asthma — consume 75 percent of the $1.4 trillion U.S. healthcare budget, according to Department of Health and Human Services statistics. Demographic shifts in the population resulting in socio and cultural changes in the market place have increasing and multiple effects as food relates to the health of diverse cultural groups.

The increasing incidence of obesity in adults and children is the result of poor quality food intake and decreased physical activity. In addition, busy families focus less time on food preparation in the home and increase consumption of food away from home. The major motivations for food choices in the United States are taste, cost and ease of access — quality and nutrition are low priorities.

The ultimate long-term solution to reduce disease and promote health and wellness is prevention, through knowledge creation and public education and understanding.

Potential Strategies
Food can be a focal point for fostering a sense of community, both through the sharing of meals and through educational opportunities. The integration of nutrition education, gardening, cooking courses and retail food shopping options as formal and informal shared learning opportunities, for example, would address the interests of residents of all ages.

Potential strategies for the community include:

» Community facilities with kitchen and dining space that will encourage shared meals and community interactions around food and fellowship. Such community interactions can benefit all citizens, but are especially significant to the community’s youngest and oldest members.

» Nutrition and cooking education offered through schools and community centers. Classes and events that feature farmers and horticulturalists would link the agrarian history of the region to current food production and local food sources.

» Community gardens at convenient locations across the community that offer enjoyment, social connectedness, and physical activity and can be linked to formal and informal educational opportunities for all ages.

» Specialty markets, grocery stores, community-based farmers markets, co-ops, delicatessens and restaurants to meet lifestyle preferences and cultural and ethnic options. These will help residents celebrate quality food in the community as part of the social fabric.

Distinctiveness
University faculty, students, staff members and program resources to guide the development of a community founded in health and wellness will be an advantage. Examples of the value added through the University’s relationship with the community include:

» Nutrition education that permeates the community through unique and engaging activities and forums.

» Integrating the community into University agricultural research programs located nearby.

» Extension food and nutrition services available to members of the community.
RECREATION AND RELAXATION

The new community will provide for recreation and relaxation opportunities, both in terms of formal structures and programs, which are accessible to all members of this diverse community throughout their life span.

Regular physical activity substantially reduces the risk of dying of coronary heart disease, the nation’s leading cause of death, and decreases the risk for stroke, colon cancer, diabetes, and high blood pressure. It also helps to control weight; contributes to healthy bones, muscles, and joints; reduces falls among older adults; helps to relieve the pain of arthritis; reduces symptoms of anxiety and depression; and is associated with fewer hospitalizations, physician visits, and medications. Moreover, physical activity need not be strenuous to be beneficial; people of all ages benefit from participating in regular, moderate-intensity physical activity.

In addition, relaxation and reflection opportunities contribute to social well-being and overall health. Such opportunities can be provided through natural environment and landscape features such as (bodies of water, gardens and pathways) and programming for individuals and groups.

Potential Strategies

Physical activity, recreation and relaxation contribute to the health and well-being of individuals and communities. The new community will provide opportunities and support structures to nurture and sustain an active population at all ages and stages of life. Potential strategies include:

- The incorporation of design principles that promote both active and passive physical activity in all seasons.
- Community design that features elements including complete streets (sidewalks, medians, street lamps, crosswalks, bike lanes, and trees), high levels of street connectivity, mixed land uses, and high-density development in order to create a walkable environment.
- Schools that are located within a critical distance from most residences to promote walking as the primary mode of transportation.
- A variety of relaxation opportunities including arts and music accessible to all members of the community. Indoor spaces with plenty of light and vegetation, including skyway or underground walkway systems, will allow for relaxation in inclement weather.
- Design that capitalizes on the natural environment to provide the quietness and beauty that offers relaxation and reflection.

Distinctiveness

The new community will benefit from unique resources of the University that could include:

- Incorporation of principles from New Urbanism, transit-oriented development (TOD) and other leading planning principles to promote physical activity, generate more opportunities for recreation, and improve the health of residents.
- Consideration of the impact of the built environment on levels of physical activity and health as a component of the socio-ecological model.
- Elimination or reduction of some of the barriers facing disadvantaged citizens in engaging in recreational and leisure time physical activity.
Wellness

WELLNESS CENTERS, ACTIVE LIVING BY DESIGN

Design Workshop recommends that the new community at UMore Park include a Wellness Center, as opposed to a traditional health club. These facilities contain all of the elements of health clubs but also employ on-site medical staff that perform routine check-ups, physical therapy sessions, diet and nutrition counseling, cardiovascular counseling and exercise sessions for people of all ages. The wellness facilities in some communities around the nation also provide the “school nurse” function for local schools. Some wellness facilities also install small gardens to grow seasonal foods for the local café. The Health and Wellness Facilities Plan on the following page suggests a location with good access from main highways that could serve as the site for a Wellness Center, with “healing gardens” for residents. These gardens would also present wonderful opportunities to create art in the community.
Health and Wellness Facilities Plan

Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest

VERMILLION HIGHLANDS

- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.

Health and Wellness Facilities Plan

Vermillion Highlands

A Research, Recreation and Wildlife Management Area

Wellness Center
- Clinic
- Urgent Care
- Exercise and Lifestyle Classes
- Health Club/Gym
- Public Health Counseling, Screening Services

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
The closest hospital to the UMore Park property is currently located over five miles from the site as shown on the Health Facilities Location Map above. The consultant team recommends that the University and its partners explore the establishment of a medical clinic within the development as the population of the new community grows. A clinic in conjunction with the Wellness Center would provide quality health care to residents and also serve as a major generator of employment in the area.

The new community will have an emphasis on health and wellness— with “prevention” as a goal— but will also need to address routine outpatient and general services.

The new community offers a unique opportunity for the University’s Academic Health Center to engage medical personnel, pharmacists, nurses, dentists, public health specialists and others in programming that supports wellness and the prevention of disease in the community. Such an intimate relationship can offer approaches to health and document outcomes. With confidence in University programming, a high percentage of residents may choose to participate in activities and education that lead to higher levels of wellness in the community.
Residents regard safety as a core requirement in communities. Safety was ranked as a key principle by the UMore Park Academic Mission Task Force on Health. The brief discussion below and potential strategies are excerpted verbatim from the task force report.

Through design, technology, public education, the provision of public services and execution of the highest standards for the built and natural environment, the community will be a safe and comfortable place for people to live, work and play.

Planned community design and the creation of a strong sense of community contribute to safety in neighborhoods. Even at a time when statistics in many places across the country show a steady decline in criminal activity, safety tops the list of concerns in national polls, according to the national Local Government Commission. Research shows that community spirit and willingness to get involved in crime prevention efforts reduces violent crime by as much as 40 percent. A sense of community is a determining factor influencing how well residents watch out for one another.

Potential Strategies
Strategies that could contribute to safety and comfort in the new community include:

» Parks, schools, community facilities and shops that are easily reached via walking and bicycle paths to draw people together and create a ‘busy’ community where people routinely see each other.

» The design of residential streets that slow traffic to help reduce the number of pedestrian injuries.

» “Front porch” design in houses and neighborhoods that create opportunities to interact with neighbors and encourage a sense of community concern for one another.

» Sufficient and aesthetically pleasing lighting incorporated into residential, retail and public areas.

Distinctiveness
University of Minnesota research and resources will enable the new community to utilize the most innovative technologies to ensure that safety issues are addressed, including:

» Transportation design and use of alternative transit options.

» Sustainable, energy efficient lighting technologies.

» Community design, encompassing both the built and natural environments, that encourages openness and connectivity with others.
Water Management

WATER SUPPLY

The consultant team recommends that the new community obtain water from a combination of on-site and off-site sources. Pursuing a diversified water strategy would allow the community to operate more self-sufficiently with regards to water usage and decrease demands on conventional municipal systems in the region. The Water Distribution Concept Plan on the following page illustrates the suggested location of water infrastructure.

The new community would obtain on-site water by constructing its own facilities within the boundaries of the UMore Park property. Wells located strategically throughout the community would tap subsurface groundwater in the area. Constructed water bodies, including the larger lake on the west side of the community, would provide surface-level water sources to the new community. Water acquired from on-site sources would be treated at facilities located within the community.

Initial projections indicate that the new community would consume 5.7 million gallons of water per day. Water used for irrigation throughout the community would be in addition to the estimated usage by residents and businesses of 5.7 million gallons per day. The new community should pursue cutting-edge technologies to conserve water, including the latest advances in the reuse of greywater, in order to minimize daily water consumption.

METRICS FOR WATER SUPPLY

» The new community’s recommended water budget should strive for a 35 percent reduction in the daily water usage per person within the community as compared to current daily water usage rates for the Twin Cities region.

» By utilizing on-site sources, the new community should use less water per person per day from municipal sources than the typical usage rate for similar developments.
Water Distribution Concept Plan

Possible water tower location (one acre each)

Possible ground water connection

Possible surface water connection area

Existing water tower

Possible connection to municipal water main (City of Rosemount)

VERMILLION HIGHLANDS
A Research, Recreation and Wildlife Management Area

Legend

- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest

NOTE: Water distribution piping is typically located in roadway right of way

VERMILLION HIGHLANDS

- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

* The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
SEWER SYSTEM

The consultant team recommends that the new community at UMore Park incorporate sustainable sewer systems to minimize energy usage required to treat waste and also to minimize impacts on conventional treatment systems in the surrounding area. Population projections and anticipated land uses in the new community indicate that the development would produce an average of 5.7 million gallons of sewage per day at full build-out. The new community’s sewer system should utilize on-site, sustainable solutions as much as possible to minimize demands on municipal systems and set an example for sustainable sewage treatment in the Twin Cities region.

The Sanitary Sewer Concept Plan on the following page suggests that the new community employ a range of sustainable sewage treatment technologies. The construction of on-site wetlands to treat a portion of the sewage waste produced in the new community would minimize expenses associated with piping the waste to municipal treatment facilities located off-site and would use far less energy to operate as compared to conventional wastewater treatment plants. Employing on-site wetlands would also create diversity in the local ecosystem. As much as 60 to 80 acres of constructed wetlands for sewage waste treatment is recommended. The construction of relatively small “package” wastewater treatment facilities also minimizes expenses associated with piping to off-site treatment facilities. Many new communities, particularly in rural areas, have employed package plants in recent years to reduce piping. Many of the package plants use less energy compared to conventional wastewater treatment plants.

Sludge produced by wastewater treatment facilities on the property could be recycled into compost or mulch, in contrast to the conventional practice of depositing sludge into area landfills. This strategy would reduce transportation costs and provide a sustainable source of compost and mulch material for community residents and area farmers.

METRICS FOR SEWER SYSTEM

» The highest LEED Neighborhood Development or future standards and requirements for sewage treatment should be met or exceeded.

» Energy consumption required for sewage treatment should be minimized through the creation of constructed wetlands where feasible.

» The percentage of sludge waste used for mulch or composting should be maximized.
Sanitary Sewer Concept Plan

Legend
- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest

NOTE: Sanitary sewer system piping is typically located in roadway rights of way. Lift stations will be required to move sewage from the southern part of the site to the northern part of the site.

VERMILLION HIGHLANDS
- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

The shades of color on the Vermillion Highlands indicates intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
TECHNOLOGY

Telecommunications

The new community should provide the necessary infrastructure for the provision of telecommunications services, including telephone and related technologies. The consultant team recommends that transmission systems for dry utilities be buried underground to provide for more appealing aesthetics. In addition, the development should work with a number of different telecommunications providers to provide greater choice to residents and, therefore, lower overall prices. As an overarching goal, the community should ensure that the very latest in telecommunications offerings are provided to all residents. Securing the latest technologies will be essential to attracting top companies, particularly those associated with high-tech or green industries.

Broadband and Fiber Optics

The highest capacities in broadband and fiber optics should run through the development. All public spaces, including neighborhood shopping areas, gathering places, and schools, should offer the latest in wireless connectivity and broadband access. To compete with other employment centers and communities in the Twin Cities and across the nation, the community should require this level of service. The consultant team recommends that the University and its development partners ensure that the community has the necessary broadband and fiber optic assets to outperform its competitors in the region.
The new community at UMore Park will require a comprehensive transportation system to serve all of its needs. Based on traffic forecasts, the development would likely have a substantial impact on local and regional traffic. (Transportation planning associated with the new community should incorporate economic, social, and ecological objectives.) The transportation system should be designed and constructed to accommodate existing and future travel demand. To meet the sustainability goals, the transportation system should be multi-modal and should integrate with the land use plan. Planning for the future should provide for decreased dependence on the automobile as the community matures. The Concept Master Plan embraces the coming changes through planning a transit oriented development with a rich mix of land uses.

One of the objectives of the planning process is to create a community with a balance of jobs and housing units. By providing greater employment opportunities, the community is more likely to have a high percentage of residents who both work and live in the vicinity of the development, thus avoiding the creation of a “bedroom community.” Promoting a balance of jobs and housing would also help to minimize pressure on transportation infrastructure in and around the new community.

**METRICS FOR TRANSPORTATION**

- **Vehicle trips could be minimized by 10 percent by balancing the number of jobs and housing units with transportation choices, including transit.** This strategy would minimize transportation costs associated with time, energy, pollution, safety, implementation, and maintenance.
- **A transportation demand management (TDM) plan that would reduce vehicle trips by an additional 10 percent should be developed.** This goal could be accomplished through transit and carpool incentives, bicycle parking/storage, and communication strategies.
- **Walking and bicycling should compose five percent of all person trips.**
- **The miles of sidewalks and trails per acre in the new community should exceed the number provided in typical developments within the State.**
- **The new community’s transportation network should serve all people and accommodate all trip purposes, thereby increasing mobility choices through its TDM plan.**
- **Consistent with LEED or future standards, no more than 20 percent of the total development footprint areas should be used for surface parking facilities.**
Further, the consultant team concurs with the following design and implementation principles put forward by the Academic Mission Task Force on Transportation.

- **Modal Integration and Prioritization:** All transportation modes should be provided so as to be complementary and mutually supportive, giving priority, first, to pedestrians and bicyclists; second, to users of transit and intermodal transfer facilities; and third, to auto and parking facilities users.

- **Resiliency, Flexibility and Adaptability:** The transportation system should be able to react to changes in travel patterns, behaviors and infrastructure conditions; adapt to changing demographics and technological advances; and accommodate growth in local, regional and global markets.

- **Maximize Accessibility, Reliability and Mobility:** The system should be designed to minimize transportation system and user costs, and maximize accessibility, reliability and mobility choices for people of all ages and for freight.

- **Community Enhancing:** The transportation system should promote quality of life, health and safety, economic development, environmental protection and aesthetics.

- **Supportive of Research and Innovation:** The system should allow demonstration of emerging transportation technologies and strategies and evaluation of experimental approaches.

### Roads

The development at UMore Park will likely benefit from a number of currently proposed improvements to regional roads and highways in the southern portion of the Twin Cities region. In addition, the growth of the new community would precipitate the construction of a number of new roads and road improvements to service the development’s increasing number of residents, businesses, and visitors.

Within Dakota County, transportation officials have already proposed the following road improvements.

**NORTH/SOUTH ALIGNMENTS:**

- A study is being launched in Fall 2008 to assess north/south alignments in a broader regional context. The study will include the previously proposed extension of County Road 71 (Rich Valley Boulevard) from County Road 42 (145th Street) to connect with existing County Road 79 (Blaine Avenue) in the City of Rosemount and Empire Township.

**EAST/WEST ALIGNMENTS:**

- The construction of a new county highway running east-west along an alignment between 180th Street and 200th Street and between County Road 9 (Dodd Boulevard) in Lakeville and Biscayne Avenue in Empire Township;

- The construction of a new county highway within the 215th Street and 220th Street alignments between County Road 23 (Cedar Avenue) in Lakeville and Minnesota Highway 3 (Chippendale Avenue) in Farmington;

- The paving and widening (to a 3-lane or 4-lane section) of Akron Avenue (County Road 73) from County Road 42 to the north city limit of Rosemount;
» The construction of a new interchange connecting U.S. 52, Minnesota Highway 55 and County Road 42, including frontage roads and other local roadways to support the new interchange; and

» In addition, Dakota County and MnDOT are partnering to study the future transportation needs of the Minnesota Highway 3 Corridor between Inver Grove Heights and Farmington, including the possibility of installing a new interchange at County Road 42.

EXISTING ROADS

State and local authorities have classified the existing transportation routes in and near the UMore Park property into four groups as shown on the Existing Roads Functional Classification Map. U.S. 52, Minnesota 55 and County Road 42 serve as principal arterial routes that serve the larger region, connect different sections of the Twin Cities area, and connect the metropolitan area to other parts of Minnesota and the Upper Midwest. Highway 3 and County Roads 46 and 66 serve as minor arterial routes that carry more local traffic between communities in Dakota County. Collector routes such as County Roads 73 and 81 and various city streets in Rosemount connect different neighborhoods and are spaced within a mile or less apart in more urbanized areas. Local roads, such as the existing 170th Street and small neighborhood streets in Rosemount, service individual homes and businesses.

Dakota County maintains all county roads including 42 and 46. Rosemount and other cities hold responsibility for city or municipal streets within their boundaries. Currently, all non-county roads within the UMore Park property are considered “private roads” controlled and maintained by the University.

County Road 46 and Blaine Avenue would be the two minor arterial roads that would connect through the development. Aggregate extraction activities would create a deep depression along the current County Road 46 alignment (70 feet or more deep) and would require the road to be realigned to circumvent this future lake. The future alignment of Blaine Avenue has not been determined at this time.
Existing Roads Functional Classification Map

Source 10
Existing Roads Jurisdictional Classification Map

Legend
- State of Minnesota
- Dakota County
- Municipal
- Private
- Umore Park
- Vermillion Highlands WMA

Source 11
Transit-Light Rail, Commuter Rail, Bus

The Concept Master Plan builds upon the potential for light rail, commuter bus, and internal bus service that may someday service the site. Many of these improvements are currently under discussion and proposed by the transit authorities but not currently funded or planned. The *Regional Transportation Map* shows the anticipated routes. A proposed light rail line, running from the eastern neighborhood center of the new community at the UMore Park property through the western neighborhood center and west toward Minnesota Highway 3, would eventually connect the community with a comprehensive mass transit system serving the Twin Cities region. The light rail line, running east-west, would represent the southern terminus of the Robert Street light rail line, which would eventually connect the new community with other centers of employment, education, and entertainment in the region. The consultant team recommends three transit stations along the line to service the new community. After passing the UMore Park property the corridor would generally follow Minnesota Highway 3 northward, terminating in the downtown St. Paul area. The line would connect with the “central corridor” line connecting downtown St. Paul, the University of Minnesota’s East Bank and West Bank campuses, and downtown Minneapolis.

The Concept Master Plan and local transportation agencies call for a series of bus rapid transit (BRT) lines to connect UMore Park with other suburban destinations in the southeastern portion of the Twin Cities region. A BRT line would run along County Road 42, from County Road 23 in Apple Valley east through the UMore Park property, terminating at U.S. 52. This BRT line would include two transit stations along the northern edge of the new community, and its route would divert to the south of the Dakota County Technical College campus to accommodate student traffic from the campus as well as nearby high schools and civic facilities in the community.

The BRT line running along County Road 23, at the western terminus of the County Road 42 route, would connect Interstate 35-E in Burnsville with Lakeville and points south. Other planned major BRT routes will run east-west along County Road 28 in the Inver Grove Heights area, and east-west connecting Fort Snelling and the Minneapolis-St. Paul Airport area with South St. Paul. A series of park-and-ride lots, including one at County Road 42 and U.S. 52 and another near downtown Rosemount at Minnesota Highway 3 and County Road 42, would provide parking spaces and connections for commuters from the new community and the surrounding area.
The proposed land use changes in and around the property were added to the transportation model along with the proposed Robert Street LRT plans and the supporting BRT system. Those changes resulted in approximately one percent of the vehicle trips from the property shifting over to transit. The Twin Cities overall has a transit usage of just over two percent (which includes the much higher usage in the urban core). Based on the rural location of the site relative to the urban growth areas, the one percent usage is consistent with suburban patterns in the Twin Cities. Over time, the Twin Cities model will continue to be updated to reflect changing travel behavior that will occur due to demographics, job growth, fuel prices, and transit ridership changes. However, those changes have not occurred, and at this point the Metropolitan Council model is not predicting significant changes to the prior patterns.

However, trip reduction may be inherent with a proposed land use plan including jobs, housing and retail, and incorporated with a pedestrian-oriented community. A reduction of ten percent of the single occupant vehicle trips can be achieved through implementing a transportation demand management plan.

Pedestrian, Equestrian, and Bicycle Circulation

The recommended transportation and open space frameworks for the community at UMore Park outline a comprehensive system of pedestrian, bicycle and equestrian connections within the community and to surrounding locations. Significant pedestrian and bicycle corridors would follow the major arterials within the UMore Park property, including County Road 46, County Road 42, and the diagonal arterial connecting the two village centers. In particular, neighborhood and community-wide networks would connect residents by bicycle or foot with the major transit stations for light rail and bus rapid transit within the community. Bike lanes, sidewalks and multi-use trails would facilitate this connection along the primary arterials. The neighborhood streets within the new community are designed to slow vehicular traffic and therefore facilitate greater pedestrian and bicycle connectivity within and between neighborhoods.

Connections to adjacent destinations enhance the vitality of the community’s pedestrian, bike, and equestrian trail system. A series of trails and pathways would connect the southern portion of the community with the Vermillion Highlands and Dakota County Regional Park. Connections from the community to proposed regional and City of Rosemount trails would also be made. Trails would also connect the community to existing neighborhoods within the City of Rosemount to the west as well as to Coates and other current and future communities to the east. Equestrian trails would be limited within the new community but would connect open space areas within the community to open spaces and trails in the south (Vermillion Highlands and the Dakota County Regional Park).
Alleys

The consultant team recommends that several neighborhoods within the new community, particularly those in and around the neighborhood center areas, include a significant number of alley-loaded residential products. The residential alleys would primarily provide access to individual homes and access for emergency and service vehicles within neighborhoods. Although alleys would carry a relatively minor portion of the vehicular traffic within the development, they would enhance the community’s overall transportation network.

Signage and Wayfinding

The community should feature coordinated signage and wayfinding. Coordination would pertain to street signs, as well as gateway signs guiding visitors and residents into the community. Larger profile signs near UMore Park’s entrances would help to develop a branding identity for the new community. Signage guidelines and programs should be established for retail and commercial tenants and for community amenities and buildings. Signage will begin to establish an identity for the new community and provide for effective guides for travelers.
The Dakota County region that surrounds the UMore Park property evolved from agrarian roots, as did much of the seven-county metropolitan area. The location of the University’s Rosemount Research and Outreach Center has been a focal point for local agricultural and horticultural research since its inception in Fall 1947. The history and traditions of the region are important social and cultural threads that can help to weave a strong social fabric in the new community.

The Concept Master Plan links the agricultural traditions of the past to new opportunities in research, local foods and community gardens, and landscaping that support health and wellness.

**Agricultural Research**

Currently between 600 and 900 acres are used annually for agricultural research. The Rosemount Research and Outreach Center coordinates the projects of 38 faculty members on site. For the future, the Concept Master Plan, in conjunction with the Vermillion Highlands planning, will ensure that over 1,000 acres is available for agricultural research.

By law, 1,000 acres of Vermillion Highlands: A Research, Recreation and Wildlife Management Area are dedicated to agricultural research. Other types of research can be incorporated across the full 2,822 acres, and could include water quality, ecology, wildlife habitat and other areas of investigation that support the goals of this public natural area. As development occurs over time, research projects that are currently located on the 5,000-acre site can be relocated to Vermillion Highlands.

In addition, the Concept Master Plan includes roughly 100 acres of land along the southern edge of the new community for agricultural research and demonstration (see Concept Master Plan, District VI description on page 39). This segment of the new community is envisioned to serve as a research and demonstration area that focuses more specifically on local foods. For example, research could address varieties of vegetables and fruits that contain increased levels of healthful constituents, the anti-cancer constituents of cruciferous vegetables (broccoli, cabbage, kale and others) and soybeans. Research might focus on the ability to breed for cold hardiness traits in ornamentals and shrubs, for example. This area, located in relatively close proximity to the new Rosemount Research and Outreach Center, is envisioned to serve as a demonstration area that focuses more specifically on local foods.
Agricultural Research, Local Foods and Gardens Plan

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VERMILLION HIGHLANDS

- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

*The shades of color on the Vermillion Highlands indicates intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration. Note: In general, agricultural research would occur on the Vermillion Highlands acres labeled as "Moderate Intensity Use".*
Center facility, would also be a resource for research-based education and demonstration for community residents, local farmers and school children and youth.

New research investigations over time would vary and bring new knowledge to better bridge the public’s understanding of the relationships between food and health.

**Local Foods**

This unique area in the new community that highlights research on local foods, provides new opportunities for faculty and students in the College of Food, Agricultural and Natural Resource Sciences who engage in aspects of local foods and horticulture through departments and the Minnesota Institute for Sustainable Agriculture. It is important, too, to link this research into the social interactions of the community. For example, a portion of the fruits and vegetables grown on this 100-acre research and demonstration site could be featured in a community farmers’ market.

The long-standing farmers’ markets in St. Paul and Minneapolis will likely continue to dominate the Twin Cities markets for local foods in the foreseeable future. However, the community at UMore Park has the opportunity to create a new, regional-scale farmers’ market. The University already has the experience of assessing users of local farmers’ markets through its own University of Minnesota Farmers Market, which concluded its fourth season in October 2008. This market, which will return in Summer 2009 with plans to bring fresh produce and flowers to the Twin Cities campus, featured the produce of student growers as well as growers from around the region.

Ideally, the farmers’ market in the new community would feature permanent, sheltered facilities and be integrated into the initial design for the main neighborhood center for the community. Public art could anchor one end of the market, and the Main Street-level retail core of the neighborhood center could wrap around the farmers’ market. During hours of operations, the farmer’s market should energize the entire retail district and attract residents from throughout the region. During off-peak hours, the farmers’ market facility would double as a venue for concerts, classes and other community events.

Food is a focal point for social interactions. The farmers’ market would be a venue for people to meet and participate in one of the benefits and features of the new community.

*Hmong farmers are currently leasing land on the UMore Park property as part of the University New Immigrant Farm Program to produce goods to be sold at Twin Cities farmers’ markets.*
In conjunction with the on-site research and production of local foods, community classes on cooking, nutrition and seasonable fruits and vegetables as components of a healthy diet could be offered by University Extension and public engagement specialists. These venues and programming provide ways for people to explore interests and expand learning opportunities.

Specialty Gardens. The Twin Cities is home to a significant Hmong population, which has grown and contributed to the social fabric and economic development in the Twin Cities since the mid-1970s. Currently, the University has set aside about 75 acres of leased land as part of its New Immigrant Farm Program. These acres, currently leased by Hmong farmers are situated in the northern-most reaches of the UMore Park property, near County Road 42. Consistent with the University’s commitment to diversity and opportunity, it will ensure that acres are available to new immigrant farmers. Over time and as development unfolds, these plots (with acreage equal to or greater than current use) may be relocated to the Vermillion Highlands property.

Community Gardens. In addition, community gardens help promote a sense of community and a connection to the environment. The Concept Master Plan incorporates reserve plots for community gardens in residential neighborhoods, potentially located along walkways and open space corridors throughout the community. Gardens along open space areas could include ornamental flowers and grasses in addition to fruits and vegetables to enhance the aesthetic qualities of the community. Gardens could also be components of the landscaping around schools and community facilities. The gardens could provide teaching tools for classes, and could be maintained in conjunction with related community activities during the summer months. The University of Minnesota Landscape Arboretum has significant experience in developing plots and raised gardens for elementary schools and special needs partner organizations.

**METRIC FOR AGRICULTURAL RESEARCH AND DEMONSTRATION**

- Dedicate permanent and viable growing space in community gardens within the new community at the square footage rates suggested by the LEED Neighborhood Development guidelines or future standards.

**Landscaping for Health and Wellness**

The landscape design of the community should encourage the inclusion of a variety of fruit and nut trees, fruit bearing shrubs and vines and other plant materials. Landscaping that includes unusual trees and foliage can provide additional education opportunities, engage the efforts of local Master Gardeners, offer spaces for quiet and personal reflection, and contribute to the overall aesthetics of the community.

Further, even in its earliest phases, the development could feature a nursery and garden center to serve initial residents. The creation of 12,500 new homes over time and related retail, office industrial and civic uses would create a significant demand for plant materials. A nursery has the opportunity to utilize land slated for later stages of development as an interim land use. Already the University has long-standing relationships with nurseries and other green industries in the state. The consultant team suggests that the University explore potential opportunities with these and other operations as development unfolds.
PLACES OF WORSHIP

Places of worship have helped form the fabric of communities throughout America since colonial times. Religious organizations help further a number of community initiatives, including providing social services and educational facilities such as pre-schools, day care facilities and meeting places. The opportunity to practice one’s faith would add to the cultural richness of the new community and provide a way to integrate new residents into the community over time. Eventually, an Interfaith Association could be created to facilitate the creation and support of faith organizations. In addition, the new community could explore providing incubator space for the creation of faith-based organizations and establish a strategy for providing sites for places of worship as the community grows. Research suggests that faith-based organizations typically organize in master planned communities at a ratio of one denomination per 2,500 residents. In the Concept Master Plan sites have been provided within the property using this ratio. In addition, sites have been limited to three acres in size to ensure that these facilities are in scale with the neighborhoods in which they are located. The possible places of worship are located on high-points so that the character of the community can be enhanced by the iconic quality of the site as shown on the Places of Worship Plan.

METRICS FOR PLACES OF WORSHIP

» Space for places of worship should be designated to provide for the inclusion of one denomination per 2,500 residents in the new community.

» A place of worship should be located within one-half mile of every resident in the new community.

» A variety of denominations ideally should be represented across the multiple places of worship.

» Places of worship should collaborate with other institutions within the community to make best use of space and facilities for educational, wellness and other community programs.
Places of Worship Plan

Vermillion Highlands
A Research, Recreation and Wildlife Management Area

Legend
- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education/ Places of Worship
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest

VERMILLION HIGHLANDS
- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

The shades of color on the Vermillion Highlands indicates intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.

Half Mile Walking Radius

Community | January, 2009 195
The economics section of the Concept Master Plan considers the economic feasibility of the new community at UMore Park and associated activities on the property from two perspectives. The financial analysis considers the overall investment returns produced by the development and aggregate mining for the University and its potential development partners. It considers the projected revenues resulting from sales of aggregate material, improved land parcels, and developed residential and commercial products versus the costs of development and operation of the property over time. In contrast, the fiscal analysis considers the monetary impacts the new development would have on other entities, including local governments. It provides a short analysis of the tax revenues produced by the new community as a result of development.
FINANCIAL ANALYSIS

The consultant team evaluated the four preliminary land use scenarios, as well as the final Concept Master Plan, in terms of overall market and financial feasibility. This process provides the University necessary information to identify the most financially viable land use plan for the new community at UMore Park and understand its short and long-term revenues, costs, and risks to the University and to potential development partners. Based upon these assumptions, the new development would provide internal rates of return (IRR) to both the University and a potential development partner in excess of 20 percent.

General Assumptions

Given the general economic recession and real estate downturn present in the Twin Cities and the nation at large as of Fall 2008, the uncertainty of the timing and strength of a potential economic rebound, and the long-term nature of a development of this size, the consultant team did not conduct a formal market analysis during the conceptual master planning effort. The team, however, did leverage the findings of a market study commissioned by the University and completed by Economic Research Associates (ERA), during the 2006 strategic planning for the UMore Park property. This document provided a general assessment of the development potential for residential and commercial space in the community. The consultant team supplemented the ERA findings with additional economic and demographic analyses to prepare a preliminary development program for the community at UMore Park, including projections concerning the number, types, and prices of residential units in the community as well as forecasts of supportable commercial space and commercial land values in the development. The consultant team leveraged these general market analysis findings in creating the four preliminary land use scenarios for the community at UMore Park and the final Concept Master Plan.

The consultant team used historical benchmarks for the Twin Cities real estate market and drew from examples of comparable large-scale master planned communities in the United States in creating land use scenarios for the new community. Given the uncertainty of the current economy, the team has not identified the timing of a recovery in the local real estate market. The financial analysis for the community does assume over the long-term (the next 20 to 30 years) that the Minneapolis-St. Paul market will absorb between 15,000 and 20,000 new homes per year, in line with historical trends over the last few decades. The Twin Cities region’s residential market has fluctuated markedly in recent years, with permits for new units decreasing from a peak of 28,000 in 2004 to a total of only 10,000 in 2007. The consultant team assumed that the community at UMore Park would grow on an annual basis based upon historical trends in the local market. The financial analysis does not account for potential booms and busts over the next few decades.
Given that the Twin Cities region has not witnessed the development of a large-scale community of the size of the UMore Park property, the Concept Master Plan drew from the experience of notable master planned communities around the country in developing land use concepts and financial analysis models. Historically, larger master planned communities have demonstrated the ability to capture as much as three percent of a metropolitan area’s annual residential building permit activity. The team analyzed the performance of several precedent communities, including The Woodlands, a community of over 80,000 residents just north of Houston, and Stapleton, a residential and commercial community of over 4,000 acres emerging on the site of Denver’s former Stapleton International Airport. These two communities witnessed an increase in the density of development over time and an increase in the absorption of residential and commercial products as critical masses of residents and businesses in these developments emerged.

The financial analysis considered the potential returns for both the University and potential partners or development entities. It also illustrated the value created for the property through the planning and entitlement process and continued progress in the overall development management process. The analysis revealed that, in line with general financial theory, development entities that bear higher levels of risk in terms of money spent on gaining entitlements and providing for initial trunk infrastructure, normally gain higher returns in line with these risks.

For each of the four development concept scenarios, the consultant team conducted preliminary financial analyses to compare potential financial returns from each scenario. This information, coupled with a determination of the environmental sustainability of each scenario and consistency with the University’s mission, helped the team and the University develop the final Concept Master Plan for the new community at UMore Park.

The Stapleton community in Denver, Colorado is one of the precedent master planned communities that the consultant team compared to the new community at UMore Park.
General Conclusions of Financial Analysis

The financial analyses revealed the following key conclusions:

» Higher density development increases overall financial returns, and the provision of light rail service to the new community would help support the feasibility of a higher-density development;

» Increasing the proportion of development devoted to commercial land uses would increase overall financial returns from the UMore Park property; and,

» Pursuing gravel mining on the UMore Park property would provide an opportunity to generate a stream of cash flows to the University based on a royalty rate of $1.00 to $2.00 per ton. Early cash flows from this operation may be capitalized in order to fund development of the master planned community. There are an estimated 200 to 300 tons that could be extracted over a period of several decades.

FINANCIAL RETURNS: THE CONCEPT MASTER PLAN

The consultant team performed an initial financial return analysis for the Concept Master Plan using the following general assumptions:

» The University and a developer partner would jointly sell finished residential lots (with all site work completed and infrastructure in place) and undeveloped commercial pads (acreage without infrastructure or site work completed).

The University would contribute land at UMore Park and a portion of the necessary capital for the deal. The University would not finance any of its contribution to the project. The private sector developer would contribute additional capital, financed through bank credits. Other assumptions include:

» Public financing would provide additional funding through general obligation bonds;

» The community at UMore Park would develop and complete build-out within 30 years;

» Gravel mining revenues are not included in this financial analysis;

» Projected revenue assumptions are based upon the previous market study by ERA and supplemental research;

» Development costs are provided by local engineering firm RLK, based upon local experience, and include all roads and infrastructure, along with major community amenities; and,

» Soft costs, including project management and design, are included in the financial analysis.

Based upon these assumptions, the new community at UMore Park would provide internal rates of return (IRR) to both the University and the developer partner well in excess of normal expectations in the development community of 20 percent. Overall, over a 30 year time frame, the initial financial analysis suggests that the project presents a significantly attractive real estate development opportunity, producing very positive returns to the University. The potential financial returns should be sufficient to attract an experienced development partner with the skill and capacity to undertake a project of this scale.
As a large-scale mixed-use project to be developed over approximately 30 years, the community at UMore Park would have a significant fiscal impact on local jurisdictions. Direct fiscal impacts stemming from the development of the new community include:

- Sales and income tax revenues to local and state coffers generated from construction activities;
- Corporate income tax, real property tax, and retail sales tax generated from retail and office uses;
- Income tax generated by residents of the community;
- Sales tax revenues generated from local retail purchases; and
- Transfer tax revenues generated from home sales.

In order to measure the full potential fiscal impact of the community at UMore Park the analysis considers the taxing structures of the relevant jurisdiction(s) with oversight of development activities. The Concept Master Plan assumes that the City of Rosemount would oversee development at UMore Park in accounting for tax revenues produced at the municipal level.

Based upon the land use program for the Concept Master Plan, the analysis estimates that UMore Park development would, for example, generate a total of $984 million in property tax revenue for the City of Rosemount over a thirty year build-out period.

**METRICS FOR ECONOMICS**

- Rate of investment for LEED: Strive to minimize the payback period for investments made in achieving LEED certification on schools, libraries, residences, public facilities and office and industrial space based upon calculations of energy savings and other soft benefits.
- Economics of Art: Maximize the multiplier effects stemming from investments in art facilities and programs. Maximize the net fiscal impact of its art initiatives.
- Community Assets: Ensure a net positive fiscal benefit stemming from the development of assets such as open space, trails, health care programs and facilities, etc.
ECONOMIC DEVELOPMENT STRATEGY

In keeping with the University’s financial goals and its academic and community-focused missions, the new community should represent a significant economic development engine for Dakota County and the Twin Cities region. The consultant team believes that the development can attract and help sustain significant new business for the region, including companies oriented to green technologies and sustainable enterprise in general.

The recommended design of the community and its ties to the University system should bolster the economic development strategy for the new community. The combination of amenities, including vibrant neighborhood centers, options for entertainment, art and culture, and significant open space and recreational opportunities, should attract employers and employees alike. Companies today realize that employees are seeking more than the typical office park environments when considering work opportunities. Office parks across the country, for example, have begun to transform into mixed-use environments in order to capitalize on the desire of many employees, and in particular knowledge workers, to live and work in more dynamic environments. Today’s knowledge workers are seeking out communities that integrate employment centers with amenities including shopping, parks, and performing arts.

Many professionals, particularly in larger cities such as Minneapolis, are furthermore choosing developments that integrate a variety of housing options, including townhomes, condominiums and rowhomes in addition to traditional detached single family residences, with shopping and office components. The community’s potential mass transit links to the rest of the Twin Cities, as well as the prospect of shorter commute times from nearby residences, should also enhance the economic development position of the community. The new community should represent the next generation of employment centers in the Twin Cities and attract companies and employees through its design and its overall quality of life.

Furthermore, UMore Park’s association with the University of Minnesota’s brand name should help stimulate economic development efforts in the new community and attract larger employers. Efforts to locate start-up companies utilizing technological breakthroughs developed at the University in the new community, in particular, would establish the development as a hotspot for high-tech firms in the Twin Cities region. Synergies between green technology initiatives within the University and the creation of new companies in the community, in particular, would encourage growth of the Eco-Industrial Park. Leveraging the power of the University as one of the pre-eminent research institutions in the country would help the community at UMore Park grow as an economic development engine for the region.
In terms of phasing of initial development, absorbing the over six million square feet of projected office, industrial and institutional space in the new community over the next few decades would require securing one or more large employers in the early stages to establish the community as a significant employment center. The introduction of a large office or industrial user in the new community would help to create a critical mass of office users to support nearby retail and residential development. The economic development strategy, therefore, should involve identifying potential large-scale employers and approaching them very early during the development process. University and civic leaders should outline how locating operations in the new community would create significant benefits for companies over the short- and long-term. Aggressively pursuing research and employment uses should help catalyze the new community and promote a higher level of economic development.

The consultant team recommends that the University also stimulate economic development by partnering with local jurisdictions and business organizations to recruit employers to the community. Local jurisdictions seeking to expand their tax bases may wish to offer financial incentives to potential businesses considering locating in the new community. Combining the efforts of local officials, regional and state government leaders, and the University would help generate significant economic development on the UMore Park property.
The recommended development program for the community at UMore Park should generate a significant number of new jobs and provide ample opportunities for residents of the new community and the surrounding region to work within close proximity of their homes. The community would create a variety of retail, education, health and wellness and corporate positions as well as jobs related to eco-industrial uses. The Concept Master Plan assumes approximately 7.9 million square feet of mixed-use commercial, retail, institutional/education, civic, office, and light industrial and generation of anywhere between 200 to 600 employees per square feet. Thus, the development should generate a total of approximately 25,000 permanent jobs at build-out.

Achieving a sustainable jobs-to-housing balance would help the community at UMore Park and the University achieve goals and objectives in a number of areas. The presence of additional jobs within or in close proximity to the community would reduce overall levels of traffic on area roadways and thereby reduce energy use and improve air quality. Because residents would be spending less money on gasoline and other commuting costs, their disposable incomes would increase. Spending less time commuting to distant jobs would improve the overall quality of life for residents.

Jobs/Housing Balance

Given that the Concept Master Plan would yield a total of approximately 12,500 residential units, the community at UMore Park should seek to achieve a jobs-to-housing ratio of at least 1 to 1. This figure is in line with jobs to housing ratios for comparable large mixed-use communities. For example, The Woodlands near Houston currently achieves a jobs-to-housing ratio of 1.21, based upon a total of 40,000 jobs and 33,000 housing units.

The consultant team recommends that the community at UMore Park strive to provide a sustainable jobs-to-housing balance. Typically, an urban core houses a significant portion of a metropolitan area’s employment centers, and outlying suburban areas serve as bedroom communities, providing workers during the day. Under this traditional model, the suburbs are quiet during the day while office workers are in the urban core, and the urban core largely shuts down at night when workers return home. This model results in heavy rush hour traffic and higher carbon emissions, higher parking requirements due to the mismatch of daytime and nighttime land uses, less engagement in community life due to time spent commuting, and a reduced sense of security during off hours.
A jobs/housing balance of 1:1.1 is considered a minimum for economic sustainability and the national average is 1.3, but the jobs/housing ratio alone does not constitute a reliable indicator of sustainability. Ideally, the jobs that a community has to offer are filled by residents of the community itself in order to reduce overall commuting distances. A low jobs/housing ratio indicates a bedroom community where residents are commuting elsewhere for work. A high ratio usually indicates a dense urban or industrial area with relatively little housing. Research has shown that ratios between 1:1.2 and 1:2.8 may not have a significant impact on Vehicle Miles Travelled (VMT), however, because factors other than the numbers of houses and jobs can impact commuting patterns. To truly reduce VMT, planners must work to match the pool of jobs to the residents of the new community. The community could pursue this goal through various means such as using an affordability index to match the projected cost of housing to the projected incomes offered by the jobs within the community. Matching the projected incomes of jobs created with the anticipated costs of home ownership would help more residents live and work in the same community.

The ultimate goal is to minimize both the number of residents who travel to St. Paul and Minneapolis to work and those who travel into the new community from other areas. By balancing a desirable community with desirable employment opportunities and housing that is affordable to local workers, the VMT should decrease and quality of life should increase.

To achieve the recommended jobs-to-housing ratio of 1:1.23 units per residence, the community should work to attract employers that can draw employees from throughout the Twin Cities region, and in particular the southern portion of the metropolitan area. The consultant team recommends that the community provide attractive retail options to entice employment centers, along with various amenities desired by workers during the day such as parks, entertainment, and community gathering places.

**METRICS FOR JOBS / HOUSING BALANCE**

» Strive to achieve a jobs to housing ratio of 1:1.23.

» Strive to include a mix of jobs that ties to the household incomes of residents living in the community in order to reduce the need for commuting within or to/from the community.
AFFORDABLE HOUSING

The degree of attainability or affordability of housing in a master planned community can have a number of impacts on the community and region. First, if attainability and affordability are not addressed, the diversity of the community diminishes because many potential buyers would be excluded from the community by price. Second, the sense of community would diminish because many of the individuals who are essential to making the community work cannot afford to live there. This portion of the community might include school teachers, health care workers, police and fire personnel, and municipal workers. Third, the inter-generational nature of the community is challenged because young adults who grew up in the community cannot afford to return. Fourth, the lack of workforce housing may cause employers to struggle to find employees to fill jobs and hired employees may need to travel great distances to work. Fifth, the regional implications of not providing workforce housing include economic impacts such as reduced annual consumer spending, stagnation of household growth, unfilled jobs, and a loss of regional competitiveness.

Housing Gap

THE REGIONAL HOUSING GAP

Without counting additional potential residential units in the community at UMore Park, the unmet affordable housing need through the year 2010 in Dakota County is conservatively estimated at 25,456 low-income households.

The median home price in Dakota County is $235,000 and the average fair market rent for a two-bedroom apartment is $848 per month. In Dakota County, a family of four with two full-time wage earners needs to earn a combined annual salary of $55,056—an amount slightly greater than that earned by one-half of Minnesota households—to afford only basic necessities and spend no more than 30 percent of income on monthly rent.

THE NEW COMMUNITY’S HOUSING GAP

An initial analysis of income distribution within the Twin Cities indicated that roughly 43 percent of the population of the Twin Cities would be unable to afford to purchase property in the new community based upon current pricing levels and mortgage lending requirements (assuming a minimum $50,000 household income to get into the least expensive product based upon an assumption that households spend no more than one-third of incomes on housing). An additional portion of the population would be able to rent within the community, but their long-term prospects as permanent residents would be challenged by the current pricing. The Suggested Average Home Prices Table lists the average home prices recommended by the consultant team for the new community.

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<th>Suggested Average Home Prices Table</th>
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<td>Low Density Detached</td>
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<td>Moderate Density Detached</td>
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<td>High Density Detached</td>
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Housing Terms

“Workforce housing” is a fluid term. In recent years it has come to mean the gap facing those who earn too much to qualify for affordable housing subsidies, but not enough to afford a home or an apartment— or “attainable housing”. The Urban Land Institute (ULI) places the bottom end of the workforce housing bracket at 50 or 60 percent of median family income— the upper cutoff for many federal subsidies. ULI also defines workforce housing as housing for households making between 60 and 120 percent of area median income (AMI). Workforce housing is also known as housing that is affordable to the typical worker in the region.

The term “workforce” often refers to the essential workers critical to the ongoing prosperity of the region, holding such positions as light manufacturing workers, police officers, teachers, bus drivers, nurses, retail salespersons and restaurant servers. A 2001 Twin Cities study of workforce housing report, Workforce Housing: The Key to Ongoing Regional Prosperity. A Study of Housing’s Economic Impact on the Twin Cities, September 2001, by Maxfield Research, Inc. and GVA Marquette Advisors, defined workforce households as those who earn between $15,000 and $50,000 gross income annually (between about $7.25 and $24 per hour). Ninety percent of current job openings and the majority of existing jobs in the Twin Cities pay workforce wages or less. Workforce housing pertained to either a rental unit with monthly rent between $375 and $1,250 or an owned unit priced below $125,000.

Common definitions for affordable housing are: housing targeted to and affordable by households that meet specific income eligibility levels, in this case households earning at or below 80 percent of area median income. “Affordable housing” does not refer to the design, type or method of construction of a housing unit or development, but rather to the cost of the housing to the consumer. Housing is generally considered affordable if the household pays less than 30 percent of its monthly income to secure the housing. By the 30 percent measure, a family would have to earn $33,920 per year ($18 per hour) to afford to rent a two-bedroom apartment or $67,600 per year ($32.50 per hour) to afford to buy a modest single-family house for approximately $201,000. Approximately 32 percent of homeowners and 47 percent of renters in Dakota County spend over 30 percent of their household income on housing.

Challenges and Solutions

Not everyone within the Twin Cities can currently afford to purchase a home even given the wide variety of choices available within the Twin Cities. According to the latest available statistics, 75 percent of Twin Cities households own their own homes, and many pay more than 30 percent of their income to continue ownership. If the independent actions of a much larger marketplace cannot put home ownership within reach of all residents, it would be unrealistic for everyone who wishes to purchase a home in the community at UMore Park to be able to do so. This points out an important distinction between goals for home ownership in the new community and goals for affordable housing, which may involve a substantial pool of rental housing. To provide for home ownership for everyone who desires it would require unrealistic subsidies that would make the new community unworkable from an economic perspective.
The University could increase housing affordability by either reducing qualitative requirements or the price of land parcels sold to developers. These two actions work against other objectives of the University. Reducing quality may mean giving up environmental, energy, or other advancements, and reducing the cost of land to developers may also reduce the financial benefits of the project to the University; neither is a desirable outcome. According to a Twin Cities study, a private developer would likely lose about $31,000 per unit trying to develop average-size, new owner workforce units and about $43,000 per unit trying to develop typical workforce rental units.

In addition, if the project is of high quality and highly desirable, price appreciation may put the cost of acquiring a home beyond the reach of many residents over time, even if standards are reduced or land is discounted. In other words, the units may be affordable to the first buyers, but without controls on price appreciation, the units would be sold at market rates and would no longer be affordable to the lowest income segments. Price controls are necessary to ensure permanently affordable housing stock.

Another strategy to closing the gap between income and home ownership is to rethink the concept of affordability and Total Cost of Ownership (TCO). Affordable housing is commonly defined as housing that takes 30 percent or less of a homeowner’s income. The remaining 70 percent goes to transportation, energy, food, clothing, transportation, childcare, education and leisure expenses. The new community offers innovative transportation such as car sharing as well as bus rapid transit that would make vehicle ownership unnecessary, thus reducing the magnitude for transportation costs in a household budget. (In many Minnesota households, transportation costs are greater than housing costs, so this savings could be significant.)

Furthermore, by utilizing green technologies in home construction such as superinsulation and solar or geothermal energy sources, energy costs could dramatically decline. Thus, by innovating in other areas of the community, affordable housing could be offered to a larger pool of residents while maintaining a high quality of life.

One way to limit the scope would be to provide attainable housing for those residents who provide “essential services.” Another way to establish a target would be to consult with the local regulating authorities. This would include education, health care, municipal, and public safety (police, fire, and EMT) workers. The Metropolitan Council calculates the number of affordable housing units required for development projects based on land use, proximity to transit and a number of other factors. The Metropolitan’s Council March 2008 report identifies the 2011-2020 Allocation of Affordable Housing Need by City/County. It is estimated that Rosemount’s “new affordable housing need” is 923 units and Empire Township’s is 100 units. A strategy to meet the community’s affordable housing needs could be a compelling factor in the entitlement process.

Strategies should be employed to address Rosemount’s current shortfall of affordable housing and provide housing for “essential service” workers. Both strategies would require controls on price appreciation; otherwise, housing demand within the community would eventually make these homes too expensive for workers. This suggests implementing a “housing authority”-type program which pre-qualifies purchasers (and/or renters) based on income, net worth, and residency criteria to ensure that the limited supply of attainable homes is sold only to targeted families and individuals. Property taxes or recordation taxes could be earmarked to pay for a housing trust fund dedicated to financing the construction of moderate-income housing.
(Housing trust funds normally dedicate their funds to the production of low-income housing.) Resort communities that often face similar affordable housing issues have created housing authorities or affordable housing projects for workers who cannot otherwise afford to rent or purchase.

New partnerships with public and private organizations could be created to address housing needs. Aeon, a Community Development Corporation/Community Housing Development Organization, has developed 1,503 affordable housing units in the Minneapolis/St. Paul metropolitan area. The Family Housing Fund is a nonprofit organization that produces and preserves affordable housing for low- and moderate-income families in the Twin Cities metropolitan area. Common Bond Communities is the largest nonprofit developer, manager and service provider of affordable homes and services in the Upper Midwest.

The University and its future partners could also consider partnering with public and private organizations that offer down payment assistance. The community may also call upon employers in the future to provide financial and other assistance for low- and moderate-income workers in an effort to improve employee retention and productivity.

Providing for alternative housing types such as accessory units and carriage houses is another solution for providing housing to different income levels. The residential codes of local jurisdictions do not currently allow for accessory units. Both municipalities have discussed allowing these uses but so far have not moved forward.

An aggressive attainable housing program would also require a range of financing techniques to make housing attainable. These would include bond financing and tax credit financing techniques.

**METRICS FOR AFFORDABLE HOUSING:**

» Meeting LEED standards or future standards, at least 15 percent of total rental units should be priced for households up to 50 percent of area median income, and an additional 15 percent of total rental units should be priced for households up to 80 percent of area median income. Affordable units should be maintained at affordable levels for at least 15 years.

» Meeting LEED standards or future standards, at least 10 percent of for-sale housing should be priced for households up to 80 percent of the area median income and an additional 10 percent of for-sale housing should be priced for households at up to 120 percent of the area median income.
APPENDIX: ART

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Art represents the physical beauty of the community, as expressed through homes, parks, streets, and civic and commercial buildings. Art includes the physical works of art within the community such as sculpture, gardens, environmental art, and paintings. It includes the performances of theatre, dance, culinary arts, poetry, and literature within the community and by the residents of the community. Art is more than just the physical beauty of the place but also reflects the soulfulness and sense of spirit of the community and the authenticity of the place. It is also the “artfulness” and elegance by which the community conducts its affairs. Art is a process as much as it is a product. The site has gone through a long evolutionary process from pre-European contact to today’s uses to what is planned for tomorrow. The regenerative life and use of the land is itself art.

Developers of new communities are including public art in order to increase marketability to potential residents and businesses. As cities and towns encourage the development of neighborhood centers and mixed-use developments throughout the Twin Cities and other metropolitan areas, new communities are introducing sculptures, fountains, and other improvements to distinguish their product and create a sense of identity. Scottsdale, Arizona, markets its art walk to visiting tourists. In addition, many cities such as Denver and San Francisco are instituting public art requirements stipulating that one or two percent of the development budgets of real estate projects fund public art. The University itself has an institutional commitment to the incorporation of public art on its campuses.

In order to encourage public art and the creation of an improved aesthetic in the new community, the consultant team recommends that the new community at UMore Park dedicate one percent of the total development budget for public art initiatives. These may take the form of sculptures, fountains, or funding for art gardens, plazas, and other infrastructure. The Art and Culture Plan on the following page illustrates the locations planned for significant concentrations of artwork and cultural facilities. The new community should represent an attractive and

Signature pieces of sculpture can enhance streets and serve as focal points in the community.
Art and Culture Plan

Legend
- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest
- Destination Centers
- Urban Center Art Piece
- Local Centers Art Piece
- Small Art Pieces as part of an artwalk or at a point of interest
- Art Walk Route

VERMILLION HIGHLANDS
- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
Artful community, and this distinctiveness should increase the appeal of the overall project.

University faculty and students should be engaged in examining all design facets including architecture, landscape architecture, interior design, and civil engineering to identify potential opportunities to create and promote works of art. The consultant team recommends that the new community include an “Art Walk,” comprised of organized sculpture gardens throughout the community’s streets and parks. The community should prominently display art from local residents and University of Minnesota faculty and students in its permanent collection. The community could consider implementing a program where a local arts foundation provides additional funding for design services and the selection of nationally and internationally known designers to produce schools, fire stations, and other civic improvements of national and international acclaim that promote public art.

**METRICS FOR ART**

- Dedicate one percent of the development budget to fund public art initiatives.
- Registered architects should design all office, retail, civic and multi-family buildings.
- Registered landscape architects should design all landscapes for office, retail, civic, and multi-family buildings, as well as public parks and right of ways.
- Locate a work of public art within two blocks of every residence, civic facility, place of worship, or place of work.
- An art-of-living director should be employed to organize a range of events and celebrations.
- At least one arts performance per week should be featured in the community performing arts center.
- Public art displays from 12 different artists per year should be featured in the main neighborhood centers.

Artful buildings and landscape architecture can become signature elements of the community.
Strive to achieve volunteer rates for art initiatives of at least 50 percent for citizens who do not attend art activities in a given year, and 80 percent for citizens who attend at least one arts event in a given year.

At least 50 percent of the residents of the new community should make financial contributions to the arts in a given year.

At least 75 percent of the new community’s residents should attend a live performing arts event in a given year.

At least 80 percent of the new community’s residents should attend community festivals, parades, and associated events in a given year.

At least 70 percent of residents should visit a museum or art gallery in a given year.

Art Facilities

The consultant team recommends that a site of five to ten acres be set aside for a future Community Arts Center. This arts facility might share a space with other public facilities. The Community Arts Center could house an artist-in-residence and University of Minnesota students and faculty. These individuals, as well as various community members, could create artwork for installation in the community. A community sculpture garden, for example, or a community art walk might be created by such artists. Further, public engagement in the form of intergenerational classes should be a priority. University faculty and students could design programs that stimulate the creation and experience of various kinds of art and performance.

Historic Resources

Concrete remnants at the site of the World War II Gopher Ordnance Works are a reminder of the history of the property. Certain structures could be retained as public art forms that recall the legacy of the land while creating unique landscape details. It is important to note that some regard the concrete remnants as a representation of a war economy. Broader public discussion will be required to address their presence as public art.

The consultant team recommends that the development of UMore Park consider the value of preserving the T-walls or smoke stacks of the GOW. However, their upkeep and restoration could cost a great deal and complicate development plans for the new community.

Performance arts can be a regional draw to the community. A unique backdrop, such as a lake, can make for memorable experiences.
The consultant team also suggests that the University’s Rosemount Research and Outreach Center include interpretive displays and oral histories concerning the World War II era in order to preserve this aspect of the area’s history for future generations. Faculty and students at the University could help to create oral histories of the farmers and former workers at the GOW site in order to further preserve the history of the area.

**Archaeology**

The Mdewakanton Dakota had lived in villages along the Mississippi and Minnesota Rivers for several hundred years prior to the arrival of the earliest European explorers. The Dakota used the highlands above the rivers chiefly for hunting and as travel corridors. As a result, researchers have discovered little archaeological material on and around the UMore Park property. However, the history of the earliest inhabitants of the area can be captured through interpretive programs, cultural initiatives and other research and education programs that could be developed by the University.

**METRICS FOR HISTORICAL AND CULTURAL RESOURCES**

» Interpretive exhibits and monumentation in community centers should highlight the history of the region beginning with the earliest inhabitants, the explorers, immigrant settlers and through the federal government’s establishment of the Gopher Ordnance Works facility during World War II. More recent developments including the contributions of new immigrants and local innovation should also be highlighted.

» Engage faculty members from the College of Liberal Arts and elsewhere at the University (in history, geography, languages, political science, arts and other disciplines) to enhance the interpretation of the region’s history in the design of community centers, schools, and other public places.

In addition, the earth work generated by the gravel mining operation provides the opportunity to create a major outdoor amphitheater for the region. This new venue would help provide for the arts in the new community and help to attract residents and visitors from throughout the Twin Cities region.

**PERFORMING ARTS**

The Twin Cities has a strong heritage of funding and supporting performing arts facilities and programs. The region ranks as having one of the strongest performing arts scenes outside of New York and notable venues, such as the Guthrie Theater, rank among the world’s best. Roughly three out of every four Twin Cities residents attend some sort of performing arts event in a typical year. Developers of larger mixed-use projects increasingly consider cultural and performing arts centers as possibilities for civic uses in their communities. These uses increase visibility and traffic and often promote additional nearby retail activity. Increasingly, arts centers are being adapted to the suburban environment. The Urban Land Institute indicates that larger suburban developments and communities are creating performing arts centers to generate and focus economic investment in a specific location and to position the community to attract residents and businesses. Research indicates that families increasingly favor arts centers located in park settings and that younger people prefer performance spaces in outdoor settings rather than more sedentary indoor venues.
The consultant team recommends that the village center feature a sizeable performing arts center as the anchor of civic amenities and programming. The performing arts center should represent one of the largest venues in the southern portion of the metropolitan area and should further enhance the marketability of the new community. The University’s experience with internationally acclaimed entertainment and the building and maintenance of facilities including Northup Auditorium, Rarig, Ted Mann and the new University Arts Quarter on the West Bank campus provide the backdrop to successful facilities and programming in the new community. The community should also consider inclusion of an “arts tent” as a venue for art events and musical performances during warmer months.

OTHER CULTURAL FACILITIES

The neighborhood center should also include space for public art galleries, art classes, and other facilities in order to increase the array of cultural assets in the community. Facilities used for meetings may double as space for cultural organizations and provide additional space for activities. The community should also consider including a community cultural facility to host seminars, conferences, and other events.

A small park outside the library in the Lowry Park community in Denver, Colorado provides art, education, and outdoor recreation opportunities. Similarly, the new community at UMore Park can satisfy its many goals by providing for informal educational opportunities, artistic expression, and connections to nature and recreation.
Art Education

In addition to promoting the installation of public art assets throughout the community, art education in community activities and in local schools is encouraged. The community centers at the new community can offer art classes for residents of all ages and abilities. The University can lend its expertise to enhancing art education programs within the new community.

Art as a Way to Understand Nature

Artists have drawn inspiration from the natural environment over the ages. The consultant team recommends that public art expressions contribute to the celebration of the natural environment and help residents better understand the natural Minnesota environment. Artistic works may also assist in the explanation of natural processes and environmental ethics.

The community should infuse artistic expression in natural areas, such as bridges and trails in open space areas. Vermillion Highlands is a particularly valuable asset to residents of the new community in experiencing nature and inspiring artistic expression. A portion of the public arts budget could be designated specifically to encourage artistic activities and provide for artistic pieces that help integrate nature into the community.
Relation to Regional Art Resources

The consultant team recommends that the new community leverage its affiliation with the University to connect the community with the significant cultural resources of the Weisman, Bell Museum, Goldstein Landscape Arboretum and the art, theater, dance, music and literature departments among others. The performing arts center, as well as other cultural facilities in the community, would represent additional venues for artistic exhibits and performances for University groups. The neighborhood center could host traveling exhibits from the University. Primary and secondary school students could have the opportunity to take classes through the University and benefit from University programming within the community.

New Immigrant/Old Immigrant Cultures

The University’s Academic Task Force recommended that the new community have an international focus that incorporates the richness of the new and old cultures of Minnesota. Exhibits, art pieces and performances at the new community could draw from the experiences of all populations in Minnesota. Cultural offerings in the community should draw from the experiences of Native Americans and the early European settlers as well as from the experiences of newer groups, including residents from Latin America and Southeast Asia.
The consultant team recommends that the new community provide land for a cemetery, consistent with the history, future and lifecycles stories of the new community that will evolve over time. Currently, few cemeteries are located within five miles of the property, as shown on the Cemetery Location Map. The Concept Master Plan provides space for a cemetery near open space on the edge of the community as shown on the Cemetery Location Plan. This open space area should have an artistic design that speaks to the quality of the community.
Cemetery Location Plan

Legend
- Single Family Residential (large lot)
- Single Family Residential (small lot)
- Single Family Residential (attached)
- Multi Family Residential
- Mixed-Use
- Commercial/Retail
- Commercial/Office
- Light Industrial/Office
- Civic/Institutional/Education
- Parks and Parkways
- Open Space
- Water
- Wetlands
- Forest
- Cemetery

VERMILLION HIGHLANDS
- Highest Intensity Use
- Moderate Intensity Use
- Low Intensity Use

* The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
APPENDIX: IMPLEMENTATION

Phasing Strategy ........................................... 226
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PHASING STRATEGY

Design Workshop recommends that the new community at UMore Park pursue a phasing strategy that would provide the most favorable cash flow position for the University and its development partners and would help to stimulate the ongoing growth of the community. During the early stage of development, the project should pursue temporary and relatively low intensity land uses (such as light industrial uses or agricultural leases) on lands slated for later, and more intense, land development. The Phasing for Development Plan can be found on the following page.

The phasing of development of the new community relates to the phasing and timing of potential aggregate extraction on the site. Approximately 40 percent of the site does not contain valuable aggregate resources and therefore development can begin as potential mining occurs elsewhere on the 8-square-mile property. The gravel Environmental Impact Statement process will determine an approach to address traffic, noise and other results of mining and how local impacts can be minimized.

Within three years following the commencement of gravel mining, the consultant team envisions the new community beginning initial home construction. Phase One of the residential development in the new community should include around 1,850 units, with a mix of eight to twelve product types. The balance of the community located at UMore Park should be built at an appropriate pace in response to the commercial and residential market in the Twin Cities region.

Within two years following initial development at UMore Park, the community should pursue development of significant infrastructure components (including trunk sewer lines, for example) in order to prepare for construction of initial residential neighborhoods and commercial centers. The community should also construct elements at this stage that would help “put the development on the map” within the larger Twin Cities region. This stage may include completing sports complexes for soccer, baseball, or softball and perhaps a regional amphitheater. Opening these facilities would attract events and thereby help to familiarize residents of the Twin Cities with the new development and the surrounding area.
Phasing for Development Plan

The shades of color on the Vermillion Highlands indicate intensity of use, with lowest intensity being lightest uses of all kinds to preserve the environmental character of the land and allow for habitat restoration.
COMMUNITY GOVERNANCE

Community governance of the new community at UMore Park refers to ongoing entities or systems designed and empowered to operate and administer the community in the future. The term does not pertain to University governance of any ongoing University-related functions or involvement in the new community.

The overarching goals and vision for the new community should represent a starting point for all discussions related to community governance and the ongoing growth of the development.

Creating and employing solid community governance strategies from the beginning helps to:

» Maximize project marketability;
» Maximize developmental flexibility;
» Minimize liability from and within the development;
» Generate new and creative ways of thinking and problem solving; and
» Create and maintain a sense of a viable, vibrant community.

BRANDING AND MARKETING

Naming, branding, and other marketing strategies significantly influence the potential success of new master planned communities. Many communities draw from historical precedents or the assets of the land and surrounding landscapes to craft names that appeal to potential residents and businesses. The University and its future development partners should carefully consider naming strategies for the new community.
Reference Materials A ................................................. 232
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Bibliography of Key University of Minnesota Publications on UMore Park ......................... 235
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Acknowledgements

Design Workshop’s assembled team of professionals is assisting the University of Minnesota in the visioning and concept master planning of the UMore Park development. This team, which includes the relevant experience of land planners, landscape architects, urban designers, economists, natural resource planners, transportation planners and engineers provides the UMore Park management team with a unified vision and identity for a new proposed community. In addition, Design Workshop has invited experts in development feasibility, funding, market strategy, entitlements, and governance to advise the design team. The following consultants contributed to this effort:

**Design Workshop, Inc.**
**Land Planning and Design**
Kurt Culbertson, *Principal-in-Charge*
Anna Gagne, *Project Manager*
Stephen Faber, *Project Designer*
Jennifer Pickett, *Graphic Designer*
Judy Navarro, *Graphic Designer*
Britt Palmberg, *Editor*
Sara Tie, *Landscape Designer*
Pablo Silveira, *GIS Specialist*
Brandon Hardison, *Landscape Designer*
Izzi Gailey, *Executive Assistant*
Adrian Rocha, *Designer*
Peter Adams, *Economics*
Annie Sutherland-Watts, *Project Assistant*

**Hoisington Koegler Group, Inc.**
**Land Planning and Design**
Mark Koegler, *President*
Jeff McMenimen, *Director of Design*
Bryan Harjes, *Landscape Architect*
Rusty Fifield, *Public Finance Specialist*
Anna Claussen, *Project Designer*

123 North Third Street, Suite 100
Minneapolis, MN 55401
612-338-0800
mkoegler@hkgi.com
jmcmenimen@hkgi.com

**Robert Charles Lesser & Co.**
**Real Estate Advisors**
Adam Ducker, *Managing Director*
Jon Trementozzi, *Senior Associate*
Jonathan Bartlett, *Vice President*

7200 Wisconsin Avenue
Bethesda, MD 20814
240-644-1300
aducker@rclco.com
Urban Design Associates (UDA)

Community Design
Rob Robinson, Chairman
Joe Nickol, Project Manager
David Csout, Illustrator

Gulf Tower, 31st Floor
707 Grant Street
Pittsburgh, PA 15219
rob.robinson@urbandesignassociates.com

Applied Ecological Services (AES)

Environmental Planning
Kim Chapman, Principal Ecologist
Doug Mensing, Senior Ecologist

21938 Mushtown Road
Prior Lake, MN 55372
412-263-5200
kim@appliedeco.com

Avant Energy

Energy and Carbon Planning
Derick Dahlen, President
Molly Andvik, Project Manager and Senior Analyst

200 South Sixth Street
Suite 300
Minneapolis, MN 55402
612-349-6868
derick.dahlen@avantenergy.com

RLK Incorporated

Civil Engineering
Joe Samuel, Senior Professional Engineer

6110 Blue Circle Drive, Suite 100
Minnetonka, MN 55343
952-259-9227
jsamuel@rlkinc.com

Short, Elliot and Hendrickson (SEH)

Transportation Planning
Mark Benson, Transportation Planner
Dave McKenzie, Railroad Specialist
Haifeng Xiao, Transportation Modeling

3535 Vadnais Center Drive
St. Paul, MN 55110
1-800-325-2055
mbenson@sehinc.com

Broadband Group

Tom Reiman, President

900 South Pavilion Center Drive,
Suite 180
Las Vegas, NV 89144-4584
702-405-7000
UMore Park
Management Team
University of Minnesota

Charles C. Muscoplat, Chair
Vice President for Statewide Strategic Resource Development

Carla Carlson
Assistant Vice President for Statewide Strategic Resource Development

L. Steven Goldstein
President and CEO
University of Minnesota Foundation

Forrest Izuno
UMore Park Director of Operations and Head, Rosemount Research and Outreach Center

Larry Laukka
University Distinguished Fellow and Senior Advisor for UMore Park

Steven Lott
UMore Park Project Manager

Judith Martin
Professor of Geography and Director of the Urban Studies Program

Dewey Thorbeck
Director of the Center for Rural Design

Management Team Program
Staff and Advisors

Lorri Chapman
Executive Assistant, Office of Statewide Strategic Resource Development

Janet Dalgleish
Specialist, Department of Environmental Health and Safety

Ken Tyra
Legal Advisor to the Management Team

Susan Weinberg
Director of Real Estate
Bibliography of Key University of Minnesota Publications on UMore Park


All publications are available at www.umorepark.umn.edu.
REFERENCE MATERIALS B

Source Data

GENERAL GIS DATA SOURCES USED ON MULTIPLE EXHIBITS:

Aerial Imagery from the National Agricultural Imagery Program (NAIP) Digital Orthorectified Images (DOQ), Minnesota, 2003.
Provided by: Minnesota Land Management Information Center (LMIC) http://www.lmic.state.mn.us/chouse/naip03mrsid.html

Road and street data is from the Minnesota Department of Transportation and was updated in spring of 2008.
Provided and interpreted by: Short Elliott Hendrickson Inc. (SEH®) http://www.sehinc.com/

Additional road and street data from the Minnesota Department of Natural Resources (MNDNR) and provided by the MNDNR Data Deli. http://deli.dnr.state.mn.us/data_catalog.html

Additional road and street data from the Metropolitan Council. Adapted, analyzed and presented by SEH®.

UMore Park internal roads and streets were digitized by staff at Center for Rural Design (CRD) using 2002 color DOQ provided by Dakota County, reprojected to UTM, NAD83, as a base.

Municipal Boundaries from the Minnesota Department of Natural Resources.
Note- municipal locations are generalized on some exhibits based on Google Earth municipal locations and aerial development signatures.

Rivers, Lakes and Streams data is from the Minnesota Department of Natural Resources.

UMore Park Boundary was digitized by staff at the CRD using 2002 color DOQ provided by Dakota County, reprojected to UTM, NAD83, as a base.

Vermilion Highlands Boundary was digitized by staff at CRD using 2002 color DOQ provided by Dakota County, reprojected to UTM, NAD83, as a base.

Two Foot contour data (Lidar)- (used for slope analyses and all contour lines)
Derived by staff at CRD using 2004 LIDAR data provided by Dakota County, reprojected to UTM, NAD83.
**SPECIFIC GIS DATA SOURCES:**

1: **Metropolitan Urban Service Area (MUSA)**

MUSA data is from the Metropolitan Council. Provided by DataFinder.  
http://www.datafinder.org/metadata/comp_plan_composite.htm  
Cultural Sites of Iconic or Interpretive Significance from the report “A Historical Interpretation and Preservation Plan for UMore Park,” by John Lauber; April, 2006.  
http://www.umorepark.umn.edu/History.html

2. **Regionally Significant Parks and Recreation Map**

Dakota County Greenways from Dakota County, 2007.  
http://www.co.dakota.mn.us/NR/rdonlyres/00001c6c/ wonmyctotzheyiekzdsozrghajqbdh/map.pdf  
Provided by the Dakota County Office of Planning.  
http://www.co.dakota.mn.us/Departments/Planning/default.htm

Regional Parks from Metropolitan Council, 2002.  
Provided by the University of Minnesota.  
http://www.metrocouncil.org/parks/index.htm

3: **Regionally Significant Biological and Ecological Area Map**

Regionally Significant Ecological Area data from Minnesota Department of Natural Resources, 2003.  
http://www.dnr.state.mn.us/rsea/metro_methods.html  
http://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/rsea/map.pdf  
Provided by the Metropolitan Council.  
http://www.metrocouncil.org/index.htm

Metropolitan Conservation Corridor from MNDNR, 2007. Provided by the Center for Rural Design as part of the DNR Greenprint package.  
http://www.dnrstate.mn.us/metroconservationcorridors/index.html

Mississippi River Critical Area from the Metropolitan Council, 1997.  
Provided by the University of Minnesota.  
ftp://gisftp.metc.state.mN.us/mnrra_a.zip  
http://gis.metc.state.mN.us/metadata/bg/mnrra_a.jpg

Wildlife Management Areas were provided by the MNDNR Data Deli.  
http://deli.dnrstate.mN.us/metadata.html?id=L390003970202

Metropolitan Council Lands were extracted by staff at CRD from 2006 parcel data provided by Dakota County, re-projected to UTM, NAD83.

Scientific and Natural Areas were provided by the MNDNR Data Deli.  
http://deli.dnrstate.mN.us/metadata.html?id=L220000150201
4: Land Cover, Wetlands and Streams Map


FEMA 100 year flood plain provided by The Minnesota DNR Data Deli. [http://deli.dnr.state.mn.us/metadata.html?id=L390004250202](http://deli.dnr.state.mn.us/metadata.html?id=L390004250202)

5: Existing Land Use Map


Dakota County Land Use from Dakota County, 2005. Provided by Dakota County in 2008. [http://www.co.dakota.mn.us/Departments/Planning/default.htm](http://www.co.dakota.mn.us/Departments/Planning/default.htm)

6: Regional Transportation Map (SEH)

Proposed transit lines and stops were developed by SEH® in 2008 based on the Robert Street Corridor Study conducted by Dakota County. [http://www.co.dakota.mn.us/EnvironmentRoads/Transit/PublicTransportation/Robert+Street+Corridor.htm](http://www.co.dakota.mn.us/EnvironmentRoads/Transit/PublicTransportation/Robert+Street+Corridor.htm) [http://www.co.dakota.mn.us/NR/rdonlyres/3991BBCD-E7D7-485B-90C8-9AFD8B765B83/8708/Longterm_Vision_051309.pdf](http://www.co.dakota.mn.us/NR/rdonlyres/3991BBCD-E7D7-485B-90C8-9AFD8B765B83/8708/Longterm_Vision_051309.pdf)

7: Existing Utilities Map

Existing and Proposed Utilities from RLK Incorporated; June, 2008.  
http://www.rlkinc.com/index.php

8: Aggregate Resources Map

Approximate Aggregate Resource locations information created by ProSource Technologies, Inc; May, 2008.  
http://prosourcetech.com/

9: Built Environment Map

University Structures were digitized by staff at CRD using 2002 color DOQ provided by Dakota County, reprojected to UTM, NAD83, as a base.

Gopher Ordinance Works Associated Debris/buildings were digitized by staff at CRD using 2002 color DOQ provided by Dakota County, reprojected to UTM, NAD83, as a base.

Refineries and Mining areas were extracted by staff at CRD from 2006 parcel data provided by Dakota County, reprojected to UTM, NAD83.

10: Existing Roads Functional Classification Map

Road data provided by the Metropolitan Council and adapted, analyzed and presented by SEH®.

11: Existing Roads Jurisdictional Classification

Road data provided by the MNDOT and adapted, analyzed and presented by SEH®.
LEED NEIGHBORHOOD DEVELOPMENT RATING SYSTEM

The Pilot Version of LEED (Leadership in Energy and Environmental Design) for Neighborhood Development (ND) Rating System (June 2007) was one of the measurement systems used to assess the effectiveness of the development project and the conceptual community design to address principles of smart growth, new urbanism, and green building.

BACKGROUND ON LEED NEIGHBORHOOD DEVELOPMENT

The U.S. Green Building Council (USGBC), the Congress for New Urbanism, and the Natural Resources Defense Council have partnered to develop this initial pilot program. The intent of the program is to establish a national set of standards for neighborhood location and design and assessing and rewarding environmentally superior development practices. LEED certification provides independent, third-party verification that a development's location and design meets accepted high levels of environmentally responsible, sustainable development. LEED provides rating systems that are voluntary, consensus-based, market-driven, grounded in accepted energy and environmental principles, and that strike a balance between established practices and emerging concepts. For more information visit www.usgbc.org/LEED/ND

THE NEW COMMUNITY AT UMORE PARK INITIAL CONCEPTUAL SCORING

This initial scoring of the Concept Master Plan for the UMore Park property is not intended for submittal to the USGBC for certification at this time, but rather to identify how the project location and design meets, is challenged or falls short of the LEED ND rating system at an early stage of conception. The consultant team found completing this scoring sheet to be a helpful exercise in informing the setting of goals and standards for the Concept Master Plan.

The Project Checklist on the following pages uses three categories for the scoring. A “Yes” scoring indicates that the Concept Master Plan design meets this requirement, and/or the Concept Master Plan Book recommends this action as a “best practice”. Points in the question mark (“?”) category indicates that the achievement of this point is less certain because there are barriers making it challenging to meet the requirement, or the University or other authority is completely responsible for a key decision (such as a transit authority funding construction of a newly conceived route). A “No” score indicates that a point is not possible or is not envisioned to be a promising concept for the plan design.

A total of 41 points were identified as a “Yes” and 40 as possible but less certain to be achievable. This 81 point score places the initial assessment in the top certification category of “Platinum” range (80-106 points). However, it is important to note that the prerequisites for certification of “Smart Location”, “Proximity to Water and Wastewater Infrastructure”, “Imperiled Species and Ecological Communities”, and “Farmland Conservation” are determined to not be certain at this time.

The large size of the nearly 5,000 acre property presents a challenge to achieving the many of the points that require the existing built environment within a radius of the property and/or high density averages across the property. Individual neighborhoods developed in phases within the overall property may discover greater potential for LEED ND certification as community mixed-use centers, for example, will provide the diverse uses, employment and housing, and density that meet the LEED ND requirements.
### LEED for Neighborhood Development Pilot Project Checklist

**Project Name:** UMORE PARK

**Initial Evaluation: September 4, 2008**

#### Explanation of the Evaluation

Yes: The Concept Master Plan design meets this requirement, or the Pattern Book or Concept Master Plan Book recommends this action.

?: Not a certainty because there are barriers making it quite challenging to meet the requirement, or the University or other authority is completely responsible for the decision.

No: Not a Possibility

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Smart Location &amp; Linkage</th>
<th>30 Points Possible</th>
<th>Comments</th>
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<tr>
<td>?</td>
<td></td>
<td>Smart Location</td>
<td>Required</td>
<td></td>
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<tr>
<td>?</td>
<td></td>
<td>Proximity to Water and Wastewater Infrastructure</td>
<td>Required</td>
<td>Option 1: Attainable if connection is made to Rosemount/Empire waste water treatment plan, or the Metro Council’s “legally adopted planned” water &amp; waste water service area is extended.</td>
</tr>
<tr>
<td>?</td>
<td></td>
<td>Imperiled Species and Ecological Communities</td>
<td>Required</td>
<td>1995 record of two State endangered species. Attainable if coordinate with DNR NHP to conduct surveys. If negative impact is determined then protect with buffer, easement, and other mitigation.</td>
</tr>
<tr>
<td>Y</td>
<td></td>
<td>Wetland and Water Body Conservation</td>
<td>Required</td>
<td>Attainable: Site work prior to community development will cause disturbance to many of the existing wetlands. Wetlands that are disturbed will be replaced.</td>
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<tr>
<td>?</td>
<td></td>
<td>Floodplain Avoidance</td>
<td>Required</td>
<td></td>
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</tbody>
</table>

<p>| 2   |    | Brownfield Redevelopment  | 2                  | Attainable: Meets the first requirement of a National Priority List. Also need remediation such that the controlling public authority approves the protective measures and/or clean-up as appropriate for the future use of the site. |
| 0   |    | High Priority Brownfields Redevelopment | 1 | Site is not on the federal priority lists for FEZ, FEC, PRC, COR, UCS |
| 2   |    | Preferred Location        | 2 to 10            | Option 1: Transit provider must commit to the level of transit service they would provide before this can be calculated. Or Option 3: Vehicle-share program and publicize. |
| 4   |    | Reduced Automobile Dependence | 1 to 8 | Attainable: If 50% of the dwelling units and business entrances are within 3 miles of at least four or more diverse uses. Must have biking network and bicycle storage. Plan provides space for a mix of uses - but future tenant mix will determine if this is achieved. |
| 1   |    | Bicycle Network           | 1                  | Attainable: If center is within a 1/2 mile walking distance of a number of pre-project jobs greater than 50% of the dwelling units. Interpretation request may be necessary due to the large acreage of the site but intent may be met. |
| 3   |    | Housing and Jobs Proximity | 3                  | Attainable: Residential component is at least 25% of the project’s total building square footage and 50% of the dwelling units are within 1/2 mile walking distance of a school. |
| 1   |    | School Proximity          | 1                  | Attainable: Site work prior to community development will cause changes to the floodplain. Follow NFIP guidelines for siting in 100 year floodplain if one exists following site work. |
| 1   |    | Steep Slope Protection    | 1                  | Attainable: If undeveloped sites avoid slopes &gt;15%; attainable on previously developed sites if restore native plant communities on &gt;15% slopes. Need to better define site slopes with respect to development layout. |
| 1   |    | Site Design for Habitat or Wetlands Conservation | 1 | Attainable: Site work prior to community development will cause disturbance to many of the existing wetlands. Wetlands that are disturbed will be replaced. |
| 1   |    | Restoration of Habitat or Wetlands | 1 | Attainable: If terrestrial and wetland/aquatic habitats are restored using native plants on &gt;10% of development footprint; remove invasive plants; protect with perpetual easement. Finding a non-profit conservation/education organization to hold the easement is challenging due to the cost of maintenance and high amount of edge condition. |
| 1   |    | Conservation Management of Habitat or Wetlands | 1 | Attainable: 10-year ecological restoration &amp; management program is implemented for native habitats or wetland/aquatic habitats; include implementation tasks, staffing, costs, funding source, schedule, threats assessment and threats response plan. |</p>
<table>
<thead>
<tr>
<th>Credit</th>
<th>Description</th>
<th>Points Possible</th>
<th>Required</th>
<th>Notes</th>
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<tbody>
<tr>
<td>1</td>
<td>Open Community</td>
<td>39 Points Possible</td>
<td>Prereq 1</td>
<td>Must be public streets, not gated community.</td>
</tr>
<tr>
<td>2</td>
<td>Compact Development</td>
<td>Prereq 2</td>
<td>Required</td>
<td>Must have greater than 10 dwelling units per acre residential and greater than 75 FAR non-residential to achieve points. The average does not exceed 10 du per acre. It is possible to achieve separately.</td>
</tr>
<tr>
<td>3</td>
<td>Diversity of Uses</td>
<td></td>
<td>1 to 4</td>
<td>Attainable: if 50% of the dwelling units are within a 1/2 mile walk distance of the diverse uses and built by the time 50% of occupancy is in place. This is difficult to determine until tenants are in place but a mix of uses is anticipated in the plan.</td>
</tr>
<tr>
<td>4</td>
<td>Diversity of Housing Types</td>
<td></td>
<td>1 to 3</td>
<td>See formula for housing type scoring. Plan includes a wide diversity of housing types.</td>
</tr>
<tr>
<td>5</td>
<td>Affordable Rental Housing</td>
<td>Credit 4</td>
<td>1 to 2</td>
<td>Attainable: at least 15% of total rental units are priced for households up to 50% of area median income and units are maintained at affordable levels for a minimum of fifteen years. OR At least 30% of total rental units are priced for households up to 80% of area median income and units are maintained at affordable levels for a minimum of fifteen years.</td>
</tr>
<tr>
<td>6</td>
<td>Affordable For-Sale Housing</td>
<td>Credit 5</td>
<td>1 to 2</td>
<td>Attainable: at least 10% of for-sale housing is priced for households up to 80% of the area median income (1 point); OR At least 20% of for-sale housing is priced for households up to 120% of the area median income (2 points); or additional 15% of total rental units are priced for households up to 80% of area median income and units are maintained at affordable levels for a minimum of fifteen years.</td>
</tr>
<tr>
<td>7</td>
<td>Reduced Parking Footprint</td>
<td>Credit 6</td>
<td>2</td>
<td>Attainable: Parking lot sitting and no more than 20% of the total development footprint used for surface parking facilities and no single parking lot larger than 2 acres and bicycle and carpool spaces included.</td>
</tr>
<tr>
<td>8</td>
<td>Walkable Streets</td>
<td>Credit 7</td>
<td>4 to 8</td>
<td>The project Pattern Book suggests these specific guidelines for site design.</td>
</tr>
<tr>
<td>9</td>
<td>Street Network</td>
<td>Credit 8</td>
<td>1 to 2</td>
<td>Attainable: One point for Street grid density 20-29 centimeter miles/sq. mi. Or two points for &gt;30</td>
</tr>
<tr>
<td>10</td>
<td>Transit Facilities</td>
<td>Credit 9</td>
<td>1</td>
<td>Attainable: developer/transit authority agrees to providing transit shelters for all stops.</td>
</tr>
<tr>
<td>11</td>
<td>Transportation Demand Management</td>
<td>Credit 10</td>
<td>2</td>
<td>Option 1: Achievement of 20% reduction in weekday trips is challenging outside of the dense development. Or provide community transit passes. Or a transit provider would have to commit to provide services within the community with service no less frequent than five rides per weekday peak period.</td>
</tr>
<tr>
<td>12</td>
<td>Access to Surrounding Vicinity</td>
<td>Credit 11</td>
<td>1</td>
<td>Requires through streets at the project boundary every 800 feet unless there are physical constraints. The local jurisdictional requirements for spacing of intersections does not allow for this (requirement of no less than 1/4 mile spacing for right-in/out and 1/2 mile spacing for full intersections).</td>
</tr>
<tr>
<td>13</td>
<td>Access to Public Spaces</td>
<td>Credit 12</td>
<td>1</td>
<td>Attainable: Option 1: an open recreation facility of at least 1 acre within a 1/2 mile walking distance of the dwelling units or Option 2: at least 50% of dwelling units and business entrances located within a 1/4 mile walking distance of a multi-use trail or bikeway of 3 miles length or more. Master Plan designed with this criteria in mind.</td>
</tr>
<tr>
<td>14</td>
<td>Access to Active Spaces</td>
<td>Credit 13</td>
<td>1</td>
<td>Attainable: For each residential unit type developed, 20% of each type must comply with the accessible design provisions of FHA and the Rehabilitation Act, Apply ADA and FHA provisions for rights-of-way.</td>
</tr>
<tr>
<td>15</td>
<td>Universal Accessibility</td>
<td>Credit 14</td>
<td>1</td>
<td>Attainable: Gain conceptual design phase input from neighbors, local public officials, community and modify the project based on input.</td>
</tr>
<tr>
<td>16</td>
<td>Community Outreach and Involvement</td>
<td>Credit 15</td>
<td>1</td>
<td>Attainable: by not restricting household gardens and greenhouses AND (Option 1) providing sufficient community garden space for residents; or (Option 2) using CSAs with 150 miles of Umore—80% of households must buy shares for 2 years; Option 3 requires pre-existing, diverse farmer’s market operating for 2 years within 1/4 mile of center of Umore Park property.</td>
</tr>
<tr>
<td>17</td>
<td>Local Food Production</td>
<td>Credit 16</td>
<td>1</td>
<td>Attainable: by not restricting household gardens and greenhouses AND (Option 1) providing sufficient community garden space for residents; or (Option 2) using CSAs with 150 miles of Umore—80% of households must buy shares for 2 years; Option 3 requires pre-existing, diverse farmer’s market operating for 2 years within 1/4 mile of center of Umore Park property.</td>
</tr>
<tr>
<td>Credit</td>
<td>Description</td>
<td>Attainable</td>
<td>Comments</td>
<td></td>
</tr>
<tr>
<td>--------</td>
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<td>------------</td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>LEED Certified Green Buildings</td>
<td>1 to 3</td>
<td>Attainable but challenging; 1 point for 20% to 30% of building square footage LEED certified; 2 points for 30%-40%, and 3 points for 40% or more</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Energy Efficiency in Buildings</td>
<td>1 to 3</td>
<td>Attainable: Residential (3 stories and less) must meet Energy Star ratings. Non-Residential and Residential (over 3 stories) must perform in excess of standards.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Reduced Water Use</td>
<td>1 to 3</td>
<td>Attainable: Indoor use achieves 30% of baseline use reduction after meeting Energy Policy Act (non-residential) or Energy Star (residential) standards and low flow standards are met for residential; 1 extra point for outdoor irrigation using non-potable water or xeriscaping—implement UMore’s water budget and use drought-tolerant perennial in landscaping.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Building Reuse and Adaptive Reuse</td>
<td>1 to 2</td>
<td>Attainable: Recommendation of reuse of one building. Reuse of 20% of the existing building stock is at the University's discretion.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Contaminant Reduction in Brownfields Remediation</td>
<td>1</td>
<td>Challenging but potentially attainable following gravel extraction: For portions of the site that are not previously developed: identify limits of construction impact zone—site requirements. Option 3: Tree protection may be possible. Interpretation request may be necessary.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Stormwater Management</td>
<td>1 to 5</td>
<td>Attainable if project mimics natural hydrology of site including ground water recharge &amp; employs alternative stormwater mgmt techniques and achieves pre-European settlement criteria (rate, volume &amp; water quality); To achieve 5 points: Option 1 (previously developed site) criterion is 1.125in rain infiltrated/reused/detention/transpired (Versailles R. JPO standard is 2.75in rain infiltrated at pre-development level); Option 2 (undeveloped site) criterion is 2.25in rain.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Heat Island Reduction</td>
<td>1</td>
<td>Attainable if 50% of non-roof impervious surface is shaded or non-reflective (SRI &gt;29) or roofs are &gt;50% green roofs or &gt;75% of roofs are non-effective (SRI &gt;29 steep roof; SRI &gt;78 low-sloped roof); combination of green/non-reflective roof allowed if total is &gt;75% of roofs.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Solar Orientation</td>
<td>1</td>
<td>Attainable if &gt;75% of projects aligned to use solar effectively.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>On-Site Renewable Energy Sources</td>
<td>1</td>
<td>Should be attainable as a minimum of 5% load must be provided for on-site. Estimate 3.5-5 MW needed to comply. Options: Ground-based heat pump, solar, wind turbine, biofuel. Unsure of crossover between Credits 12 and 13.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>District Heating &amp; Cooling</td>
<td>1</td>
<td>Does not apply to site, but individual neighborhoods might apply—Requires at least 80% of project be connected to district heating/cooling system. This would only work in high density development.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Infrastructure Energy Efficiency</td>
<td>1</td>
<td>Possible to attain using current conservation technologies. Guidelines require a 15% reduction of annual energy use. May be costly; ground source heat pumps might qualify.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Wastewater Management</td>
<td>1</td>
<td>Attainable with water budget planning. 50% reuse of wastewater is 50% of total wastewater.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Recycled Content for Infrastructure</td>
<td>1</td>
<td>Attainable but challenging. Roadways, parking lots, sidewalks must use 90% of the total volume recycled aggregate.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Construction Waste Management</td>
<td>1</td>
<td>Attainable: Recycle and/or salvage at least 50% of non-hazardous construction demolition debris. Develop a construction waste management plan.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Comprehensive Waste Management</td>
<td>1</td>
<td>Attainable: Project is in municipality with HHW and recyclables drop-off site; placing a HHW/recycling and composting site in UMore will increase participation.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Light Pollution Reduction</td>
<td>1</td>
<td>Do not exceed 80% of the lighting power densities for exterior areas and 50% for building facades and landscape as defined in ASHRAE/IESNA. See specific requirements.</td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>1 to 5</td>
<td>projects closed/sustainable water budget.</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>1</td>
<td>New alt. sw mgmt techniques/applications/combinations.</td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>1</td>
<td>Targeted wildlife habitat restoration/recovery program—introduction of extinct wildlife; multifunctional greenway system (for sw mgmt, human trails, wildlife corridors); etc…</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>LEED® Accredited Professional</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For more information, contact:

Office of the Vice President
Statewide Strategic Resource Development
University of Minnesota
450 McNamara Alumni Center
200 Oak Street, S.E.
Minneapolis, MN 55455

Phone: (612) 624-6252
Fax: (612) 624-4843
Web: www.umorepark.umn.edu

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