



City of Rosemount

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August 21, 2013

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ALTERNATIVE URBAN AREAWIDE Review

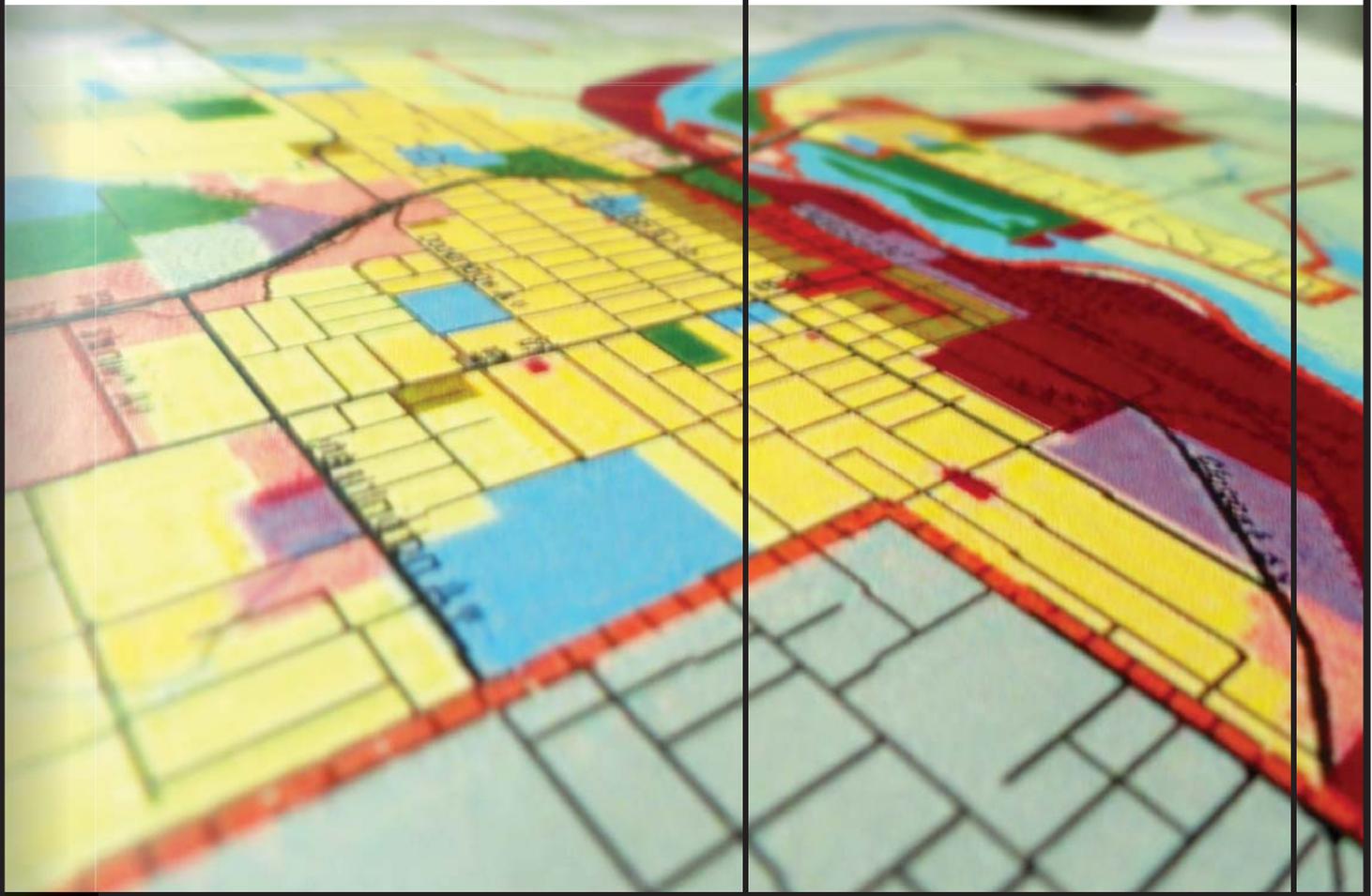
Umore Study Area

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Rosemount, Minnesota

Final AUAR

WSB Project No. 1829-06



**FINAL ALTERNATIVE URBAN AREAWIDE REVIEW
UMORE STUDY AREA**

Prepared For:

City of Rosemount

August 21, 2013

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I. EXECUTIVE SUMMARY

I.i. INTRODUCTION/BACKGROUND

The UMore Study Area is approximately 4,900 acres located in the southern portion of the City of Rosemount and the northern portion of Empire Township (Appendix A - Figure 5-1 to 5-3). Both governmental units have worked together along with the University of Minnesota in the preparation of this AUAR with Rosemount assuming the Responsible Government Unit role. A summary of the public involvement process that was completed to prepare the AUAR is included in Appendix D.

The UMore Park AUAR includes the review of four development scenarios. Scenarios 1 through 3 are generally consistent with known plans of the primary owner of the property, the University of Minnesota. Plans for the property have been shaped by a number of policy, strategic and physical planning initiatives undertaken by the University. Additional background information on these actions can be found in Appendix B. It is currently anticipated that most, if not all of development within the study area will be undertaken by private entities, not the University of Minnesota, pursuant to land sales or ground leases.

Scenarios 1 through 3 represent interpretations of the University's Concept Master Plan for UMore Park that was adopted by the Board of Regents on December 12, 2008. Scenario 4 is consistent with the comprehensive plans of the City of Rosemount and Empire Township. A description of each scenario's type and intensity of development follows:

Scenario 1 (Figure 6-1)

Scenario 1 contains residential, commercial, industrial, mixed-use, and park/open spaces uses organized around a neighborhood, village, community or regional center. Long-term, the plan accommodates a transit connection between the three higher density center areas and points north of the UMore site. An extensive planned system of greenways and open space meanders through the site accommodating active and passive recreational uses, preservation of natural features and establishing corridors for wildlife movement.

On the west side of the site, development will surround a new lake that will be an amenity resulting from gravel mining operations that are scheduled to commence in 2013. The gravel mining area was the subject of an Environmental Impact Statement. The Record of Decision for the UMore Park Sand and Gravel Resources Project EIS was published in November of 2010.

County State Aid Highway (CSAH) 46 bisects the site in an east/west direction forming the boundary between the City of Rosemount and Empire Township. Akron Avenue and Blaine Avenue will be extended through the site and will be transferred to Dakota County following construction and connection to the overall Dakota County highway system. In the north, the UMore Park property surrounds the Dakota County Technical College (DCTC) which abuts County State Aid Highway (CSAH) 42.

Residential uses occur in four different density classifications ranging from low density (1 - 3.5 units/acre) to high density (12 - 24 units per acre). Scenario 1 uses the maximum density within the residential ranges to determine population. Neighborhood, Village, Community and Regional Centers contain varying mixes of residential and non-residential uses. Employment

land uses, which are generally concentrated in the eastern portion of the site, include office/business park and light industrial uses. Scenario 1 accommodates a future population of approximately 35,000 people and about 18,000 jobs.

Scenario 2 (Figure 6-2)

The quantities and locations of future land uses shown on Scenario 2 are identical to those shown on Scenario 1. Scenario 2 allows testing of an alternative that has residential densities that are more in line with the traditional densities in suburban communities like the City of Rosemount. For this Scenario, the middle of the residential density ranges have been used for the low density, low-medium density, medium density and high density categories. As a result, Scenario 2 projects a future population of approximately 25,000 people and about 18,000 jobs.

Scenario 3 (Figure 6-3)

Scenario 3 is intended to examine the implications of a future land use pattern that includes expanded employment opportunities. With the exception of areas lying between Barbara and Blaine Avenues, the land use pattern shown on Scenario 3 is identical to that shown on Scenarios 1 and 2. Scenario 3 replaces largely residential uses lying west of Blaine Avenue with office/business park uses and light industrial. The maximum residential densities are used, the same as used in Scenario 1. As a result, Scenario 3 accommodates a future population of approximately 31,500 people and about 24,500 jobs.

Scenario 4 – Existing Comprehensive Plans

Scenario 4 depicts the current comprehensive plans of both the City of Rosemount and Empire Township. Both comprehensive plans recognize UMore Park and reference future growth and development. Rosemount’s plan categorizes the UMore site as Agricultural Research (AGR). The plan states, “This land use designation is used solely for the UMore Park property that is owned and operated by the University of Minnesota. It is anticipated that, after the UMore Park Master Plan is created and adopted, a major Comprehensive Plan amendment will be conducted to re-designate the land to its appropriate land use category.”

The Empire Township Comprehensive Plan categorizes the UMore Park property as University of MN (UMORE). The property is also designated as being in a Mining Overlay Area. The plan states, “The University of Minnesota Outreach, Research and Education Park (UMore Park) consisted of nearly 4,530 acres in Empire Township. Approximately 2,830 acres of land has become part of the Vermillion Highlands Wildlife Management Area (WMA) jointly operated by the University and the DNR for agricultural research and WMA usage. The remaining 1700 acres of UMore Park is being planned for mineral extraction and eventual urbanization. The University has completed a two-year long study of potential urban uses in Empire and the City of Rosemount (additional 2900 acres). The UMore Property in Empire is also included in the Mineral Extraction Overlay area.”

I.ii. INFRASTRUCTURE PLANNED TO SERVE THE DEVELOPMENT

If future development occurs as proposed under Scenarios 1, 2 or 3, new utilities, roads and other infrastructure will be needed to serve the AUAR area. Comprehensive Plans and this AUAR identify the infrastructure needed to support the varying levels of development identified in the Scenarios. Infrastructure needs are discussed in greater detail under the response to AUAR Items: 13 – Water Use, 17 – Water Quality: Surface Water Runoff, 18 – Water Quality:

Wastewaters and 21 – Traffic. Item 28 – Infrastructure and Public Services includes a summary of new infrastructure that would be needed and where appropriate, provides comparisons between the scenarios.

I.iii. ANTICIPATED DEVELOPMENT STAGING

The development of UMore Park is expected to occur over the next 30 to 40 years depending on market conditions and overall development demand. The timing of development will also be influenced by the timing of construction for required infrastructure improvements both locally and regionally. The future availability of transit may also influence the timing of the full build-out of the UMore Park property.

In general, development is anticipated to be phased from the north in Rosemount along County State Aid Highway (CSAH) 42 to the south extending into Empire Township. The timing of development in the western portion of the UMore Park property will be influenced by the timing of the extraction of minerals in the area and the restoration of the property to accommodate urban development.

II. SUMMARY OF MITIGATION MEASURES

Pursuant to Minnesota Rules, mitigation measures have been developed as part of the AUAR. These measures would apply to any proposed development that may occur over time within the study area.

II.i. Fish, Wildlife, and Ecologically Sensitive Resources

- A. Wetlands will need to be delineated in conformance with the Wetland Conservation Act as part of the development process. Depending on the location of the wetlands, either the City of Rosemount or Empire Township will review and verify the wetland delineation.
- B. Wetland impact is anticipated to be minimized to the maximum extent practical and feasible throughout the review area. If wetland impacts are proposed, wetland mitigation will be required of the project proposer pursuant to current wetland regulations and City or Township requirements.
- C. The City of Rosemount and Empire Township will require buffers around wetlands at a width dependent upon the wetland's management classification, per their respective ordinances.
- D. Storm water management features should incorporate native plantings of grasses, trees, and shrubs.
- E. A loggerhead shrike survey is recommended by the DNR as part of a development project if disturbance would be planned during the nesting season (nesting season is generally April through July). The DNR will need to be contacted before any survey work is completed.
- F. While ideally suited habitat for Blanding's turtles is not apparent within the study area, they have been noted near the study area and some habitat in the area could be marginally suitable. Development projects should take into consideration the use of oversized culverts, surmountable curbs, and revegetation with native species.
- G. Development plans for the northeastern corner of the site will consider incorporating the oak woodland that has been identified on the County Biological Survey as open space to protect or enhance this habitat to the extent practical.
- H. Development plans will consider incorporating the existing or remaining wildlife habitat areas within the Regionally Significant Ecological Areas (RSEA) and other areas within the site as open space to the extent practical. However, depending on environmental remediation that may be required, disturbance of these areas may be necessary.
- I. Tree removal within the study area that occurs as part of development will need to meet the requirements of the City's or Township's Tree Preservation Ordinance.

II.ii. Water Use Mitigation Plan

- A. Extend trunk water main services as shown in **Figures 13-3 through 13-5** consistent with the CWP. For Scenario 1, an additional 16" trunk main may be extended from the intersection of Akron Avenue and CSAH 42 to approximately 2,600 feet east of the intersection of CSAH 42 and Blaine Avenue (**Figure 13-3 – Alt. 1**).

- B. 6-8 municipal wells are recommended as a result of this development, with up to 2 of the wells being in addition to what was planned as part of the CWP. For Scenario 1, one well may be located within the study area depending upon the trunk water mains extended to the development (see **Figure 13-3 – Alt. 2**). Well fields have been preliminarily allocated to the north and to the east of the study area close to the future water treatment plants, in accordance with the CWP.
- C. 2,750,000 to 3,500,000 gallons of water system storage is recommended as a result of this development, with up to 700,000 gallons being in addition to what was planned as part of the City’s CWP. The storage should be constructed in a location to best serve the entire City and overall water system.
- D. Any abandoned wells found within the study area will be sealed in accordance with with Dakota County Ordinance No. 114, Well and Water Supply Management, and Minnesota Department of Health guidelines.
- E. In accordance with the City’s Wellhead Protection Plan (WHPP), continue protection of the existing Drinking Water Supply Management Area (DWSMA) located in the study area as shown in **Figure 13-2**. A DWSMA will be established for future wells as they are constructed and the WHPP is updated.
- F. There exists potential for future interconnection of the proposed water system in the study area between the City of Rosemount and Empire Township. Additional water system assessments and agreements between the City of Rosemount and Empire Township may be required if further development interests beyond the presented material were to arise.
- G. Industrial and Business Park land use water demands can be highly variable depending upon the business operation or manufacturing process employed at each property. At the time of the five year AUAR evaluation, water demands from individual properties in the Industrial and Business Park land use areas should be evaluated and estimated future demands revised if necessary.
- H. Any new wells (supply, dewatering, monitoring, or other) shall be constructed in accordance with Dakota County Ordinance 114, Minnesota Statutes Chapter 103I and Minnesota Rules Chapter 4725.

II.iii. Erosion and Sedimentation Mitigation Plan

- A. A Storm Water Pollution Prevention Plan (SWPPP) to the extent required by NPDES regulations will be needed for any development in the study area. Review of the SWPPP for each development will be required by the City or the Township.

II.iv. Water Quantity and Quality Mitigation Plan

- A. Each new development within the AUAR area will need to incorporate BMPs to meet applicable water quantity and water quality regulatory requirements. These policies are outlined in the local stormwater management requirements section. The soils within the

AUAR area are primarily comprised of Hydrologic Soil Group A and B soils; therefore, it is likely that these policies will be met using infiltration.

- B. Infiltration to the Rosemount or Empire Township's standards will be provided on each development site or in a regional infiltration system that is created to serve a defined drainage area. The selection of a development-specific or regional system will be based on identifying feasible areas that take into consideration soils, drainage patterns, existing and past land use, and other factors. Areas where infiltration is not feasible or where contamination is possible will not be used for infiltration practices.
- C. To protect adjacent structures, an overflow from the Lake 2162 will be developed that would allow water to overflow either to the northeast toward pond 2246 or to the South toward the Vermillion River. This overflow could potentially occur if a rainfall event occurs that exceeds a 100-year 24-hour event, and/or water elevations reach extremely high levels. Based on this analysis and the installation of the proposed BMP'S, the volume of runoff generated within the AUAR area will be significantly reduced in the future, and the corresponding probability of this overflow occurring will be also reduced from that which exists today.
- D. If any storm water in the study area within Empire Township is to be directed to the City of Rosemount, the Rosemount infiltration standard will be applied to the development.
- E. Design considerations for comprehensive stormwater management should include regional ponding.
- F. Approved TMDL load reductions and implementation plans shall be addressed by a development's stormwater management plan. These will need to be addressed per the schedule identified in the current version the MS4 permit. The proposed language states "For TMDLs approved prior to the effective date of the MS4 permit the Waste Load Allocation (WLA) discharge requirement will become a requirement of the permittee".
- G. In the City of Rosemount, post-development discharge rates will be limited to 0.05 cfs/acre of the 100-year, 24-hour event.
- H. In Empire Township, it will be required that post-development discharge rates will not be greater than pre-development discharge rates for the 1-year and 10-year, 24-hour storm critical duration events to reduce erosion impacts downstream of the site.
- I. The developer will be responsible for grading the site appropriately to provide adequate stormwater management to the extent necessary and will be required to obtain the necessary permits for stormwater management and grading, to preserve the existing natural features, and to provide water quality protection to meet MPCA Construction General Permit requirements in addition to City of Rosemount, Empire Township, and VRWJPO requirements.
- J. Stormwater will be required to be pretreated prior to discharge to wetlands and Lake 2162.

- K. A SWPPP required by the NPDES regulations will be needed for any development in the study area. Review of the SWPPP for each development will be required by the City and Township.

II.v. Wastewater Mitigation Plan

- A. **Figures 18-3, 18-4, and 18-5** show conceptual layout of gravity sewers, lift stations and forcemains to serve the proposed study area under each scenario. All of the scenarios maintain an identical pipe layout network and can be identified by sewer district or Rosemount Interceptor connection points as defined in **Figure 18-2**.
- B. The East sewer district consists primarily of gravity sewers, and two lift stations and forcemains that convey wastewater north to the Rosemount Interceptor along County Road (CR) 42. The south lift station capacity ranges from 700 gpm to 900 gpm and the north lift station capacity ranges from 1,700 gpm to 2,000 gpm in capacity, depending on the scenario. Sewers within the East sewer district range between 8" and 21" in diameter.
- C. The Central sewer district consists of primarily gravity sewers, and one lift station and forcemain that convey the wastewater north to the Rosemount Interceptor along CR 42. The lift station ranges in capacity from 1,600 gpm to 2,000 gpm depending on the scenario. Sewers within the Central sewer district range in size from 8" to 24" in diameter.
- D. The Northwest sewer district consists of all gravity sewers which flows to the north and discharges to the Rosemount Interceptor along CR 42. The gravity sewer ranges in size from 8" to 21" depending on the scenario.
- E. Similar to the Northwest sewer district, the Southwest sewer district consists of all gravity sewers. Wastewater flows to the west where it discharges to the Rosemount Interceptor along Biscayne Ave. The gravity sewers in the Southwest district range in size from 8" to 15" in diameter.

II.vi. Geologic Hazards and Soil Conditions Mitigation Plan

- A. NPDES Phase II Construction Site permit will be required for development within the study area. This permit requires a site specific Storm Water Pollution Prevention Plan (SWPPP) to be completed for construction. This SWPPP is required to include pollution prevention management measures for solid waste and hazardous material spills that occur during construction.
- B. Development or construction work will require conformance with the City spill response plan. Spills will be reported to the Minnesota State Duty Officer and 911, along with applicable City staff. Those authorities will in turn notify any other appropriate officials depending on the nature of the incident.
- C. For all gas stations with underground tanks, annual licensing from the MPCA will be needed.
- D. The area of partially hydric soils in the northeast corner of the site is proposed to remain as a natural open space area.

- E. Should any other conditions be identified during site development activities that have the potential to materially impact either groundwater recharge or groundwater quality, investigations will be conducted and mitigation measures will be identified to address the impact consistent with applicable State and Federal requirements.
- F. Project contingency plans should be prepared and reviewed/approved by MPCA to address potential releases of hazardous substances identified during construction activities. These plans should include current Phase I evaluations prior to beginning construction activities to identify potential releases.
- G. The City requests project proposers prepare and submit to the MPCA Construction Contingency Plans (“CCPs”) to help identify and address any potential releases of hazardous substances that may be encountered during construction activities. Phase I Environmental Site Assessments should also be completed for the proposed project area and submitted to MPCA along with the CCPs.
- H. Any business or institutional uses that use or store petroleum or other hazardous products will be subject to local and state rules regulating such uses.

II.vii. Transportation Mitigation Plan

- A. Evaluate and compare the traffic analysis prepared as part of the AUAR in coordination with the City of Rosemount, Empire Township and Dakota County with detailed roadway mitigation. Evaluations will occur with each large scale development plan submitted for approval, the City, Township and County Comprehensive Plan updates and/or with each five year AUAR review.
- B. Expansion of CSAH 42 from Biscayne Avenue to US 52 from 4 lanes to 6 lanes when warranted by traffic volumes.
- C. Construction of an interchange to replace the existing TH 3/CSAH 42 intersection. Interchange geometry will be proposed with future studies.
- D. Reconstruction of the existing interchange at CSAH 42 and US 52 as a system interchange to accommodate higher turning movements. The City of Rosemount’s and Dakota County’s 2030 Comprehensive Plans have identified this interchange as potentially serving a rerouted alignment of TH 55 in the future. Interchange configuration and lane geometry will be determined in future studies.
- E. Addition of intersection control (signal, roundabout, etc), documented in an Intersection Control Evaluation report, at locations that meet the required traffic warrants and intersection spacing guidelines in accordance with the City, County, and Township including the updated CSAH 42 Segment 15 recommendations adopted by the County Board.
- F. Provide right-of-way required for future roadway expansion adjacent to and within the UMore property.

- G. Design and construction of the internal roadway system within the UMore development providing adequate service to each zone of development with turn lanes and traffic control as needed for safe and efficient traffic flow.
- H. Preparation of a Travel Demand Management (TDM) plan for the site, or portions thereof, prior to the first large scale development proposal. This would include, but is not limited to, action items for: transit (both bus and rail), non-motorized, and new technologies.
- I. Preparation of an Access Management Plan for the affected arterial and collector roadways prior to the first development proposal.

II.viii. Noise Mitigation Plan

- A. Site plans for future developments should include measures such as appropriate setback distances, earthen berms, noise walls, and appropriate site design (such as outdoor activity areas being developed away from major noise sources). Each of these items should be considered on a case-by-case basis. The site plans developed for specific projects should show the proposed locations and types of mitigation, with the estimated noise reductions for all areas projected to exceed noise standards.

II.ix. Nearby Resources Mitigation Plan

- A. Currently, UMore Park is not receiving federal funding or permitting. Should federal funding or permitting be required in the future, the project:
 - Must comply with Section 106 of the National Historic Preservation Act of 1966 (Section 106);
 - The lead federal agency will be required to initiate consultation with applicable Native American Tribes; and
 - Additional architectural surveys may be required.
- B. Erosion control measures will be required during construction to control the loss of Waukegan soils and other soil types susceptible to erosion. All disturbed areas will be required to be re-seeded and mulched as needed.
- C. As appropriate, site and building plans will reflect and enhance any significant views of natural features.
- D. Park dedication will be in conformance to the codes and requirements of the City of Rosemount and Empire Township.

II.x. Visual Impact Mitigation Plan

- A. Through the development review process, the City will require appropriate screening of development in the study area to control adverse visual impacts.

II.xi. Compatibility with Land Use Regulations Mitigation Plan

- A. If the AUAR area develops as shown in Scenarios 1, 2 or 3, changes will be needed to the City of Rosemount's Comprehensive Plan, Empire Township's Comprehensive Plan, the Metropolitan Council's 2030 Regional Development Framework, and both the City's and Township's zoning ordinances through the respective amendment processes.

- B. While no impacts to floodplain are anticipated, if impacts occur, mitigation in conformance with Empire Township regulations will required.

III. UMORE STUDY AREA AUAR

1) PROJECT TITLE

UMore Study Area

2) PROPOSER

The University of Minnesota
Steven Lott
1605 W 160th Street
Rosemount, MN 55068
651-423-2562
Lottx020@umn.edu

3) RGU

City of Rosemount
Mr. Eric Zweber
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4) REASON FOR EAW PREPARATION

EQB guidance indicates no response is necessary.

5) PROJECT LOCATION

County: Dakota
City/Township: City of Rosemount; Empire Township
Section 33, 34, 34, 36 T115, R19
Section 25, 26, 27, 28 T115, R19
Section 1, 2, 3, 4 T114, R19

Figures 5-1 to 5-3 show the study area location.

6) DESCRIPTION

A. ANTICIPATED TYPES AND INTENSITY OF DEVELOPMENT

The UMore Study Area is approximately 4,900 acres located in the southern portion of the City of Rosemount and the northern portion of Empire Township (**Figure 5-1 to 5-3**). Both governmental units have worked together along with the University of Minnesota in the preparation of this AUAR with Rosemount assuming the Responsible Government Unit role.

The UMore Park AUAR includes the review of four development scenarios. Scenarios 1 through 3 are generally consistent with known plans of the primary owner of the property, the University of Minnesota. Plans for the property have been shaped by a number of policy, strategic and physical planning initiatives undertaken by the University. Additional background information on these actions can be found in **Appendix B**.

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Scenario 1 (Figure 6-1)

Scenario 1 contains residential, commercial, industrial, mixed-use, and park/open spaces uses organized around a neighborhood, village, community or regional center. Long-term, the plan accommodates a transit connection between the three higher density center areas and points north of the UMore site. An extensive planned system of greenways and open space meanders through the site accommodating active and passive recreational uses, preservation of natural features and establishing corridors for wildlife movement.

On the west side of the site, development will surround a new lake that will be an amenity resulting from gravel mining operations that are scheduled to commence in 2013. The gravel mining area was the subject of an Environmental Impact Statement. The Record of Decision for the UMore Park Sand and Gravel Resources Project EIS was published in November of 2010.

County State Aid Highway (CSAH) 46 bisects the site in an east/west direction forming the boundary between the City of Rosemount and Empire Township. Akron Avenue and Blaine Avenue will be extended through the site and will be transferred to Dakota County following construction and connection to the overall Dakota County highway system. In the north, the UMore Park property surrounds the Dakota County Technical College (DCTC) which abuts County State Aid Highway (CSAH) 42.

Residential uses occur in four different density classifications ranging from low density (1 - 3.5 units/acre) to high density (12 – 24 units per acre). Scenario 1 uses the maximum density within the residential ranges to determine population. Neighborhood, Village, Community and Regional Centers contain varying mixes of residential and non-residential uses. Employment land uses, which are generally concentrated in the eastern portion of the site, include office/business park and light industrial uses. Scenario 1 accommodates a future population of approximately 35,000 people and about 18,000 jobs.

Table 6-1 summarizes Scenario 1.

Table 6-1. Scenario 1

SCENARIO 1

LAND USE	GROSS ACREAGE	%	NET ACREAGE ^a	UNITS	POPULATION ^{**}	EMPLOYEES ^{***}
LOW DENSITY RESIDENTIAL (1-3.5 DU/AC.) ^a	1014.3	20.7%	811.4	2,840	9,088	
LOW-MED DENSITY RESIDENTIAL (3.5-6 DU/AC.) ^a	739.2	15.1%	591.4	3,548	8,516	
MEDIUM DENSITY RESIDENTIAL (6-12 DU/AC.) ^a	465.1	9.5%	372.1	4,465	10,716	
HIGH DENSITY RESIDENTIAL (12-24 DU/AC.) ^a	5.9	0.1%	4.7	113	158	
NEIGHBORHOOD CENTER						
15% Low-Med Density Residential (3.5-6 DU/AC.) ^a	19.2	0.4%	15.4	92	222	
50% Medium Density Residential (6-12 DU/AC.) ^a	64.1	1.3%	51.3	615	1,477	
25% High Density Residential (12-24 DU/AC.) ^a	32.1	0.7%	25.8	615	862	
10% Retail/Commercial/Office (.35 FAR)	12.8	0.3%	10.3			447
VILLAGE CENTER						
35% Medium Density Residential (6-12 DU/AC.) ^a	44.0	0.9%	35.2	422	1,014	
40% High Density Residential (12-24 DU/AC.) ^a	50.3	1.0%	40.2	966	1,352	
25% Retail/Commercial/Office (.5 FAR)	31.4	0.6%	25.1			1,565
COMMUNITY CENTER						
15% Medium Density Residential (6-12 DU/AC.) ^a	17.2	0.3%	13.7	165	396	
10% High Density Residential (12-24 DU/AC.) ^a	11.4	0.2%	9.2	220	308	
75% Retail/Commercial/Office (.25 FAR)	85.9	1.7%	68.7			2,137
REGIONAL CENTER						
5% Medium Density Residential (6-12 DU/AC.) ^a	8.2	0.2%	6.6	79	189	
5% High Density Residential (12-24 DU/AC.) ^a	8.2	0.2%	6.6	158	221	
90% Retail/Commercial (.25 FAR)	147.8	3.0%	118.3			3,680
OFFICE / BUSINESS PARK (.3 FAR)	284.0	5.8%	227.2			8,247
LIGHT INDUSTRIAL (.4 FAR)	180.2	3.7%	144.2			2,166
OPEN SPACE	938.6	19.1%	938.6			
OPEN WATER	259.2	5.3%	259.2			
RIGHT-OF-WAY (COLLECTORS AND ARTERIALS)	491.9	10.0%	491.9			
LOCAL STREETS RIGHT-OF-WAY & NEIGHBORHOOD PARKS			644.3			
TOTAL	4911.0	100.0%	4,911.0	14,299	34,518	18,242

NOTES / ASSUMPTIONS:

^aNet Acreage calculated by subtracting 20% (for local ROW, neighborhood parks, municipal and institutional uses) off of all land uses except Open Space, Open Water and Collector/Arterial Right-of-Way

^{**}Population calculated at an average rate of:

- Low Density Residential: 3.2 persons per household
- Low-Med Density Residential: 2.4 persons per household
- Medium Density Residential: 2.4 persons per household
- High Density Residential: 1.4 persons per household

^{***}Average Employee assumptions:

- Centers: 1 employee per 350 sq. ft. floor area
- Office / Business Park: 1 employee per 360 sq. ft. floor area
- Light Industrial: 1 employee per 1,160 sq. ft. floor area

^aResidential Densities used for Concept 1:

- Low Density Residential: 3.5 DU/AC.
- Low-Med Density Residential: 6 DU/AC.
- Medium Density Residential: 12 DU/AC.
- High Density Residential: 24 DU/AC.

Workforce Population (65% of Population):	22,436
Jobs/Workforce Population Ratio:	.81:1

Scenario 2 (Figure 6-2)

The quantities and locations of future land uses shown on Scenario 2 are identical to those shown on Scenario 1. Scenario 2 allows testing of an alternative that has residential densities that are more in line with the traditional densities in suburban communities like the City of Rosemount. For this Scenario, the middle of the residential density ranges have been used for the low density, low-medium density, medium density and high density categories. As a result, Scenario 2 projects a future population of approximately 25,000 people and about 18,000 jobs.

Table 6-2 summarizes Scenario 2.

Table 6-2. Scenario 2

SCENARIO 2

LAND USE	GROSS ACREAGE	%	NET ACREAGE	UNITS	POPULATION**	EMPLOYEES***
LOW DENSITY RESIDENTIAL (1-3.5 DU/AC.) ^a	1014.3	20.7%	811.4	1,828	5,842	
LOW-MED DENSITY RESIDENTIAL (3.5-6 DU/AC.)	739.2	15.1%	591.4	2,809	6,742	
MEDIUM DENSITY RESIDENTIAL (6-12 DU/AC.) ^a	486.1	9.5%	372.1	3,349	8,037	
HIGH DENSITY RESIDENTIAL (12-24 DU/AC.) ^a	5.9	0.1%	4.7	85	118	
NEIGHBORHOOD CENTER						
15% Low-Med Density Residential (3.5-6 DU/AC.) ^a	19.2	0.4%	15.4	73	175	
50% Medium Density Residential (6-12 DU/AC.) ^a	84.1	1.3%	51.3	462	1,108	
25% High Density Residential (12-24 DU/AC.) ^a	32.1	0.7%	25.6	462	646	
10% Retail/Commercial/Office (.35 FAR)	12.8	0.3%	10.3			447
VILLAGE CENTER						
35% Medium Density Residential (6-12 DU/AC.) ^a	44.0	0.9%	35.2	317	760	
40% High Density Residential (12-24 DU/AC.) ^a	50.3	1.0%	40.2	724	1,014	
25% Retail/Commercial/Office (.5 FAR)	31.4	0.6%	25.1			1,565
COMMUNITY CENTER						
15% Medium Density Residential (6-12 DU/AC.) ^a	17.2	0.3%	13.7	124	297	
10% High Density Residential (12-24 DU/AC.) ^a	11.4	0.2%	9.2	165	231	
75% Retail/Commercial/Office (.25 FAR)	85.9	1.7%	68.7			2,137
REGIONAL CENTER						
5% Medium Density Residential (6-12 DU/AC.) ^a	8.2	0.2%	6.6	59	142	
5% High Density Residential (12-24 DU/AC.) ^a	8.2	0.2%	6.6	118	166	
90% Retail/Commercial (.25 FAR)	147.8	3.0%	118.3			3,680
OFFICE / BUSINESS PARK (.3 FAR)	284.0	5.8%	227.2			8,247
LIGHT INDUSTRIAL (.4 FAR)	180.2	3.7%	144.2			2,186
OPEN SPACE	838.5	18.1%	838.5			
OPEN WATER	259.2	5.3%	259.2			
RIGHT-OF-WAY (COLLECTORS AND ARTERIALS)	491.9	10.0%	491.9			
LOCAL STREETS RIGHT-OF-WAY & NEIGHBORHOOD PARKS			644.3			
TOTAL	4911.0	100.0%	4,911.0	10,571	25,278	18,242

NOTES / ASSUMPTIONS:

*Net Acreage calculated by subtracting 20% (for local ROW, neighborhood parks, municipal and institutional uses) off of all land uses except Open Space, Open Water and Collector/Arterial Right-of-Way

**Population calculated at an average rate of:

- Low Density Residential: 3.2 persons per household
- Low-Med Density Residential: 2.4 persons per household
- Medium Density Residential: 2.4 persons per household
- High Density Residential: 1.4 persons per household

***Average Employee assumptions:

- Centers: 1 employee per 350 sq. ft. floor area
- Office / Business Park: 1 employee per 380 sq. ft. floor area
- Light Industrial: 1 employee per 1,160 sq. ft. floor area

^aResidential Densities used for Concept 2:

- Low Density Residential: 2.25 DU/AC.
- Low-Med Density Residential: 4.75 DU/AC.
- Medium Density Residential: 9 DU/AC.
- High Density Residential: 18 DU/AC.

Workforce Population (65% of Population):	16,431
Jobs/Workforce Population Ratio:	1.11:1

Scenario 3 (Figure 6-3)

Scenario 3 is intended to examine the implications of a future land use pattern that includes expanded employment opportunities. With the exception of areas lying between Barbara and Blaine Avenues, the land use pattern shown on Scenario 3 is identical to that shown on Scenarios 1 and 2. Scenario 3 replaces largely residential uses lying west of Blaine Avenue with office/business park uses and light industrial. The maximum residential densities are used, the same as used in Scenario 1. As a result, Scenario 3 accommodates a future population of approximately 31,500 people and about 24,500 jobs.

Table 6-3 summarizes Scenario 3.

Table 6-3. Scenario 3

SCENARIO 3				NET ACREAGE ^a		POPULATION ^{**} EMPLOYEES ^{***}	
LAND USE	GROSS ACREAGE	%		UNITS			
LOW DENSITY RESIDENTIAL (1-3.5 DU/AC.) ^a	784.3	16.0%		627.4	2,196		7,027
LOW-MED DENSITY RESIDENTIAL (3.5-6 DU/AC.) ^a	755.2	15.4%		604.2	3,625		8,700
MEDIUM DENSITY RESIDENTIAL (6-12 DU/AC.) ^a	412.3	8.4%		329.8	3,958		9,498
HIGH DENSITY RESIDENTIAL (12-24 DU/AC.) ^a	5.9	0.1%		4.7	113		158
NEIGHBORHOOD CENTER							
15% Low-Med Density Residential (3.5-6 DU/AC.) ^a	19.2	0.4%		15.4	92		222
50% Medium Density Residential (6-12 DU/AC.) ^a	64.1	1.3%		51.3	616		1,477
25% High Density Residential (12-24 DU/AC.) ^a	32.1	0.7%		26.6	616		862
10% Retail/Commercial/Office (.35 FAR)	12.8	0.3%		10.3			447
VILLAGE CENTER							
35% Medium Density Residential (6-12 DU/AC.) ^a	44.0	0.9%		35.2	422		1,014
40% High Density Residential (12-24 DU/AC.) ^a	60.3	1.0%		40.2	966		1,352
25% Retail/Commercial/Office (.5 FAR)	31.4	0.6%		25.1			1,565
COMMUNITY CENTER							
15% Medium Density Residential (6-12 DU/AC.) ^a	17.2	0.3%		13.7	165		396
10% High Density Residential (12-24 DU/AC.) ^a	11.4	0.2%		9.2	220		308
75% Retail/Commercial/Office (.25 FAR)	85.9	1.7%		68.7			2,137
REGIONAL CENTER							
5% Medium Density Residential (6-12 DU/AC.) ^a	6.2	0.2%		6.6	79		189
5% High Density Residential (12-24 DU/AC.) ^a	6.2	0.2%		6.6	159		221
90% Retail/Commercial (.25 FAR)	147.8	3.0%		118.3			3,680
OFFICE / BUSINESS PARK (.3 FAR)	462.2	9.4%		369.7			13,421
LIGHT INDUSTRIAL (.4 FAR)	269.0	5.5%		215.2			3,233
OPEN SPACE	938.6	19.1%		938.6			
OPEN WATER	259.2	5.3%		259.2			
RIGHT-OF-WAY (COLLECTORS AND ARTERIALS)	491.9	10.0%		491.9			
LOCAL STREETS RIGHT-OF-WAY & NEIGHBORHOOD PARKS	644.3			644.3			
TOTAL	4911.0	100.0%		4,911.0	13,224		31,422 24,483

NOTES / ASSUMPTIONS:

^aNet Acreage calculated by subtracting 20% (for local ROW, neighborhood parks, municipal and institutional uses) off of all land uses except Open Space, Open Water and Collector/Arterial Right-of-Way

^{**}Population calculated at an average rate of:

- Low Density Residential: 3.2 persons per household
- Low-Med Density Residential: 2.4 persons per household
- Medium Density Residential: 2.4 persons per household
- High Density Residential: 1.4 persons per household

^{***}Average Employee assumptions:

- Centers: 1 employee per 350 sq. ft. floor area
- Office / Business Park: 1 employee per 350 sq. ft. floor area
- Light Industrial: 1 employee per 1,160 sq. ft. floor area

^aResidential Densities used for Concept 3:

- Low Density Residential: 3.5 DU/AC.
- Low-Med Density Residential: 6 DU/AC.
- Medium Density Residential: 12 DU/AC.
- High Density Residential: 24 DU/AC.

Workforce Population (65% of Population):	20,424
Jobs/Workforce Population Ratio:	1.20:1

Scenario 4 – Existing Comprehensive Plans

Scenario 4 depicts the current comprehensive plans of both the City of Rosemount and Empire Township. Both comprehensive plans recognize UMore Park and reference future growth and development. Rosemount’s plan categorizes the UMore site as Agricultural Research (AGR). The plan states, “This land use designation is used solely for the UMore Park property that is owned and operated by the University of Minnesota. It is anticipated that, after the UMore Park Master Plan is created and adopted, a major Comprehensive Plan amendment will be conducted to re-designate the land to its appropriate land use category.”

The Empire Township Comprehensive Plan categorizes the UMore Park property as University of MN (UMORE). The property is also designated as being in a Mining Overlay Area. The plan states, “The University of Minnesota Outreach, Research and Education Park (UMore Park) consisted of nearly 4,530 acres in Empire Township. Approximately 2,830 acres of land has become part of the Vermillion Highlands Wildlife Management Area

(WMA) jointly operated by the University and the DNR for agricultural research and WMA usage. The remaining 1700 acres of UMore Park is being planned for mineral extraction and eventual urbanization. The University has completed a two-year long study of potential urban uses in Empire and the City of Rosemount (additional 2900 acres). The UMore Property in Empire is also included in the Mineral Extraction Overlay area.”

Since both of the current comprehensive plans recognize the current agricultural condition of the UMore Park property, neither plan provides a projected basis for examining planned residential and non-residential uses.

B. INFRASTRUCTURE PLANNED TO SERVE THE DEVELOPMENT

If future development occurs as proposed under Scenarios 1, 2 or 3, new utilities, roads and other infrastructure will be needed to serve the AUAR area. Comprehensive Plans and this AUAR identify the infrastructure needed to support the varying levels of development identified in the Scenarios. Infrastructure needs are discussed in greater detail under the response to AUAR Items: 13 – Water Use, 17 – Water Quality: Surface Water Runoff, 18 – Water Quality: Wastewaters and 21 – Traffic. Item 28 – Infrastructure and Public Services includes a summary of new infrastructure that would be needed and where appropriate, provides comparisons between the scenarios.

C. ANTICIPATED DEVELOPMENT STAGING

The development of UMore Park is expected to occur over the next 30 to 40 years depending on market conditions and overall development demand. The timing of development will also be influenced by the timing of construction for required infrastructure improvements both locally and regionally. The future availability of transit may also influence the timing of the full build-out of the UMore Park property.

In general, development is anticipated to be phased from the north in Rosemount along County State Aid Highway (CSAH) 42 to the south extending into Empire Township. The timing of development in the western portion of the UMore Park property will be influenced by the timing of the extraction of minerals in the area and the restoration of the property to accommodate urban development. The location of actual land uses may shift within the study area to accommodate underlying past land use, updated information, storm water management needs, internal road access, etc. However, any development density is anticipated to remain in conformance with the densities reviewed in this AUAR.

7) PROJECT MAGNITUDE

Table 7-1 summarizes the proposed land uses for each scenario.

Table 7-1 Composite Scenarios Table

COMPOSITE SCENARIOS TABLE

LAND USE	SCENARIO 1		SCENARIO 2		SCENARIO 3		SCENARIO 4	
	GROSS ACREAGE	%						
LOW DENSITY RESIDENTIAL (1-3.5 DU/AC.) ^A	1014.3	20.7%	1014.3	20.7%	784.3	16.0%	N/A	N/A
LOW-MED DENSITY RESIDENTIAL (3.6-6 DU/AC.) ^A	739.2	15.1%	739.2	15.1%	756.2	15.4%	N/A	N/A
MEDIUM DENSITY RESIDENTIAL (6-12 DU/AC.) ^A	465.1	9.5%	465.1	9.5%	412.3	8.4%	N/A	N/A
HIGH DENSITY RESIDENTIAL (12-24 DU/AC.) ^A	5.9	0.1%	5.9	0.1%	5.9	0.1%	N/A	N/A
NEIGHBORHOOD CENTER								
15% Low-Med Density Residential (3.6-6 DU/AC.) ^A	19.2	0.4%	19.2	0.4%	19.2	0.4%	N/A	N/A
50% Medium Density Residential (6-12 DU/AC.) ^A	64.1	1.3%	64.1	1.3%	64.1	1.3%	N/A	N/A
25% High Density Residential (12-24 DU/AC.) ^A	32.1	0.7%	32.1	0.7%	32.1	0.7%	N/A	N/A
10% Retail/Commercial/Office (.35 FAR)	12.8	0.3%	12.8	0.3%	12.8	0.3%	N/A	N/A
VILLAGE CENTER								
35% Medium Density Residential (6-12 DU/AC.) ^A	44.0	0.9%	44.0	0.9%	44.0	0.9%	N/A	N/A
40% High Density Residential (12-24 DU/AC.) ^A	50.3	1.0%	50.3	1.0%	50.3	1.0%	N/A	N/A
25% Retail/Commercial/Office (.5 FAR)	31.4	0.6%	31.4	0.6%	31.4	0.6%	N/A	N/A
COMMUNITY CENTER								
15% Medium Density Residential (6-12 DU/AC.) ^A	17.2	0.3%	17.2	0.3%	17.2	0.3%	N/A	N/A
10% High Density Residential (12-24 DU/AC.) ^A	11.4	0.2%	11.4	0.2%	11.4	0.2%	N/A	N/A
75% Retail/Commercial/Office (.25 FAR)	85.9	1.7%	85.9	1.7%	85.9	1.7%	N/A	N/A
REGIONAL CENTER								
5% Medium Density Residential (6-12 DU/AC.) ^A	8.2	0.2%	8.2	0.2%	8.2	0.2%	N/A	N/A
5% High Density Residential (12-24 DU/AC.) ^A	8.2	0.2%	8.2	0.2%	8.2	0.2%	N/A	N/A
80% Retail/Commercial (.25 FAR)	147.8	3.0%	147.8	3.0%	147.8	3.0%	N/A	N/A
OFFICE / BUSINESS PARK (.3 FAR)	284.0	5.8%	284.0	5.8%	462.2	9.4%	N/A	N/A
LIGHT INDUSTRIAL (.4 FAR)	180.2	3.7%	180.2	3.7%	269.0	5.5%	N/A	N/A
OPEN SPACE	938.5	19.1%	938.5	19.1%	938.5	19.1%	N/A	N/A
OPEN WATER	259.2	5.3%	259.2	5.3%	259.2	5.3%	N/A	N/A
RIGHT-OF-WAY (COLLECTORS AND ARTERIALS)	491.9	10.0%	491.9	10.0%	491.9	10.0%	N/A	N/A
LOCAL STREETS RIGHT-OF-WAY & NEIGHBORHOOD PARKS								
TOTAL	4911.0	100.0%	4911.0	100.0%	4911.0	100.0%	N/A	100.0%

Building heights will be as regulated by zoning provisions in place at the time of development or as specifically modified as part of a Planned Unit Development approval.

8) PERMITS AND APPROVALS

List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.

It is anticipated similar permits and approvals will be needed for most scenarios. However, where differences occur, they are noted. Development within the study area will be funded through a combination of developers' funds and local agency funds. Mitigation will include the need for development in the area to obtain the required permits and adhere to permitting stipulations.

Table 8-1. List of Permits and Approvals

<i>Federal</i>	<i>Permit/Approval</i>
US Army Corps of Engineers	Section 404 Permit
<i>State</i>	<i>Permit/Approval</i>
Pollution Control Agency	NPDES Storm Water Permit
Pollution Control Agency	Sanitary Sewer Permit
Pollution Control Agency	Section 401 Water Quality Certification Permit, if Section 404 Individual Permit is needed
Pollution Control Agency	Approval of remediation and cleanup plans, as applicable
Department of Natural Resources	Temporary dewatering for construction
Department of Natural Resources	Water appropriation permit and New Well Construction approval
Department of Health	Water main permit
Department of Health	Well permit
State Historic Preservation Office	Coordination, if federal permits are needed with development
MnDOT	State Aid approval
MnDOT	Work in right-of-way permit, if applicable
<i>Regional/ County/ Local</i>	<i>Permit/Approval</i>
City of Rosemount	Comprehensive Plan amendment for scenarios
City of Rosemount	Wetland Conservation Act Approval
City of Rosemount	Preliminary and final plat approvals
City of Rosemount	Building permits
City of Rosemount	Rezoning or text amendments for scenarios
Empire Township	Comprehensive Plan amendment for scenarios
Empire Township	Preliminary and final plat approvals
Empire Township	Building permits
Empire Township	Rezoning or text amendments for scenarios
Empire Township	Wetland Conservation Act Approvals
Metropolitan Council	Comprehensive Plan amendments for scenarios
Metropolitan Council	Review of new sanitary sewer plans
Dakota County	Approval of county road improvements
Dakota County	Access permits
Dakota County	New Well/Abandonment Permit
Dakota County	Conformance with County Ordinances, where applicable

9) LAND USE

Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

A. EXISTING LAND USES

The UMore Park property has been owned and operated by the University of Minnesota since the late 1940s. The property lies in both the City of Rosemount and Empire Township. Existing land use patterns for UMore Park within the two jurisdictions have been similar or consistent with one another over the years.

The University of Minnesota has used the land for educational outreach programs, research, agricultural production, and to a more limited extent, recreational activities. Developed uses on the property in Rosemount include the administrative office; two beef research facilities, a poultry research facility, the west research complex, and the contracts and leasing office. Developed uses on the property in Empire Township include the central research complex, the south research complex and the Lone Rock Trailhead. Approximately 76 acres on the site are currently used for community farming. Fourteen families currently raise crops on this land that are sold predominantly at local area farmers markets

Approximately 1,700 acres in the northwest part of the UMore Park site is anticipated for gravel mining and has been approved for issuance of local mining permits. Gravel mining in the area is expected to last for up to 40 years; however, resource extraction will be phased over time in accordance with the project EIS with restoration efforts occurring as mining operations are relocated.

Areas of traditional suburban growth have emerged over the past twenty-five years near the UMore Park property, particularly on the north and west in the City of Rosemount. The development patterns in these areas are consistent with development patterns found in central Dakota County.

B. SURROUNDING LAND USES – CITY OF ROSEMOUNT

Surrounding land uses in the City of Rosemount include a mix of residential, industrial and educational uses. Residential neighborhoods are located north of the northwest portion of the UMore Park site including a mix of single-family detached dwelling units and attached townhomes. County State Aid Highway (CSAH) 42 serves as a divide between these existing residential areas and the UMore Park site. A business park and a general industrial land use pattern are located adjacent to the northwest edge of the UMore Park site. This area encompasses approximately 335 acres of manufacturing, office, warehousing and storage spaces. Biscayne Avenue separates these developments from the UMore site.

The Dakota County Technical College (DCTC) is located along County State Aid Highway (CSAH) 42, surrounded by UMore Park on the west, south and east sides. Ground was broken in June of 2012 for a new Rosemount community park that lies immediately south of

the DCTC campus. The 26 acre park features ball diamonds and other active recreational facilities.

Land lying north of County State Aid Highway (CSAH) 42 is just beginning to see construction of new single-family neighborhoods which are displacing land used for agriculture. Development in this area is consistent with the development pattern examined as part of the CSAH 42/Akron AUAR completed by the City of Rosemount in 2007 and updated in 2012. The Flint Hills Resources facility is located along Highway 52, northeast of the UMore site. This facility, which is not contiguous to UMore's boundary, includes the Pine Bend Refinery which processes approximately 320,000 barrels of crude oil per day.

The northeast corner of the UMore site abuts land currently used for agriculture and an industrial use that abuts Highway 52. The eastern border of UMore in Rosemount also abuts land that is in the City of Coates. The existing land use pattern in Coates is predominately agricultural.

C. SURROUNDING LAND USES – EMPIRE TOWNSHIP

Existing land use patterns in Empire Township primarily consist of agricultural uses including active mining operations which are shown on Empire Township's existing land use map as Industrial. In addition to mining operations south of the UMore Park site, two significant recreational resources are adjacent to the site as well. Dakota County and the Minnesota Department of Natural Resources acquired 817 acres, commonly known as the Butler Land Trust property. In 2012, Dakota County completed a Master Plan for 457 acres of the Butler property for development of the new Whitetail Woods Regional Park. The remaining 360 acres of the Butler property is owned and maintained by the Minnesota Department of Natural Resources as a Wildlife Management Area (WMA).

East of the Butler property is the 2,822 acre Vermillion Highlands Modified Wildlife Management Area. The facility is jointly operated by the University of Minnesota and the Minnesota Department of Natural Resources, in conjunction with Dakota County and Empire Township. Vermillion Highlands contains equestrian, hiking and cross country ski trails and offers major hunting opportunities in the region. Land in the northern portion of the Vermillion Highlands property will be used for agricultural research by the University of Minnesota as development displaces current research facilities in the UMore Park property over time.

The southeast portion of the UMore Park site in Empire Township abuts the City of Coates. All of the abutting land in this area is used for agricultural purposes.

Figure 9-1 identifies the general existing land use pattern in the vicinity of the UMore site.

D. LAND USE COMPATIBILITY

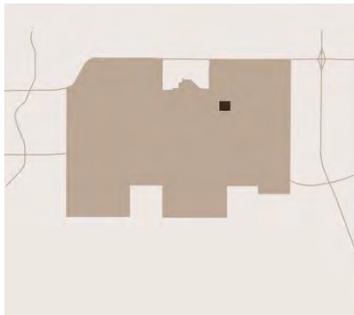
The UMore Park property sits on the developing edge of urban growth in the Twin Cities Metropolitan Area in the City of Rosemount. Accordingly, much of the surrounding land remains under agricultural and semi-rural land uses. Land lying west of the UMore Park property is either industrial or agriculture which is generally compatible with both the proposed interim gravel mining use of the property and the eventual transition to urban

development. The gravel mining operation was addressed in an Environmental Impact Statement prepared in October of 2010.

Land lying along County State Aid Highway (CSAH) 42 which is UMore’s northern boundary will experience additional residential and commercial development, consistent with Rosemount’s Comprehensive Plan as well as the CSAH 42/Akron AUAR. Scenarios 1, 2 and 3 that are included in this AUAR depict a pattern of future land use that closely mirrors the planned land use pattern to the north. In this area, the planned land use pattern generally transitions from residential uses on the west to commercial uses in the center to industrial uses to the east extending to Highway 52.

In the southern portion of the UMore Park property, Scenarios 1, 2 and 3 depict a land use pattern that contains low-density residential uses which will be compatible with the long-term development of the adjoining area in Empire Township. In the south, the eastern portion of the UMore Park site that abuts Vermillion Highlands is shown as low-density residential or open space uses on Scenarios 1, 2 and 3, which will be compatible with the use of the Vermillion Highlands property. The extreme southeast corner of the AUAR area is a parcel owned by Dakota County which long-term, is expected to have an industrial use and be compatible with both Vermillion Highlands and agricultural property to the east.

E. SUPERFUND SITE STATUS



The University of Minnesota Rosemount Research Center Superfund Site (“UMRRC Site”) consists of three electrical transformer recycling facilities operated by former University tenants, known as the George's Used Equipment (GUE) site, the Porter Electric and Machine Company (“PE”) site, and the U.S. Transformer (“UST”) site, and a former University chemical waste disposal site. The UMRRC Site was added to the Minnesota Permanent List of Priorities (“PLP”) on October 30, 1984 and the federal National Priorities List (“NPL”) on June 10, 1986.

The UMRRC Site was the subject of extensive investigation and cleanup by the University in the late 1980s and early 1990s, with regulatory oversight by the United States Environmental Protection Agency (“U.S. EPA”) and the Minnesota Pollution Control Agency (“MPCA”). The response actions selected by MPCA, with concurrence by U.S. EPA, for the UMRRC Site are documented in the Minnesota Enforcement Decision Document dated December 4, 1986 (“MEDD”) and the Record of Decision dated June 11, 1990 (“ROD”). The objectives of the response actions required under the MEDD and ROD were to eliminate human health risks associated with hazardous substances in soil, provide safe drinking water to affected residences, and achieve Federal and State drinking water standards for chloroform in groundwater. With U.S. EPA concurrence, MPCA modified the ROD via Explanations of Significant Differences (“ESDs”) in August 1991 and October 1993, respectively, to make various changes to treatment and disposal methods for the soil response action.

Response actions implemented by the University under the MEDD and ROD included:

- Operable Unit 1 (OU 1) - construction of a community rural water supply system and a groundwater pump and treat system;
- Operable Unit 2 (OU 2) - Excavation and off-site disposal of soil impacted by metals at multiple concentrations and PCBs at concentrations greater than 25 parts per million (“ppm”) from GUE; consolidation and on-site containment of soil impacted by metals and PCBs between 10 and 25 ppm in a containment unit designated as GUE Deep; and
- Operable Unit 3 (OU 3) - Excavation and on-site thermal destruction of PCB-impacted soil with concentrations greater than 25 ppm from multiple areas with disposal of treatment residuals and wastewater in GUE Deep; placement of a 10-inch soil cover on excavated areas with PCBs in soil at concentrations between 1 and 10 ppm; and placement of a 16-inch soil cover and fencing of GUE Deep. This OU is co-located with OU 2.

The University completed the cleanup in 1994. The UMRRC Site was administratively closed, and was removed by MPCA and U.S. EPA from the PLP and NPL on November 27, 2000 and February 6, 2001, respectively.

Because hazardous substances remained in place after the cleanup, the UMRRC Site is statutorily subject to review by U.S. EPA and MPCA every five years to confirm that the completed response actions remain protective of public health and the environment. In all four of the Five-Year Reviews performed since the UMRRC Site was administratively closed, the last of which was completed between October 2011 and June 2012, U.S. EPA and MPCA determined that the response actions continue to be protective of public health and the environment. In the Fourth Five Year Review Report (June 14, 2012), U.S. EPA recommended several actions to ensure long-term protectiveness of the response actions. The University is discussing those recommendations with appropriate MPCA and U.S. EPA Superfund Program requirements.

The Fourth Five Year Review Report can be viewed at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_405352.pdf

F. POTENTIAL ENVIRONMENTAL HAZARDS

Significant portions of UMore Park have historically been used primarily or exclusively for farming. In those areas, the potential for significant environmental impacts from past land use is very low. However, other remaining portions of UMore Park have a higher risk of environmental impacts due to land uses that occurred there during and after World War II.

The roughly eastern two-thirds of UMore Park comprised the industrial portion of the Gopher Ordnance Works (“GOW”), a WWII-era government-owned, contractor-operated facility. The GOW operations were focused primarily on the production of smokeless gunpowder for cannon shells. The plant also was used for the manufacture of several intermediary products for powder production, including nitric acid and a concentrated form of sulfuric acid known as oleum, which was used on-site and was also exported to other ordnance plants. No munitions assembly or high explosives production took place at GOW.

The federal government condemned approximately 11,500 acres of Dakota County farm land for the GOW in 1942. The construction period for the GOW, which was designed to include over 900 buildings, two power plants, a wastewater treatment facility and associated industrial and sanitary sewer systems, and other infrastructure, was relatively short and involved intense activity from 1942 through 1944. Construction of the facility began in 1942, was halted in 1943, and then restarted in 1944. The facility included two sets of powder production lines (the “ABC” and “DEF” lines). Construction of the DEF lines was never completed. Limited production of gunpowder and related products occurred on the ABC lines only during the period from approximately January to August of 1945. After August of 1945, the plant was kept in use for a brief period for the purpose of reworking salvaged powder.

The GOW was declared war surplus in 1946. Demolition activities were initiated including burning off excess powder and powder-coated materials in a designated area at the site, demolishing buildings and other above-ground infrastructure, and stripping and shipping salvaged building materials and equipment for use at other federal facilities or public sale. At least some of the demolition debris was disposed by the federal government’s contractors on-site. GOW construction, operation and demolition activities have resulted in releases of hazardous substances and petroleum products in areas of UMore Park where those activities occurred.

Approximately 8,000 acres of former GOW property were transferred to the University by the federal government in 1947 and 1948 for use in agricultural and other research. Post-GOW land uses by the University and its tenants have also resulted in releases of hazardous substances and petroleum in limited areas of UMore Park.

The former GOW was determined to be eligible to participate in the Formerly Used Defense Sites (“FUDS) Program. The FUDS Program is not a regulatory program, but is an administrative program managed by the United States Army Corps of Engineers for the investigation/cleanup of former defense sites. The Corps needs concurrence for its actions at FUDS sites from the appropriate state regulatory program, in this case, the MPCA Superfund Program.

The applicable state law pertaining the releases of hazardous substances is the Minnesota Environmental Response and Liability Act, Minn. Stat. §§ 115B. 01, et. seq. (“MERLA”). Under MERLA, owners and operators (including property owners) may be considered responsible parties for releases of hazardous substances and be required to perform appropriate response actions to address releases that pose a threat to public health or the environment.

Several significant environmental studies and investigations of UMore Park and the adjacent Vermillion Highlands have been completed since 2002, which have documented releases of hazardous substances from both GOW operations and post-GOW activities. A listing of those initiatives can be found at:

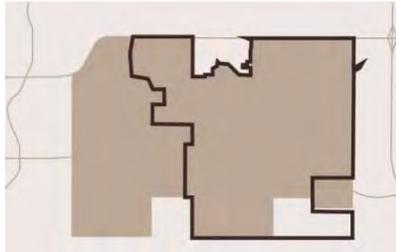
<http://www.umorepark.umn.edu/planning/gowinvestigation/repository/index.htm>

These investigations have also identified potential physical hazards to the public, such as debris and abandoned structures, and areas that contain asbestos. The University has posted signs on segments of the UMore Park property that are not open to the public due to the presence of potential physical hazardous and identified substances in some areas.

The following is a brief summary of the more significant environmental studies and investigations that have been completed to date (in reverse chronological order):

i) February, 2012 – Remedial Investigation Report – Barr Engineering

The Remedial Investigation Report presents the results of the Remedial Investigation (“RI”) of the eastern two-thirds of UMore Park. The study area comprised approximately 3,500 acres and included the GOW powder production lines and ancillary facilities. The RI was conducted to investigate the known and potential releases of hazardous substances and petroleum products associated with both GOW and post-GOW land uses.



The RI investigated 71 Sites of Concern (“SOCs”) that were identified through the Phase I Environmental Site Assessment (Barr Engineering, 2011) and prior studies. The investigation included the collection of approximately 578 soil samples collected from test trenches, soil borings, surface soil and sewer sampling locations; groundwater monitoring from existing and newly installed monitoring wells; completion of two geophysical investigations; and televising selected reaches of GOW sewers.

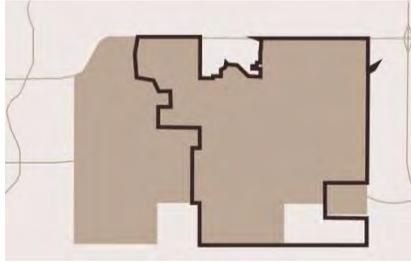
Releases of hazardous substances that resulted in constituent of concern (“COC”) concentrations above MPCA Tier 1 Soil Reference Values for unrestricted site use scenarios (“Tier 1 SRVs”) were identified in 39 of the 71 investigated SOCs. Nitrate+nitrite (as N), which was detected in shallow groundwater above drinking water standards at and upgradient of the project area, is attributed to regional agricultural land use. The results of the RI provide sufficient detail for the University to identify significant data gaps for the investigated SOCs and develop conceptual response action strategies to address identified releases.

The RI findings will be used to determine the future additional investigations and response actions that are necessary to protect public health and the environment and inform future use of the property. All future investigation and cleanup activities will be conducted with MPCA Superfund and/or Brownfields Program oversight, and will be based on the planned use of the property.

The report can be reviewed at:

<http://www.umorepark.umn.edu/planning/SelectPublications/2012finalrireport/index.htm>

ii) April 2011 - Phase I Environmental Site Assessment, UMore East, Dakota County, Minnesota – Barr Engineering



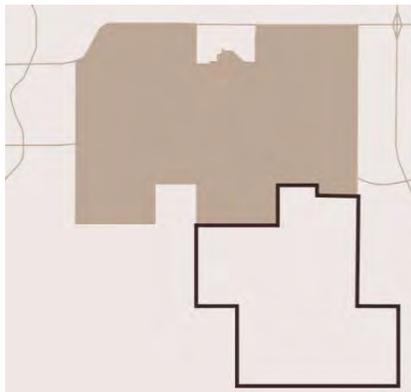
The purpose of the Phase I Environmental Site Assessment was to identify recognized environmental conditions (“RECs”) on approximately 3,175 acres of UMore Park. The Phase I ESA revealed no evidence of RECs in connection with the subject property, except for the following:

- Releases at George’s Used Equipment, Porter Machine and Electric, U.S. Transformer and former Burn Pit sites (i.e., the UMRRRC Site);
- Presence of Asbestos Containing Building Materials on the ground near some GOW structures in former powder manufacturing and processing areas;
- Documented releases associated with the GOW construction, use, or decommissioning/demolition activities and identified post-GOW activities;
- Potential releases associated with GOW construction, use, or decommissioning/demolition activities and the identified post-GOW activities;
- Documented presence of cannon powder after GOW decommissioning;
- Suspected or known improper waste disposal; and
- Potential releases of arsenic in GOW powder production areas from possible past use of arsenic-containing pesticides.

The report can be reviewed at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_338076.pdf

iii) December 2010 – Phase I Environmental Site Assessment, Vermillion Highlands Property, Dakota County, MN – Barr Engineering



The purpose of the Phase I Environmental Site Assessment was to identify RECs on approximately 2,840 acres of the Vermillion Highlands Property, located adjacent and to the south of UMore Park. The Phase I ESA revealed no evidence of RECs in connection with the property, except for the following:

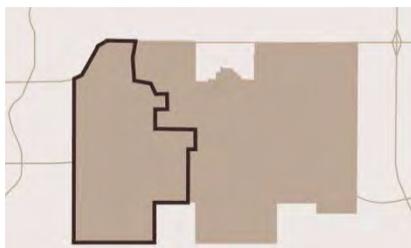
- Documented past releases of smokeless gunpowder at identified finished powder shipping houses, rifle powder blending tower and packing house;
- Waste disposal at the “M” Street/Coates Dump and potential waste disposal at the Northern 1945 Disturbed Area;

- Presence of Asbestos-Containing Building Materials on the ground in the vicinity of the powder screening houses, shaker sieve houses, rifle blending tower and packing house;
- Potential improper waste disposal at the Dole Explosives site;
- Past application of sewage sludge at the Sewage Sludge Application Research Site;
- Suspected spillage of petroleum products from the above ground storage tank at the Forage Hill site;
- GOW-era wastewater discharge to the GOW drainage ditch;
- Former operations of the law enforcement agencies shooting range resulting in lead impacts to soil; and
- Fugitive battery disposal at the abandoned Ohmann Farm.

The report can be reviewed at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_338072.pdf

iv) October 2010 – UMore Park Sand and Gravel Resources Project Final EIS Report – SEH



The University of Minnesota prepared a Final Environmental Impact Statement (“EIS”) for the establishment of new aggregate mines and ancillary operations on approximately 1,722 acres of the UMore Park property. The area is known as the UMore Mining Area (“UMA”). Prior to the preparation of the Final EIS, a Draft EIS, a Scoping

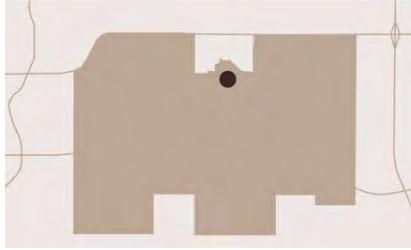
Decision Document and a companion Scoping Environmental Assessment Worksheet were prepared. The Draft EIS was prepared and distributed to the Environmental Quality Board (“EQB”) as well as other local and regional units of government, agencies and interest groups.

The alternatives evaluated in the Final EIS included the Build (mining and ancillary uses on the UMA) condition and the No-Build condition. Subject areas included, but were not limited to, land use, sensitive resources, surface water quality, groundwater, traffic, air quality, visual impacts and archaeological, historical and architectural resources. The Final EIS includes a summary of mitigation measures to address potential impacts. The Record of Decision for the EIS was issued in November of 2010.

The report can be reviewed at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_338066.pdf

v) **August 2010 – Technical Memorandum – Preliminary Investigation, Naval Intelligence Reserve Center Gun Ranges – Barr Engineering**



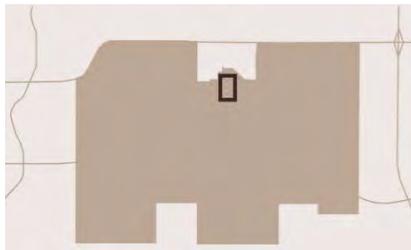
A Preliminary Investigation was conducted of the former skeet shooting range, trap shooting range and firing range at the former Naval Intelligence Reserve Center (“NIRC”). The gun ranges were constructed for recreational uses for Navy personnel stationed at the NIRC. Approximately 110 soil samples were collected and analyzed. The

results of the investigation found that the use of the NIRC firing range did not significantly affect soil quality in the investigation area. The detected lead and zinc concentrations in the soil were below Tier 1 SRVs for residential land use. Five of the 110 samples had arsenic concentrations between 9.2 mg/kg and 13 mg/kg, which were slightly above the Tier 1 SRV of 9.0 mg/kg.

The report can be reviewed at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_338063.pdf

vi) **August 2010 – Environmental Baseline Survey, Naval Intelligence Reserve Command (Post-demolition) – Versar**



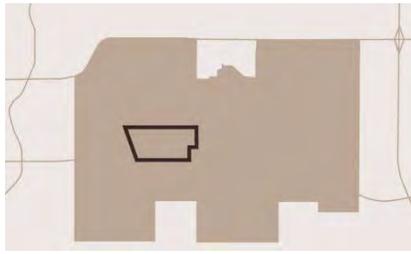
An Environmental Baseline Survey (“EBS”) of the Naval Intelligence Reserve Command was performed in July of 2010. Based on observations and reviewed data, all areas on the subject property were judged to have no storage, release, or disposal of hazardous substances or petroleum products or their derivatives, including no migration of these substances from adjacent areas,

with six exceptions. Further, Asbestos-Containing Building Materials were found in 6 former buildings including caulk, sealant, mastic, vinyl flooring, Transite and thermal system insulation. Lead-based paint was found in 10 former buildings. Polycyclic biphenols were detected in the soil adjacent to a transformer and disposed in a Subtitle D landfill. According to the Navy, all structures and environmental issues noted in the EBS were removed from the property and cleaned to regulatory limits promulgated by the MPCA or as established/recommended by U.S. EPA as of August 2010. The EBS recommended no further action.

The report can be reviewed at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_337951.pdf

vii) May 2010 – Technical Memorandum – Preliminary Subsurface Investigation Results, Ancillary Use Facility, UMore Mining Area – Barr Engineering

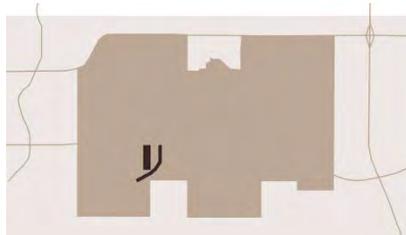


A Preliminary Subsurface Investigation (“PSI”) was conducted at the Ancillary Use Facility (“AUF”) located at UMore Park. Nineteen test trenches were excavated in six areas of potential concern. No evidence of a release of a hazardous substance or petroleum products or the presence of dump materials was identified during the PSI.

The report can be reviewed at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_338059.pdf

viii) January 2010 - Supplemental Site Inspection (SOC 4) / Remedial Investigation (SOC 5) Report – Barr Engineering

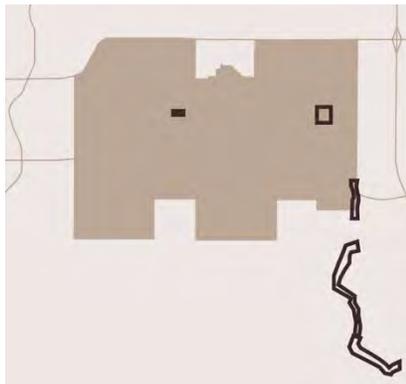


As part of the Draft Environmental Impact Statement (“DEIS”) for proposed mining operations at the UMore Mining Area (“UMA”), sites of concern (“SOCs”) were investigated at the Former DNT Loading Platform and Drainage Ditch (SOC 4) and at the Central Services Station/former DNT Storage Bunkers (SOC5). The Supplemental Site Inspection and Remedial Investigation were designed to evaluate the nature and extent of hazardous substances or petroleum products in SOCs 4 and 5 that were released during or after the operation of the GOW.

The results of the investigation are detailed in the full report which can be found at:

<http://conservancy.umn.edu/bitstream/91608/11/SSI-RIreport UMA 011210 Report.pdf>

ix) December 2009 – Final Expanded Site Inspection Report – U.S. Army Corps of Engineers – Omaha District



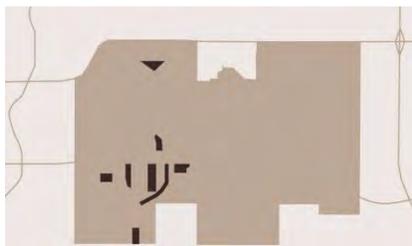
Tidewater, Inc. prepared a Final Expanded Site Inspection (“ESI”) Report for the United States Army Corps of Engineers (“USACE”). The purpose of the ESI was to expand on the existing Focused Site Inspection data set (USACE, 2009) to further define boundaries of certain GOW-related Areas of Concern (“AOCs”) and to provide a higher level of confidence with risk assessment decision-making. Based on the results of the ESI and associated risk assessments, hazardous substances have been

released, impacting the groundwater, surface water, soil and sediment in the study area. These releases occurred as a result of activities performed in the AOCs, and present potential risks to human health and/or the environment. A summary of the conclusions of the risk assessments is provided in the ESI.

The report can be reviewed at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_338057.pdf

x) November 2009 – Phase II Investigation Report, Sites of Concern 1 – 3 and 6 – 8 – Barr Engineering



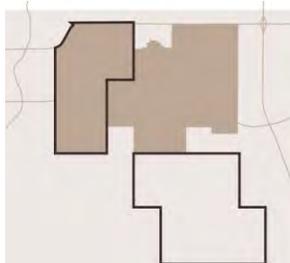
A Phase II Investigation was conducted to determine whether historical activities at six Sites of Concern (“SOCs”) identified in the UMore Mining Area resulted in releases of hazardous substances or petroleum products to the environment. A total of 66 test trenches, 15 direct-push soil borings, and 14 surface sampling locations were evaluated. No incidental odors, discoloration, or elevated headspace measurements indicative of a past release of hazardous substances or petroleum products were encountered during the field investigation. Forty-six soil samples and 10 groundwater samples were also collected and analyzed. Sampling results that slightly exceeded health risk-based regulatory screening criteria included semi-volatile organic compounds (“SVOCs”) were detected in one soil sample, arsenic was detected in two soil samples, and nitrate+nitrite was found in one groundwater sample. Additional investigation was recommended to further evaluate SVOC concentrations.

Asbestos Containing Building Material (“ACBM”) was encountered during the investigation at the ground surface in locations identified in the Phase II ESA Report. The University reported the presence of ACBM to the MPCA and coordinated ACBM abatement in accordance with the University’s Emission Control Plan.

The report can be reviewed at:

<http://www.umorepark.umn.edu/planning/SelectPublications/2009phaseiisocs/index.htm>

xi) March 2009 - Final Focused Site Inspection Report – Former Gopher Ordnance Works – United States Army Corps of Engineers – Omaha District



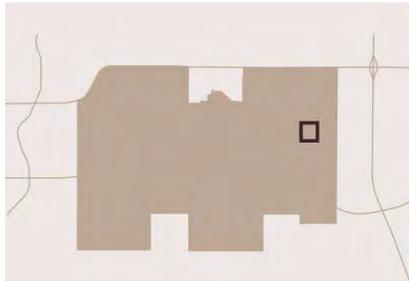
The Final Focused Site Inspection Report (“Focused SI”) summarizes the results of the field and laboratory work described in the July 2007 Final Sampling and Analysis Plan for the seven AOCs at the Former Gopher Ordnance Works site located in Rosemount, Minnesota. The field portion of the Focused SI included a land survey of AOC7, sampling for the media of concern in the AOCs and background sampling for

chemicals. Analytical samples were sent to Seven Trent Laboratories for chemical analysis. The Focused SI also included a risk screening-level Human Health Risk Assessment and screening-level Ecological Risk Assessment.

Based on the results of the field work and the screening-level Risk Assessments, potential hazardous substances were found to have been released impacting the groundwater, surface water, soil and sediment. These releases occurred as a result of activities performed in AOCs and there exist potential risks to human health and/or the environment. Conclusions of the screening-level Risk Assessments are provided in the full report which is available at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_337969.pdf

xii) March 2009 - Limited Preliminary Assessment Report – Final – Steam Plant & Associated 26.7 Acres and Segments B, C, and D – former Gopher Ordnance Works – Rosemount, MN – U. S. Army Corps of Engineers – Omaha District



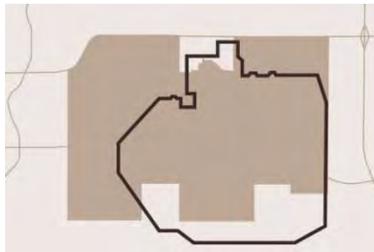
A Limited Preliminary Assessment was conducted to collect information to determine if further investigation at the Steam Plant and the associated 26.7 acres surrounding the property was warranted. The USACE-Omaha District conducted site reconnaissance in July 2005 and designated the Steam Plant as a DERP-FUDS eligible AOC in August 2006.

The Limited Preliminary Assessment recommended a Site Inspection project for AOC7. The purpose of the Site Inspection was not only to characterize the contaminants of concern in the Steam Plant property but to accurately locate the precise boundaries of the 26.7 acre parcel of property transferred from the Government to the Regents of the University of Minnesota in March 1961. This study recommended that further environmental research be conducted and proposed that a Site Investigation (SI) be performed on the Steam Plant and associated 26.7 acres.

The full report is available at:

http://www.umorepark.umn.edu/prod/groups/ssrd/@pub/@ssrd/@umorepark/documents/article/ssrd_article_337973.pdf

xiii) October 2006 – Concrete and Soil Assessment, UMore Park – Peer Engineering



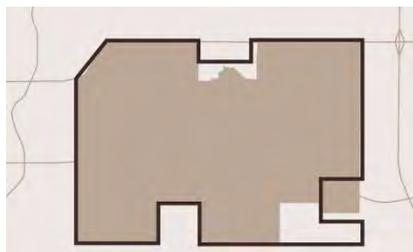
The Concrete and Soil Assessment was performed to: (1) quantify by volume, and assess remnant concrete GOW building foundations and walls; (2) determine possible alternatives for reuse, reconditioning and/or disposal of the concrete; and (3) evaluate the environmental condition of soils adjacent to and/or in contact with the remnant concrete foundations.

Based on the concrete and soil sampling conducted as part of the Concrete and Soil Assessment, approximately 70% of the concrete remnants/structures at UMore Park are suitable for reuse without mitigation. Mitigation will be required for the remainder of the remnants/structures where the concrete is impacted or potentially impacted with asbestos and/or other hazardous materials, to allow reuse of the material.

The report can be reviewed at:

<http://www.umorepark.umn.edu/planning/SelectPublications/csa/index.htm>

xiv) July 2006 – Phase I Environmental Site Assessment, UMore Park – Peer Engineering



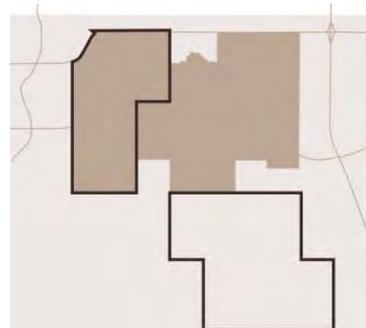
The Phase I Environmental Assessment (“Phase I ESA”) was conducted to identify Recognized Environmental Conditions (“RECs”) associated with UMore Park. The Phase I ESA revealed on-site RECs, which indicate that there are existing, undefined releases of hazardous substances and petroleum products at GOW operational/functional areas

identified in prior studies, and there is a potential for unidentified soil and/or ground water impacts at UMore Park from other GOW operational/functional areas, waste sites identified by Dakota County, and past and/or present University and University tenant property use. A Phase II Environmental Site Assessment was recommended to further evaluate these RECs.

The report can be reviewed at:

<http://www.umorepark.umn.edu/planning/SelectPublications/2006phasei/index.htm>

xv) March 2006 – Preliminary Assessment Report, Final Quitclaim Property, Former Gopher Ordnance Works, UMore Park – U.S. Army Corps of Engineers – Omaha District

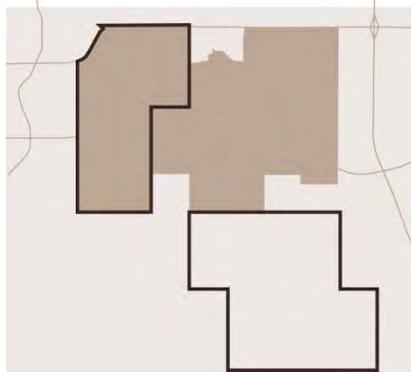


The Preliminary Assessment was undertaken by USACE as part of the Formerly Used Defense Sites (“FUDS”) Program. The purpose of the Preliminary Assessment was to collect information to determine if further investigation of the former GOW was warranted. The study area included land transferred to the University in 1947, as well as lands returned to private ownership after World War II. In the Preliminary Assessment, USACE identified six Areas of Concern (“AOCs”) related to GOW, and recommended that further investigation be completed in those areas.

The report can be reviewed at:

<http://www.umorepark.umn.edu/planning/SelectPublications/2006fgowassess/index.htm>

xvi) August 2003 – Preliminary Environmental Investigation, Former Gopher Ordnance Works, UMore Park – Peer Engineering



In 2002, the University, MPCA and Dakota County jointly funded a Preliminary Investigation of the former GOW. Peer Engineering reviewed readily available historical information regarding the GOW, including aerial photography, contemporaneous GOW, and documents past environmental studies. Based on the review, Peer identified a number of former GOW operation areas with potential for environmental impacts. Dakota County staff also completed detailed information review as well as site visits and historical aerial photograph review. Information

from the aerial photograph review was mapped using GIS to allow for easy identification of locations in the field. Based on the results of the information review and subsequent discussions between the MPCA, the University and Dakota County, six GOW operational areas were tagged for initial investigation. They included the Oleum Plant, the Nitric Acid Plant, the Burning Grounds, the Waste Water Treatment Plant, the Maintenance Shops and the Primary Settling Basin. Findings from the Preliminary Investigation indicated that hazardous substances were released as a result of GOW construction, operation and demolition.

The report can be reviewed at:

<http://www.umorepark.umn.edu/planning/SelectPublications/2003prelimgowinvest/index.htm>

10) COVER TYPES

Provide a cover type map and overlay map showing anticipated development.

To assess cover types on the UMore Park property, data was obtained from the Minnesota Land Cover Classification System (MLCCS). The data is based on a combination of aerial photograph review and on-the-ground verification of cover types (see **Figure 10-1**). The MLCCS data was translated into the Land Cover Types shown in **Table 10-1** in order to be consistent with the classifications used in the UMore Park Sand and Gravel Resources Final Environmental Impact Statement. The proposed mining operations addressed in the EIS in the western portion of the property will substantially modify the current landscape. Accordingly, the post mining landscape pattern which includes cropland and open water has been used to depict overall site cover types.

Table 10-1. Land Cover

Land Cover	Acres
Bare Ground	27.14
Brushland/Grassland with Sparse Trees	850.35
Cropland	2,521.35
Forest - Plantation	66.94
Forest - Woodland	230.44
Herbaceous/Shrub Wetland	0.93
Impervious < 25% with Vegetation	73.38
Impervious > 25%	46.29
Native Shrubland	5.53
Non-native Grassland	824.14
Non-native Shrubland	0.00
Open Water	259.16
Wetland	16.73
TOTAL	4,922.39

Figures 10-2, 10-3, and 10-4 show Concept Plans 1 through 3 with post mining reclamation cover types as a map overlay. The resulting impacts on land cover types are almost identical on all of the three concepts. Open space corridors that are integral to the future development pattern have been identified based on natural resource data. Accordingly, almost all of the existing wetlands, forest areas, and substantial areas of herbaceous cover lie within open space corridors are intended to be preserved.

11) FISH, WILDLIFE, AND ECOLOGICALLY SENSITIVE RESOURCES

- a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

- b. Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities on or near the site? Yes No
 If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the DNR Natural Heritage and Nongame Research program has been contacted give the correspondence reference number: ERDB 20060789 . Describe measures to minimize or avoid adverse impacts.

i) Existing Conditions

The existing fish, wildlife, and ecologically sensitive resources have been analyzed based on previous studies, historical aerial photos, information from the DNR, and a site visit during July 2012. In addition, a separate environmental review was completed for the western-most third of the UMore site where sand and gravel mining are anticipated to occur. A separate Environmental Impact Statement (EIS) was completed for the mining project (University of

Minnesota, 2010). For purposes of this AUAR, the post-mining conditions land use was used as the existing conditions for this analysis. The habitat on site is described below.

- **Wetlands:** Based on the National Wetlands Inventory database and the post-mining conditions, the existing site contains approximately 17 acres of wetland. All of the wetlands appear to be isolated and not connected to other water resources. No DNR Public Waters are located within the site. Most of the wetlands within the UMore site are located on agricultural land and are likely drained or highly degraded, but still may provide some habitat for species accustomed to disturbance. In the post-gravel mining existing conditions, there will be a large (260 acre) open water body present in the western portion of the site as shown on **Figure 10-1**. **Figure 11-1** shows the National Wetlands Inventory within the study area.
- **Forest and Woodland Communities:** Based on the Dakota County Minnesota Land Cover Classification System (MLCCS), approximately 296 acres of forest or woodland communities exist on the site. Many of these wooded areas are planted and serve as wind breaks between buildings or tree lines between agricultural fields. Many of the forests contain green ash, boxelder, cottonwood, and mixed conifers but are disturbed and of low quality, with invasive species such as buckthorn growing throughout the understory. An oak woodland of slightly higher quality is located in the northeast corner of the UMore site. This woodland is also listed in the Department of Natural Resources Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance database (**Figure 11-1**), although it is described as being below the minimum biodiversity significance threshold.
- **Grassland/Shrubland:** Based on the Dakota County MLCCS and the July 2012 site visit, approximately 855 acres of grassland and mixed shrubland exist within the site. The grassland areas are primarily dominated by non-native species, such as smooth brome. While many of these areas are fragmented by agricultural land, larger tracts of grassland and mixed shrubland exist near the center of the site, in the footprint of the former Gopher Ordnance Works site. Wildlife observed during the site visit included American goldfinch, American crow, chipping sparrow, mourning dove, various species of warblers, turkeys, and tree frogs. Various signs of larger species of wildlife, such as deer, were also visible throughout the grassland areas.
- **Agricultural Areas:** Based on the Dakota County MLCCS and the July 2012 site visit, approximately 2,520 acres of agricultural land exists within the site. This agricultural activity is located throughout most of the western and southern portions of the site, with various smaller fields located in the eastern and northern areas. Much of the area that is now under agricultural production has been since the early 1900s. The agricultural areas are expected to provide little habitat, except for resting areas during bird migration. The area provides limited cover with an occasional and monotypic food source. The regular farming operations result in wildlife at the site that are accustomed to frequent disturbance.
- **Rare Features/Endangered Species:** A review of the DNR-licensed Natural Heritage Information System (NHIS; License # LA-579; ERDB 20120373) revealed that two rare

features, the Blanding's turtle and the loggerhead shrike (*Lanius ludovicianus*) were documented near or within the UMore site. The correspondence with the DNR is included in Appendix B.

The DNR has no record of the turtles within the study area, but they have been reported in the vicinity of the site and the DNR indicated the site could also contain turtles if suitable habitat exists. Blanding's turtles are a state-listed threatened species and require both wetland and upland habitats to complete their lifecycle. They can also travel up to and over a mile from wetlands. The DNR's review states that the site contains several wetlands. However, of the nearly 5,000 acres, approximately 17 acres are wetland. Based on this, it seems that the project area is not ideal for turtles.

Information from the DNR also indicates that loggerhead shrike, a state-listed threatened bird species that prefers dry upland prairie or open grassland with scattered hedgerows, shrubs, and small trees, were observed in the area during breeding season. Given the presence of grassland and shrubland areas scattered throughout agricultural land and the adjoining trees associated with the windbreaks within the study area, this area could be suitable for loggerhead shrike. Potential impacts to loggerhead shrike were also documented in the UMore Park Sand and Gravel Resources EIS (2010). The EIS concluded that given the lack of open grassland, suitable nesting trees, and limited hunting perches, the habitat within the proposed mining area (the western portion of the size encompassing 1,700 acres) was not suitable to loggerhead shrike. Additionally, a loggerhead shrike survey (Barr, 2010) was completed in the eastern side of the study area as part of the environmental review in that area for the University of Minnesota's wind turbine project. No shrikes or evidence of shrikes were identified in the area.

The US Fish and Wildlife Service was also consulted regarding federally threatened and endangered species via their online Section 7 Consultation process. Based on this consultation, two federally-listed species occur within Dakota County. These species are summarized below.

- Higgins eye pearl mussel (*Lampsilis higginsii*), a federally endangered species, is found within the Mississippi River. Mussels can be affected by changes in water flow or water quality. The Higgins eye pearl mussel is also a state listed endangered species, but was not documented within the UMore site.
- Prairie bush clover (*Lespedeza leptostachya*) is a federally threatened species which grows in native prairies on well-drained soils. Prairie bush clover is also a state listed threatened species, but was not documented within the UMore site.

The Department of Natural Resources (DNR) Central Region's Regionally Significant Ecological Areas (RSEA) database, DNR's MCBS Sites of Biodiversity Significance, and the DNR publication "Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife" were reviewed for occurrences of features within the UMore site. These features are summarized below.

- Regionally Significant Ecological Areas: In 2003, the Minnesota DNR conducted a landscape-scale assessment of the seven-county metro area to identify ecologically significant terrestrial and wetland areas. This resulted in the Regionally Significant Ecological Areas (RSEA) mapping for the Twin Cities area. This assessment was based on LandSat data and aerial photo interpretation of grassland. In 2008, the DNR updated the assessment using MLCCS data. The RSEA gives rankings between 1 (lowest) to 3 (highest). Five sites identified within the UMore site had a ranking of 1. A sixth site, bordering the north-central portion of the site, was given a ranking of 2. These RSEA areas are on the western portion of the Dakota County Technical College (DCTC) as well as the central portion of the study area. These areas have either already been developed (as is the case with DCTC) or contain areas where the former Gopher Ordnance Works (GOW) was located and some remnants of the GOW still remain in portions of this area. Based on a field review of the RSEA areas, they either contained developed land, have previously been disturbed, or contain remnants of the GOW. Additionally, some of these areas have been altered since the RSEA data was compiled as noted on **Figure 11-1**.
- Minnesota County Biological Survey: The DNR's MCBS Sites of Biodiversity Significance database identifies plant communities that are considered significant at a statewide level. Factors taken into account include the number of rare species documented within a site, the quality of the native plant communities, the size of the site, and the context of the site within the landscape. Sites are given a ranking of Outstanding, High, Moderate, and Below. One MCBS Site of Biodiversity Significance, an oak woodland, was identified within the UMore site (**Figure 11-1**). This site was given a ranking of "Below". A ranking of "Below" means that the site does not meet the minimum biodiversity threshold for statewide significance, but still may have conservation value at a local level.
- "Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife": This document outlines Species of Greatest Conservation Need and Habitat of Greatest Conservation Need. Oak Savanna habitat and upland deciduous forest is noted within this publication. The oak woodland identified in by the MCBS is in this category.
- Surrounding Resources: The land that borders the UMore site to the north, east, and west consists mainly of agricultural land use with some urban/residential uses to the northwest, where the City of Rosemount is located. The land that borders the UMore site to the southwest is also mainly agricultural, with some MCBS Site of Biodiversity Significance and RSEA sites located further south. In general, these sites are of higher quality than those located within the UMore site.

To the southeast, the Vermillion Highlands Research, Recreation, and Wildlife Management Area borders the UMore site. This area is over 2,800 acres in size and is managed by the DNR and University of Minnesota to provide recreation opportunities for the public and research opportunities for the University. A few MCBS Sites of Biodiversity Significance and RESAs are located within the WMA, although these are of lesser quality

than those areas located to the west. Through the joint management and planning by the University of Minnesota and DNR, proposed master plans have been developed that include buffers between the UMore study area and Vermillion Highlands. These buffers are reflected in the land use scenarios for UMore. More information about Vermillion Highlands and the master planning of this area can be found at <http://www.vermillionhighlands.umn.edu/about/index.htm>.

- Rosemount Natural Area Identification
The City of Rosemount developed a Natural Area Identification map (**Figure 11-2**). Some of the land within the study area is identified on this map as highest priority, lower priority, and the Mississippi River Greenway. Most of the area that is identified on the map is ranked as a lower priority.

Scenario 1

This scenario allows for a population of approximately 35,000 people and employment for approximately 18,000. Agricultural land uses would be removed and replaced with low, medium, and high density residential areas, office/business parks, and light industrial.

With this scenario, approximately 940 acres of open space and 260 acres of open water would remain. The open space would be located throughout the UMore site, and would create habitat corridors for wildlife from north to south as well as west to east. Much of the land that borders the Vermillion Highlands WMA would remain as open space as well. The 260 acres of open water space would be located in the west and southwest portion of the UMore site, in an area that is anticipated to be mined in the interim. Any impacts as a result of this potential mining operation has been documented in the EIS dated October 2010. This open water area would be surrounded by green space and provide recreational opportunities for the public as well as wildlife habitat. The area of biodiversity significance in the northeast corner would not be impacted. Various portions of the RSEAs would remain as open space as well depending on the need to conduct contamination remediation in the area (see **Section 9** of the AUAR for discussion on pollutants and past land uses). Based on state and federal requirements, the wetlands would likely remain intact with some anticipated impact and resulting mitigation. There would be opportunities to create habitat with storm water management requirements as part of development. The main wildlife habitat impact from these scenarios would be the potential reduction in loggerhead shrike habitat, a state-listed threatened species, if mitigation is not provided.

Scenario 2

This scenario allows for a population of approximately 25,000 people and employment for approximately 18,000. Similar to Scenario 1, agricultural land uses will be replaced with low, medium, and high density residential areas, office/business parks, and light industrial. The overall land cover will be identical to Scenario 1, with the difference being in population density. The area of biodiversity significance in the northeast corner would not be impacted with this scenario. Various portions of the RSEAs would remain as open space as well, depending on the need to conduct contamination remediation in the area (see **Section 9** of the AUAR for discussion on pollutants and past land uses). Based on state and federal requirements, the wetlands would likely remain intact with some anticipated impact and resulting mitigation. There would be opportunities to create habitat with storm water

management requirements as part of development. Again, the main wildlife habitat impact from these scenarios would be the potential reduction in loggerhead shrike habitat if mitigation is not provided.

Scenario 3

This scenario allows for a population of approximately 31,000 people and employment for approximately 24,000. Again, the agricultural land uses would be removed and replaced with low, medium, and high density residential areas, office/business parks, and light industrial.

Compared with Scenarios 1 and 2, this scenario would create more office/business park and light industrial space. The amount and location of green space and open water would remain the same as outlined in Scenarios 1 and 2. Again, similar to the first two scenarios, the area of biodiversity significance in the northeast corner would not be impacted and various portions of the RSEAs would remain as open space as well depending on the need to conduct contamination remediation in the area (see **Section 9** of the AUAR for discussion on pollutants and past land uses). Based on state and federal requirements, the wetlands would likely remain intact with some anticipated impact and resulting mitigation. There would be opportunities to create habitat with storm water management requirements as part of development. The main wildlife habitat impact from these scenarios would be the potential reduction in loggerhead shrike habitat if mitigation is not provided.

Scenario 4

Scenario 4 calls for the UMore site remaining under the current comprehensive plans of both the City of Rosemount and Empire Township. Rosemount's plan categorizes the UMore site as Agricultural Research and states, "This land use designation is used solely for the UMore Park Property that is owned and operated by the University of Minnesota. It is anticipated that, after the UMore Park Master Plan is created and adopted, a major Comprehensive Plan amendment will be conducted to re-designate the land to its appropriate land use category."

The Empire Township Comprehensive Plan categorizes the UMore Park property as University of MN (UMORE) and is also designated as being in a Mining Overlay Area. The plan states, "The University of Minnesota Outreach, Research and Education Park (UMore Park) consisted of nearly 4,530 acres in Empire Township. Approximately 2,830 acres of land has become part of the Vermillion Highlands Wildlife Management Area (WMA) jointly operated by the University and the DNR for agricultural research and WMA usage. The remaining 1,700 acres of UMore Park is being planned for mineral extraction and eventual urbanization. The University has completed a two-year long study of potential urban uses in Empire and the City of Rosemount (additional 2900 acres). The UMore Property in Empire is also included in the Mineral Extraction Overlay area."

Based on these comprehensive plans, land cover under Scenario 4 would generally remain in its existing state, with the possible exception of the area within Empire Township that is designated as being in the Mining Overlay Area. Any potential ecological resource impacts as a result of mining, and potential mitigation measures, were discussed in the EIS completed in October 2010. With regard to the remaining areas of the UMore site, because land use would not change substantially, there would not likely be any impacts to ecological resources.

B. Fish, Wildlife, and Ecologically Sensitive Resources Mitigation Plan

The following mitigation measures will be employed for Scenarios 1-3:

- Wetlands will need to be delineated in conformance with the Wetland Conservation Act as part of the development process. Depending on the location of the wetlands, either the City of Rosemount or Empire Township will review and verify the wetland delineation.
- Wetland impact is anticipated to be minimized to the maximum extent practical and feasible throughout the review area. If wetland impacts are proposed, wetland mitigation will be required of the project proposer pursuant to current wetland regulations and City or Township requirements.
- The City of Rosemount and Empire Township require buffers around wetlands at a width dependent upon the wetland's management classification, per their respective ordinances.
- Storm water management features should incorporate native plantings of grasses, trees, and shrubs.
- A loggerhead shrike survey is recommended by the DNR as part of a development project if disturbance would be planned during the nesting season (nesting season is generally April through July). The DNR will need to be contacted before any survey work is completed.
- While ideally suited habitat for Blanding's turtles is not apparent within the study area, they have been noted near the study area and some habitat in the area could be marginally suitable. Development projects should take into consideration the use of oversized culverts, surmountable curbs, and revegetation with native species.
- Development plans for the northeastern corner of the site will consider incorporating the oak woodland that has been identified on the County Biological Survey as open space to protect or enhance this habitat to the extent practical.
- Development plans will consider incorporating the existing or remaining wildlife habitat areas within the Regionally Significant Ecological Areas (RSEA) and other areas within the site as open space to the extent practical. However, depending on environmental remediation that may be required, disturbance of these areas may be necessary.
- Tree removal within the study area that occurs as part of development will need to meet the requirements of the City's or Township's Tree Preservation Ordinance.

12) PHYSICAL IMPACTS ON WATER RESOURCES

Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch? Yes No

If yes, identify water resource affected. Describe alternatives considered and proposed mitigation measures to minimize impacts. Give the DNR Protected Waters Inventory (PWI) number(s) if the water resources affected are on the PWI.

There are very few wetland resources within the study area (17 acres within the 5,000 acre study area). There are no DNR Public Waters within the study area. No specific development plans have been developed for the study area. Both state and federal wetland regulations require avoidance and minimization of wetland impact. However, with anticipated infrastructure needed to serve the study area such as roads and utilities, it is anticipated some wetland impact would occur.

Wetland impact would be subject to State regulations through the Wetland Conservation Act (WCA). Additionally, any impacts within the City of Rosemount would be subject to the City's Wetland Management Plan. Impacts could also be regulated by the US Corps of Engineers through Section 404 of the Clean Water Act. Wetland impact would need to be avoided and minimized to the greatest extent practical.

13) WATER USE

Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? Yes No

If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

A. Existing Conditions

Currently, private wells within the study area serve the agricultural, residential, irrigation, commercial and public water use needs. According to a review of the County Well Index, the study area contains some domestic use private wells utilized for potable water. There could be other existing residences in the study area that have private wells, however, no information is available regarding additional private wells beyond those listed on the County Well Index. The wells on the County Well Index are shown on **Figure 13-1**.

Recent ground water modeling has defined the 10 year time of travel for source wellheads for wells to determine the Drinking Water Supply Management Area (DWSMA) within the City of Rosemount. The DWSMA is within a portion of the study area and was established as a part of the City's current Wellhead Protection Program as shown in **Figure 13-2**.

The geology of the City's existing wells is consistent with other communities in the Twin Cities Metro Area. The Paleozoic sedimentary rocks around the Twin Cities Metro area have three primary aquifers (in descending order): the Prairie du Chien–Jordan, the Franconian-Ironton-Galesville (FIG), and the Mt. Simon-Hinckley. Each of these is separated by a confining layer that essentially separates the aquifers.

The deepest of the three aquifers is the Mt. Simon-Hinckley. There are no geologic factors that would limit the City's use of this aquifer. However, Minnesota Statute 103G.271 Subd 4a prohibits the issuance of permits to appropriate water from this aquifer in the Metro area unless there are no feasible alternative to this source. Therefore, this aquifer is not an option for future use in Rosemount at this time.

The second deepest aquifer available to Rosemount is the Franconia- Ironton- Galesville, or FIG. Due to poor water quality and low water yield, the FIG is not commonly used in the south Metro area. The yield of a new FIG well in Rosemount would be estimated in the 200-500 gallons per minute (gpm) range. The FIG recharges slowly, and water does not move through the aquifer very efficiently resulting in limited well capacity and excessive drawdown. This can cause unanticipated well problems when adding new wells in the FIG, with the new wells frequently failing to meet production expectations and old wells decreasing in productivity. This does not preclude any FIG wells, but indicates well production expectations must be modest and the risks must be understood.

The Prairie du Chien – Jordan aquifer is the highest yielding aquifer in the Metro. Although these formations have different names and are geological different the two units have been shown to be hydraulically connected. The Prairie du Chien – Jordan aquifer is present over most of the City except for a southeast-northwest trending bedrock valley that is present along the northern portion of the City, generally located from 1 to 3 miles north of Dakota County Rd. 42. Unfortunately, in this area of the City where the bedrock valley is present, a continuous layer of water-bearing Prairie du Chien – Jordan bedrock is absent which limits the usefulness of the aquifer by the City. Despite limitations, Prairie du Chien – Jordan wells are optimal because they generally produce five to ten times more water per foot of drawdown than FIG wells. All of Rosemount's existing operational wells are located in the Jordan aquifer, which underlies the Prairie du Chien, and all future wells are anticipated to be in the Jordan aquifer also.

Existing and future demands for the entire City have been included in the City's Comprehensive Water System Plan (CWP). Future infrastructure needs for the City, encompassing the AUAR study area, were developed in the CWP. As a part of the CWP, well fields were preliminarily located to the north and to the west of the study area. The well field locations were selected due to their proximity to the future water treatment plant sites.

The City's water system is divided into two pressure zones, western and eastern, and is connected through a pressure reducing valve (PRV). The western pressure zone is the higher elevation zone, and is able to serve the entire study area. There are three water towers in the west pressure zone with an overflow elevation of 1,105.00 feet and there is one tower in the east pressure zone with an overflow elevation of 1,050.00 feet. Service to future development outside the study area has been addressed in the CWP.

The water system currently has eight wells, two in the eastern zone and six in the western. Well capacities range from 400 gpm to 1,600 gpm with a system firm capacity (assumes the largest well out of service) of 6500 gpm and a western zone system firm capacity of 5,700 gpm. Two wells are located in the eastern pressure zone with a capacity of 400 gpm each.

The western zone is the high elevation zone, so wells in the western pressure zone can serve either pressure zone, since pressure is reduced through the PRV for the eastern pressure zone. The eastern wells are designed to serve the eastern zone only, but could supply water at very low pressure to the western zone during an emergency situation. The PRV separating the two systems allows for each system to be supplied from either the eastern or western wells, but water typically flows from the western pressure zone to the eastern.

Well firm capacity should meet or exceed maximum day demands. Historical water usage for the City has indicated average water use of 95 gallons per capita per day (gpcd) with 3 people/unit for residential units, 800 gallons per acre per day (gpac) for commercial property, and 250 gpac for public/institutional property. Also, historical maximum day to average day ratio (peaking factor) has been approximately 3.0 and is expected to decrease in the future as the City grows and possibly implements water conservation programs as indicated in the CWP. Existing system demands are shown below in **Table 13-1**.

Table 13-1. Existing Average Day Water Usage and Maximum Day Water Usage for Rosemount’s Water System*

Type	Area Served	Number of Units	Population Served	Avg. Day Water Use (GPD)	Maximum Day Water Use (GPD)
Residential	2400	6339	19017	1.81	5.42
Non-Residential	2511	216		0.64	1.91
Total	4911	6555	19017	2.44	7.33

*Based on the City’s Comprehensive Water Plan.

Average day existing water use is estimated to be 2.44 million gallons per day (MGD) (1,696 gpm) and maximum day existing water use is estimated to be 7.33 MGD (5,088 gpm). Since system well firm capacity exceeds the maximum day demand no additional wells are needed at this time.

In Rosemount, when additional water storage is needed with new development, it is paid for by the developer. Water is also treated within the City’s system. Treatment is paid via user water bills proportionate to the user’s water usage.

i) Scenario 1

Development within the study area will be connected to municipal water service in this scenario. Development within the study area consists of residential with varying densities, office and business park, light industrial, and community centers composed of residential land uses with varying densities and commercial land use. **Table 13-2** below summarizes the development plans and population density assumptions to determine the water demand for the study area. As discussed in the existing conditions, it was assumed that current water usage per capita is 95 gpcd. Non-residential demands were estimated based on Metropolitan Council Environmental Service (MCES) sewer availability charge (SAC) criteria. In accordance with MCES’s SAC development criteria,

each SAC unit was based on 14 employees where one SAC unit equals 274 gallons per day (GPD). The assumed maximum day demand to average day demand ratio (peaking factor) is 3.0 based on historic water demands. Future projected water demands for the study area are shown below in **Table 13-2**.

Table 13-2. Future water demand for Scenario 1

Type	Gross Area (ac)	Net Area Served (ac)	Number of Units	Population/ Employees Served	Avg. Day Water Use (GPD)	Maximum Day Water Use (GPD)
Low Density Residential	1014	811	2840	9088	863,366	2,590,097
Low-Med Density Residential	739	591	3548	8516	809,061	2,427,184
Medium Density Residential	465	372	4465	10716	1,018,083	3,054,248
High Density Residential	6	5	113	158	14,934	44,801
<i>Neighborhood Center</i>						
Low-Med Density Residential	19	15	77	185	21,125	63,374
Medium Density Residential	64	51	513	1231	140,326	420,977
High Density Residential	32	26	615	862	81,769	245,306
Retail/Commercial/Office	13	10		447	8,763	26,288
<i>Village Center</i>						
Medium Density Residential	44	35	352	845	96,334	289,002
High Density Residential	50	40	966	1352	128,409	385,227
Retail/Commercial/Office	31	25		1565	30,658	91,975
<i>Community Center</i>						
Medium Density Residential	17	14	137	330	37,562	112,686
High Density Residential	11	9	220	308	29,386	88,157
Retail/Commercial/Office	86	69		2137	41,808	125,425
<i>Regional Center</i>						
Medium Density Residential	8	7	66	158	17,985	53,954
High Density Residential	8	7	158	221	21,029	63,088
Retail/Commercial	148	118		3680	72,044	216,131
<i>Office/Business Park</i>						
Office/Business Park	284	227		8247	161,399	484,198
<i>Light Industrial</i>						
Light Industrial	180	144		2166	42,399	127,196
<i>Open Space</i>						
Open Space	939	939	NA	NA	NA	NA
<i>Open Water</i>						
Open Water	259	259	NA	NA	NA	NA
<i>ROW (Collectors/Arterials)</i>						
ROW (Collectors/Arterials)	492	492	NA	NA	NA	NA
<i>Local Streets/Neighborhood Parks</i>						
Local Streets/Neighborhood Parks		644	NA	NA	NA	NA
Total	4911	4911		52212	3,636,438	10,909,313

Based on the water use associated with Scenario 1, average day water demand is estimated to be 3.64 MGD (2,525 gpm), and maximum day water demand is estimated at 10.91 MGD (7,576 gpm) for the proposed study area. Current average day demand in Rosemount is 2.44 MGD (1,696 gpm) and maximum day demand is 7.33 MGD (5,088 gpm).

Ground elevations in the study area are consistent with existing western pressure zone elevations therefore, the entire study area would be served by the western pressure zone and all demands were calculated as western pressure zone demands. There are significant topography variations within the study area, and a few properties with elevations below 910 feet may require an individual PRV as shown in **Figure 13-3**.

UMore development would result in 3.64 MG of additional storage needs. Current system storage is 3.5 MG. It is recommended that system storage should meet or exceed average day demand based on ten state standards and American Water Works Association (AWWA) recommendations. This development would increase the City's average day demand from approximately 2.44 MGD to 6.0 MGD. Because the CWP anticipated some development, but not that depicted in Scenario 1, an additional 2.5 MG of storage would be needed to serve the entire city upon full development of the study area, and constructed in a location to best serve the entire community. The CWP indicates a 1.5 MG elevated storage tower to be constructed in the western portion of the study area, and ground storage reservoirs to be constructed at the proposed Water Treatment Plant (WTP) locations. Since the WTPs have not yet been constructed, it is assumed water towers would be constructed for storage needs. So, in addition to the 1.5 MG tower planned in the CWP, an additional 1.0 MG elevated tower is proposed to be located in the eastern portion of the study area.

Development of the study area alone would generate a maximum day demand of 10.91 MGD (7,576 gpm) and average day of 3.636 MGD (2,525 gpm). Well firm capacity should meet or exceed maximum day water use, resulting in the need for seven (7) to eight (8) wells to supply the study area. The City's total maximum day demand upon complete development of the study area would be 18.24 MGD (12,664 gpm) and average day of 6.078 MGD (4,221 gpm). As discussed previously, current western zone system well firm capacity is 5,700 gpm. The full development of the study area will require an additional 6,964 gpm of well capacity to be constructed. If individual well capacities are similar to those constructed in the past (1,000 gpm each), then approximately seven (7) wells will be required to serve the entire city upon full development of the study area. The well capacity required to meet the study area demand was located in well fields with locations predetermined in the CWP. Initial water system modeling evaluation indicated the ultimate water system layout included in the CWP did not have capacity to deliver adequate domestic operating pressure. Therefore, two water system design alternatives were reviewed and are described below.

As part of the Rosemount CWP, approximately 2.9 MG of storage and 6 wells were planned to serve the study area. Estimated water demands and resulting supply and

storage necessary to serve development included in Scenario 1 differs from what was planned in the CWP, as shown in **Table 13-3**.

Table 13-3. Comparison of supply and storage included in CWP and Scenario 1.

	Rosemount Area Included in CWP (2007)	Total Study Area Included in Scenario 1	Rosemount Area Included in Scenario 1
Area (Acres)	3107	4911	3107
Average Day Demand (MGD)	2.93	3.64	2.56
Maximum Day Demand (MGD)	8.79	10.91	7.67
Estimated Wells Required	6	7 to 8	5 to 6
Estimated Storage Required (MG)	2.93	3.64	2.56

Alternative 1

This alternative maintained CWP planned well locations. Three wells will be located in the southwestern well field and four wells in the northwestern well field.

Development within the project area will require the construction of trunk water mains. The anticipated trunk water main layout and sizes are shown in **Figure 13-3** (Alt. 1). These trunk mains would outline the proposed study area, and are sized to serve the ultimate Rosemount water system. The pipe network follows the ultimate water system layout included in the CWP, however to supply adequate service, a 16" trunk main and a few 12" trunk mains connecting to the 16" trunk main were added to the northeast corner of the study area. Additional 8" distribution mains that would serve development and interconnect the trunk main loop are not shown. Existing residents will be given the opportunity to connect to the municipal water system.

Alternative 2

In an attempt to maintain pipe sizes and layouts consistent with the ultimate water system layout included in the CWP, this alternative required one well to be located in the study area. Three wells will be located at each the southwest and northwest well fields.

Development within the project area will require the construction of trunk water mains. The anticipated trunk water main layout and sizes are shown in **Figure 13-3** (Alt. 2). These trunk mains would outline the proposed study area, and are sized to serve the ultimate Rosemount water system. Some additional 8" distribution mains that would serve development and interconnect the trunk main loop are not shown.

ii) Scenario 2:

This scenario is similar to Scenario 1. The land use areas are the same as Scenario 1, however the development densities have been decreased. As discussed in the existing conditions, it was assumed that water usage per capita is 95 gpcd. Non-residential demands were estimated based on Metropolitan Council Environmental Service (MCES) sewer availability charge (SAC) criteria. Each SAC unit was based on 14 employees where one SAC unit equals 274 gallons per day (GPD). The assumed maximum day demand to

average day demand ratio (peaking factor) is 3.0 based on historic water demands. **Table 13-4** shows the projected future water demands for Scenario 2.

Table 13-4. Future water demands for Scenario 2

Type	Gross Area (ac)	Net Area Served (ac)	Number of Units	Population/ Employees Served	Avg. Day Water Use (GPD)	Maximum Day Water Use (GPD)
Low Density Residential	1014	811	1826	5842	554,990	1,664,970
Low-Med Density Residential	739	591	2809	6742	640,490	1,921,470
Medium Density Residential	465	372	3349	8037	763,515	2,290,545
High Density Residential	6	5	85	118	11,153	33,459
Neighborhood Center						
Low-Med Density Residential	19	15	73	175	16,625	49,875
Medium Density Residential	64	51	462	1108	105,260	315,780
High Density Residential	32	26	462	646	61,370	184,110
Retail/Commercial/Office	13	10		447	8,763	26,288
Village Center						
Medium Density Residential	44	35	317	760	72,200	216,600
High Density Residential	50	40	724	1017	96,615	289,845
Retail/Commercial/Office	31	25		1565	30,658	91,975
Community Center						
Medium Density Residential	17	14	124	297	28,215	84,645
High Density Residential	11	9	165	231	21,945	65,835
Retail/Commercial/Office	86	69		2137	41,808	125,425
Regional Center						
Medium Density Residential	8	7	59	142	13,490	40,470
High Density Residential	8	7	118	166	15,770	47,310
Retail/Commercial	148	118		3680	72,044	216,131
Office/Business Park						
Office/Business Park	284	227		8247	161,399	484,198
Light Industrial						
Light Industrial	180	144		2166	42,399	127,196
Open Space						
Open Space	939	939	NA	NA	NA	NA
Open Water						
Open Water	259	259	NA	NA	NA	NA
ROW (Collectors/Arterials)						
ROW (Collectors/Arterials)	492	492	NA	NA	NA	NA
Local Streets/Neighborhood Parks						
Local Streets/Neighborhood Parks		644	NA	NA	NA	NA
Total	4911	4911		41958	2,758,709	8,276,127

Based on the water use associated with Scenario 2, average day water demand is estimated to be 2.76 MGD (1,916 gpm), and maximum day water demand is estimated at 8.28 MGD (5,747 gpm) for the proposed study area. Current average day demand is 2.44 MGD (1,696 gpm) and maximum day demand is 7.33 MGD (5,088 gpm).

Similar to the Scenario 1 analysis, the study area will be served by the western pressure zone. A few properties with elevations below 910 feet may require an individual PRV as shown in **Figure 13-4**. Evaluation methods are described in detail in the Scenario 1 section.

Development of the study area alone would generate a maximum day demand of 8.28 MGD (5,747 gpm) and average day of 2.758 MGD (1,916 gpm). Well firm capacity should meet or exceed maximum day water use, resulting in the need for six (6) wells to supply the study area. The City's total maximum day demand upon complete development of the study area would be 15.60 MGD (10,835 gpm) and average day of 5.20 MGD (3,612 gpm). As in the Scenario 1 evaluation, current western zone system firm capacity is 5,700 gpm and should be increased to meet the maximum day water demand of 10,835 gpm. Approximately five wells would be needed to serve the entire city upon full development of the study area, which is consistent with the CWP projections. The analysis (which included water system modeling) indicated that three wells should be located at the southwest well field and two wells at the northwest well field, in accordance with the CWP.

Trunk and distribution water main development would be in accordance with the ultimate water system layout included in CWP. The anticipated trunk water main layout and sizes are shown in **Figure 13-4**.

This development would result in 2.76 MG of additional storage needs. The additional storage recommended to serve the entire city upon full development of the study area would be 1.70 MG in this scenario. The system was designed with one 2.0 MG elevated tower located in the western section of the study area.

As part of the Rosemount CWP, approximately 2.9 MG of storage and 6 wells were planned to serve the study area. Estimated water demands and resulting supply and storage necessary to serve development included in Scenario 1 differs from what was planned in the CWP, as shown in **Table 13-5**.

Table 13-5. Comparison of supply and storage included in CWP and Scenario 2.

	Rosemount Area Included in CWP (2007)	Total Study Area Included in Scenario 2	Rosemount Area Included in Scenario 2
Area (Acres)	3107	4911	3107
Average Day Demand (MGD)	2.93	2.76	1.98
Maximum Day Demand (MGD)	8.79	8.28	5.93
Estimated Wells Required	6	6	4 to 5
Estimated Storage Required (MG)	2.93	2.76	1.98

iii) Scenario 3

Development densities in Scenario 1 and 3 were consistent, but land use areas and locations are different. Land uses in the eastern portion of the study area were changed from lower density residential to higher densities or to industrial or business park. As discussed in the existing conditions, it was assumed that water usage per capita is 95 gpcd. Non-residential demands were estimated based on Metropolitan Council Environmental Service (MCES) sewer availability charge (SAC) criteria. Each SAC unit was based on 14 employees where one SAC unit equals 274 gallons per day (GPD). The assumed maximum day demand to average day demand ratio (peaking factor) is 3.0 based on historic water demands. **Table 13-6** shows the projected future water demands for Scenario 3.

Table 13-6. Future water demands for Scenario 3

Type	Gross Area (ac)	Net Area Served (ac)	Number of Units	Population/ Employees Served	Avg. Day Water Use (GPD)	Maximum Day Water Use (GPD)
Low Density Residential	784	627	2196	7027	667,565	2,002,695
Low-Med Density Residential	755	604	3625	8700	826,500	2,479,500
Medium Density Residential	412	330	2958	9498	902,310	2,706,930
High Density Residential	6	5	113	158	15,010	45,030
Neighborhood Center						
Low-Med Density Residential	19	15	92	222	21,090	63,270
Medium Density Residential	64	51	615	1477	140,315	420,945
High Density Residential	32	26	615	862	81,890	245,670
Retail/Commercial/Office	13	10		447	8,763	26,288
Village Center						
Medium Density Residential	44	35	422	1014	96,330	288,990
High Density Residential	50	40	966	1352	128,440	385,320
Retail/Commercial/Office	31	25		1565	30,658	91,975
Community Center						
Medium Density Residential	17	14	165	396	37,620	112,860
High Density Residential	11	9	220	308	29,260	87,780
Retail/Commercial/Office	86	69		2137	41,808	125,425
Regional Center						
Medium Density Residential	8	7	79	189	17,955	53,865
High Density Residential	8	7	158	221	20,995	62,985
Retail/Commercial	148	118		3680	72,044	216,131
Office/Business Park						
Office/Business Park	462	370		13421	262,645	787,934
Light Industrial	269	215		3233	63,277	189,830
Open Space						
Open Space	939	939	NA	NA	NA	NA
Open Water						
Open Water	259	259	NA	NA	NA	NA
ROW (Collectors/Arterials)						
ROW (Collectors/Arterials)	492	492	NA	NA	NA	NA
Local Streets/Neighborhood Parks						
Local Streets/Neighborhood Parks		644	NA	NA	NA	NA
Total	4911	4911		55907	3,464,474	10,393,422

Based on the water use associated with Scenario 3, average day water demand is estimated to be 3.46 MGD (2,406 gpm), and maximum day water demand is estimated at 10.39 MGD (7,217 gpm) for the proposed study area. Current average day demand is 2.44 MGD (1,696 gpm) and maximum day demand is 7.33 MGD (5,088 gpm).

Similar to the Scenario 1 and 2 analyses, the study area will be served by the western pressure zone. A few properties with elevations below 910 feet may require an individual PRV as shown in **Figure 13-5**. Evaluation methods are described in detail in the Scenario 1 section.

Development of the study area alone would generate a maximum day demand of 10.39 MGD (7,217 gpm) and average day of 3.464 MGD (2,406 gpm). Well firm capacity should meet or exceed maximum day water use, resulting in the need for seven (7) to eight (8) wells to supply the study area. The City's total maximum day demand upon complete development of the study area would be 17.720 MGD (12,305 gpm) and average day of 5.91 MGD (4102 gpm). Similar to the Scenario 1 and 2 evaluation, current western zone system firm capacity is 5,700 gpm and should be increased to meet the maximum day water demand of 12,305 gpm. Approximately six wells would be needed to serve the entire city upon full development of the study area. Three wells would be located at each of the southwest and northwest well fields, in accordance with the CWP.

Trunk and distribution water main development would be in accordance with the ultimate water system layout included in the CWP. The anticipated trunk water main layout and sizes are shown in **Figure 13-5**.

This development would result in 3.46 MG of additional storage needs. The additional storage required to serve the entire city upon full development of the study area would be 2.41 MG in this scenario. Storage tank size and placement would be consistent with Scenario 1, with one 1.5 MG elevated tower located in the western section of the study area and one 1.0 MG elevated tower located in the eastern section.

As part of the Rosemount CWP, approximately 2.9 MG of storage and 6 wells were planned to serve the study area. Estimated water demands and resulting supply and storage necessary to serve development included in Scenario 3 differs from what was planned in the CWP, as shown in **Table 13-7**.

Table 13-7. Comparison of supply and storage included in CWP and Scenario 3.

	Rosemount Area Included in CWP (2007)	Total Study Area Included in Scenario 3	Rosemount Area Included in Scenario 3
Area (Acres)	3107	4911	3107
Average Day Demand (MGD)	2.93	3.46	2.41
Maximum Day Demand (MGD)	8.79	10.39	7.24
Estimated Wells Required	6	7 to 8	5
Estimated Storage Required (MG)	2.93	3.46	2.41

B. Water Use Mitigation Plan

- Extend trunk water main services as shown in **Figures 13-3 through 13-5** consistent with the CWP. For Scenario 1, an additional 16" trunk main may be extended from the intersection of Akron Avenue and CSAH 42 to approximately 2,600 feet east of the intersection of CSAH 42 and Blaine Avenue (**Figure 13-3 – Alt. 1**).
- 6-8 municipal wells are recommended as a result of this development, with up to 2 of the wells being in addition to what was planned as part of the CWP. For Scenario 1, one well may be located within the study area depending upon the trunk water mains extended to the development (see **Figure 13-3 – Alt. 2**). Well fields have been preliminarily allocated to the north and to the east of the study area close to the future water treatment plants, in accordance with the CWP.
- 2,750,000 to 3,500,000 gallons of water system storage is recommended as a result of this development, with up to 700,000 gallons being in addition to what was planned as part of the City's CWP. The storage should be constructed in a location to best serve the entire City and overall water system.
- Any abandoned wells found within the study area will be sealed in accordance with with Dakota County Ordinance No. 114, Well and Water Supply Management, and Minnesota Department of Health guidelines.
- .
- In accordance with the City's Wellhead Protection Plan (WHPP), continue protection of the existing Drinking Water Supply Management Area (DWSMA) located in the study area as shown in **Figure 13-2**. A DWSMA will be established for future wells as they are constructed and the WHPP is updated.
- There exists potential for future interconnection of the proposed water system in the study area between the City of Rosemount and Empire Township. Additional water system assessments and agreements between the City of Rosemount and Empire Township may be required if further development interests beyond the presented material were to arise.
- Industrial and Business Park land use water demands can be highly variable depending upon the business operation or manufacturing process employed at each property. At the time of the five year AUAR evaluation, water demands from individual properties in the Industrial and Business Park land use areas should be evaluated and estimated future demands revised if necessary.
- Any new wells (supply, dewatering, monitoring, or other) shall be constructed in accordance with Dakota County Ordinance 114, Minnesota Statutes Chapter 103I and Minnesota Rules Chapter 4725

14) WATER-RELATED LAND USE MANAGEMENT DISTRICTS

Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? Yes No
If yes, identify the district and discuss project compatibility with district land use restrictions.

There are no shoreland districts or wild and scenic river districts within the study area. **Figure 14-1** shows the Federal Emergency Management Agency (FEMA) designated 100-year and 500-year floodplain and the Dakota County floodplain map. These areas are within the portion of the study area within Empire Township. No impacts to floodplain are anticipated. However, if impacts occur, conformance with Dakota County ordinances will be needed and mitigation in conformance with Empire Township regulations will be required.

A. Water-Related Land Use Management Districts Mitigation Measures

- Any development is required to meet the standards in the local Floodplain Ordinance.

15) WATER SURFACE USE

Will the project change the number or type of watercraft on any water body?

Yes No

If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

16) EROSION AND SEDIMENTATION

Give the acreage to be graded or excavated and the cubic yards of soil to be moved:

NA acres; NA cubic yards

Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction

A. Existing Conditions

A detailed list of the soils present on the site is provided in **Item 19** and shown in **Figure 19-1**. The site can be described as generally flat with some hilly areas in the north-central and northeast portions of the site. Of the soils on the site, **Figure 16-1** shows the location of Highly Erodible Land (HEL).

B. Scenarios 1-3

In these scenarios, much of the proposed area would be graded to construct roads, residential, and commercial/industrial areas. For all scenarios, it is anticipated that grading will be needed to accommodate building pads and storm water drainage from the area. It is anticipated that grading will be phased and there will not be mass grading of the entire site at one time.

C. Scenario 4

In this scenario, the area will remain as agricultural and no grading activities would be occurring.

D. Erosion and Sedimentation Mitigation Plan

- A Storm Water Pollution Prevention Plan (SWPPP) to the extent required by NPDES regulations will be needed for any development in the study area. Review of the SWPPP for each development will be required by the City or the Township.

17) WATER QUALITY – SURFACE WATER RUNOFF

- Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any storm water pollution prevention plans.**
- Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.**

i) Procedures and Methods Followed

The procedures and methods used to estimate the runoff volumes and pollutants loads within the AUAR were based on the simple method as discussed in the Minnesota Stormwater Manual and in Section III of the City of Rosemount's non-degradation plan dated December 20, 2007. The simple method provides an easy yet reasonably accurate way to estimate the pollutant loads as they change in response to development.

To estimate the pollutant loads the annualized runoff volumes, pollutant concentrations from different land uses, and site areas were used. The pollutant loads were then estimated for the existing and proposed conditions to determine the change with development.

The change in pollutant loads from implementing BMPs during development was incorporated into the analysis. In the City of Rosemount where areas are proposed to be developed, the runoff volume for events equal to or less than the 100-year 24-hour would be retained on-site as required by Rosemount's Plan. In reviewing the rainfall data no events were recorded over this threshold; therefore, it was assumed in the analysis that the discharge would be zero on an annual average basis.

In Empire Township, it is required to retain the increase in the runoff volume from the existing conditions to the proposed conditions for the 2-year 24-hour storm event. This is the same requirement as the Vermillion River Joint Powers Organization rules. The flow weighted runoff volume was calculated for the existing conditions to determine what runoff volume needs to be retained on-site to match existing conditions. This was used in the analysis to determine the runoff volume that would be infiltrated and the pollutant loading for the proposed conditions could be estimated.

ii) Existing Conditions

The study area currently consists of the sand and gravel mining operation located on the western portion of the site, small grain straight rows, small wooded and grassed areas and a few small wetlands. The impervious surface is primarily comprised of the existing roadways. These include County Road 42, County Road 46, and 170th Street which run east and west. The major roads which run north to south include Biscayne Avenue, Akron Avenue, Audrey Avenue, and Blaine Avenue East.

The major watersheds include the future mining drainage, drainage to the Mississippi River, and discharges to the Vermillion River (**Figure 17-1**). The Mississippi River receives drainage from approximately 2,641 acres. The Vermillion River receives drainage from 1,408 acres of the AUAR area and the River is located approximately 2.5 miles downstream from the project boundary. The drainage area to the future lake (Lake 2162) associated with the mining operation is 871 acres. The basins shown as land locked on **Figure 17-1** are located within Empire Township and consist of 159 acres. There are areas within the City of Rosemount that are currently landlocked; however, there are plans to provide an overflow path through storm sewer constructed as a part of future development.

Future development will need to address any requirements that are established due to current regulatory standards adopted by the Vermillion River Watershed Joint Powers Organization (VRWJPO), City of Rosemount, Empire Township, and Minnesota Pollution Control Agency (MPCA).

About 115 acres of the study area consists of Group A rated soils and the remaining area contains Group B rated soils. These soil ratings are based on hydrologic soil classifications with A soils having high infiltration rates even when thoroughly wetted. The infiltration rates range from 0.8 to 1.63 inches per hour (Minnesota Stormwater Manual). These soils consist chiefly of deep, well drained to excessively drained sands and gravel. Group A soils have a high rate of water transmission, therefore resulting in a low runoff potential. Group B soils have moderate infiltration rates ranging from 0.3 to 0.6 inches per hour when thoroughly wetted. Group B soils consist of deep moderately well to well drained soils with moderately fine to moderately coarse textures.

iii) Proposed Conditions

Due to the conceptual nature of the development scenarios, the amount of impervious surfaces for each land use was estimated based on the estimates in the City of Rosemount's Nondegradation Report Dated December 20, 2007 and by characterizing the impervious surface amounts of existing developments in the City.

The existing conditions and three proposed land use scenarios were evaluated. All three of the land use scenarios represent a similar amount of proposed impervious surface. Scenario 1 represents a 27 percent impervious, Scenario 2 represents a 26 percent impervious, and Scenario 3 represents a 28 percent impervious. Stormwater management for any scenario can be provided through a combination of wet detention ponds and infiltration features. The soils within the study area will likely provide ideal conditions for achieving volume reduction and pollutant reduction through the use of infiltration.

iv) Local Stormwater Management Requirements

Stormwater management within the future development of the study area must be in conformance with local requirements of the Vermillion River Water Joint Powers Organization (VRWJPO), City of Rosemount, Empire Township and Minnesota Pollution Control Agency (MPCA). Some requirements are more stringent than others. However, the

development in the study area will need to demonstrate that all local standards are being met under proposed stormwater management techniques. The following is a summary of major stormwater management requirements:

(1) Vermillion River Watershed Joint Powers Organization

The VRWJPO design standards require that for rate control, proposed runoff rates shall not exceed existing for the 1-year and 10-year critical during storm events.

The proposed runoff rates shall also keep future peak flood flows for the Vermillion River 100-year, 4-day event from increasing above existing conditions peak flows.

Numerical flow standards must be adopted in intercommunity boundaries as identified in the VRWJPO Hydrologic Model. This would apply to the communities of Rosemount and Empire Township. These communities must apply the VRWJPO Hydrologic Model values in the calibration of their own local hydrologic models.

The VRWJPO prefers that infiltration/volume control be used for meeting the water quality standards identified in their rule. The volume control criteria requires development that creates one acre or more of new impervious surface must incorporate volume control practices into the design sufficient to prevent an increase in the runoff volume for the 2-year 24-hour storm above pre-development conditions. The criteria can either be satisfied by the LGU on a regional basis or calculated on a site by site basis for each individual proposal.

In instances where infiltration/volume control is not feasible and the site is discharging to a designated trout stream this criteria can be met through ponding providing the pond does not discharge for the 2-year 24-hour storm (preferred option) or the wet pond is designed with a combination of measures such as shading, filtered bottom withdrawal, vegetated swale discharges, or constructed wetland treatment cells that will limit temperature increases.

(2) City of Rosemount Stormwater Management Requirements and Design Standards

The City's 2007 Surface Water Management Plan (SWMP) design standards require that all water from a 100-year 24-hour storm event be retained on-site. For events with longer duration, a maximum peak stormwater discharge rate will be limited to 0.05 cfs/acre. The City requires that this standard be met through the use of infiltration and regional treatment where it is practical and feasible to do so.

Landlocked depressions that presently do not have a defined outlet and do not typically overflow may be allowed a positive overflow to prevent damage to adjacent properties. Any overflows from landlocked depressions will comply with the City's rate control, runoff volume control and low floor requirements including storing runoff from the 100-year, 24-hour storm event for new development and restricting discharge to 0.05 cfs/acre for longer duration storm events.

Pretreatment to NURP standards is required prior to the discharge of stormwater to waterbodies and wetlands classified as Preserve and Manage 1 and infiltration basins.

The NURP guidelines require that a permanent pool (dead storage) volume below the principal spillway shall be greater than or equal to the runoff from a 2.5-inch storm event for the entire drainage area assuming full development. The NURP pond shall meet the design criteria identified in the City's 2007 Surface Water Management Plan.

Infiltration/volume control shall be provided that is equivalent to 1/12 of an acre-foot/acre/day for the entire site's acreage. Water discharged to infiltration basins shall be pretreated to NURP standards.

(3) Empire Townships Stormwater Management Requirements and Design Standards

Empire Township's stormwater management requirements for rate control state that proposed rates shall not exceed the existing runoff rates for the 1-year, and 10-year critical duration storm events. The runoff rates shall be implemented such that peak runoff rate controls keep future peak flood flow for the Vermillion River 100-year 4-day event from increasing above existing conditions peak flows. The Township's standards are the same as the VRWJPO requirements.

For land disturbing activities where one acre of new impervious surface is created, sufficient volume control shall be provided to prevent an increase in the runoff volume for the 2-year 24-hour storm above pre-development conditions, unless soil conditions limit infiltration.

In cases where land disturbance of 40 acres or more, Empire Township refers to the VRWJPO for review and comment prior to review or approval.

(4) National Pollution Discharge Elimination System (NPDES) Standards

The MPCA is responsible for implementing NPDES standards. The NPDES requirements in the AUAR area will be from the NPDES Construction General Permit and the NPDES Municipal Separate Storm Sewer System (MS4) Permit.

The NPDES Construction General Permit will require that for sites replacing pervious surfaces with one acre or more of impervious surface a water quality volume equivalent to 1/2 inch of runoff from the new impervious surface should be treated. This can be met through wet sedimentation basins, infiltration/filtration, or regional ponding. There are no impaired waterbodies, trout streams, or special waters within one mile of the study area; therefore, no additional stormwater requirements will apply. The post-construction water quality standards of the NPDES permit are not more restrictive than what will be required by the other regulatory agencies.

The NPDES MS4 permit requires permittees to provide post-construction water quality standards adopted at the local level. The NPDES MS4 Permit is currently being rewritten and additional stormwater requirements may apply and will need to be addressed as a part of future development. The MS4 permit will also require permittees to meet the requirements of future TMDLs. Currently there is a TMDL proposed for discharges to the Mississippi River and it is identified as the South Metro Turbidity TMDL. The South Metro Turbidity TMDL is proposed to require a 25% reduction in TSS loading.

B. Water Quantity and Quality Analysis

A water quantity and quality analysis was completed for the existing and proposed conditions within the study area. This quantitative analysis used the procedures and methods described previously and the results are summarized in **Table 17-1** and **Table 17-2**. **Table 17-1** summarizes the total runoff volumes for each development scenario compared to the existing condition.

Table 17-1: Existing and Proposed Runoff Volumes

LGU	Existing conditions (AC-FT)	Scenario 1 w/o infiltration (AC-FT)	Scenario 1 with infiltration (AC-FT)	Scenario 2 w/o infiltration (AC-FT)	Scenario 2 with infiltration (AC-FT)	Scenario 3 w/o infiltration (AC-FT)	Scenario 3 with infiltration (AC-FT)
Rosemount ¹	610	1,874	75	1,775	75	1,949	75
Empire Township ²	394	815	565	780	553	866	555

¹ The estimates on the scenarios with infiltration are based on the City of Rosemount’s policy requiring storage of the 100-year 24-hour rainfall event on-site.

² The estimates on the scenarios with infiltration are based on the Empire Townships policy requiring that storage be provided to retain the increase in runoff from predevelopment conditions for the 2-year 24-hour event.

Table 17-2 summarizes the total pollutant loads for each development scenario compared to the existing condition.

Table 17-2: Total Suspended Solids and Total Phosphorus Loads

LGU	Pollutant	Existing conditions	Scenario 1 w/o infiltration	Scenario 1 with infiltration	Scenario 2 w/o infiltration	Scenario 2 with infiltration	Scenario 3 w/o infiltration	Scenario 3 with infiltration
Rosemount ¹	TSS (tons/yr)	128	309	5	290	5	312	5
	TP (lbs/yr)	842	1,491	20	1,411	20	1,518	20
Empire Township ²	TSS (tons/yr)	95	196	96	130	94	140	93
	TP (lbs/yr)	632	636	443	607	434	659	431

¹ The estimates on the scenarios with infiltration are based on the City of Rosemount’s policy requiring storage of the 100-year 24-hour rainfall event on-site.

² The estimates on the scenarios with infiltration are based on the Empire Townships policy requiring that storage be provided to retain the increase in runoff from predevelopment conditions for the 2-year 24-hour event.

To achieve compliance with regulatory requirements, future development must provide annual volume and pollutant load reductions in the amounts presented in **Tables 17-1** and **17-2**. These values represent reductions from the post-development condition and are comparable to the City of Rosemount, Empire Township, and VRWJPO regulatory standards. Empire Township has adopted the VRWJPO regulatory standards.

C. Potential Impact to Downstream Receiving Waters

The analysis within the AUAR area for the City of Rosemount shows that the runoff volumes will be reduced from 610 ac-ft for the existing conditions down to 75 ac-ft for each of the three land use scenarios. This is a reduction in runoff volume of 88 percent, achieved through implementing City of Rosemount's volume reduction requirements. This reduction in runoff translates directly to the reduction in pollutant loads shown in **Table 17-2**.

The City of Rosemount's regulatory policy requires that all the water from a 100-year 24-hour storm event be retained on-site. Runoff will still occur from undeveloped areas such as open space and there is potential for events to exceed the 100-year 24-hour storm event. This necessitates the need to provide an overflow discharge route. Providing an overflow discharge route is required by the City of Rosemount.

In Empire Township, the analysis shows that the runoff volumes increase. However, the TSS and TP loadings will decrease. Empire Township's regulatory policy requires that the increase in runoff volumes from predevelopment conditions be retained on-site for the 2-year 24-hour storm event. Predevelopment is considered the condition of the site immediately prior to development. There will be no impact to the Vermillion River for TSS and TP and the increase in runoff volume will be mitigated by implementing Empire Township's policy where rates shall not exceed the existing runoff rates for the 1-year, and 10-year critical duration storm events.

D. Water Quantity and Quality Mitigation Plan

- Each new development within the AUAR area will need to incorporate BMPs to meet the applicable water quantity and water quality regulatory requirements. These policies are outlined in the local stormwater management requirements section. The soils within the AUAR area are primarily comprised of Hydrologic Soil Group A and B soils; therefore, it is likely that these policies will be met using infiltration.
- Infiltration to the Rosemount or Empire Township's standards will be provided on each development site or in a regional infiltration system that is created to serve a defined drainage area. The selection of a development-specific or regional system will be based on identifying feasible areas that take into consideration soils, drainage patterns, existing and past land use, and other factors. Areas where infiltration is not feasible or where contamination is possible will not be used for infiltration practices.
- To protect adjacent structures, an overflow from the Lake 2162 will be developed that would allow water to overflow either to the northeast toward pond 2246 or to the south toward the Vermillion River. This overflow could potentially occur if a rainfall event occurs that exceeds a 100-year 24-hour event, and/or water elevations reach extremely high levels. Based on this analysis and the installation of the proposed BMP'S, the volume of runoff generated within the AUAR area will be significantly reduced in the future, and the corresponding probability of this overflow occurring will be also reduced from that which exists today.
- If any storm water in the study area within Empire Township is to be directed to the City of Rosemount, the Rosemount infiltration standard will be applied to the development.

- Design considerations for comprehensive stormwater management should include regional ponding.
- Approved TMDL load reductions and implementation plans shall be addressed by a development's stormwater management plan. These will need to be addressed per the schedule identified in the current version the MS4 permit. The proposed language states "For TMDLs approved prior to the effective date of the MS4 permit the Waste Load Allocation (WLA) discharge requirement will become a requirement of the permittee".
- In the City of Rosemount, post-development discharge rates will be limited to 0.05 cfs/acre of the 100-year, 24-hour event.
- In Empire Township, it will be required that post-development discharge rates will not be greater than pre-development discharge rates for the 1-year and 10-year, 24-hour storm critical duration events to reduce erosion impacts downstream of the site.
- The developer will be responsible for grading the site appropriately to provide adequate stormwater management to the extent necessary and will be required to obtain the necessary permits for stormwater management and grading, to preserve the existing natural features, and to provide water quality protection to meet MPCA Construction General Permit requirements in addition to City of Rosemount, Empire Township, and VRWJPO requirements.
- Stormwater will be required to be pretreated prior to discharge to wetlands and Lake 2162.
- A SWPPP as required by the NPDES regulations will be needed for any development in the study area. Review of the SWPPP for each development will be required by the City and Township.

18) WATER QUALITY – WASTEWATER

- a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.**
- b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.**
- c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.**

- d. If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

i) **Existing Conditions**

Within the City of Rosemount, there are approximately 6,484 connections to regional sewer. The City has approximately 752 residential units that are served by on-site septic systems. Of the 6,484 connections to regional sewer, most are single family residential with some multi-family residential, commercial/industrial, and institutional connections. Based on the City’s Sewer Rate Study, the average daily wastewater flow is 1,875,886 gallons per day (GPD). Within the study area there are a few rural residential homes that are served by on-site septic systems.

Since the wastewater generated from the City of Rosemount is primarily from residential units, the wastewater characteristics are assumed to be of typical domestic strength. **Table 18-1** is a summary of the estimated wastewater characteristics for Rosemount.

Table 18-1. Estimated Wastewater Characteristics and Total Average Daily Wastewater Loading for the City of Rosemount

Parameter	Estimated Wastewater Characteristics and Average Daily Loading	
	mg/l	lbs/day
Biochemical Oxygen Demand	220	3,442
Total Suspended Solids	220	3,442
Ammonia –Nitrogen	25	391
Total Phosphorous	8	125

Wastewater generated from the City is collected by a series of lift stations, laterals, and trunk sewer mains, and is then directed to one of two interceptor sewers that are owned, operated and maintained by the Metropolitan Council Environmental Services (MCES). These two interceptors include the Apple Valley Interceptor and the Rosemount Interceptor. **Figure 18-1** shows existing MCES interceptor sewers and lift stations that serve the City of Rosemount. The Rosemount Interceptor sewer consists of two lift stations, forcemains and gravity sewer that extends west along 140th Street from the decommissioned Rosemount Wastewater Treatment Facility (WWTF). The interceptor is located east of State Highway 52, along the north side of 140th Street, crossing Highway 52, then flows south to County State Aid Highway (CSAH) 42, where it turns west and flows along CSAH 42 to Biscayne Avenue. At Biscayne Avenue the interceptor line flows south following Biscayne Avenue to the Empire WWTF. The Rosemount Interceptor sewer is primarily gravity sewer, increasing in size from 36-inch to 48-inch at the intersection of Akron Avenue/CSAH 42. The Apple Valley Interceptor carries approximately ¼ of the wastewater flow generated from the City south to the Empire WWTF.

All of the flow generated from within the study area will be directed to MCES's Rosemount Interceptor sewer that discharges to the Empire WWTF. The Empire WWTF has an average day treatment capacity of 24 MGD.

Development Scenario 1:

Development within the study area will be connected to the municipal sewer system which ultimately flows to the MCES interceptors. Development within the study area consists of residential with varying densities, office and business park, light industrial, and four community centers composed of residential land uses with varying densities and commercial land use. **Table 18-2** below totals the development plans with proposed population density assumptions to determine the wastewater flow for the study area. The unit demand summarized below was determined through population, number of units, and wastewater usage. It was assumed that wastewater generation is 80 gallons per day per capita (gpcd) for Low Density and Low-Medium Density Residential, 85 gpcd for Medium Density Residential, and 90 gpcd for High Density Residential. Non-residential demands were estimated based on MCES sewer availability charge (SAC) criteria. Each SAC unit was based on 14 employees where one SAC unit equals 274 gallons per day (GPD). The estimated peak flow factor was developed from MCES's standard peaking factors and was applied to the accumulated flow in each pipe within the sewer network.

Table 18-2. Estimated Average Day Wastewater Flow from Scenario 1

Type	Gross Acres	Net Acres (80% Gross Acres)	Wastewater Flow per Unit (GPAD)	Avg. Day Wastewater Flow (GPD)
Low Density Residential	1014	811	896	727,045
Low-Med Density Residential	739	591	1152	681,315
Medium Density Residential	465	372	2448	910,916
High Density Residential	6	5	3013	14,148
Neighborhood Center				
Low-Med Density Residential	19	15	1,156	17,789
Medium Density Residential	64	51	2,448	125,554
High Density Residential	32	26	3,021	77,465
Retail/Commercial/Office	13	10	854	8,763
Village Center				
Medium Density Residential	44	35	2449	86,194
High Density Residential	50	40	3024	121,651
Retail/Commercial/Office	31	25	1219	30,658
Community Center				
Medium Density Residential	17	14	2446	33,608
High Density Residential	11	9	3039	27,839
Retail/Commercial/Office	86	69	609	41,808
Regional Center				
Medium Density Residential	8	7	2449	16,091
High Density Residential	8	7	3032	19,923
Retail/Commercial	148	118	609	72,044
Office/Business Park	284	227	710	161,399
Light Industrial	180	144	294	42,399
Open Space	939	939	NA	NA
Open Water	259	259	NA	NA
ROW (Collectors/Arterials)	492	492	NA	NA
Local Streets/Neighborhood Parks		644	NA	NA
Total	4911	4911		3,216,608

Table 18-3 summarizes the estimated ultimate wastewater flow by MCES connection point. **Figure 18-2** shows the proposed trunk sewer system layout to collect wastewater from the study area and sewer districts at connection locations along the Rosemount Interceptor.

Table 18-3. Estimated Ultimate Regional Wastewater Flow by MCES Connection Point from Scenario 1

MCES Manhole (City of Rosemount ID No.)	Sewer Shed	Gross Acreage	Net Acreage	Ultimate Average Flow (MGD)	Ultimate Peak Flow (MGD)
210	Central	937	750	1.01	3.21
226	East	1152	922	0.95	2.87
633	Northwest	710	568	0.82	2.86
643	Southwest	422	338	0.44	1.55

Table 18-4 summarizes the estimated wastewater characteristics and loading for the wastewater that will be generated under Development Scenario 1.

Table 18-4. Estimated Wastewater Characteristics and Total Average Daily Wastewater Loading from Scenario 1

Parameter	Estimated Wastewater Characteristics and Average Daily Loading	
	mg/l	lbs/day
Biochemical Oxygen Demand	220	5,902
Total Suspended Solids	220	5,902
Ammonia - Nitrogen	25	671
Total Phosphorous	8	215

Under this development scenario all of the flow generated from the study area will be directed south to MCES's Empire WWTF. Average daily flow was estimated to be 3.22 MGD (2,234 gpm).

The proposed trunk sewer system layout was developed consistent with the City's Comprehensive Sanitary Sewer System Plan (CSP) and proposed street locations in the study area.

Sanitary sewer flows were generated for each sewer district based on the net developable acreage and the anticipated land use. The wastewater flow generation rates for the various land use categories discussed in this section were used to project future wastewater flows.

The sanitary sewer system was developed using the existing MCES interceptors as municipal sewer system discharge points. Future trunk sewers were laid out based on ground contours which govern how far the gravity trunk sewers can feasibly be

extended. All trunk sewers were designed to be no deeper than 40 feet, and no shallower than 8 feet from the existing ground surface.

Gravity sewer mains, lift stations, and forcemains needed to accommodate the ultimate service area were then sized for peak sanitary sewer flows from those sub-districts which are tributary to each particular trunk gravity sewer main or lift station.

The proposed trunk sewer system layout to serve development included in Scenario 1 is shown in **Figure 18-3**. With varying ground elevations, three new lift stations will be required to convey the wastewater to the Rosemount Interceptor. The proposed trunk sewer system layout results in the highest future flow to the MCES lift station along CSAH 42. There is potential for alternative sanitary sewer layouts where the flow can be directed downstream of the MCES lift station or west to the Rosemount Interceptor adjacent to Biscayne Avenue.

Development Scenario 2:

This scenario is similar to Scenario 1. The land use area are the same as Scenario 1, however the development densities have been decreased. As discussed in Scenario 1, it was assumed that wastewater usage per capita is 80 gpcd for Low Density and Low-Medium Density Residential, 85 gpcd for Medium Density Residential, and 90gpcd for High Density Residential. Non-residential demands were estimated based on MCES SAC criteria. Each SAC unit was based on 14 employees where one SAC unit equals 274 gallons per day (GPD). The estimated peak flow factor was developed from MCES's standard peaking factors and was applied to the accumulated flow in each pipe within the sewer network. **Table 18-5** summarizes the estimated wastewater flow generated from the study area under Scenario 2.

Table 18-5. Estimated Average Day Wastewater Flow from Scenario 2

Type	Gross Acres	Net Acres (80% Gross Acres)	Wastewater Flow per Unit (GPAD)	Avg. Day Wastewater Flow (GPD)
Low Density Residential	1014	776	576	447,154
Low-Med Density Residential	739	626	912	571,390
Medium Density Residential	465	372	1836	683,187
High Density Residential	6	5	2250	10,566
Neighborhood Center				
Low-Med Density Residential	19	15	911	14,023
Medium Density Residential	64	51	1,837	94,187
High Density Residential	32	26	2,264	58,054
Retail/Commercial/Office	13	10	854	8,763
Village Center				
Medium Density Residential	44	35	1835	64,603
High Density Residential	50	40	2268	91,238
Retail/Commercial/Office	31	25	1219	30,658
Community Center				
Medium Density Residential	17	14	1835	25,206
High Density Residential	11	9	2280	20,879
Retail/Commercial/Office	86	69	609	41,808
Regional Center				
Medium Density Residential	8	7	1840	12,090
High Density Residential	8	7	2277	14,965
Retail/Commercial	148	118	609	72,044
Office/Business Park				
Office/Business Park	284	227	710	161,399
Light Industrial	180	144	294	42,399
Open Space				
Open Space	939	939	NA	NA
Open Water				
Open Water	259	259	NA	NA
ROW (Collectors/Arterials)				
ROW (Collectors/Arterials)	492	492	NA	NA
Local Streets/Neighborhood Parks				
Local Streets/Neighborhood Parks		644	NA	NA
Total	4911	4911		2,464,612

Table 18-6 summarizes the estimated ultimate wastewater flow by MCES connection point.

Table 18-6. Estimated Ultimate Regional Wastewater Flow by MCES Connection Point from Scenario 2

MCES Manhole (City of Rosemount ID No.)	Sewer Shed	Gross Acreage	Net Acreage	Ultimate Average Flow (MGD)	Ultimate Peak Flow (MGD)
210	Central	937	750	0.74	2.46
226	East	1152	922	0.78	2.41
633	Northwest	710	568	0.62	2.24
643	Southwest	422	338	0.32	1.18

Table 18-7 summarizes the estimated wastewater characteristics and loading for the wastewater that will be generated under Development Scenario 2.

Table 18-7. Estimated Wastewater Characteristics and Total Average Daily Wastewater Loading from Development Scenario 2

Parameter	Estimated Wastewater Characteristics and Average Daily Loading	
	mg/l	lbs/day
Biochemical Oxygen Demand	220	4,522
Total Suspended Solids	220	4,522
Ammonia - Nitrogen	25	514
Total Phosphorous	8	164

Consistent with Scenario 1, all of the flow generated from the study area will be directed south to MCES's Empire WWTF. Average daily flow was estimated to be 2.46 MGD (1,712 gpm). The method for design of the trunk sewer system layout is discussed in the Scenario 1 section. The proposed trunk sewer system layout to serve development included in Scenario 2 is shown in **Figure 18-4**, which is the same as the proposed trunk sewer system layout for Scenario 1. With varying ground elevations, three new lift stations will be required to convey the wastewater to the Rosemount Interceptor. The proposed trunk sewer system layout results in the highest future flow to the MCES lift station along CSAH 42. There is potential for alternative sanitary sewer layouts where the flow can be directed downstream of the MCES lift station or west to the Rosemount Interceptor adjacent to Biscayne Avenue.

Development Scenario 3:

Development densities in Scenario 1 and 3 were consistent, but land use areas and locations are different. Land uses in the eastern portion of the study area were changed from lower density residential to higher densities or to industrial or business park. As discussed in the previous scenarios, it was assumed that wastewater usage per capita is 80 gpcd for Low Density and Low-Medium Density Residential, 85 gpcd for Medium

Density Residential, and 90gpcd for High Density Residential. Non-residential demands were estimated based on MCES SAC criteria. Each SAC unit was based on 14 employees where one SAC unit equals 274 gallons per day (GPD). The estimated peak flow factor was developed from MCES's standard peaking factors and was applied to the accumulated flow in each pipe within the sewer network. **Table 18-8** summarizes the estimated wastewater flow generated from the study area under Scenario 2.

Table 18-8. Estimated Average Day Wastewater Flow from Scenario 3

Type	Gross Acres	Net Acres (80% Gross Acres)	Wastewater Flow per Unit (GPAD)	Avg. Day Wastewater Flow (GPD)
Low Density Residential	784	645	896	577,541
Low-Med Density Residential	755	587	1152	676,226
Medium Density Residential	412	330	2448	807,373
High Density Residential	6	5	3013	14,148
Neighborhood Center				
Low-Med Density Residential	19	15	1,156	17,789
Medium Density Residential	64	51	2,448	125,554
High Density Residential	32	26	3,021	77,465
Retail/Commercial/Office	13	10	854	8,763
Village Center				
Medium Density Residential	44	35	2449	86,194
High Density Residential	50	40	3024	121,651
Retail/Commercial/Office	31	25	1219	30,658
Community Center				
Medium Density Residential	17	14	2446	33,608
High Density Residential	11	9	3039	27,839
Retail/Commercial/Office	86	69	609	41,808
Regional Center				
Medium Density Residential	8	7	2449	16,091
High Density Residential	8	7	3032	19,923
Retail/Commercial	148	118	609	72,044
Office/Business Park				
Office/Business Park	462	370	710	262,645
Light Industrial	269	215	294	63,277
Open Space				
Open Space	939	939	NA	NA
Open Water				
Open Water	259	259	NA	NA
ROW (Collectors/Arterials)				
ROW (Collectors/Arterials)	492	492	NA	NA
Local Streets/Neighborhood Parks				
Local Streets/Neighborhood Parks		644	NA	NA
Total	4911	4911		3,080,595

Table 18-9 summarizes the estimated ultimate wastewater flow by MCES connection point.

Table 18-9. Estimated Ultimate Regional Wastewater Flow by MCES Connection Point from Scenario 3

MCES Manhole (City of Rosemount ID No.)	Sewer Shed	Gross Acreage	Net Acreage	Ultimate Average Flow (MGD)	Ultimate Peak Flow (MGD)
210	Central	937	750	1.01	3.24
226	East	1152	922	0.82	2.46
633	Northwest	710	568	0.82	2.86
643	Southwest	422	338	0.44	1.55

Table 18-10 summarizes the estimated wastewater characteristics and loading for the wastewater that will be generated under Development Scenario 3.

Table 18-10. Estimated Wastewater Characteristics and Total Average Daily Wastewater Loading from Scenario 3

Parameter	Estimated Wastewater Characteristics and Average Daily Loading	
	mg/l	lbs/day
Biochemical Oxygen Demand	220	5,652
Total Suspended Solids	220	5,652
Ammonia - Nitrogen	25	642
Total Phosphorous	8	206

Consistent with Scenario 1 and Scenario 2, all of the flow generated from the study area will be directed south to MCES's Empire WWTF. Average daily flow was estimated to be 3.08 MGD (2,139 gpm). The method for design of the trunk sewer system layout is discussed in the Scenario 1 section. The proposed trunk sewer system layout to serve development included in Scenario 3 is shown in **Figure 18-5**, which is the same as the proposed trunk sewer system layout for Scenario 1. With varying ground elevations, three new lift stations will be required to convey the wastewater to the Rosemount Interceptor. The proposed trunk sewer system layout results in the highest future flow to the MCES lift station along CSAH 42. There is potential for alternative sanitary sewer layouts where the flow can be directed downstream of the MCES lift station or west to the Rosemount Interceptor adjacent to Biscayne Avenue.

ii) Wastewater Mitigation Plan

- **Figures 18-3, 18-4, and 18-5** show conceptual layout of gravity sewers, lift stations and forcemains to serve the proposed study area under each scenario. All of the scenarios maintain an identical pipe layout network and can be identified by sewer district or Rosemount Interceptor connection points as defined in **Figure 18-2**.

- The East sewer district consists primarily of gravity sewers, and two lift stations and forcemains that convey wastewater north to the Rosemount Interceptor along County Road (CR) 42. The south lift station capacity ranges from 700 gpm to 900 gpm and the north lift station capacity ranges from 1,700 gpm to 2,000 gpm in capacity, depending on the scenario. Sewers within the East sewer district range between 8" and 21" in diameter.
- The Central sewer district consists of primarily gravity sewers, and one lift station and forcemain that convey the wastewater north to the Rosemount Interceptor along CR 42. The lift station ranges in capacity from 1,600 gpm to 2,000 gpm depending on the scenario. Sewers within the Central sewer district range in size from 8" to 24" in diameter.
- The Northwest sewer district consists of all gravity sewers which flows to the north and discharges to the Rosemount Interceptor along CR 42. The gravity sewer ranges in size from 8" to 21" depending on the scenario.
- Similar to the Northwest sewer district, the Southwest sewer district consists of all gravity sewers. Wastewater flows to the west where it discharges to the Rosemount Interceptor along Biscayne Ave. The gravity sewers in the Southwest district range in size from 8" to 15" in diameter.

19) GEOLOGIC HAZARDS AND SOIL CONDITIONS

- A. Approximate depth (in feet) to groundwater: 40' – 50' minimum**
Approximate depth (in feet) to bedrock*: 25' minimum; 150' average

*See Figure 19-4.

- B. Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.**

Information from the MPCA, the Minnesota Geological Survey, and the Department of Geology and Geophysics at the University of Minnesota indicate that the UMore site is not within an active karst area (Figure 19-6). Based on information from the University of Minnesota, the site may be a "Covered Karst" condition where carbonate bedrock exists, but under more than 100 feet of sediment cover. Portions of the site may also be "Transition Karst" with more than 50 feet of sediment cover. These two conditions would be consistent with bedrock depths on the site. More significant limitations based on karst landscapes exist south and east of the study area in Dakota County.

No limestone or sinkholes are known to exist on the site.

- C. Describe the soils on the site, giving NRCS (SCS) classifications, if known. Discuss soil granularity and potential groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.**

i) SOILS

The soils within the study area are typical of those in the City of Rosemount and Empire Township; generally sandy and conducive to infiltration. Waukegan is the dominant soil type on the UMore property. The NRCS assigns soils to 4 different hydrologic groups A, B, C and D. Most of the area has hydrologic soils in group B with some areas of A and C. Group A soils are characterized as having a high infiltration rate even when wet with low runoff potential. Group B soils have moderate infiltration characteristics with low runoff potential. Group C soils infiltrate at a slower rate resulting in a higher runoff potential. All of the soils present on the site are listed in **Table 19-1** and are also shown on **Figure 19-1**.

Soils on the UMore site are conducive to development. With the exception of a very small area in the northeast corner of the site, they are not hydric (**Figure 19-2**) and very few areas have limitations for basement suitability (**Figure 19-3**).

According to the Dakota County Soil Survey, Waukegan silt loam (0 to 1 percent slopes) is the predominate soil type on the UMore property. Waukegan is a well-drained soil on loamy, mantled outwash plains and stream terraces. Individual areas are typically irregular in shape and range from about 5 to 200 acres in size. Permeability of Waukegan soil is moderate in the silty mantle and rapid in the sandy underlying material. The available water capacity is moderate, and runoff is very slow. The seasonal high water table is below a depth of 6 feet and throughout Dakota County, most areas of this soil are cropland.

The Dakota County Soil Survey further discusses the Urban Land-Waukegan Complex (0 to 1 percent slope) which is the second largest soil type on the subject property. In Rosemount and Empire Townships, these soil types consist of cut and fill land in which the original soil material has been so altered that individual horizons are indistinguishable. Generally, the sandy underlying material has been mixed into the loamy surface layer and subsoil. Construction of the Gopher Ordnance Works was the primary reason for large areas of Waukegan soils being placed into the Urban Land classification.

The Urban Land-Waukegan soils have characteristics that are in many ways identical to those of the undisturbed Waukegan soils. They are well suited to buildings and the construction of roads providing that proper base materials are provided as part of the roadway subgrade.

Table 19-1. Soil Types

Map Symbol	Map Unit Name	Description	Hydrologic Group	Hydric	Drainage	Erosion Hazard	Suitability for Dwellings w/ Basements
1027	Udorthents	Wet		Unknown		Not rated	Not rated
1029	Pits	Gravel		Unknown		Not rated	Not rated
150B	Spencer	Silt-Loam	C	Partially hydric	Moderately well drained	Moderate	Very limited
1816	Kennebec	Variant Silt-Loam	C	Partially hydric	Moderately well drained	Slight	Somewhat limited
250	Kennebec	Silt-Loam	C	Not hydric	Moderately well drained	Slight	Somewhat limited
279B	Otterholt	Silt-Loam	B	Partially hydric	Well drained	Moderate	Not limited
279C	Otterholt	Silt-Loam	B	Partially hydric	Well drained	Severe	Somewhat limited
301B	Lindstrom	Silt-Loam	B	Not hydric	Well drained	Slight	Not limited
342B	Kingsley	Sandy-Loam	C	Partially hydric	Well drained	Moderate	Not limited
39A	Wadena	Loam	B	Not hydric	Well drained	Slight	Not limited
39B	Wadena	Loam	B	Not hydric	Well drained	Slight	Not limited
39B2	Wadena	Loam	B	Not hydric	Well drained	Moderate	Not limited
39C	Wadena	Loam	B	Not hydric	Well drained	Moderate	Not limited
39D	Wadena	Loam	B	Not hydric	Well drained	Moderate	Very limited
411A	Waukegan	Silt-Loam	B	Not hydric	Well drained	Slight	Not limited
411B	Waukegan	Silt-Loam	B	Not hydric	Well drained	Moderate	Not limited
411C	Waukegan	Silt-Loam	B	Not hydric	Well drained	Severe	Somewhat limited
415B	Kanaranzi	Loam	B	Not hydric	Well drained	Slight	Not limited
41B	Estherville	Sandy-Loam	A	Not hydric	Somewhat excessively drained	Slight	Not limited
454B	Mahtomedi	Loamy-Sand	A	Not hydric	Excessively drained	Slight	Not limited
611C	Hawick	Coarse Sandy-Loam	A	Not hydric	Excessively drained	Moderate	Somewhat limited
611D	Hawick	Coarse Sandy-Loam	A	Not hydric	Excessively drained	Moderate	Very limited
611E	Hawick	Loamy-Sand	A	Not hydric	Excessively drained	Severe	Very limited
857A	Urban land-Waukegan	Urban		Not hydric		Not rated	Not rated
857B	Urban land-Waukegan	Urban		Not hydric		Not rated	Not rated
858C	Urban land-Chetek	Urban		Not hydric	Somewhat excessively drained	Not rated	Not rated
865B	Urban land-Hubbard	Urban		Not hydric	Excessively drained	Not rated	Not rated
895B	Kingsley-Mahtomedi-Spencer		C	Not hydric	Moderately well drained	Moderate	Not limited
895C	Kingsley-Mahtomedi-Spencer		C	Not hydric	Moderately well drained	Severe	Somewhat limited

ii) GROUNDWATER

A number of detailed studies have been completed and provide data on the groundwater conditions in the UMore Park AUAR project area. These studies have included using test wells to assess groundwater flow, recharge rates, temperature, and water quality. Data from these and other studies have been used to evaluate the potential impacts of future site uses on groundwater. Two key topics addressed in these studies are groundwater recharge and groundwater quality impacts.

Groundwater Recharge

Surface soil and underlying geologic units in the area are conducive to infiltration, thus little runoff occurs from the property. Potential impacts of future development on groundwater recharge are typical of urban development and include reduced infiltration to groundwater due to soil compaction and construction of impervious ground cover (e.g., pavement and buildings). Through sustainable site planning, storm water management, and construction practices, potential impacts to groundwater recharge caused by urban development can be mitigated.

Groundwater Quality Impacts

Regional agricultural practices have resulted in nitrate concentrations in shallow groundwater above state and federal and drinking water standards at and upgradient of the site. As urban development replaces agriculture land use, it is assumed that less nitrate-based fertilizer will be applied to the ground in the project area and local nitrate contributions to groundwater will decrease. However, nitrate concentrations in shallow groundwater will likely remain above drinking water standards due to agricultural practices in the region.

Historical use on the subject property has resulted in limited impacts to groundwater quality. The former University of Minnesota Rosemount Research Center Burn Pit (UMRRC Burn Pit) was identified as the source of groundwater impacts in the mid-1980s and was mitigated under an agreement between the University and the Minnesota Pollution Control Agency (MPCA). Mitigation measures, which were designed to eliminate human health risks by providing safe drinking water to affected residences, were achieved with the construction of a community rural water supply system and the operation of a groundwater extraction and treatment system. The MPCA approved the shutdown of the groundwater extraction and treatment system in 1991 after groundwater impacts were confirmed to be lower than the applicable health-based drinking water standards. Samples collected during recent studies from existing and newly installed monitoring wells indicate that groundwater impacts associated with the UMRRC Burn Pit continue to decrease. The United States Environmental Protection Agency concluded in 2012 that the groundwater remedy remains protective of human health and the environment and groundwater does not exceed health risk levels.

iii) SCENARIOS 1, 2 AND 3

Proposed land uses within the study area will include a mix of residential, commercial, industrial and park and open space uses. All development will be served by municipal water and sanitary sewer systems. Commercial and industrial uses are anticipated to be

clean uses; a mix of offices, warehouses, light assembly operations, and research and development. The Concept Master Plan prepared by the University of Minnesota advocates the establishment of an eco-industrial park that would include uses that would typically have a symbiotic relationship, using the by-products of one operation as a resource for another. The nature of the full complement of future land uses on the UMore property is not expected to present a hazard to groundwater contamination since contaminants are either not expected to be present within the area or will be properly addressed in full accordance with State and Federal requirements.

In order to meet the daily needs of future residents and businesses, the study area is expected to see development of typical urban commercial services uses, some of which will have limited potential for groundwater contamination. Gas stations and convenience stores with gas are the most common uses with some contamination potential. These developments will be required to adhere to State regulations for containment of underground petroleum tanks thereby limiting the risk potential.

Based on the proposed land uses depicted in Scenarios 1, 2 and 3, the potential for groundwater contamination and/or adjacent drinking well contamination should be no greater than, and is expected to be less than, the potential that exists with the existing agricultural land use. The pesticides and fertilizers that are used in agricultural uses currently are allowed to run off the site and/or infiltrate into the ground, thus having the potential to contaminate existing wells.

iv) GEOLOGIC HAZARDS AND SOIL CONDITIONS MITIGATION MEASURES

- The NPDES Phase II Construction Site permit will be required for development within the study area. This permit requires a site specific Storm Water Pollution Prevention Plan (SWPPP) to be completed for construction. This SWPPP is required to include pollution prevention management measures for solid waste and hazardous material spills that occur during construction.
- Development or construction work will require conformance with the City spill response plan. Spills will be reported to the Minnesota State Duty Office and 911, along with applicable City staff. Those authorities will in turn notify any other appropriate officials depending on the nature of the incident.
- For all gas stations with underground tanks, annual licensing from the MPCA will be needed.
- The area of partially hydric soils in the northeast corner of the site is proposed to remain as a natural open space area.
- Should any other conditions be identified during site redevelopment activities that have the potential to materially impact either groundwater recharge or groundwater quality, investigations will be conducted and mitigation measures will be identified to address the impact consistent with applicable State and Federal requirements.

- The City requests project proposers prepare and submit to the MPCA Construction Contingency Plans (“CCPs”) to help identify and address any potential releases of hazardous substances that may be encountered during construction activities. Phase I Environmental Site Assessments should also be completed for the proposed project area and submitted to MPCA along with the CCPs.
- Any business or institutional uses that use or store petroleum or other hazardous products will be subject to local and state rules regulating such uses.

v) GEOLOGIC HAZARDS AND SOIL CONDITIONS MITIGATION MEASURES

- The NPDES Phase II Construction Site permit will be required for development within the study area. This permit requires a site specific Storm Water Pollution Prevention Plan (SWPPP) to be completed for construction. This SWPPP is required to include pollution prevention management measures for solid waste and hazardous material spills that occur during construction.
- Development or construction work will require conformance with the City spill response plan. Spills will be reported to the Minnesota State Duty Office and 911, along with applicable City staff. Those authorities will in turn notify any other appropriate officials depending on the nature of the incident.
- For all gas stations with underground tanks, annual licensing from the MPCA will be needed.
- The area of partially hydric soils in the northeast corner of the site is proposed to remain as a natural open space area.
- Should any other conditions be identified during site redevelopment activities that have the potential to materially impact either groundwater recharge or groundwater quality, investigations will be conducted and mitigation measures will be identified to address the impact consistent with applicable State and Federal requirements.
- The City requests project proposers prepare and submit to the MPCA Construction Contingency Plans (“CCPs”) to help identify and address any potential releases of hazardous substances that may be encountered during construction activities. Phase I Environmental Site Assessments should also be completed for the proposed project area and submitted to MPCA along with the CCPs.
- Any business or institutional uses that use or store petroleum or other hazardous products will be subject to local and state rules regulating such uses.

20) SOLID WASTES, HAZARDOUS WASTES, STORAGE TANKS

For an AUAR, generally only the estimated total quantity of municipal solid waste generated and information about any recycling or source separation programs of the RGU need to be included. No response is necessary for b. For c, potential locations of storage tanks associated with commercial uses in the AUAR should be identified (e.g., gasoline tanks at service stations).

- A. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.**

No hazardous wastes, solid animal manure, sludge and/or ash are anticipated to be produced by the development scenarios. Municipal solid waste (MSW) that is generated by future urban development under scenarios 1, 2, and 3 will be hauled away by the municipal garbage service. Residents and businesses within the community will be encouraged to reduce generation of municipal solid waste through both traditional recycling initiatives but also through innovative development and programmatic strategies. Dakota County Solid Waste Management Ordinance (No. 110) and Hazardous Waste Ordinance (No. 111) will apply to the study area.

The University is a generator of new knowledge and ideas. The development of UMore Park presents an unprecedented opportunity to accommodate future growth in a manner that can become a model for sustainability. UMore Park has the potential to help transform the regional economy by providing new employment opportunities and a stronger connection between locally sourced and produced goods and nearby populations. Forward-looking strategies and aspirational goals have been explored through various master planning and research that examine how UMore Park inhabitants can achieve principals of sustainability including zero waste (see **Appendix B**). Scenario 4, which is the scenario that assumes continued use and operations of UMore Park in its current state, will have no additional generation waste beyond its current use for the site.

The following table represents estimated quantities of municipal solid waste and recycling that will be generated annually for the 4 development scenarios.

Table 20.1 Estimated MSW Quantities

Development Scenario	Estimated Employment	Estimated Population	Annual Gross MSW in Tons	MSW Recycled in Tons	Annual Net MSW
Scenario 1	18,242	34,518	43,172	21,586	21,586
Scenario 2	18,242	25,278	36,240	18,120	18,120
Scenario 3	24,483	31,422	46,760	23,380	23,380
Scenario 4	NA	NA	NA	NA	NA

Quantities were based on the population and employment projections as outlined in responses to **Section 6** (see **Tables 6.1, 6.2 and 6.3**). The following methodology and assumptions were used to calculate estimated MSW quantities.

- Annual tons per capita for residential uses 0.75
- Annual tons per employee for commercial uses 0.95
- Annual per capita and per employee rates were generated based on the following data:
 - Dakota County Population 398,552
 - Dakota County Jobs 170,000
 - 2010 Dakota County MSW Tonnage 460,000
 - Percent Residential/Commercial 65/35
- Fifty percent of solid waste generated is recycled and removed from the MSW stream. The Dakota County Solid Waste Master Plan 2012-2030 sited an actual reduction in MSW in Dakota County as a result of recycling was 44% in 2008 and 45% in 2010. The MPCA cites in its Report on 2011 SCORE Programs, a reduction of 45% in 2011 due to recycling state wide, which reflects of an upward trend in recycling. Long term goals in Dakota County for recycling are to reduce the MSW stream by 54-60% by 2030. These percentages do not include yard waste recycling material. The 50% figure is arrived at for use in the AUAR based on a projection that progress will be made towards achieving the county goals and as a result of the University’s vision for sustainability and zero waste for UMore Park.

B. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use or toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

AUAR Guidelines: No response is necessary for AUAR item 20.b.

C. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans. AUAR Guidelines: For AUAR Item 20.c, potential locations of storage

tanks associated with commercial uses in the AUAR should be identified (e.g. gasoline tanks or service stations)

Scenarios 1-3 propose various nodes of commercial development that will likely have small quantities of petroleum products or other materials typical of urban retail commercial development. In some cases gas stations or service stations will exist and will likely have underground storage tanks associated with the businesses. These locations can be seen on each of the Scenario Land Use Maps (**Figure 6-1 to 6-3**) labeled as: Neighborhood Center, Village Center, Community Center, Regional Center, Business Park, and Industrial.

i) Solid Waste, Hazardous Waste, and Storage Tank Mitigation Plan

Any business or institutional uses that use or store petroleum or other hazardous products will be subject to local and state rules regulating such uses.

21) TRAFFIC

Parking spaces added Not Necessary for AUAR . **Existing spaces (if project involves expansion)** NA .

Estimated maximum peak hour traffic generated (if known) and time of occurrence See information below .

Provide an estimate of the impact on traffic congestion on affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

A. Background

As part of Item #21 – Traffic, the following items have been addressed as summarized below:

- The anticipated estimated daily, AM, and PM peak hour traffic generated from the UMore property under each development scenario.
- The anticipated traffic impact on the area roadways as a result of the proposed development of the UMore property.
- The anticipated impact on the regional transportation system as a result of the proposed development of the UMore property.
- Determination of anticipated transportation improvements to mitigate identified impacts from traffic generated by the proposed UMore property.

The existing conditions were analyzed as the baseline for the future year analysis. Four development scenarios were analyzed including the no-build and three build scenarios. Each build scenario contains a mixture of uses including, residential, light industrial, office, retail and open space.

Future land development will have an impact on the operations of roadways and intersections in the project area. Increased trips from future development scenarios will be used to forecast future traffic volumes and evaluate traffic operations on the roadway system within the study area.

The year 2030 was assumed for the traffic analysis of each scenario for the full build of the site. The year was selected to represent the current transportation system analysis time

horizon used by the City of Rosemount, Empire Township, Dakota County, and Metropolitan Council. Full build out in the study area is likely to occur beyond the analysis time horizon. In addition, although concept planning has occurred within the study area, anticipated phasing of the planned development has not yet been finalized. It is anticipated that this analysis will be evaluated based on one or more of the following potential triggers:

- With each proposed development proposal
- With the City of Rosemount's, Empire Township and/or Dakota County's Comprehensive Plan updates
- With the 5-year AUAR evaluation process

This study was developed with consideration of the transportation and land use elements of the following documents:

- *Rosemount / Empire / UMore Area Transportation System Study*
- *Highway 52/42/55 Interchange and Highway 55 Regional Corridor Study*
- *Dakota County CSAH 42 Access Plan*
- *Highway 52 IRC Management Plan*
- *CSAH 42 / Akron Avenue AUAR*
- *Empire Mining EIS*
- *UMore Gravel Mine EIS*
- *City of Rosemount Transportation Plan*
- *Dakota County 2030 Transportation Plan*
- *Empire Township 2030 Transportation Plan*

B. Existing (2012) Conditions

In order to evaluate the existing conditions, key roadway segments and intersections were selected that are expected to provide the primary access to the regional roadway system when the area develops. This section documents the geometry, traffic volumes, and functional class at these locations, and uses these traffic characteristics to estimate their existing traffic operations.

i) Key Roadways and Intersections

The following existing and future roadways were selected as the key roadway segments for the development site:

- CSAH 42 - TH 3 to US 52
- Boulder Trail (extension) – Biscayne Ave to Blaine Ave
- CSAH 46 - TH 3 to US 52
- Biscayne Ave – CSAH 42 to 170th St
- Akron Ave (CR 73) – CSAH 42 to 170th St
- Audrey Ave – CSAH 42 to 170th St
- Blaine Ave (CSAH 71) – CSAH 42 to CSAH 46

The transportation characteristics for the roadways are displayed in **Table 21-1**. The existing roadway section is documented, along with the existing functional classification.

The following existing and future intersections were selected because they provide primary access to the regional roadway system from the development site:

- CSAH 42 at TH 3
- CSAH 42 at Biscayne Ave
- CSAH 42 at 145th St
- CSAH 42 at CR 73 (Akron Ave)
- CSAH 42 at Audrey Ave
- CSAH 42 at CSAH 71 (Blaine Ave)
- CSAH 42 at US 52 SB Ramps
- CSAH 42 at US 52 NB Ramps
- Boulder Tr (extension) at Biscayne Ave
- Boulder Tr (extension) at Akron Ave
- Boulder Trail (extension) at Audrey Ave
- Boulder Tr (extension) at Blaine Ave
- CSAH 46 at TH 3
- CSAH 46 at Biscayne Ave
- CSAH 46 at Akron Ave
- CSAH 46 at Audrey Ave
- CSAH 46 at Blaine Ave
- CSAH 46 at US 52 SB Ramps/Frontage Rd W
- CSAH 46 at US 52 NB Ramps/Frontage Rd E

Table 21-1: Characteristics of Key Roadways

Roadway	Location	Facility Type	Functional Class
CSAH 42	TH 3 to US 52	4 Lane w/Turn Lanes	Principal Arterial
Boulder Trail (extension)	Biscayne Ave to Blaine Ave	(Future)	Future Major Collector
CSAH 46	TH 3 to Biscayne Ave	4 Lane w/Turn Lanes	Minor Arterial
CSAH 46	Biscayne Ave to US 52	2 Lane w/Turn Lanes	Minor Arterial
TH 3	CSAH 42 to CSAH 46	2 Lane w/Turn Lanes	Minor Arterial
Biscayne Ave	North of CSAH 42	2 Lane w/Turn Lanes	Major Collector
Biscayne Ave	CSAH 42 to 170 th St	Gravel	Local (Future Major Collector)
Akron Ave (CR 73)	North of CSAH 42	2 Lane w/ Turn Lanes	Major Collector (Future Minor Arterial)
Akron Ave	CSAH 42 to 170 th St	(Future)	Future Minor Arterial
Audrey Ave	CSAH 42 to 170 th St	(Future)	Future Major Collector
Blaine Ave (CSAH 71)	CSAH 42 to CSAH 46	2 Lane w/Turn Lanes	Minor Arterial
US 52	CSAH 42 to CSAH 46	4 Lane Freeway	Principal Arterial

Source: WSB & Associates, Inc. and City of Rosemount Transportation Plan (2008)

The existing (2012) AM and PM peak hour turn movement traffic volumes, lane geometry, traffic control and Average Daily Traffic (ADT) volumes for the existing key roadways are illustrated on **Figures 21-1A and 21-1B**. The traffic volumes were obtained from “Year 2011 MnDOT Traffic Flow Maps” and the “UMore Gravel Mine EIS”.

C. Existing (2012) Operations Analysis

Traffic operations were evaluated for the existing key roadway segments and intersections. This section describes the methodology used to assess the operations and provides a summary of how traffic is operating today. The detailed peak hour analysis is included in the **Appendix C**.

i) Analysis Methodology

The traffic operations analysis is derived from established methodologies documented in the “Highway Capacity Manual 2010” (HCM). The HCM provides a series of analysis techniques that are used to evaluate traffic operations.

The analysis techniques defined in the HCM is different for roadways and intersections. Roadway segment analysis focuses on the average daily volume to capacity ratio, while intersection analysis focuses on delay caused by the peak hour critical movements. It is

therefore possible to have an efficient intersection located along a poorly operating roadway segment, or a poorly operating intersection along an otherwise free-flowing arterial.

For purposes of this study, the roadway segment analysis was conducted at a planning level. The planning level analysis consists of comparing the average daily flow rates on a roadway segment to the ADT roadway segment traffic capacity threshold volumes for that facility type, as displayed is **Table 21-2**.

Table 21- 2: Roadway Segment Traffic Capacity Thresholds

Roadway Section	Capacity (vehicles per day)		
	Uncongested (LOS A – C)	Approaching Congestion (LOS D)	Congestion (LOS E – F)
Two-lane undivided urban	< 6,000	6,000 – 10,000	> 10,000
Two-lane undivided rural	< 11,000	11,000 – 15,000	> 15,000
Three-lane urban (two-lane with turn lanes)	< 12,000	12,000 – 17,000	> 17,000
Four-lane undivided urban	< 18,000	18,000 – 22,000	> 22,000
Five-lane urban (four-lane with turn lanes)	< 26,000	26,000 – 32,000	> 32,000
Four-lane divided rural	< 32,000	32,000 – 38,000	> 38,000
Six-lane divided urban	< 40,000	40,000 – 47,000	> 47,000
Eight-lane divided urban	< 53,000	53,000 – 63,000	> 63,000
Four-lane freeway	< 60,000	60,000 – 80,000	> 80,000
Six-lane freeway	< 90,000	90,000 – 120,000	> 120,000

Source: Derived from the Highway Capacity Manual

The intersection peak hour analysis utilizes micro-simulation computer modeling software (Synchro/SimTraffic). The methodology and results of this analysis are included in the **Appendix C**.

ii) Existing (2012) Level of Service Summary

The existing roadway segment traffic operations are displayed on **Table 21-3**. For purposes of this study, segments are classified as either uncongested, approaching congestion, or congested based on the ADT and estimated LOS. As shown on the table, no segments are classified as congested when using the LOS D/E boundary as the index of congestion. TH 3 and CSAH 46 are at LOS C conditions.

Table 21-3: Existing (2012) Roadway Segment Level of Congestion

Roadway	Location	ADT	LOS
CSAH 42	TH 3 to US 52	12,100	A
Boulder Trail (extension)	Biscayne Ave to Blaine Ave	(Future)	---
CSAH 46	TH 3 to Biscayne Ave	11,000	A
CSAH 46	Biscayne Ave to US 52	9,800	C
TH 3	CSAH 42 to CSAH 46	10,400	C
Biscayne Ave	North of CSAH 42	2,350	A
Biscayne Ave	CSAH 42 to 170 th St	760	A
Akron Ave (CR 73)	North of CSAH 42	365	A
Akron Ave	CSAH 42 to 170 th St	(Future)	---
Audrey Ave	CSAH 42 to 170 th St	(Future)	---
Blaine Ave (CSAH 71)	CSAH 42 to CSAH 46	800	A
US 52	CSAH 42 to CSAH 46	30,000	B

Source: Year 2011 MnDOT Traffic Flow Maps and WSB & Associates, Inc.

A summary of the existing (2012) peak hour traffic operations at the key intersections was completed and is included in the **Appendix C**. Based on the analysis the existing roadway network generally performs at acceptable conditions (LOS D or better) in the AM and PM peak hours. The only exception is the CSAH 42/US 52 NB Ramps intersection which operates at LOS E in the AM peak hour. This is due to high traffic volumes on CSAH 42 and a lack of traffic signals at the intersection to allow vehicles to clear the northbound approach.

D. Future 2030 Conditions

The purpose of this section is to identify the traffic impacts associated with the future development within the project area. For the UMore development, the no-build (existing land use and general traffic growth) and three full-build land use scenarios were evaluated. A detailed description of the scenarios can be found in **Item 6 Land Use**.

The analysis year of 2030 was selected based on the current time horizon for the City of Rosemount, Empire Township and Dakota County’s Comprehensive plans. It is acknowledged that the full build out of the UMore site **will not** occur until much later possibly 2040/2050. However, this assumption does provide a worst case condition for 2030. The assumptions and analysis can be reviewed and compared to the results in the AUAR with each required 5 year AUAR evaluation.

i) Future Roadway System and Functional Classification

The functional classification system is the creation of a roadway and street network which collects and distributes traffic from neighborhood streets to collector roadways to arterials and ultimately, the Metropolitan Highway System. Roads are placed into categories based on the degree to which they provide access to adjacent land versus

provide higher-speed mobility for “through” traffic. Functional classification is a cornerstone of transportation planning. Within this approach, roads are located and designed to perform their designated function.

The functional classification system used in the City of Rosemount and UMore development area conforms to the Metropolitan Council standards. The Metropolitan Council has published these criteria in the *Transportation Development Guide/Policy Plan*. This guide separates roadways into four main street classifications, including principal arterials, minor arterials, collectors, and local streets. These classifications address the function of state, county, and city streets from a standpoint of the safe and efficient movement of traffic while providing satisfactory access to residents and businesses located within the UMore development area and the City. The attached **Figure 21-2** illustrates the anticipated future functional classification system in the UMore development area. Although these locations are shown on the figure as conceptual, the functional classifications will be for the appropriate design and access configurations.

Under the following headings, information is provided for each of the respective functional classes, as well the roadways that fall under those classes in the study area. The descriptions of the characteristics of the functional classes provided below are based on Metropolitan Council information. It may be noted that these descriptions represent the “ideal conditions” and that not all roadways within that functional class will fit the specific description due to unique local conditions, history of the roadway, or other factors.

Principal Arterial Roadways: The metropolitan highway system is made up of the principal arterials in the region. Principal arterials include all Interstate freeways. Interstate freeways connect the region with other areas in the state and other states. They also connect the metro centers to regional business concentrations. The emphasis is on mobility as opposed to land access. They connect only with other Interstate freeways, other principal arterials, and select minor arterials and collectors. The principal arterials through or adjacent to UMore are:

- CSAH 42
- US 52

Minor Arterials: The emphasis of minor arterials is on mobility as opposed to access in the urban area; only concentrations of commercial or industrial land uses should have direct access to them. The minor arterial should connect to principal arterials, other minor arterials, and collectors. Connection to some local streets is acceptable. The Metropolitan Council has identified “A” minor arterials as streets that are of regional importance because they relieve, expand, or complement the principal arterial system. The minor arterials in the UMore development area are:

- CSAH 46
- CSAH 71 (Blaine Avenue)
- TH 3

- CR 73 (Akron Avenue) upgraded from Major Collector

Collector Streets: The collector system provides connection between neighborhoods and from neighborhoods to minor business concentrations. It also provides supplementary interconnections of major traffic generators within the metro centers and regional business concentrations. Mobility and land access are equally important. Direct land access should predominantly be to development concentrations. In order to preserve the amenities of neighborhoods while still providing direct access to business areas, these streets are usually spaced at one-half mile intervals in developed areas. Refer to **Figure 21-2** for proposed collector roadways (major and minor) within the UMore development area. The major collector roadways in the UMore development area are:

- Audrey Avenue
- Biscayne Avenue
- Boulder Trail (proposed east-west roadway extension)

Local Streets: Local streets provide the most access and the least mobility within the overall functional classification system. They allow access to individual homes, shops, and similar traffic destinations. Through traffic should be discouraged by using appropriate geometric designs and traffic control devices. Local streets in the in the UMore development area will be identified as detailed development plans are completed.

ii) Future 2030 No-Build Planned Roadway Improvements

Several roadway improvements were identified in the previous planning efforts / studies listed in the background section of this document. These improvements, listed below, were assumed to be in place as part of the future 2030 conditions traffic analysis.

1. Installation of traffic signals at the following CSAH 42 intersections:
 - Biscayne Ave
 - 145th St
 - Akron Ave
 - Audrey Ave
 - Blaine Ave
2. Interim improvements at CSAH 42 and US 52 SB and NB Ramps including signalization, bridge replacement and addition of turn lanes. These improvements would be in preparation of the future system interchange.
3. Installation of traffic signals at the following CSAH 46 intersections:
 - Biscayne Ave
 - US 52 SB and NB Ramps
4. Addition of turn lanes at the following intersections:
 - CSAH 42 and Biscayne Ave

- CSAH 46 and Biscayne Ave
 - CSAH 46 and Akron Ave
5. Lengthening of the eastbound left-turn lane at the CSAH 42/Biscayne Ave intersection
 6. Realignment of Akron Avenue to meet Biscayne Avenue south of 170th Street. Akron Avenue will act as a parallel reliever to TH 3.

These improvements are in accordance with the mitigation measures proposed in the “City of Rosemount Transportation Plan”, “Dakota County Transportation Plan”, “CSAH 42 / Akron Avenue AUAR”, and the “UMore Gravel Mine EIS”.

iii) Future 2030 No Build Traffic Conditions

The future 2030 No Build traffic volumes were based on the projected 2030 conditions from the Dakota County Transportation Plan Model which reflected the most recent comprehensive plan updates from the surrounding communities. A sub-area model for the study area was developed that incorporated the detailed Traffic Analysis Zones (TAZ) and data from the traffic demand model used by Dakota County. The results from the sub-area model were used for the 2030 No Build ADT forecasts. No other growth was assumed with the future 2030 No Build condition.

iv) Study Area Traffic Generation

Traffic Analysis Zones (TAZ) were developed for the study area in order to accurately assign traffic to the roadway network. **Figure 21-3** illustrates the TAZ’s in relationship to the primary roadway system.

Trip generation estimates were developed for each scenario using the “*Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Ed.*”, based on the anticipated land uses summarized in **Table 21-4**. Trips generated by the proposed development area are shown for average daily traffic (ADT), AM peak hour, and PM peak hour.

The trip generation rates were adjusted to reflect both pass by trips, those trips already on the roadway that would use the proposed development, and internal dual purpose trips, those trips that would travel between uses within each specific TAZ in the proposed development. It assumed that 15% to 20% of the trips used by retail/commercial/service uses would be pass-by and 10% of the development travel would be internal dual purpose trips within each TAZ.

Even with these adjustments the numbers of trips assumed to be generated by the study area is conservative. Future development of the UMore Park property will be a reflection of the University’s Concept Master Plan and is likely to provide land uses patterns that stress the inclusion of housing and employment, linked by convenient non-motorized vehicle and roadway connections. Development in such a manner has the potential to reduce motorized vehicle trips with the development as well as to destinations outside of UMore.

v) Site Traffic Trip Distribution

Trip distribution refers to the geographic orientation of vehicles approaching or departing a site. Analysis of the site's proposed land use alternatives and the intensity of the anticipated development indicates that some of the trips destined for the site will originate from within the development itself and include short trips, while other trips will originate outside the immediate UMore development area. Thus, it can be expected that those trips originating outside of the City will approach via TH 3, TH 52/55, CSAH 42 and CSAH 46. Trip distribution percentages based on the anticipated demographics and traffic characteristics of the area are shown in **Figure 21-4**.

Each land use within the study area also produces a directional trip distribution according to the time of day. The ITE trip generation manual provides directional trip distribution data that gives the percentage of vehicles entering and exiting the site for each land use type. For example, it can be expected that a large majority of the trips in the residential location would be leaving the area in the AM peak; similarly, most of the trips in the office and/or commercial area would be arrivals in the AM and departing during the PM peak.

Study Area Traffic Assignment

The future 2030 traffic volume estimates for each scenario were developed based on the trip generation estimates in **Table 21-4** and assigned to the roadway system based on the trip distribution shown in **Figure 21-4**. The projected 2030 traffic volumes were then added to the 2030 No Build (background) traffic to estimate the 2030 build traffic volumes.

The estimated AM and PM peak hour turning movements for both the No Build and Build conditions are shown in **Figures 21-5 to 21-8**. The estimated average daily traffic volumes for the No Build and Build scenarios are shown on **Figure 21-9**.

Table 21-4: Development Area Traffic Generation

Land Use	Time of Day	Scenario 1				Scenario 2				Scenario 3			
		Net Trips Generated			Total Land Use Units	Net Trips Generated			Total Land Use Units	Net Trips Generated			Total Land Use Units
		Total	In	Out		Total	In	Out		Total	In	Out	
Low Density Residential (ITE Code: 210)	Daily	27,040	13,520	13,520	811.4 acres	17,384	8,692	8,692	811.4 acres	20,908	10,454	10,454	627.4 acres
	AM Peak Hour	2,132	540	1,592		1,368	346	1,022		1,646	418	1,228	
	PM Peak Hour	2,840	1,788	1,052		1,827	1,152	675		2,199	1,385	814	
Low-Medium Density Residential (ITE Codes: 210, 231)	Daily	30,654	15,327	15,327	591.4 acres	24,268	12,134	12,134	591.4 acres	31,320	15,660	15,660	604.2 acres
	AM Peak Hour	2,554	673	1,881		2,021	534	1,487		2,607	687	1,920	
	PM Peak Hour	3,159	1,953	1,206		2,500	1,544	956		3,227	1,994	1,233	
Medium Density Residential (ITE Code: 231)	Daily	34,600	17,300	17,300	372.1 acres	25,960	12,980	12,980	372.1 acres	30,680	15,340	15,340	329.8 acres
	AM Peak Hour	2,994	760	2,234		2,240	567	1,673		2,653	673	1,980	
	PM Peak Hour	3,480	2,007	1,473		2,613	1,507	1,106		3,086	1,780	1,306	
High Density Residential (ITE Code: 223, 232)	Daily	424	212	212	4.7 acres	320	160	160	4.7 acres	424	212	212	4.7 acres
	AM Peak Hour	36	9	27		27	7	20		36	9	27	
	PM Peak Hour	44	27	17		33	20	13		44	27	17	
Light Industrial (ITE Codes: 110, 130, 150)	Daily	14,540	7,270	7,270	144.2 acres	14,540	7,270	7,270	144.2 acres	21,700	10,850	10,850	215.2 acres
	AM Peak Hour	1,708	1,438	270		1,708	1,438	270		2,548	2,146	402	
	PM Peak Hour	1,792	316	1,476		1,792	316	1,476		2,676	472	2,204	
Neighborhood Center (ITE Codes: 210, 223, 231, 231, 232, 710, 820, 826)	Daily	11,589	5,795	5,794	102.6 acres	9,865	4,932	4,933	102.6 acres	11,589	5,795	5,794	102.6 acres
	AM Peak Hour	847	299	548		698	261	437		847	299	548	
	PM Peak Hour	1,190	647	543		1,016	546	470		1,190	647	543	
Village Center (ITE Codes: 223, 231, 232, 710, 820, 826)	Daily	21,678	10,838	10,840	100.5 acres	20,169	10,085	10,084	100.5 acres	21,678	10,838	10,840	100.5 acres
	AM Peak Hour	1,355	634	721		1,228	603	625		1,355	634	721	
	PM Peak Hour	2,244	1,141	1,103		2,090	1,052	1,038		2,244	1,141	1,103	
Community Center (ITE Codes: 223, 231, 232, 710, 720, 813, 820, 854, 881, 912, 932)	Daily	29,255	14,240	15,015	91.6 acres	28,811	14,023	14,788	91.6 acres	29,255	14,240	15,015	91.6 acres
	AM Peak Hour	1,327	793	534		1,285	784	501		1,325	796	529	
	PM Peak Hour	2,753	1,238	1,515		2,708	1,213	1,495		2,757	1,234	1,523	
Regional Center (ITE Codes: 223, 231, 232, 813, 820, 854, 862, 863, 875, 881, 912, 932, 936, 945)	Daily	60,752	30,376	30,376	131.5 acres	60,518	30,258	30,260	131.5 acres	60,752	30,376	30,376	131.5 acres
	AM Peak Hour	2,866	1,554	1,312		2,842	1,546	1,296		2,866	1,554	1,312	
	PM Peak Hour	5,306	2,672	2,634		5,282	2,660	2,622		5,306	2,672	2,634	
Office/Business Park (ITE Codes: 750, 770)	Daily	11,758	5,879	5,879	227.2 acres	11,758	5,879	5,879	227.2 acres	19,124	9,562	9,562	369.7 acres
	AM Peak Hour	1,519	1,351	168		1,519	1,351	168		2,470	2,200	270	
	PM Peak Hour	1,539	261	1,278		1,539	261	1,278		2,506	427	2,079	
Open Space (ITE Codes: 411)	Daily	1,776	888	888	938.5 acres	1,776	888	888	938.5 acres	1,776	888	888	938.5 acres
	AM Peak Hour	192	100	92		192	100	92		192	100	92	
	PM Peak Hour	200	100	100		200	100	100		200	100	100	
TOTAL TRIPS GENERATED:	Daily	244,066	121,645	122,421		215,369	107,301	108,068		249,206	124,215	124,991	
	AM Peak Hour	17,530	8,151	9,379		15,128	7,537	7,591		18,545	9,516	9,029	
	PM Peak Hour	24,547	12,150	12,397		21,600	10,371	11,229		25,435	11,879	13,556	

Source: ITE Trip Generation 9th Edition

vi) Future 2030 No-Build and Build Operations Analysis and Deficiencies

A summary of the expected traffic operations for the key roadway segments is illustrated in **Table 21-5** for the 2030 No Build and Build Scenarios 1, 2 and 3. As noted previously, the LOS D/E boundary was used as the index of congestion. Based on the results shown in **Table 21-5**, no segments of roadway are congested in the No Build scenario. Those segments congested in the Build scenarios include:

- CSAH 42 from TH 3 to US 52 with all scenarios as 4-lane and with scenarios 1 and 3 as 6-lane.
- TH 3 from CSAH 42 to CSAH 46 with all scenarios
- Blaine Avenue from CSAH 42 to CSAH 46 with scenarios 1 and 3

A summary of the expected future 2030 peak hour traffic operations at the key intersections is included in the **Appendix C**. The analysis of the peak hour 2030 No Build Condition shows the following roadway deficiencies:

- The intersection of TH 3 and CSAH 42 operates poorly, especially in the PM peak hour, due to a lack of lanes to handle the projected traffic volumes. The intersection operates at LOS F in the PM peak hour.
- The high southbound traffic volumes at the Blaine Avenue and CSAH 42 intersection, coupled with a single left-through-right lane, cause traffic to queue resulting in unacceptable LOS operations at the intersection in the PM peak hour.
- Even with signals installed at the CSAH 42/US 52 Ramp intersections, the lack of available turn lanes on the SB off-ramp and through lanes under the bridge severely degrade the operations at the intersection in both peak hours.

The analyses of the Full Build Scenarios show that most key intersections will operate at LOS F conditions in either the AM and/or PM peak hours without addition of turn lanes or additional through lanes.

vii) Future 2030 Highway Expansion Needs

Lane Needs: The County has identified anticipated 2030 highway expansion needs in the “*Dakota County 2030 Transportation Plan*”. These improvements would be considered completed with the no-build scenario. The plan is shown in **Figure 21-10A** and include the following in the study area:

- Expansion of CSAH 42 from 4 lanes to 6 lanes west of Biscayne Avenue
- Expansion of CSAH 42 from 2 lanes to 4 lanes east of TH 52
- Expansion of CSAH 46 from 4 lanes to 6 lanes west of Biscayne Avenue
- Expansion of CSAH 46 from 2 lanes to 4 lanes from Biscayne Avenue to TH 52
- Extension of CR 73 (Akron Ave) from CSAH 42 south as a 2 lane roadway
- Extension of CSAH 71 (Blaine Ave) south as a 2 lane roadway

Table 21-5: Future 2030 Roadway Segment Level of Congestion

Roadway	Location	2030 No Build		Full-Build Scenario 1		Full-Build Scenario 2		Full-Build Scenario 3	
		AADT	LOS	AADT	LOS	AADT	LOS	AADT	LOS
CSAH 42	TH 3 to US 52	27,000 - 28,000	D/B	48,000 - 52,000	F/F	42,000 - 45,000	F/D	49,000 - 53,000	F/F
Future E/W Collector	Biscayne Ave to Blaine Ave	(Future)	---	2,000 - 15,000	B	2,000 - 12,000	B	2,000 - 16,000	B
CSAH 46	TH 3 to US 52	14,000 - 25,000	B	28,000 - 32,000	D	28,000 - 31,000	D	28,000 - 33,000	D
TH 3	CSAH 42 to CSAH 46	21,000	E	25,000	F	24,000	F	25,000	F
Biscayne Ave	North of CSAH 42	4,500	B	11,000	C	9,000	C	11,000	C
Biscayne Ave	CSAH 42 to 170 th St	7,100	B	6,000 - 10,000	C	5,000 - 9,000	C	6,000 - 10,000	C
Akron Ave (CR 73)	North of CSAH 42	10,000	C	18,000	E	16,000	D	18,000	E
Akron Ave	CSAH 42 to 170 th St	1,000 - 2,200	A	9,000 - 22,000	C/D	8,000 - 19,000	C/D	9,000 - 22,000	C/D
Audrey Ave	CSAH 42 to 170 th St	(Future)	---	5,000 - 17,000	B/D	4,500 - 15,000	B/D	5,000 - 17,000	B/D
Blaine Ave (CR 71)	CSAH 42 to CSAH 46	1,200	A	15,000 - 18,000	E	13,000 - 16,000	D	17,000 - 20,000	E
US 52	CSAH 42 to CSAH 46	40,600	C	47,000	C	45,000	C	48,000	C

Source: WSB & Associates, Inc., D/B = 4-lane/6-lane

Based on the proposed development scenarios and the analysis included in this traffic study, potential additional roadway expansion would be needed to accommodate the study area traffic. The anticipated lanes needs are shown in **Figure 21-10B**. The additional lane needs over those identified in by the County include:

- Expansion of CSAH 42 from 4 lanes to 6 lanes Biscayne Ave to TH 52
- Expansion of CSAH 46 from 2 lanes to 4 lanes east of TH 52
- Expansion of CR 73 (Akron Ave) from 2 lanes to 4 lanes south of CSAH 42 to the new east/west Major Collector
- Expansion of CR 71 (Blaine Ave) from 2 lanes to 4 lanes south of CSAH 42 to the new east/west Major Collector
- Development of the UMore development internal Major and Minor Collector roadway system

Access and Intersection Control: Access spacing and type of intersection (i.e. full or partial access) will follow either the County or City/Township access spacing guidelines depending on roadway jurisdiction. The CSAH 42 access spacing is based on the *“CSAH 42 Corridor Study Updated Recommendations for Segment 15 Adopted by the County Board”* and the *“Rosemount Transportation Plan”*.

The type of intersection control (i.e. side street stop, signalization, roundabout, or interchange) can be assessed at a planning level based on traffic volume thresholds. The criteria found in the *“Dakota County Transportation Plan”* and the Institute of Transportation Engineers indicates that: an interchange should be considered at a location where the total intersection volume is more than 70,000 vehicles per day, and; a signalized intersection or roundabout should be considered where the total intersection volume is more than 12,000 vehicles per day. Based on these criteria, **Figures 21-10A and 21-10B** show the anticipated Future 2030 No-Build and Build intersection access and control on the Major Collector and Arterial roadways. Installation of intersection control will be documented in an Intersection Control Evaluation (ICE) report as traffic conditions dictate.

Right-of-Way Needs: Additional right-of-way will be required with the expansion of existing roadways and development of new alignments. Based on the City of Rosemount, Empire Township and Dakota County guidelines the following right-of-way would be anticipated on roadways adjacent to or in the UMore development area.

Local City Street (urban/rural).....	60ft/80ft
2 lane City Street (urban/rural).....	80ft/100ft
2 lane County Road (urban/rural).....	100ft/110ft
4 lane City Street.....	100ft
4 lane County Road (undivided/divided).....	120ft/150ft
6 lane County Road.....	200ft

E. Transportation Mitigation Plan

Mitigation measures have been developed to address the future potential traffic demands on the local and regional roadway system with any of the build scenarios for the study area. These measures may include at the appropriate time the following:

- Evaluate and compare the traffic analysis prepared as part of the AUAR in coordination with the City of Rosemount, Empire Township and Dakota County with detailed roadway mitigation. Evaluation will occur with each large scale development plan submitted for approval, the City, Township and County Comprehensive Plan updates and/or with each five year AUAR review.
- Expansion of CSAH 42 from Biscayne Avenue to US 52 from 4 lanes to 6 lanes when warranted by traffic volumes.
- Construction of an interchange to replace the existing TH 3/CSAH 42 intersection. Interchange geometry will be proposed with future studies.
- Reconstruction of the existing interchange at CSAH 42 and US 52 as a system interchange to accommodate higher turning movements. The City of Rosemount's and Dakota County's 2030 Comprehensive Plans have identified this interchange as potentially serving a rerouted alignment of TH 55 in the future. Interchange configuration and lane geometry will be determined in future studies.
- Addition of intersection control (signal, roundabout, etc), documented in an Intersection Control Evaluation report, at locations that meet the required traffic warrants and intersection spacing guidelines in accordance with City, County, and Township guidelines including the updated CSAH 42 Segment 15 recommendations adopted by the County Board..
- Provide right-of-way required for future roadway expansion adjacent to and within the UMore property.
- Design and construction of the internal roadway system within the UMore development providing adequate service to each zone of development with turn lanes and traffic control as needed for safe and efficient traffic flow.
- Preparation of a Travel Demand Management (TDM) plan for the site, or portions thereof, prior to the first large scale development proposal. This would include, but is not limited to, action items for: transit (both bus and rail), non-motorized, and new technologies.
- Preparation of an Access Management Plan for the affected arterial and collector roadways prior to the first development proposal.

22) VEHICLE-RELATED AIR EMISSIONS

Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts.

A. Background

Each of the proposed study area development scenarios is anticipated to generate additional traffic, which will result in potential air quality impacts. This memorandum will discuss the potential air quality impacts associated with each of the development scenarios.

In addition to controlling air pollutants for which there are National Ambient Air Quality Standards, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories).

Controlling air toxic emissions became a national priority with the passage of the 1990 Clean Air Act Amendments, whereby Congress mandated that the U.S. Environmental Protection Agency regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System. In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers. These are acrolein, benzene, 1,3-butadiene, diesel particulate matter, plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of the National Environmental Policy Act. The FHWA will continue to monitor the developing research in this emerging field.

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the study scenarios and MSAT concentrations or exposures created by each of the study scenarios cannot be predicted with enough accuracy to be useful in estimating health impacts.

Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the scenarios would have "significant adverse impacts on the human environment."

B. Methodology

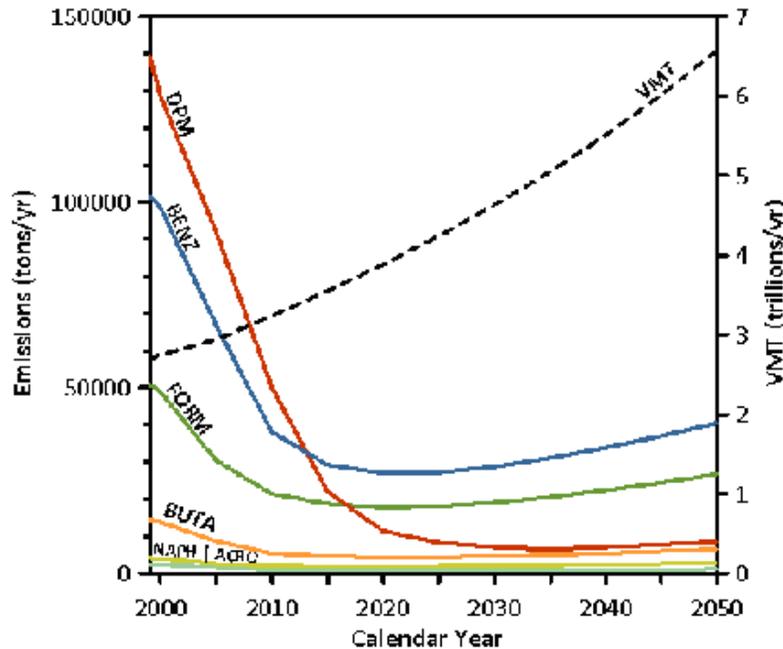
This document acknowledges that the build scenarios may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various scenarios. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*.

For each scenario in this AUAR, the amount of MSAT emitted would be proportional to the average daily traffic (ADT) assuming that other variables such as fleet mix are the same for each scenario. The ADT estimated for each of the build scenarios is higher than that for the no build condition, because of the new development that attracts trips that would not otherwise occur in the area. This increase in ADT means MSAT under the build scenarios would probably be higher than the no build condition in the study area. There could also be localized differences in MSAT from indirect effects of the project such as associated access traffic, emissions of evaporative MSAT (e.g., benzene) from parked cars, and emissions of diesel particulate matter from delivery trucks. Travel to other destinations would be reduced with subsequent decreases in emissions at those locations.

For all scenarios, emissions are virtually certain to be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by 72 percent from 1999 to 2050, as shown in the following graph. The magnitude of the EPA-projected reductions is so great (even after accounting for ADT growth) that MSAT emissions in the study area are likely to be lower in the future than they are today.

**NATIONAL MSAT EMISSION TRENDS 1999 - 2050
FOR VEHICLES OPERATING ON ROADWAYS
USING EPA'S MOBILE6.2 MODEL**



Note:

- (1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
- (2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors

Source: U.S. Environmental Protection Agency. MOBILE6.2 Model run 20 August 2009.

The U.S. Environmental Protection Agency has designated all of Hennepin, Ramsey, Anoka and portions of Carver, Scott, Dakota, Washington and Wright counties as a maintenance area for carbon monoxide. The UMore Park AUAR study area is in that portion of Dakota County that is in this carbon monoxide maintenance area.

The EPA has approved a screening method to determine which intersections need a hotspot analysis. A hot spot analysis is required if the intersection is above the benchmark average annual daily traffic (AADT) threshold or listed as one of the "Top Ten" intersections. All of the top ten intersections are within the Twin Cities carbon monoxide maintenance area. Below is a list of the top ten intersections and their 2007 AADT.

1. TH 169 at CSAH 81 – 79,400
2. TH 7 at CSAH 101 – 66,600
3. TH 252 at 85th Avenue – 66,800
4. University Avenue at Snelling Avenue – 59,700

5. TH 252 at Brookdale Drive – 61,300
6. Cedar Avenue at County Road 42 – 75,100
7. TH 7 at Williston Road – 54,900
8. University Avenue at Lexington Avenue – 59,700
9. TH 252 at 66th Avenue – 72,500
10. Hennepin Avenue at Lake Street – 37,000

The screening method demonstrates that because this project has less than the benchmark AADT's and does not involve or affect the "Top Ten Intersections," a hotspot analysis is not needed.

In summary, under all build scenarios in the design year it is expected there would be slightly higher MSAT emissions in the study area relative to the no build condition due to increased ADT. There also could be increases in MSAT levels in a few localized areas where ADT increases. However, EPA's vehicle and fuel regulations will bring about significantly lower MSAT levels for the area in the future when compared to today.

As demonstrated by the above information, this project conforms to the requirements of the Clean Air Act Amendments and the Conformity Rules, 40 CFR 93.

23) STATIONARY SOURCE AIR EMISSIONS

Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

AUAR Guidance: This item is not applicable to an AUAR. Any stationary air emission source large enough to merit environmental review requires individual review. These types of uses are not anticipated by this project.

24) ODORS, NOISE, AND DUST

Will the project generate odors, noise or dust during construction or during operation?

Yes No

If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

A. Background

Noise is defined as any unwanted sound. Sound travels in a wave motion and produces a sound pressure level. This sound pressure level is commonly measured in decibels. Decibels represent the logarithmic measure of sound energy relative to a reference energy level. A sound increase of three dBA is barely perceptible to the human ear, a five dBA increase is clearly noticeable, and a 10 dBA increase is heard twice as loud.

For highway traffic noise, an adjustment, or weighting, of the high- and low-pitched sounds is made to approximate the way that an average person hears sounds. The adjusted sound levels are stated in units of "A-weighted decibels" (dBA). In Minnesota, traffic noise levels that are exceeded 10% and 50% of the time during the hour of the day and/or night that has the heaviest traffic. These numbers are identified as the L10 and L50 levels.

Table 24-1 provides a rough comparison of the noise levels of some common noise sources.

Table 24-1. Decibel Levels of Common Noise Sources

Sound Pressure Level (dBA)	Noise Source
140	Jet Engine (at 25 meters)
130	Jet Aircraft (at 100 meters)
120	Rock and Roll Concert
110	Pneumatic Chipper
100	Jointer/Planer
90	Chainsaw
80	Heavy Truck Traffic
70	Business Office
60	Conversational Speech
50	Library
40	Bedroom
30	Secluded Woods
20	Whisper

Source: "A Guide to Noise Control in Minnesota," Minnesota Pollution Control Agency, <http://www.pca.state.mn.us/programs/pubs/noise.pdf> and "Highway Traffic Noise," FHWA, <http://www.fhwa.dot.gov/environment/htnoise.htm>

Along with the volume of traffic and other factors (i.e. topography of the area and vehicle speed) that contribute to the loudness of traffic noise, the distance of a receptor from a sound's source is also an important factor. Sound levels decrease as distance from a source increases. The following rule of thumb regarding sound decreases due to distance is commonly used: Beyond approximately 50 feet, each time the distance between a line source (such as a road) and a receptor is doubled, sound levels decrease by three decibels over hard ground, such as pavement or water, and by 4.5 decibels over vegetated areas.

B. State of Minnesota Noise Standards

The State of Minnesota has enacted noise standards that regulate the traffic noise levels on surrounding properties. Noise standards vary based on the intended use of the impacted property, known as Noise Area Classifications (NAC), as well as the time of day (daytime and nighttime). The noise standards regulate hourly L₁₀ and L₅₀ noise levels, the noise levels exceeded 10 percent and 50 percent of the hour, respectively. The State noise standards are shown in **Table 24-2**.

Table 24-2: MPCA State Noise Standards – Hourly A-Weighted Sound Levels

Noise Area Classification	General Land Use	Sound Pressure Level (dBA)			
		Daytime (7:00 AM - 10:00 PM)		Nighttime (10:00 PM - 7:00 AM)	
		L ₁₀	L ₅₀	L ₁₀	L ₅₀
NAC-1	Residential	65	60	55	50
NAC-2	Commercial	70	65	same as daytime	
NAC-3	Industrial	80	75	same as daytime	

City and County roadways are often exempt from State noise standards as per Minnesota Statutes Section 116.07, Subd. 2a. Under this statute, City and County roadways are generally exempt from State noise standards unless “full control of access has been acquired.” Full control of access has not been acquired for any of the study area roadways. Because of this exemption, exceeding the State noise standards on the roadways within the study area does not require noise mitigation.

C. Methodology

Existing and future traffic noise levels were estimated using a quantitative model. Noise modeling was completed using the noise prediction program MINNOISE, a version of the FHWA STAMINA 2.0 model adapted by MN/DOT and approved by the Minnesota Pollution Control Agency (MPCA). This model uses peak hour vehicle volume, speed, vehicle class, and the typical characteristics of the roadway to estimate traffic noise levels. In all MINNOISE models, an alpha factor of 0.5 was used to represent the soft ground in the area, and no shielding factors were used.

The model was used to estimate PM peak hour traffic noise for five scenarios: Existing (2011), No Build (2030), Land Use Scenario 1 (2030), Land Use Scenario 2 (2030), and Land Use Scenario 3 (2030). Vehicle class percentages throughout the study area were assumed to be 96% cars, 2% medium trucks, and 2% trucks/buses in all scenarios. The PM peak hour traffic volumes were assumed to be 10% of the existing and projected daily traffic volumes.

The traffic noise impacts associated with each scenario were assessed by modeling noise levels at 19 receptor sites. The receptor sites were chosen to represent a mixture of existing sensitive receptors surrounding the UMore Park area as well as representative sites throughout the UMore Park area. **Table 24-3** provides a general description of the modeled receptors. The receptor locations are shown on **Figure 24-1**.

Table 24-3. General Description of Modeled Receptor Locations.

Receptor Number	General Description of Receptor Location
1, 2, 4, 6, 8, 9, 11	existing single family home adjacent to the study area
3	Dakota County Technical College
5	St. Johns Cemetery & Lutheran Church
7	Dog Park
10, 12, 13, 14, 15, 16, 17, 18, 19	area within study area with potential for high noise impact

D. Results

The results of the PM Peak Hour sound level models are shown in **Table 24-4**. The model results indicate that the project will have a traffic noise impact on surrounding properties. The model predicts that State noise standards will be exceeded during daytime hours at many of the receptor locations. Anticipated L₁₀ sound levels in each of the three development scenarios increases from 2 to 5 dBA over the No Build scenario at most receptor locations. Larger increases in sound levels are anticipated at some receptor locations within the project area where there is little or no existing traffic. However, these standards do not apply to the study area roadways.

Table 24-4. Traffic Noise Modeling Results

Receiver	Future Land Use	Existing		2030 No Build		2030 Scenario 1		2030 Scenario 2		2030 Scenario 3	
		L ₁₀	L ₅₀								
1	NAC-1	66.2	60.6	68.3	63.6	71.3	68.1	70.9	67.6	71.4	68.2
2	NAC-1	67.4	61.1	70.5	65.5	73.3	69.5	72.7	68.7	73.5	69.7
3	NAC-1	63.8	58.2	66.7	62.4	69.9	67.0	69.3	66.2	70.0	67.2
4	NAC-1	60.1	55.5	62.6	59.1	65.6	63.1	65.0	62.4	65.7	63.3
5	NAC-1	67.9	61.4	71.4	66.3	74.2	70.4	73.6	69.6	74.3	70.6
6	NAC-1	52.1	50.6	53.2	51.9	56.2	54.9	56.0	54.6	56.6	55.2
7	NAC-1	49.0	46.5	52.5	47.8	58.8	55.4	58.4	54.9	59.8	56.7
8	NAC-1	44.6	35.7	52.6	42.8	56.6	48.3	56.5	48.1	56.6	48.3
9	NAC-1	55.6	44.2	61.9	52.4	65.2	56.9	64.4	55.7	65.2	56.9
10	NAC-1	62.0	56.6	63.4	58.6	67.1	63.9	66.5	63.1	67.3	64.1
11	NAC-1	56.7	46.4	64.5	56.6	67.9	61.8	67.4	61.0	67.9	61.7
12	NAC-2	67.2	60.2	68.7	62.3	73.4	69.1	72.8	68.3	73.5	69.3
13	NAC-1	60.5	55.3	61.7	57.0	66.5	63.8	66.1	63.2	66.6	63.9
14	NAC-2	64.3	58.2	65.6	60.1	70.4	67.1	70.0	66.5	70.6	67.4
15	varies*	52.5	41.9	60.0	51.3	69.7	64.4	69.0	63.4	70.4	65.4
16	NAC-2	49.6	40.9	53.5	42.4	69.9	64.6	69.3	63.6	69.8	64.5
17	NAC-1	48.0	40.7	58.7	50.4	68.8	64.5	68.0	63.4	68.6	64.2
18	NAC-2	49.4	48.1	50.7	49.6	60.2	54.2	60.0	54.0	61.1	55.4
19	NAC-2	62.3	56.8	63.4	58.4	67.7	64.5	67.4	64.1	67.9	64.8

*Receptor site 15 is projected to be NAC-1 in 2030 Scenario 1 and 2030 Scenario 2, and NAC-2 in Scenario 3.

Shaded cells represent an exceedance of the applicable noise standard.

i) Odors and Dust

Dust typical of construction activities would occur as a result of the UMore Park development scenarios. Dust generated through construction would be minimized through standard dust control measures such as watering. After construction is complete and final ground cover is in place, dust generation is not anticipated. Construction activities are not anticipated to generate any unusual odors, and future land use has not been determined to a level that it is possible to know if individual properties will generate unusual odors. Mitigation of any particular property that is anticipated to generate odors will occur through the normal city development and permitting process.

E. Mitigation Measures

Site plans for future developments should include measures such as appropriate setback distances, earthen berms, noise walls, and appropriate site design (such as outdoor activity areas being developed away from major noise sources). Each of these items should be considered on a case-by-case basis. The site plans developed for specific projects should show the proposed locations and types of mitigation, with the estimated noise reductions for all areas projected to exceed noise standards.

25) NEARBY RESOURCES

Are any of the following resources on or in proximity to the site?

Archaeological, historical, or architectural resources? Yes No

Prime or unique farmlands or land within an agricultural preserve? Yes No

Designated parks, recreation areas, or trails? Yes No

Scenic views and vistas? Yes No

Other unique resources? Yes No

**If yes, describe the resource and identify any project-related impacts on the resource.
Describe any measures to minimize or avoid adverse impacts.**

A. Archaeological, historical or architectural resources

A search of the Minnesota Archaeological Inventory and Historic Structures Inventory revealed no archaeological sites on the UMore property. Historic properties were identified; all are linked to the Gopher Ordinance Works. The following is the list of Previously Inventoried Architectural History Properties. The property locations are shown on **Figure 25-1**.

Table 25-1 Nearby Resources – Previously Inventoried Architectural History Properties

PROPNAME	ADDRESS	PROPCAT	PROPTYPE	HISTCONTXT	DATESURVEY	Label
Building 260-D	Rosemount Research Center	Industry	manufacturing facility		5/3/1993	0
Gopher Ordnance Works Buildings 223-A, 223-B	163xx Asher Ave.	Industry	manufacturing facility		5/3/1993	1
Gopher Ordnance Works Building 401-B	158xx Angus Ave.	Industry	manufacturing facility		5/3/1993	2
Gopher Ordnance Works 214 Buildings	off Barbara & Blaine Aves.	Industry	manufacturing facility		5/3/1993	3
Gopher Ordnance Works 214 Buildings	off Barbara & Blaine Aves.	Industry	manufacturing facility		5/3/1993	4
Gopher Ordnance Works buildings 402-B, 412-B	157xx Angus Ave.	Industry	manufacturing facility		5/3/1993	5
Chicago, Milwaukee, St. Paul & Pacific Railway (inactive)					18991230	6
Gopher Ordnance Works Buildings 301-B	Rosemount Research Center	Industry	manufacturing facility		5/3/1993	7
Gopher Ordnance Works Building 208-B		Industry	manufacturing facility		5/3/1993	8
Gopher Ordnance Works Building 208-B		Industry	manufacturing facility		5/3/1993	9
Chicago Great Western Railway (inactive)					18991230	10
Gopher Ordnance Works Building 446-C	21xx 155nd St. E.	Industry	manufacturing facility		5/3/1993	11
Gopher Ordnance Works Building 446-C	21xx 155nd St. E.	Industry	manufacturing facility		5/3/1993	12
Gopher Ordnance Works Building 401-A	155xx Blaine Ave.	Industry	manufacturing facility		5/3/1993	13
Gopher Ordnance Works Building 401-A	155xx Blaine Ave.	Industry	manufacturing facility		5/3/1993	14
Gopher Ordnance Works Buildings 412-A, 402-A	154xx Blaine Ave.	Industry	manufacturing facility		5/3/1993	15
Gopher Ordnance Works Buildings 412-A, 402-A	154xx Blaine Ave.	Industry	manufacturing facility		5/3/1993	16
Gopher Ordnance Works Building 108-B	ca. 22560 153rd St.	Industry	manufacturing facility	Word War II Manufacturing	5/3/1993	17
Gopher Ordnance Works Building 108-B	ca. 22560 153rd St.	Industry	manufacturing facility	Word War II Manufacturing	5/3/1993	18
Gopher Ordnance Works Building 704-W	15325 Babcock Ave.	Industry	office building		5/3/1993	19
Gopher Ordnance Works Building 704-W	15325 Babcock Ave.	Industry	office building		5/3/1993	20
Gopher Ordnance Works Building 717-A	ca. 15290 Babcock Ave.	Industry	manufacturing facility		5/3/1993	21
Gopher Ordnance Works Building 717-A	ca. 15290 Babcock Ave.	Industry	manufacturing facility		5/3/1993	22
Gopher Ordnance Works Building 303-A	Rosemount Research Center	Industry	manufacturing facility		5/3/1993	23
Gopher Ordnance Works Building 303-A	Rosemount Research Center	Industry	manufacturing facility		5/3/1993	24
Gopher Ordnance Works Building 706-B	ca. 15250 Blaine Ave.	Industry	manufacturing facility		5/3/1993	25
Gopher Ordnance Works Building 706-B	ca. 15250 Blaine Ave.	Industry	manufacturing facility		5/3/1993	26
Gopher Ordnance Works Buildings 102-A, 102-B, 102-C	ca. 2200 152nd St. E.	Industry	manufacturing facility		5/3/1993	27
Gopher Ordnance Works Buildings 707-FFF, 707-J, 707-LL	ca. 1900 152nd St. E.	Industry	manufacturing facility		5/2/1993	28
Gopher Ordnance Works Buildings 707-FFF, 707-J, 707-LL	ca. 1900 152nd St. E.	Industry	manufacturing facility		5/2/1993	29
Gopher Ordnance Works Building 718A	ca. 2000 152nd St. E.	Industry	manufacturing facility		5/3/1993	30
Gopher Ordnance Works Building 718A	ca. 2000 152nd St. E.	Industry	manufacturing facility		5/3/1993	31
Gopher Ordnance Works Building 411-B	ca. 1939 152nd St. E.	Industry	water tower		5/3/1993	32
Gopher Ordnance Works Building 411-B	ca. 1939 152nd St. E.	Industry	water tower		5/3/1993	33
house	ca. 2500 151st St. E.	Domestic	residence		5/3/1993	34
house and garage	14600 Blaine Ave.	Domestic	single dwelling		9/27/2010	35

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 gunpowder 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. Very few of the original World War II buildings remain today.

In recent years, the University of Minnesota has undertaken studies which further address archeological, historical and architectural resources. A brief summary of these initiatives follows:

March, 2011 – Final Environmental Assessment for the University of Minnesota Wind Energy Research Consortium Project – U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Golden Field Office

This study included an examination of cultural resources as part of a proposal for a wind turbine on a 212 acre section of land in the northeastern corner of the UMore property. The permanent construction footprint of the turbine facility occupies .6 acres. The wind turbine project was completed and began operation in 2012.

The report can be found at:

http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/EA-1791-FEA-2011.pdf

September, 2009 – Phase 1A Archaeological Survey for the UMore Park Sand and Gravel Mining Environmental Review Services, Dakota County, Minnesota

In October and November of 2008 and in September of 2009, a Phase IA archaeological survey of the UMORE site was conducted as part of the Sand and Gravel Mining Environmental Review (EIS). Since there was no federal involvement in the project, the investigation was compliant with applicable state mandates governing cultural resources such as the Minnesota Historic Sites Act, the Minnesota Field Archaeology Act, and the Minnesota Private Cemeteries Act. The report presents the methodology, previous cultural resources investigations in the project area, results of the Phase IA archaeological survey and recommendations regarding archaeological resources.

The report can be found at:

http://conservancy.umn.edu/bitstream/93303/1/UMorePhIAFinalReport_September2009.pdf

April, 2006 - A Historical Interpretation and Preservation Plan for UMore Park

As a part of a broader comprehensive planning process that began in 2003, a historical plan was assembled for the UMore property in 2006. The plan included:

- A literature search to trace the history and evolution of the site;
- The identification of themes in the history of the site that may form the basis for possible future interpretative programs;
- Development of a historic context narrative that addresses factors that have affected development and utilization of the site over time;
- A baseline field survey to identify and inventory extant buildings, objects and structures on the site;
- Evaluation of extant structures; and
 - Recommendations

The report can be found at:

https://conservancy.umn.edu/bitstream/60998/1/Lauber%2c%20John_AHistoricalIntpretationandPreservationPlanforUMorePark.pdf

B. Prime or Unique Farmlands

According to the Dakota County Soil Survey, many of the soils within the study area are listed as prime farmland soils. Prime farmland soils in Dakota County include the following map units:

Chetek, Garwin, Kennebec Variant, Joy, Kennebec, Otterholt, Dickinson, Port Byron, Rockton, Lindstrom, Spillville, Tallula, Kingsley, Wadena, Waukegan, Kanaranzi, Estherville, Mahtomedi, Antigo, Harwick, and Bold.

Figure 25-2 shows the distribution of dominant soil types on the UMore property. Waukegan silt loam covers 54 percent of the UMore Park property. 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 6 to 20 inches per hour. Because of the high drainage rates, irrigation is required during normal crop years to mitigate drought impacts. The Waukegan soils at UMore Park are highly suitable for building foundations; however, maintaining adequate vegetation on the site is required to control soil erosion.

Prior to construction of the Gopher Ordinance Works (GOW), the soils beneath the site of the plant (24% 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. Correspondingly, the soils within the footprint of the GOW were reclassified as Urban Land Waukegan Complex soils, although residual amounts of Waukegan loam and other higher quality soils exist inside of the former GOW boundaries as well.

C. Designated parks, recreation areas, or trails

A number of park, trail and open space areas are identified in plans by the City of Rosemount, Empire Township and Dakota County as well as within the University of Minnesota's Concept Master Plan for the development of UMore Park. Existing and proposed facilities include the following:

Greenways

Dakota County has an extensive network of existing and planned greenways that meander throughout the County. Segments of the planned greenway network pass from north to south through UMore Park starting just west of the DCTC campus. Another planned greenway passes through UMore Park near Blaine Avenue on the east. In Empire Township, a north/south segment of the planned greenway connects to the Vermillion Highlands MWMA and points further south. Greenways will need to be accommodated as UMore Park develops in the future.

Whitetail Woods Regional Park

Whitetail Woods Regional Park is a new 460 acre park owned and operated by Dakota County. Planning efforts for the park are ongoing.

Vermillion Highlands

Vermillion Highlands is a 2,822 acre modified research, recreation and wildlife management area (MWMA) jointly managed by the University of Minnesota and the Minnesota DNR in conjunction with Empire Township and Dakota County. The facility includes research; education and public engagement; public access for diverse, high-quality recreation; and wildlife management and hunting. In the future, trails from the UMore Park development may connect to trails in Vermillion Highlands. Existing facilities in Vermillion Highlands also include equestrian trails and the Dakota County Gun Club.

Another wildlife management area (WMA) lies in Empire Township just to the west of Vermillion Highlands, immediately south of Whitetail Woods Regional Park. An aquatic management area lies south of Vermillion Highlands on the north side of the Vermillion River.

Dakota Woods Dog Park

Dakota Woods Dog Park is a 16 acre, wooded off-leash dog park located in Empire Township.

Ames Soccer Complex at DCTC

The Ames Soccer Complex is the City of Rosemount's newest park. The facility sits on approximately 13 acres of land just southwest of DCTC on land formerly owned by the University of Minnesota.

D. Scenic views and vistas

There are no significant views or vistas within the study area. Areas within Vermillion Highlands, just south of the UMore site have views to the Vermillion River. Planned greenway corridors by Dakota County as well as trail networks though UMore Park will provide recreational and viewing opportunities for the natural areas within the study area.

The eventual and long-term change from agriculture to urban development forms will change the look of the area but is not expected to impact any significant views or vistas. Sightlines into the adjacent Vermillion Highland MWMA will be preserved through the retention of open space and as a result of the expected pattern of low-density residential uses in the area in the future.

E. Nearby Resources Mitigation Plan

- Currently, UMore Park is not receiving federal funding or permitting. Should federal funding or permitting be required in the future, the project:
 - Must comply with Section 106 of the National Historic Preservation Act of 1966 (Section 106);
 - The lead federal agency will be required to initiate consultation with applicable Native American Tribes; and
 - Additional architectural surveys may be required.
- Erosion control measures will be required during construction to control the loss of Waukegan soils and other soil types susceptible to erosion. All disturbed areas will be required to be re-seeded and mulched as needed.
- As appropriate, site and building plans will reflect and enhance any significant views of natural features.
- Park dedication will be in conformance to the codes and requirements of the City of Rosemount and Empire Township.

26) VISUAL IMPACTS

Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? Yes No

If yes, explain.

Development within the study area is anticipated to occur in a manner similar to the surrounding area in Rosemount and accordingly, no adverse impacts are anticipated resulting from implementation of the development scenarios. At the present time, the City of Rosemount is developing an active athletic park adjacent to the Dakota County Technical College that may include lighting. Should facilities be lighted, light spillage to adjacent properties can be controlled through screening and fixtures with appropriate cut-offs.

The UMore Park Mining Area is located in the western portion of the UMore site. Gravel mining in the area is anticipated to occur for the next 25+ years. During that time, berms and landscape screening will buffer visual impacts from adjacent properties.

A. VISUAL IMPACTS MITIGATION MEASURES

- Through the development review process, the City will require appropriate screening of development in the study area to control adverse visual impacts.

27) COMPATIBILITY WITH PLANS AND LAND USE REGULATIONS

Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? Yes No

If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

A. City of Rosemount Comprehensive Plan

The City of Rosemount has an existing Comprehensive Plan in place that was completed in November, 2009. This Plan is consistent with the requirements of the Metropolitan Land Planning Act for plan updates. The plan was reviewed by the Metropolitan Council and found to be consistent with the regional policies and with Metropolitan Council’s regional system plans. The plan complies with the requirements set out in Minnesota Rules 4410.3610, Subpart 1, which requires local comprehensive plans to address land use, transportation, and sanitary sewer systems and include an implementation program.

The Future Land Use Plan as shown in the City’s Comprehensive Plan designates the UMore Park Property as “AGR – Agricultural Research”. While the three development scenarios represent interpretations of the University’s Concept Master Plan for UMore Park that was adopted by the Board of Regents on December 12, 2008, Scenarios 1, 2 and 3 would require modifications to the Comprehensive Plan to allow the land uses that are being proposed. The AUAR area is designated as an “Ultimate Residential” area as shown on the Potential Ultimate Service Area Map in the Comprehensive Sanitary Sewer System Plan. This indicates that municipal sanitary sewer service is anticipated for the AUAR area at some point and future development would follow. Scenario 4 is consistent with the Comprehensive Plan as proposed and does not require an amendment.

B. Empire Township Comprehensive Plan

The AUAR area discussed in this document includes approximately 1800 acres within Empire Township. The Township has an existing Comprehensive Plan that was completed in August, 2009. The Township’s Comprehensive Plan is consistent with the requirements of the Metropolitan Land Planning Act for plan updates, and was also reviewed by the Metropolitan Council and found to be consistent with the regional policies and with the Metropolitan Council’s regional system plans. The Township’s plan complies with the requirements set out in Minnesota Rules 4410.3610, Subpart 1.

The 2030 Future Land Use Plan designates the majority of the property within the AUAR area as “University of Minnesota (UMORE),” including a “Mining Overlay Area,” and approximately 120 acres of “Public Park, Recreation and Open Space”. A “Regional Trail Search Corridor” is also identified within the study area. Modifications to the Comprehensive Plan will be required to permit the land uses that are included in Scenarios

1, 2 and 3. Scenario 4 is consistent with the Empire Township 2030 Comprehensive Plan as proposed and will not require an amendment.

C. City of Rosemount Zoning Ordinance

In an effort to ensure the compatibility of land uses, prevent urban blight, and enhance the quality of life for its residents by protecting public health, safety, convenience and general welfare, the City of Rosemount has adopted a zoning ordinance. The AUAR area is currently zoned “AG – Agricultural”.

The “AG – Agricultural” Zoning District is primarily established to encourage the long term continuation of agricultural and related uses in the City in areas which are both suitable for agricultural and are not planned for urban development. In the AG Zoning District, permitted uses include agriculture; commercial greenhouses and landscape nurseries; commercial livestock, furbearing animals and fowl, dairy farming, and commercial horse stables; essential service facilities; keeping of horses; and single-family detached dwellings (1 unit per 40 acres).

If the components of the land uses proposed in Scenarios 1, 2, or 3 are adopted through a subsequent amendment to the Comprehensive Plan, amendments to the Zoning Ordinance (Zoning Map) will need to occur in order to be consistent with any amendments to the Comprehensive Plan. New zoning districts may need to be adopted to accommodate the AUAR Low-Medium Residential, Neighborhood Center, Village Center, and Community Center land uses and innovative measures referenced in **Appendix B**. A small lot single family zoning district may be considered to implement the Low-Medium Density Residential land use. An evaluation will be needed to determine if the existing DT-Downtown zoning district can implement the various Center land use districts or if a new mixed use zoning district would need to be adopted. Use of planned development techniques is anticipated, as well. Scenario 4 is consistent with the Zoning Ordinance and will not require an amendment.

D. Empire Township Zoning Ordinance

To ensure compatibility with the Comprehensive Plan, comply with statutory requirements, and to protect the public health, safety and welfare, Empire Township has enacted a zoning ordinance. The entire AUAR area is currently zoned “AG – Agricultural Preservation”. The AG Zoning District is intended primarily for application to those areas of the Township where it is necessary and desirable, because of the high quality of soils, availability of ground water, and/or highly productive agricultural capability and the use of land, to preserve, promote, maintain, and enhance the use of land for commercial agriculture purposes and to protect such land from encroachment by non-agricultural related uses, structures or activities.

Permitted uses within the AG Zoning District include any and all forms of commercial agricultural and commercial horticulture; feedlots and poultry operations; farm buildings and accessory uses; farm drainage and irrigation systems; forestry and grazing; single-family dwelling units (1 unit per 40 acres) ; historic sites; home occupations; agricultural preserves; and publicly owned and operated wastewater treatment plants.

If the components of the land uses included in Scenarios 1, 2 or 3 are considered through a subsequent amendment to the Empire Township 2030 Comprehensive Plan, amendments to the Empire Township Zoning Ordinance (including the Zoning Map) will need to occur for compatibility and consistency. Scenario 4 is consistent with the Zoning Ordinance and does not require an amendment.

E. Metropolitan Council – 2030 Regional Development Framework

Portions of the City of Rosemount and Empire Township are designated as a “Developing Community” while other portions are designated as “Agricultural” in the 2030 Regional Development Framework. These designations indicate that the Metropolitan Council anticipates growth and development in these communities. Although the AUAR area is not designated as a “Developing Community”, rather an “Agricultural” area, the Regional Wastewater System Long Term Service Area does identify this area as “potentially serviceable”.

Being designated as “Agricultural”, the portions of both communities that are within the AUAR area are currently anticipated by the Metropolitan Council to preserve high-quality soils for existing or future agricultural use. The Metropolitan Council currently anticipates that investments in regional infrastructure such as roads, wastewater treatment, and park and open space will be for rural levels of service consistent with the intent to maintain agriculture.

As the Council updates its system plans, the feasibility of providing regional services in response to potential development of agricultural areas both pre- and post-2030 will need to be further examined. As the Council’s System Plan is currently written, the 2030 Regional Development Framework does not recognize development consistent with Scenarios 1, 2 and 3. The City of Rosemount and Empire Township will need to partner with the Council to identify potential community and regional infrastructure improvements and timeframes necessary to accommodate the UMore development scenarios as identified.

Scenario 4 is compatible with regional policies including, but not limited to, working with local and regional partners to conserve, protect and enhance the regions vital natural resources; planning and investing in multi-modal transportation choices based on the full range of costs and benefits, to slow the growth of congestion and serve the region’s economic needs; and working with communities to accommodate growth in a flexible, connected and efficient manner.

F. Compatibility with Land Use Regulations Mitigation Plan

- If the AUAR area develops as shown in Scenarios 1, 2 or 3, changes will be needed to the City of Rosemount’s Comprehensive Plan, Empire Township’s Comprehensive Plan, the Metropolitan Council’s 2030 Regional Development Framework, and both the City’s and Township’s zoning ordinances through the respective amendment processes.

28) IMPACT ON INFRASTRUCTURE AND PUBLIC SERVICES

Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project?

Yes No

If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

A. Municipal Water System Improvements

Municipal water service will be provided to development in the study area. Water demand was estimated for each scenario based on proposed land uses. Impacts to the existing water system and water system improvements necessary to serve proposed land uses for each scenario were evaluated. With appropriate mitigation, the municipal water system can accommodate the development. Item 13 within the AUAR provides detailed analysis and specific mitigation.

B. Storm Water Management Improvements

Due to the conceptual nature of the development scenarios, the amount of impervious surfaces for each land use was estimated based on the estimates in the City of Rosemount's Nondegradation Report Dated December 20, 2007 and by characterizing the impervious surface amounts of existing developments in the City and Empire Township.

The existing conditions and three proposed land use scenarios were evaluated. All three of the land use scenarios represent a similar amount of proposed impervious surface. Storm water management for any scenario can be provided through a combination of wet detention ponds and infiltration features. The soils within the study area will likely provide suitable conditions for achieving volume reduction and pollutant reduction through the use of infiltration. Item 17 within the AUAR provides detailed analysis and specific mitigation measures.

C. Sanitary Sewer Improvements

Sanitary sewer will be provided to the study area as it is developed. Wastewater generated from the study area will be directed to the MCES's Rosemount Interceptor sewer that discharges to the Empire Wastewater Treatment Facility (WWTF). With varying ground elevations, three new lift stations will be required to convey the wastewater to the Rosemount Interceptor under Scenarios 1, 2, and 3. There is potential for alternative sanitary sewer layouts where the flow can be directed downstream of the MCES lift station or west to the Rosemount Interceptor adjacent to Biscayne Avenue. Item 18 within the AUAR provides detailed analysis and specific mitigation measures.

D. Traffic and Transportation

The existing conditions were analyzed as the baseline for the future year analysis. Four development scenarios were analyzed including the no-build and three build scenarios. Future land development will have an impact on the operations of roadways and intersections in the project area. Increased trips from future development scenarios were used to forecast future traffic volumes and evaluate traffic operations on the roadway system within the study area.

The year 2030 was assumed for the traffic analysis of each scenario for the full build of the site. The year was selected to represent the current transportation system analysis time horizon used by the City of Rosemount, Empire Township, Dakota County and Metropolitan Council. Full build out of the study area is highly likely to occur after the analysis time horizon. In addition, although concept planning has occurred on the UMore site, anticipated phasing of the planned development has not yet been finalized. It is anticipated that this analysis will be reviewed based on one of the following potential triggers, if deemed necessary:

- With each proposed development proposal
- With the City of Rosemount's, Empire Township and/or Dakota County's Comprehensive Plan updates
- With the 5-year AUAR evaluation process

Based on this analysis, the transportation improvements are outlined as mitigation measures. However, these represent a worse-case scenario and will be further refined with future five-year AUAR evolution as Comprehensive Planning for the City, Township, County, and Met Council are completed.

E. Police and Fire Department

Development will also have an impact on social services such as police, fire, and community activities. The City has its own police and fire department. The City has approximately 40 paid-on-call firefighters and approximately 18 police officers. These services will be provided to the study area. The City uses a ratio of residents to police officers to estimate the need for additional police service. At the 2010 US Census, the population for the City of Rosemount was 21,874. The UMore Park development calls for an increase of 20,000 to 30,000 people over the next 25-30 years. Keeping the same ratio of residents to police officers, the City will need to increase the number of police officers by 100%-150% by the time the area is fully developed. The City will evaluate the need for additional officers and will provide additional officers as needed. Similar increases for fire department staff and other community services may also be necessary. The City currently has two fire stations. Fire Station 1 is located on the west side of the city near Dodd Boulevard and Shannon Parkway. Fire Station 2 is on the eastern side of the city off Connemara Trail near Meadows Park. It is likely that the study area would be serviced by Fire Station 2 but a need for a third fire station will likely arise as the area develops.

While Empire Township contracts with the City of Farmington for police and fire protection, the City and Township have an agreement that the UMore area is to be served by the City of Rosemount. It is anticipated the two entities will continue these services within the existing boundaries of the agreements as they currently do.

Additional municipal staff would be anticipated to be needed and the increased demands for staff are expected to be commensurate with the level and density of the development.

F. School System

The study area is located within Independent School District #196. There are four elementary schools in or nearby the study area. Rosemount also has one middle school and one high school. For the 2012 school year, enrollment at Rosemount area schools is as follows:

Rosemount Elementary – 664
Shannon Park Elementary – 804
Diamond Path Elementary – 759
Rosemount Area Learning Center - 153
Rosemount Middle – 1,185
Rosemount Senior High – 2,174

There are also two nonpublic schools located in Rosemount: First Baptist School which offers Pre K – 12 and The Church of St. Joseph Catholic School which offers K – 8.

The Concept Master Plan was reviewed with the School District during the U of M's development of that plan. As the UMore site develops and population increases, the School District may need to explore building an additional high school as well as additional middle and elementary schools in viable locations.

29) CUMULATIVE IMPACTS

Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the “cumulative potential effects of related or anticipated future projects” when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under appropriate item(s) elsewhere on this form).

The UMore Park study area encompasses approximately 4,900 acres in southern Rosemount and northern Empire Township. The AUAR itself analyzed cumulative impacts of development in this area and identified impact to infrastructure. Guidance for the AUAR states that because an AUAR by its nature is intended to deal with cumulative potential effects from future development within the AUAR, the AUAR should focus on influence of the development by past, present, or reasonably foreseeable future projects outside of the study area. Cumulative impacts related to these interactions are discussed below:

A. Past and Present Development

In 2007, the City of Rosemount completed an AUAR for the CSAH 42/Akron study area which is a 1,500 acre area immediately north of CSAH 42 across from the Dakota County Technical College campus. That AUAR was subsequently updated in 2012. The analysis of infrastructure impacts as well as the City's Comprehensive Plan within the UMore AUAR takes into account development occurring within the CSAH 42/Akron study area.

In 2010, the UMore Sand and Gravel Resources Environmental Impact Statement (EIS) was completed that analyzed impacts associated with sand and gravel mining in the western

third of the UMore AUAR study area that encompasses approximately 1,700 acres. The environmental impacts of the sand and gravel mining have been addressed in the EIS and the land use end point of the gravel mining in this area has been assumed to be the starting point for the AUAR analysis.

In 2012, the Rosemount City Council approved the Large Scale Mineral Extraction permit for Dakota Aggregates to mine gravel on approximately 600 acres of land north of County Road 46 and east of Biscayne Avenue over the next 25 years. The permit includes the use of an additional 170 acres of land north of County Road 46 and west of Akron Avenue for mining ancillary uses (aggregate processing, concrete production, asphalt production, etc.) over the next 40 years. The mining is permitted to use Akron Avenue or Biscayne Avenue to access County Road 42 through 2028. After 2028, mining traffic will only be allowed to access County Road 46.

Dakota Aggregates anticipates mining an additional 600 acres of land within Empire Township after the majority of the mining in Rosemount has been completed. Empire Township will need to review and approve that request before the mining in Empire Township can commence.

There are two active gravel mining operations within Empire Township located south of the study area.

B. Reasonably Foreseeable Future Projects

Neither the City nor the Township is aware of any reasonably foreseeable future projects.

The AUAR itself is a cumulative impact analysis. The UMore study area represents a large development. Through this environmental review process and the City of Rosemount Comprehensive Plan and Empire Township planning efforts, these cumulative impacts can be addressed and mitigation provided through infrastructure improvements, zoning regulations, and mitigation outlined in the environmental review documents.

30) OTHER POTENTIAL ENVIRONMENTAL IMPACTS

If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

There are no other potential environmental impacts known at this time.

APPENDIX B

University of Minnesota Vision, Concept Master Plan
and Aspirational Goals

APPENDIX B

University of Minnesota Vision, Concept Master Plan and Aspirational Goals

OVERVIEW

The University of Minnesota is the owner of the 5,000-acre UMore Park property. Importantly, the University brings unique assets to the planning and development of the property through its mission of research, education and outreach. The University is a generator of new knowledge and ideas. The AUAR notes some the future opportunities and alternatives that can benefit development, based on the research and analysis that the University has completed to date.

The development of UMore Park presents an unprecedented opportunity to accommodate future growth in a manner that can become a model of sustainability. UMore Park has the potential to help transform the regional economy by providing new employment opportunities and a stronger connection between locally sourced and produced goods and nearby populations. It can preserve the heritage and environmental quality of the area while creating exciting new centers of activity in Rosemount and Empire Township.

UMore Park is unique in the nation. It is among the largest contiguous properties in the United States owned by a land grant university, and is currently the largest single-owner development parcel in the Twin Cities. As the sole owner, planning efforts for the project that have been under way for the past seven years have been guided by principles established by the University's Board of Regents in 2006. The overarching vision for the property includes:

Stewardship: Best management of the property, its natural resources and future uses;

Legacy: University research, education and public engagement that extends over generations; and

Economic Development: Adding value to the region through job creation, workforce development, business development, entrepreneurial opportunities and education.

These foundational elements of the vision will continue to influence the full build-out of UMore Park over the next 30 to 40 years.

Innovation for the Future

Forward-looking strategies and aspirational goals are discussed in the recent report *The Sustainable Community at UMore Park: Aspirational Goals and Action Plan for Sustainability*, released in March of 2012. With input from over 200 people and the guidance of the international non-profit BioRegional, a framework to examine sustainability based on 10 guiding principles was presented. Topics addressed include zero carbon, zero waste, sustainable transport, sustainable materials, local and sustainable food, sustainable water, land use and wildlife, culture and community, equity and local economy, and health and happiness. The report and a summary can be accessed at:

<http://www.umorepark.umn.edu/planning/SelectPublications/sustainability2012/index.htm>

A second report that characterizes ideas for future innovation, *Infusing Sustainability into Planning and Development for UMore Park: Integration Plan*, was also published in March 2012. An international

architecture, landscape architecture and planning team undertook a broad scale effort to link the ideas embodied in the January 2009 concept master plan and the action plan for sustainability described above with contemporary and emerging sustainability practices. Key ideas from the analysis such as place-making and landscape reconstruction will help shape the specifics of future development plans including examination of a stormwater strategy that draws its roots from the glacial structure of the landscape and an overall energy strategy. The report can be accessed at:

<http://www.umorepark.umn.edu/planning/SelectPublications/2012integrationplan/index.htm>

Past Planning

Past planning efforts both inform and influence the UMore Park AUAR. They represent an expansive body of knowledge about the property, its development potential, its development form, and its relationship with the natural environment. Additional information about prior studies can be found at:

<http://www.umorepark.umn.edu/>

The following is a brief summary of some of the key policy and planning initiatives.

Strategic Planning

In 2006, a University strategic planning steering committee proposed three scenarios that were plausible options for the Board of Regents to consider in meeting the University's guiding principles for the future use of UMore Park. After careful review, the Board determined that the appropriate course of action would be to add value to the property by developing a community. The vision for the property is documented in the November 2006 report *Creating the Vision – The Future of UMore Park*. The report can be accessed at:

https://conservancy.umn.edu/bitstream/91520/1/UMoreVisionReport_112006.pdf

The decision reached by the Board in 2006 set the stage for the preparation of this AUAR.

The University's strategic planning steering committee based its proposal on analysis that was provided by Sasaki Associates in the October 2006 report *UMore Park Strategic Plan: Sasaki Report to the University of Minnesota Outreach, Research and Education Park Steering Committee*. The report can be accessed at:

https://conservancy.umn.edu/bitstream/91519/1/SasakiUMoreParkStrategicPlan_102006.pdf

Research and Discovery

The University's strengths in publically engaged research, education and outreach offer continuous potential for innovation. In 2007, nearly 100 members of the University community participated on six academic mission task forces to explore ways that University research, education and public engagement could add value to a new community at UMore Park. The task forces engaged citizens through six public listening sessions and faculty, students and staff through two campus forums. More than 450 citizens and nearly 300 members of the University community participated and offered their perspectives.

Ideas were categorized under broad priority areas including education, energy, the environment, health and wellness, transportation, interdisciplinary opportunities. The report can be accessed at: https://conservancy.umn.edu/bitstream/46494/1/TaskForceReportFinalPrinter_March2008.pdf

Concept Master Plan

In 2009, the consultant Design Workshop, Inc., in conjunction with the University's UMore Park team, completed the *Concept Master Plan for the University of Minnesota's New Sustainable Community at UMore Park*. The result of an intensive two-year planning process, the concept master plan identified a future development pattern for the UMore property and addressed key elements of sustainability and livability including the environment, the community, economic considerations, the arts and implementation. The study is a foundation element for this AUAR. The land use plan contained in the study is the basis for three of the four scenarios being reviewed and analyzed. The concept master plan document can be accessed at:

<http://www.umorepark.umn.edu/planning/concept/cmpbook/index.htm>

Application of Past Planning to the AUAR

The AUAR follows the required format and components stipulated by the Minnesota Rules for environmental review documents. At its core, it includes information and analyses on traditional elements of required infrastructure including but not limited to water, sanitary sewer, stormwater drainage and transportation. Importantly, it also includes general references to practices and techniques that have emerged from studies undertaken by the University of Minnesota that have the potential to significantly enhance economic, environmental and social sustainability over the long-term.

APPENDIX C
Peak Hour Traffic Operations Analysis

UMore AUAR - Peak Hour Traffic Analysis

The traffic operations analysis is derived from established methodologies documented in the *Highway Capacity Manual 2010* (HCM). The HCM provides a series of analysis techniques that are used to evaluate traffic operations.

Intersections are given a Level of Service (LOS) grade from “A” to “F” to describe the average amount of control delay per vehicle as defined in the HCM. The LOS is primarily a function of peak traffic hour turning movement volumes, intersection lane configuration, and the traffic controls at the intersection. LOS A is the best traffic operating condition, and drivers experience minimal delay at an intersection operating at that level. LOS E represents the condition where the intersection is at capacity, and some drivers may have to wait through more than one green phase to make it through an intersection controlled by traffic signals. LOS F represents a condition where there is more traffic than can be handled by the intersection, and many vehicle operators may have to wait through more than one green phase to make it through the intersection. At a stop sign-controlled intersection, LOS F would be characterized by exceptionally long vehicle queues on each approach at an all-way stop, or long queues and/or great difficulty in finding an acceptable gap for drivers on the minor legs at a through-street intersection.

The analysis techniques defined in the HCM is different for roadways and intersections. Roadway segment analysis focuses on the average daily volume to capacity ratio, while intersection analysis focuses on delay caused by the peak hour critical movements. It is therefore possible to have an efficient intersection located along a poorly operating roadway segment, or a poorly operating intersection along an otherwise free-flowing arterial.

The LOS ranges for both signalized and un-signalized intersections are shown in **Table A-1**. The threshold LOS values for un-signalized intersections are slightly less than for signalized intersections. This variance was instituted because drivers’ expectations at intersections differ with the type of traffic control. A given LOS can be altered by increasing (or decreasing) the number of lanes, changing traffic control arrangements, adjusting the timing at signalized intersections, or other lesser geometric improvements. LOS also changes as traffic volumes increase or decrease.

Table A-1: Intersection Level of Service Measures

	Control Delay (Seconds)	
	Signalized	Un-Signalized
A	≤ 10	≤ 10
B	10 – 20	10 – 15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	> 80	> 50

Source: Highway Capacity Manual

LOS, as described above, can also be determined for the individual legs (sometimes referred to as “approaches”) or lanes (turn lanes in particular) of an intersection. It should be noted that a LOS E or F might be acceptable or justified in those cases where a leg(s) or lane(s) has a very low traffic volume as compared to the volume on the other legs. For example, improving LOS on such low-volume legs by converting a two-way stop condition to an all-way stop, or adjusting timing at a signalized intersection, could result in a significant penalty for the many drivers on the major road while benefiting the few on the minor road. Also, geometric improvements on minor legs, such as additional lanes or longer turn lanes, could have limited positive effects and might be prohibitive in terms of benefit to cost.

Although LOS A represents the best possible level of traffic flow, the cost to construct roadways and intersection to such a high standard often exceeds the benefit to the user. Funding availability might also lead to acceptance of intersection or roadway designs with a lower LOS. LOS D is generally accepted as the lowest acceptable level in urban areas. LOS C is often considered to be the desirable minimum level for rural areas. LOS D or E may be acceptable for limited durations or distances, or for very low-volume legs of some intersections.

The LOS analysis was performed using Synchro/SimTraffic:

- **Synchro**, a software package that implements Highway Capacity Manual (HCM) methodologies, was used to build each signalized intersection and provide an input database for turning-movement volumes, lane geometrics, and signal design and timing characteristics. In addition, Synchro was used to optimize signal timing parameters for future conditions. Output from Synchro is transferred to SimTraffic, the traffic simulation model.
- **SimTraffic**, is a micro-simulation computer modeling software that simulates each individual vehicle’s characteristics and driver behavior in response to traffic volumes, intersection configuration, and signal operations. The model simulates drivers’ behaviors and responses to surrounding traffic flow as well as different vehicle types and speeds. It outputs estimated vehicle delay and queue lengths at each intersection being analyzed.

Existing (2012) Peak Hour Intersection Analysis

The existing intersection operations were evaluated for both the AM and PM peak hours. Synchro/SimTraffic micro simulation software was utilized to model the area intersections with the existing peak hour turning movements, lane geometry, and traffic control. The results of this analysis are illustrated on **Table A-2**.

The existing roadway network generally performs at acceptable conditions (LOS D or better) in the AM and PM peak hours. The only exception is the CSAH 42/US 52 NB Ramps intersection which operates at LOS E in the AM peak hour. This is due to high traffic volumes on CSAH 42 and a lack of traffic signals at the intersection to allow vehicles to clear the northbound approach.

Table A-2: Existing (2012) Intersection Level of Service

Intersection	Traffic Control	Existing		Existing	
		AM		PM	
		LOS	Delay (sec)	LOS	Delay (sec)
TH 3 & CSAH 42	Signalized	C	24	D	36
Biscayne Ave & CSAH 42	Thru-Stop	A	3	A	5
CSAH 42 & 145th St	Thru-Stop	A	9	A	4
Akron Ave & CSAH 42	Thru-Stop	A	4	A	3
Blaine Ave & CSAH 42	Thru-Stop	A	3	D	29
US 52 SB Ramps & CSAH 42	Thru-Stop	A	10	A	8
US 52 NB Ramps & CSAH 42	Thru-Stop	E	49	A	6
TH 3 & CSAH 46	Signalized	C	28	C	29
Biscayne Ave & CSAH 46	Thru-Stop	A	5	A	6
Akron Ave & CSAH 46	Thru-Stop	B	10	A	9
US 52 SB Ramps/Frontage Road (W) & CSAH 46	Thru-Stop	A	3	A	7
US 52 NB Ramps/Frontage Road (E) & CSAH 46	Thru-Stop	B	10	A	4

Source: WSB & Associates, Inc.

Future 2030 Peak Hour Intersection Analysis

The future 2030 traffic volume estimates for each scenario were developed based on the trip generation estimates in **Table 21-4** and assigned to the roadway system based on the trip distribution shown in **Figure 21-4**. The projected 2030 traffic volumes were then added to the 2030 No Build (background) traffic to estimate the 2030 build traffic volumes.

The estimated AM and PM peak hour turning movements for both the No Build and Build conditions are shown in **Figures 21-5 to 21-8**.

A summary of the expected traffic operations on the key intersections is shown in **Tables A-3 and A-4**. The analysis of the 2030 No Build Condition shows the following roadway deficiencies:

- The intersection of TH 3 and CSAH 42 operates poorly, especially in the PM peak hour, due to a lack of lanes to handle the projected traffic volumes. The intersection operates at LOS F in the PM peak hour.
- The high southbound traffic volumes at the Blaine Avenue and CSAH 42 intersection, coupled with a single left-through-right lane, cause traffic to queue resulting in unacceptable LOS operations at the intersection in the PM peak hour.

- Even with signals installed at the CSAH 42/US 52 Ramp intersections, the lack of available turn lanes on the SB off-ramp and through lanes under the bridge severely degrade the operations at the intersection in both peak hours.

The analyses of the Full Build Scenarios show that all key intersections will operate at LOS F conditions in either the AM and/or PM peak hours without mitigation.

Table A-3: Future 2030 AM Peak Hour Intersection Level of Service

Intersection	Traffic Control	2030 No Build		Full-Build Scenario 1		Full-Build Scenario 2		Full-Build Scenario 3	
		AM		AM		AM		AM	
		LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
TH 3 & CSAH 42	Signalized	D	48	F	663	F	102	F	654
Biscayne Ave & CSAH 42	Signalized	B	14	F	220	F	200	F	201
CSAH 42 & 145th St	Signalized	D	53	F	200	F	180	F	260
Akron Ave & CSAH 42	Signalized	B	19	F	269	F	213	F	290
Audrey Ave & CSAH 42	Signalized	NA	NA	F	200	F	160	F	210
Blaine Ave & CSAH 42	Signalized	C	24	F	332	F	328	F	403
US 52 SB Ramps & CSAH 42	Signalized	F	117	F	756	F	681	F	767
US 52 NB Ramps & CSAH 42	Signalized	D	36	F	453	F	459	F	506
TH 3 & CSAH 46	Signalized	D	54	F	494	F	178	F	508
Biscayne Ave & CSAH 46	Signalized	C	24	F	197	F	219	F	246
Akron Ave & CSAH 46	Thru-Stop	B	11	F	234	F	222	F	248
Audrey Ave & CSAH 46	Thru-Stop	NA	NA	F	200	F	210	F	220
Blaine Ave & CSAH 46	Thru-Stop	NA	NA	F	200	F	210	F	220
US 52 SB Ramps/Frontage Road (W) & CSAH 46	Signalized	A	7	F	259	F	256	F	249
US 52 NB Ramps/Frontage Road (E) & CSAH 46	Signalized	B	13	C	32	C	30	D	40

Source: WSB & Associates, Inc.

Table A-4: Future 2030 PM Peak Hour Intersection Level of Service

Intersection	Traffic Control	2030 No Build		Full-Build Scenario 1		Full-Build Scenario 2		Full-Build Scenario 3	
		PM		PM		PM		PM	
		LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
TH 3 & CSAH 42	Signalized	F	151	F	588	F	603	F	601
Biscayne Ave & CSAH 42	Signalized	C	22	F	242	F	270	F	287
CSAH 42 & 145th St	Signalized	C	22	F	150	F	160	F	150
Akron Ave & CSAH 42	Signalized	B	18	F	184	F	188	F	170
Audrey Ave & CSAH 42	Signalized	NA	NA	F	150	F	160	F	150
Blaine Ave & CSAH 42	Signalized	F	109	F	427	F	472	F	487
US 52 SB Ramps & CSAH 42	Signalized	E	76	F	843	F	737	F	915
US 52 NB Ramps & CSAH 42	Signalized	C	31	F	364	F	295	F	463
TH 3 & CSAH 46	Signalized	D	47	F	352	F	272	F	345
Biscayne Ave & CSAH 46	Signalized	C	21	F	197	F	224	F	292
Akron Ave & CSAH 46	Thru-Stop	A	10	F	290	F	285	F	377
Audrey Ave & CSAH 46	Thru-Stop	NA	NA	F	250	F	240	F	300
Blaine Ave & CSAH 46	Thru-Stop	NA	NA	F	250	F	240	F	300
US 52 SB Ramps/Frontage Road (W) & CSAH 46	Signalized	B	15	F	301	F	286	F	279
US 52 NB Ramps/Frontage Road (E) & CSAH 46	Signalized	B	11	F	126	F	98	F	133

Source: WSB & Associates, Inc.

Based on the results of the peak hour traffic analysis the following improvements would be needed with full-build out of the UMore development. Based on these improvements, the AM and PM peak hour level of service at the key intersections is shown in **Table A-5**. All intersections are assumed to operate at LOS D or better in the peak hours with the exception of the Blaine Avenue / CSAH 42 intersection in the PM peak hour where it is anticipated to be operating at LOS E conditions in Scenario 3.

- Reconstruction of CSAH 42 to a six-lane divided roadway with traffic signal systems and turn lane additions at Biscayne Avenue, 145th Avenue, Akron Avenue, Audrey Avenue, and Blaine Avenue. Turning movements and proposed lane geometry have are shown on the turning movement figures for major intersections along CSAH 42. Future studies will be needed to determine the exact required geometry.
- Reconstruction of CSAH 46 as a four-lane divided roadway with traffic signal systems and turn lane additions at Biscayne Avenue, Akron Avenue, Audrey Avenue, and Blaine Avenue. Turning movements and proposed lane geometry have been shown on the turning movement figures for major intersections along CSAH 46. Future studies will be needed to determine the exact required geometry.
- Construction of an interchange to replace the existing TH 3/CSAH 42 intersection. Interchange geometry will be proposed with future studies.
- Reconstruction of the existing interchange at CSAH 42 and US 52 as a system interchange to accommodate higher turning movements. The City of Rosemount’s

and Dakota County's 2030 Comprehensive Plans have identified this interchange as potentially serving a rerouted alignment of TH 55 in the future. With or without the additional traffic caused by the potential realignment of TH 55, the interchange will need to be reconstructed to handle development traffic with future interchange configuration and lane geometry will be determined in future studies.

- Addition of lanes for through and turning movements at the interchange at CSAH 46 and US 52. Additional analysis will be needed to determine whether a complete reconstruction of the interchange will be needed to accommodate future traffic volumes with the existing infrastructure. Bridge widening may be considered as an alternative to complete reconstruction at this interchange.
- Reconstruction of the signalized intersection at TH 3 and CSAH 46 to include more turn lanes and through lanes on all approaches.
- Construction of a four-lane undivided collector roadway between Biscayne Avenue east to CR 73 (Akron Ave) and a three-lane undivided roadway from CR 73 (Akron Ave) through the UMore development with turn lanes provided at major intersections and traffic control as necessary.
- Reconstruction of Biscayne Avenue as a four-lane divided roadway between CSAH 42 and Boulder Trail with turn lanes at major intersections.
- Reconstruction of 145th Avenue as a four lane divided roadway from CSAH 42 to approximately Biscayne Avenue with turn lanes at major intersections.
- Reconstruction and realignment of Akron Avenue as a four-lane divided roadway between CSAH 42 and the new east/west major collector and as a two-lane undivided roadway between the east/west major collector and 170th Street with turn lanes at major intersections. (Ultimately, the plan for Akron Avenue is to connect to Biscayne Avenue approximately one mile south of 170th Street to serve as a reliever to TH 3.)
- Extension of Audrey Avenue from its current terminus south of CSAH 42 to 170th Street as a two-lane undivided roadway with turn lanes at major intersections.
- Reconstruction of Blaine Avenue as a four-lane divided roadway between CSAH 42 and the new east/west major collector and as a two-lane undivided roadway between the new east/west major collector and 170th Street with turn lanes at major intersections.
- Construction of local roads within the UMore development providing adequate service to each zone of development with turn lanes and traffic control as needed for safe and efficient traffic flow.

Table A-5: Future 2030 Peak Hour Intersection Level of Service with Mitigation

Intersection	Traffic Control	Full-Build Scenario 1		Full-Build Scenario 2		Full-Build Scenario 3	
		AM	PM	AM	PM	AM	PM
TH 3 & CSAH 42	Future Interchange						
Biscayne Ave & CSAH 42	Signalized	D	D	C	D	C	D
CSAH 42 & 145th St	Signalized	D	C	D	C	C	C
Akron Ave & CSAH 42	Signalized	D	D	D	D	D	D
Audrey Ave & CSAH 42	Signalized	C	D	C	C	C	C
Blaine Ave & CSAH 42	Signalized	D	D	D	D	D	E
US 52 SB Ramps & CSAH 42	Reconstruct Interchange						
US 52 NB Ramps & CSAH 42							
TH 3 & CSAH 46	Signalized	D	D	D	D	D	D
Biscayne Ave & CSAH 46	Signalized	D	D	D	D	D	D
Akron Ave & CSAH 46	Signalized	D	D	D	D	C	D
Audrey Ave & CSAH 46	Signalized	C	D	C	D	C	D
Blaine Ave & CSAH 46	Signalized	C	D	C	D	D	D
US 52 SB Ramps/Frontage Road (W) & CSAH 46	Partial or Full Reconstruction of Interchange						
US 52 NB Ramps/Frontage Road (E) & CSAH 46							

APPENDIX D
Summary of Public Involvement Process

Summary of Public Involvement Process – UMore AUAR

The UMore AUAR process began in June 2012. As part of this process, a public involvement plan was developed and implemented. A summary of this process and outcome is outlined below.

Public Input Process

Public Meeting #1:

The first public meeting was held on May 8, 2012. The purpose of this meeting was to provide information on the purpose and content of an Alternative Urban Areawide Review (AUAR), discuss the AUAR process, and review the development scenarios that would be reviewed in the AUAR. This meeting was open to the public. Landowners located north and northwest of the study area were invited and the meeting was noticed in the Rosemount Town Pages.

Public Meeting #2:

The second public meeting was held June 24, 2013 held during the 30-day public comment period to review the contents and analysis in the AUAR. Invitations for this meeting were sent in the same way as the first public meeting. The meeting was also noted in the Rosemount Town Pages.

Agency Input Process

Agency Meeting #1:

A kick off agency meeting was held on June 20, 2012. All agencies listed by the EQB as commenting agencies for the AUAR were invited to this meeting. The purpose of the meeting was to provide an introduction to the UMore study area and the development scenarios, discuss the level of detail that would be in the AUAR, and receive feedback from the agencies. It was also discussed that future agency meetings would be topic specific and that while all the agencies would be invited to attend, they could self-select based on the topic in relation to their agency's review area of the AUAR. The meeting minutes from that meeting are attached.

Agency Meeting #2:

On January 9, 2013, an agency meeting to discuss ecological resources/wildlife and storm water management was held. Agencies in attendance included DNR, Dakota County, Met Council, Dakota SWCD, Vermillion River Watershed Joint Powers Organization, and the Department of Agriculture. Questions from the agencies related to connections to Vermillion Highlands; infiltration requirements and groundwater; and data from the DNR. Based on comments and questions from this agency meeting, these sections of the AUAR were revised.

Agency Meeting #3:

On February 27, 2013, an agency meeting to discuss water/wastewater and traffic/air/noise was held. Agencies in attendance included Dakota County, Met Council, and Department of Health. Questions from the agencies included concerns about contamination of drinking water from surface water; available right-of-way for future transportation infrastructure; walkability and connection to trails; and local road connectivity.

Agency Meeting #4:

On March 13, 2013 an agency meeting was held to discuss geologic hazards, land use, pollutants, and sensitive resources. Agencies in attendance included

MPCA, Dakota County, Met Council, and Department of Agriculture. No changes to these sections of the AUAR were made based on this meeting.

Agency Meeting #5: An all agency meeting will be held during the 30-day comment period to review the full AUAR.

PCA and EQB Meeting: On February 19, 2013, City staff met with Gary Krueger of the PCA and Jeff Smyser of the EQB regarding how to describe the contamination at UMore Park. The discussion concluded that the AUAR mitigation should state that the environmental investigation and clean up will occur before development. Discussion also included that land use boundaries may be adjusted based on the clean up required.

MEETING MINUTES
UMORE AUAR
Agency Meeting #1
June 20, 2012, 1:00-2:30
Rosemount Council Chambers

Attendees: Kim Lindquist (City of Rosemount), Eric Zweber (City of Rosemount), Andy Brotzler (City of Rosemount), Mark Koegler (HKGi), Craig Affeldt (Pollution Control Agency), Becky Balk (Department of Agriculture), Lynn Thompson (Dakota County Planning), Jeff Harthun (Dakota County Environmental Management), Jamie Jurgensen (Robert Trail Library), Scott Peters (Dakota County), Kurt Chatfield (Dakota County), Dean Johnson (Empire Township), Andi Moffatt (WSB), Alison Harwood (WSB), Chuck Rickart (WSB), Tim Bremicker (DNR), Carla Carlson (UMore), Steven Lott (UMore)

1. Introductions/UMore Park Overview:
UMore Park will:
 - Involve approximately 5,000 acres of land
 - Be located in Rosemount and Empire Township (Rosemount is RGU for AUAR)
 - Provide residence for 25,000-35,000 people (Depending upon Land Concept Plan)
 - Provide 18,000-24,000 jobs (Depending upon Land Concept Plan)
 - Provide transit opportunities to the north
 - Designate open space and water bodies throughout the area
2. Review of Concept Plans
 - Land Concept 1: involves a higher density of residents (approximately 34,000 people)
 - Land Concept 2: similar to Land Concept 1, but involves a lower density of residents (approximately 25,000 people)
 - Land Concept 3: developed based on City Council comments; has more area designated as a business park and highest workforce ratio
3. AUAR Overview/Agency Coordination
 - The AUAR will involve:
 - An analysis of the following items for the 3 scenarios and existing conditions:
 - Land Use
 - Ecological Resources
 - Storm Water
 - Water/Wastewater
 - Geological Hazards/Hazardous Wastes
 - Traffic
 - Sensitive Resources
 - Compatibility with Plans
 - Impact on Infrastructure

- Cumulative Effects
 - Results of the analysis
 - Mitigation to address impacts
 - Agency coordination: Coordination meetings will be held throughout the process, with agendas delivered to agencies in advance so they can decide if they want to attend.
 - Public input: Public meetings will be held throughout the process. One has been completed and 2 more will follow development of the draft AUAR.
 - The AUAR will not provide a detailed study of all impacts, but may identify mitigation measures necessary to allow development.
4. AUAR Schedule
- AUAR development has started and is anticipated to be completed in approximately 1 year.
 - The tentative schedule to AUAR approval is:
 1. Development & Analysis (Summer 2012 - Spring 2013)
 2. Submit AUAR & 30-Day Comment Period (Spring 2013)
 3. Public Meetings (TBD Spring 2013)
 4. Respond to Comments & Revise AUAR (Summer 2013)
 5. 10-Day Public Comment Period (Summer 2013)
 6. City Council Adoption of AUAR (Summer 2013)
5. Questions/Comments
- Department of Agriculture (Becky Balk): How will Project Management Team (PMT) be communicating concept plans with the local immigrant farming population?
Responses:
 - The family spokesperson for individual families will be the contact between those families and the PMT.
 - They will be invited to the Public Meetings.
 - When the time comes for relocation, the families will be given at least 1 year's notice so they do not lose a growing season.
 - Department of Agriculture (Becky Balk): Will farming be allowable post-development?
Responses:
 - Conceptually, the area will be developed gradually, so interim uses could involve agriculture. "Interim" will likely be long (i.e., 30-40 years).
 - The green space indicated in the concept plans is not intended for agricultural use.
 - The final, fully developed concept plan is not planned to include significant agricultural uses.

- Empire Township (Dean Johnson): In previous discussions, there have been recommendations for "locally grown" food options. If the final developed concept plan is to be "sustainable", farming should be an option.
6. The next agency meeting will tentatively be held in August.
- Agendas will be distributed via email to the Agency representatives approximately 1 week in advance of the meeting.
 - Kathie Hanson will be the city's clearing house for information requests
kathie.hanson@ci.rosemount.mn.us.

NOTE: *The above constitutes WSB's understanding of the items discussed at this meeting. If there are any questions, comments, or changes, please notify Andi Moffatt immediately at (763) 287-7196 or amoffatt@wsbeng.com*

APPENDIX E
Works Cited/References

Works Cited

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PMT REVIEW DOCUMENT

Responses to Comments of the Draft AUAR for the UMore Study Area
August 1, 2013

Summarized Comment	Response
Dakota County Comments	
1a. Transportation. The County travel demand model does not include information for the UMore site. If a 6-lane road is needed on CSAH 42, sufficient right-of-way will be needed.	The City and Township will work with the County through the Dakota County Plat Commission during platting of each development proposal to insure that adequate right of way is secured adjacent to CSAH 42 and all other County roads. No change has been made to the AUAR.
1b Transportation. Consider revising the mitigation measure to “provide right-of-way required for future roadway expansion adjacent <u>and within</u> the UMore property.	This text modification will be changed in Final AUAR in sections II.vii. F and Item 21 E.
1c Transportation. Future access locations to CSAH 42 are limited to ½ mile interval spacing and/or in accordance with the <i>CSAH 42 Study</i> .	Access locations shown in the AUAR meets these requirements. Reference to the CSAH 42 Final Study and updated recommendation for Segment 15 that were adopted by the County Board will be included in the Final AUAR mitigation measures sections II.vii E and Item 21 E.
1d Transportation. AUAR should incorporate text confirming that roundabouts are a potential intersection control measure.	Text will be added in the Final AUAR to the Item 21 D “Access and Intersection Control” discussion and to Item 21 E “Transportation Mitigation Plan” to reflect the use of roundabouts as an intersection control and that an Intersection Control Evaluation (ICE) will need to be completed with each proposed improvement.

<p>1e Transportation. The development will have large scale impacts on the county. It can be expected that the county road system beyond the limits covered in the AUAR will need analysis of impacts as development is further refined or occurs.</p>	<p>Additional analysis from MN Hwy 3 to US Hwy 52 will be included with the required traffic analysis as development is identified / proposed in the area. Traffic analysis for areas of the City and Township beyond MN Hwy 3 and US Hwy 52 will be analyzed within the decennial Comprehensive Plan update. This is included in the transportation mitigation plan shown in sections II.vii A and Item 21 E.</p>
<p>1f Transportation. The future alignments of various roads in the AUAR appear to be consistent with the recommendations of the <i>Rosemount/Empire/UMore Area Transportation Study</i>.</p>	<p>Comment noted</p>
<p>2 Greenways. Request to show the Vermillion Highlands Greenway map</p>	<p>Follow up with Dakota County indicated that Figure 25-3 addressed request in this comment. No change has been made to the AUAR.</p>
<p>3a. Environmental Resources. Recommendation for comprehensive approach to site clean up</p>	<p>The City and Township appreciates the County's recommendation to comprehensively address environmental impacts prior to redevelopment. The MPCA is actively involved in helping to ensure that the identified releases of hazardous substances are addressed by the persons responsible for causing or contributing to the release. The MPCA will continue to be involved before and during development through response actions plans and/or contingency plans. The scope of this AUAR Report is limited to assessing environmental impacts in the context of their potential affect on the redevelopment scenarios outlined in the AUAR, and does not extend to analysis of potentially responsible parties to address those releases. No change has been made to the AUAR.</p>
<p>3b. Environmental Resources. MPCA has indicated in past correspondence with the U of M and US Corps of Engineers that remedial investigation/feasibility study and an evaluation of potential threats from physical hazards and asbestos are needed at the GOW site.</p>	<p>The reference to MERLA, CERCLA and Army Corps' regulation in the context of future investigation and response actions within the project area is helpful in confirming the appropriate regulatory requirements. Because the investigation work plans completed to date within the project area has been reviewed by MPCA Superfund staff, this comment is not directed at the adequacy of the AUAR and/or supporting investigations.</p> <p>All investigations and response action activities conducted to date by the University in the project area have been compliant with the Minnesota Environmental Response and Liability Act ("MERLA"), Minn. Stat. § 115B.01 <i>et seq.</i>, and, where applicable, the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. 9601 <i>et seq.</i>,</p>

	<p>and ER 200-3-1, the regulation promulgated by the United States Army Corps of Engineers (“Army Corps”) for the Formerly Used Defense Sites (“FUDS”) Program. MPCA Superfund Program staff reviewed and approved the work plan for the Phase II Investigation for Sites of Concern (SOCs) 1-3 and 6-8 and the work plan and Quality Assurance Project Plan/Sampling Analysis Plan (“QAPP/SAP”) for the Supplemental Site Inspection/Remedial Investigation (“SSI/RI”). MPCA’s review and approval of investigation work plans and the QAPP/SAP was completed consistent with MERLA and CERCLA. Completion of additional investigation and other response actions will be necessary in certain portions of the project area before or contemporaneously with redevelopment activities.</p> <p>The University has committed to continue to seek approval from MPCA of all future investigation and response action work plans and related project plans developed to address releases or threatened releases of hazardous substances present within the UMA under MERLA, and as appropriate with respect to GOW, under CERCLA and/or FUDS regulations. No change has been made to the AUAR.</p>
<p>3bi. Environmental Resources. Prior to property transfers, due diligence should be exercised, especially regarding past land use.</p>	<p>The City of Rosemount and Empire Township will work with the University of Minnesota and the Minnesota Pollution Control Agency to complete appropriate additional environmental due diligence prior to the City or the Township acquiring portions of the project area for public infrastructure and services. No change has been made to the AUAR.</p>
<p>3c Environmental Resources. Dakota County has the responsibility to regulate abandoned wells. Wells must be sealed in conformance with County Ordinance 114.</p>	<p>This will be added to the FAUAR in summary of mitigation measures and in the water use section.</p>
<p>3d Environmental Resources. Measures should be taken to protect Lake 2162 from potential contamination</p>	<p>Storm water will be pretreated prior to discharge into water bodies within the study area, including Lake 2162. Pretreatment will include wet ponds and infiltration areas. Infiltration areas will be implemented in areas where the use of infiltration is a suitable BMP and does not increase risk of contaminating groundwater. The mitigation measures in Item 17 (Water Quality section) of the AUAR indicate that where contamination is possible or where soils are not suitable, infiltration will not be used. No change has been made to the AUAR.</p>

<p>3e Environmental Resources. Current tenants may generate hazardous waste</p>	<p>While not expressly referenced in the Section cited in this comment, activities of past and current tenants are noted in Section F. Potential Environmental Hazards, and in the environmental report summaries provided in that Section. Portions of the project area that were formerly leased by the University to third party tenants were included within the scope of the Phase I Environmental Site Assessment, UMore East, Dakota County, MN (Barr Engineering Co., April 2011) and the Phase I Environmental Site Assessment, UMore Park, Rosemount, MN (Peer Engineering, Inc., July 2006). Recognized environmental conditions identified during the Phase I Assessments are discussed in these studies, which are available for public review on the University's UMore Park website: http://www.umorepark.umn.edu/planning/SelectPublications/2006phasei/index.htm. In accordance with University Real Estate Office procedures, currently leased properties within the project area will be subject to further assessment as the leases expire or are terminated. Identified releases present on land leased by past or current University tenants will be appropriately addressed consistent with the proposed future use of those parcels. No change has been made to the AUAR.</p>
<p>3f. Environmental Resources. Concern that the Superfund Five Year Review should also be re-evaluated based change in land use such as those proposed in the AUAR.</p>	<p>The Five Year Review of the University of Minnesota Rosemount Research Center Superfund Site (U.S. Environmental Protection Agency, June 2012) addresses a closed federal and Minnesota Superfund site located within the project area, consisting of four former waste disposal locations totalling approximately ten acres of the 4,900 acre project area. As recommended in the Five Year Review, additional investigation and other response actions will be completed prior to any change in land use of the closed Superfund site areas. The University has posted signs on segments of the UMore Park property that are not open to the public due to the presence of potential physical hazardous and identified substances in some areas. The public should contact the University for access to the property. The City and Township will require that any remaining physical hazards will be addressed prior to or as part of any approved redevelopment plan.</p>
<p>3g Environmental Resources. There may be unrecorded wells within the study area</p>	<p>Abandoned wells discovered during future redevelopment activities in the project area will be sealed in accordance with Dakota County Ordinance No. 114 and Minnesota Department of Health guidelines. This has been added to the AUAR.</p>

<p>3gi and 3gi1 Environmental Resources. Discussion about adequacy of future groundwater.</p>	<p>It is recognized that as Rosemount grows the water demands necessary to serve the expanding population will also, and that there are concerns related to the impact of increased water demands on groundwater supplies. The City currently monitors groundwater trends, climate, and population trends and will continue to do so in the future. Additionally, the City will continue to work with Metropolitan Council staff as groundwater modeling is refined and alternate water supply sources are evaluated. No change has been made to the AUAR.</p>
<p>3h Environmental Resources. Any alterations in shoreland in Empire Township need to meet Dakota County Ordinance 50</p>	<p>This will be noted in the FAUAR in Item 14. There are currently no shoreland areas in Empire Township. However, any development in the Township will follow Dakota County ordinances.</p>
<p>3i Noted concern for potential groundwater contamination. Commercial and industrial uses may be subject to County regulation</p>	<p>Comment noted. No change has been made to the AUAR.</p>
<p>3j Prior to excavation, due diligence should be used to investigate and remediate areas.</p>	<p>The Phase I Environmental Site Assessment, UMore East, Dakota County, MN (Barr Engineering Co., April 2011) and the Phase I Environmental Site Assessment, UMore Park, Rosemount, MN (Peer Engineering, Inc., July 2006) identified “recognized environmental conditions” present within the project area. Information contained in these studies, as well as other environmental studies completed within the project area, was considered and are summarized in the AUAR Report, and are available for public review on the University’s UMore Park website: http://www.umorepark.umn.edu/planning/SelectPublications/2006phasei/index.htm.</p> <p>These studies will be a resource for parties required to prepare Stormwater Pollution Prevention Plans (SWPPPs) associated with future redevelopment projects. In addition to SWPPPs, the City recommended in the AUAR that Phase I Environmental Site Assessments and Construction Contingency Plans be developed and submitted to the Minnesota Pollution Control Agency for technical review and comment prior to excavation activities associated with future development within the project area (See Response to MPCA Comment 3). The City notes that a Construction Contingency Plan, UMore Mining Area (Barr Engineering Co., September 2012) was developed by Dakota Aggregates LLC and reviewed by the Minnesota Pollution Control Agency as a permit condition for the northern portion of the UMore Mining Area. No change has been made to the AUAR.</p>

Minnesota Department of Agriculture Comments	
No comments	Noted
Minnesota Department of Transportation Comments	
Design 1. State Highway system changes will require a MnDOT Layout	Comment noted
Traffic 1: Please indicate whether the proposed improvements are planned improvements.	The improvements identified in the 2030 No-build condition were those identified with previous planning efforts / studies. These improvements are not programmed or funded at this time but were assumed to be completed as development and traffic increases in the area. No change has been made to the AUAR.
Traffic 2: Funding has not been identified for the proposed improvements on the State Highway system. How will proposed improvements be funded?	Funding has not been identified for specific improvements at this time. As needs arise with development proposals, improvement funding will be secured either through assessments, State Aid or other sources. No change has been made to the AUAR.
Traffic 3: Figure 21-6A shows an increase of 590 vehicles over the no-build scenario. Please correct if this is an error.	Figure 21-6A has been updated to reflect the error.
Modeling 1 and 2: Concerns about the modeling methodology.	The methodology used to forecast the future 2030 build traffic was selected more specifically to determine the potential “local” impacts. It was understood that this methodology would potentially create higher forecasts on the regional system than using the regional models. This is a more conservative approach. Additionally, as specific developments are proposed this methodology provides a way to compare the development with that assumed in the AUAR. One of the controlling mitigation measures is to evaluate the traffic analysis with new development proposals. It is also anticipated that with the City of Rosemount’s, Empire Township and/or Dakota County’s Comprehensive Plan updates the Regional and Dakota County model will then be updated with more accurate population, households and employment information. Sections II.vii A and Item 21 F have been updated in the Final AUAR to more clearly indicated the additional traffic analysis and modeling that will be completed.

Modeling 3: Clarification of pass-by and internal trips is requested.	It was assumed that 15% to 20% of the trips used by retail/commercial/service uses would be pass-by from traffic already on existing roadways (CSAH 42, CSAH 46, etc.) and 10% of the development travel would be internal dual purpose trips within each TAZ. In this case it was assumed that the factors used are conservative and that in reality, more traffic would be passing-by and/or internal to the site. This was just an observation and no additional factors were used. No change has been made to the AUAR.
Modeling 4: Clarify trip generation distribution.	The distribution referenced is for the percent of traffic entering and exiting for a specific land use (i.e. 45% entering/55% exiting). The overall vehicle distribution by direction was based on the County's modeling data and existing traffic patterns. No change has been made to the AUAR.
Modeling 5: The scenarios seem to minimize non-motorized trips. It would be helpful to see an estimate of non-motorized trips.	Non-motorized traffic generation will be included with each specific development as they are proposed. No change has been made to the AUAR.
Noise: Concern about future traffic noise.	The City and Township are aware of the noise standards and guidelines. As development occurs in the area, the developer will need to assess the noise impacts. No change has been made to the AUAR.
Permits. Work in MnDOT right-of-way requires a permit.	This has been added to Item 8 of the AUAR
Review submittal contact information provided.	Comment noted. No change has been made to the AUAR.

Minnesota Department of Health Comments

<p>Asbestos/Hazardous Waste. Asbestos inspection must occur before demolition of structures. Removal of debris needs to be in conformance with state rules.</p>	<p>Parties seeking to redevelop portions of the project area will be expected to comply with all applicable federal and state statutes, regulations and rules relating to hazardous building materials, including but not limited to asbestos-containing building materials. No change has been made to the AUAR.</p>
<p>Affordable Housing. The supply of affordable housing is shrinking. The project does provide a mix of housing densities but should also consider affordable housing options</p>	<p>The City of Rosemount has a housing plan, which includes affordable housing targets, and will continue to update this plan as needed to continue to meet the Metropolitan Council's housing policies. Empire Township will address affordable housing through an updated Comprehensive Plan process. No change has been made to the AUAR.</p>
<p>Drinking Water Protection. Request to address the wellhead protection concerns outlined in two past letters related to the proposed mining in the area (April 2013 and June 2012) to the City.</p>	<p>Through the mining review and permitting process, a well monitoring plan was developed and implemented.</p> <p>It is recognized that Minnesota Department of Health (MDH) has submitted letters to the City related to well head protection and groundwater quality monitoring in connection with direct recharge from surface water into the aquifer and within the highly vulnerable portion of the Drinking Water Supply Management Area (DWSMA). The City reviewed the MDH letters and guidance documentation during the mining interim use permit and annual operating permit review process. Requirements for groundwater quality monitoring and a well monitoring plan were incorporated into these permits. The wells will be monitored through the life of the mining activity. After the mining area is reclaimed, the City will evaluate if continued monitoring is needed. Additionally, actions have been included in the City's Wellhead Protection Plan Part 2 to monitor the surface water to ground water connection during mining activities and after the mine-pit lake has been constructed, and an annual review of the groundwater monitoring plan and results associated with mining permits.</p> <p>If the any of the monitoring wells are determined that they are no longer useful, the well(s) will be sealed in accordance with Dakota County Ordinance No. 114 and Minnesota Department of Health guidelines. No change has been made to the AUAR</p>

<p>Energy Consumption. The project should consider ways, such as those described in the Concept Master Plan, to conserve energy, reduce energy use, promote use of renewable energy</p>	<p>As plans for the development of UMore continue, further consideration will be given to energy conservation, energy reduction and the use of renewable energy. No change has been made to the AUAR.</p>
<p>Health Impact Assessment. A Health Impact Assessment could provide recommendations to policy makers to support positive health outcomes, inform zoning, and permitting activities.</p>	<p>Comment noted. No change has been made to the AUAR.</p>
<p>Physical Activity. The project should consider bicycle and pedestrian connections, such as those described in the Concept Master Plan.</p>	<p>Through the Concept Master Plan, consideration and implementation of greenways, trails, and connections for non-motorized transportation will be a part of development within the study area. The proposed development scenarios incorporate a large amount of green space which will also allow for bicycle and pedestrian trails. Additionally, the City of Rosemount has a bicycle and pedestrian plan that provides guidance for the City to encourage resident participation in non-motorized transportation. No change has been made to the AUAR.</p>
<p>Stormwater/Impervious Surfaces. Increases in impervious surfaces have the potential to increase volume and pollutants. Future climate conditions are anticipated to result in increased frequency and intensity of storm events.</p>	<p>Storm water management within the study area will conform to the City and Township requirements. Overall, these requirements will result in additional infiltration and a reduction in volume and pollutants leaving the site than occurs in its current condition and land uses. The City and Township will continue to review policies in light of larger or flashier storm events that may occur in the future. No change has been made to the AUAR.</p>
<p>Well Construction. New wells or abandoned wells are required to meet state requirements.</p>	<p>It is recognized that new wells will need to be constructed in accordance with Minnesota Statutes, Chapter 103I and Minnesota Rules, Chapter 4725, and Dakota County has been delegated some responsibilities for well management within the county. A new mitigation measure has been added to read "Any new wells (supply, dewatering, monitoring, or other) shall be constructed in accordance with Dakota County Ordinance 114, Minnesota Statutes Chapter 103I and Minnesota Rules Chapter 4725.</p> <p>It is recognized that abandoned wells will need to be sealed in accordance with Dakota County Ordinances and MDH guidance. The Water Use Mitigation Plan included in the Summary of Mitigation Measures (II.ii.D, page 5) and UMore Study Area AUAR (III, 13.B., page 51) shall be amended to read "Any abandoned wells found within the study area will be sealed in accordance with Dakota County Ordinance No. 114, Well and Water Supply</p>

	Management, and in accordance with Minnesota Department of Health (MDH) guidelines.
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Metropolitan Council Comments	
Item 8 - Permits and Approvals. As new segments of sanitary sewer are proposed, plans will need to be sent to the MPCA and Met Council	Review by Metropolitan Council for any new sanitary sewer extension will be added to Item 8 in the AUAR.
Item 9 – Land Use. Comments related to the long-term planning aspect of the UMore study area. These long-range plans should be incorporated into the City and Township’s Comprehensive Plans	Both the City and the Township will complete Comprehensive Plan updates to reflect proposed land uses within the study area. No change has been made to the AUAR.
Item 9 – Regional Parks. Met Council encourages the U of M, City, and Township to work with Dakota County to facility regional trail development.	Comment noted. No change has been made to the AUAR.
Item 13 – Water Supply. Met Council has concerns about expansion of groundwater use in the study area. The City and Township should continue to work with Met Council as groundwater modeling is refined and alternate water supplies are explored. Development should also include the latest infiltration across all land uses.	<p>It is recognized that water supply is critical to future growth planning. The City and Township will continue to work with Metropolitan Council staff as groundwater modeling is refined and alternate water supply sources are evaluated.</p> <p>Additionally, the City and Township are part of the Coalition of Northern Dakota Cities that is in the early stages of developing a formal agreement and discussing future groundwater issues.</p> <p>No change has been made to the AUAR.</p>
Item 17 – Surface Water. The City and Township should consider using Atlas 14 for stormwater analysis and management.	The City and Township will be reviewing the Atlas 14 information and determining if new policies should be developed. Similarly, if there are any changes to Federal, State, regional, or County regulation(s) that would impact the City or Township regulations, then the future development of UMore will need to meet those revised regulations. No change has been made to the AUAR.

<p>Item 18 – Wastewater. The plan in the AUAR for development in the study area shows the potential for increased sewer flows in the upstream portion of the regional system that could exceed the system’s capacity. The interceptor downstream of Biscayne Ave has sufficient capacity to serve the study area. Updates to Comp Plans and Sewer Plans will be needed and plans will need to reflect the long term wastewater projections from each sewer district.</p>	<p>It is recognized that the AUAR redefined the individual sanitary sewer districts within the project area from those previously identified in the City’s 2008 Comprehensive Plan Update. The AUAR included preliminary roadway layouts and land use locations which allowed the sewer districts within the project area to be reevaluated.</p> <p>In the Comprehensive Sanitary Sewer System Plan (CSP,) included in the 2008 Comprehensive Plan Update, the project area consisted of the entire Southwest, Southwest Central, and South Central districts, and approximately 177 acres in the Central District. The AUAR redefined the project area into the Central, East, Northwest, and Southwest districts for evaluation as part of the AUAR.</p> <p>It is recognized the proposed sanitary system layout represents a potential system impact MCES’s Rosemount Interceptor. The proposed sanitary sewer system layout and estimated wastewater flows would be a change from the City’s 2008 CSP.</p> <p>To clarify the impact of the proposed sanitary sewer system and estimated wastewater flows on the MCES system, the attached Tables A, B, and C indicate future estimated wastewater flows by connection point to the Rosemount Interceptor. The tables were developed from Table 6-4 in the 2008 CSP and modified to incorporate estimated wastewater flows from Scenario 1 and Scenario 2. Also, changes in the sewer districts and flows from Table 6-4 in the 2008 CSP were highlighted for clarity. Development Scenario 1 would result in the greatest wastewater flow generated by the proposed development and Scenario 2 the least. Table 6-4 from the 2008 CSP is attached.</p> <p>Tables A, B, and C indicate that wastewater flow generated by the project area would increase ultimate (post-2030) wastewater flows relative to those planned for in the 2008 CSP. It is possible that some development may occur prior to 2030, but development timing is currently unknown. Development projections will be defined as part of future Comprehensive Plan Amendments.</p> <p>Ultimate wastewater flows would increase under Scenario 1 (Table A) in comparison to the City’s 2008 CSP, but wastewater flows would remain relatively consistent with or less than the 2008 CSP under Scenario 2 (Table B). Additionally, MCES has retained the former Rosemount Wastewater Treatment Plant site for development of a future wastewater</p>
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	<p>treatment plant if necessary.</p> <p>It is recognized that MCES’s Rosemount Interceptor has a fixed hydraulic capacity and the City commits to directing future wastewater flows not to exceed interceptor capacity. Due to the potential variation in future development, alternative sanitary sewer system layouts, service agreements between Rosemount and Empire Township, and MCES additional ultimate system treatment capacity, the City will revise the sanitary sewer system layout in the future as development plans progress. The sanitary sewer system layout will be coordinated with MCES as development progresses.</p> <p>No change has been made to the AUAR.</p>
<p>Item 21 – Traffic. The use of ITE trip generation rates is not appropriate for this size of development. Also, CSAH 42 and 52 are principal arterials. Reconstruction of these roads would require approval from Met Council</p>	<p>See response to MnDOT Modeling Comment 1. The expansion of CSAH 42 from 4 lanes to 6 lanes and the proposed interchanges on CSAH 42 at TH 3 and US 52 have been previously identified in City of Rosemount’s and Dakota County’s 2030 Comprehensive Plans and other planning studies as needed in the future. As future development is proposed in the UMore area, a better understanding on the timing of these needs will be determined.</p> <p>The City and Township will work with Dakota County, MnDOT and the Metropolitan Council on regional transportation expansion needs as development proposals are submitted to review.</p> <p>Sections II.vii A and Item 21 F have been updated in the Final AUAR to more clearly indicate the additional traffic analysis and modeling to be completed.</p>
<p>Item 27 – Compatibility with Plans/Land Use Regulations. The Met Council is drafting a new 2040 Framework. Scenarios 1, 2, and 3 are not recognized by the Met Council’s 2030 Framework. It is expected that the City and Township will update their comprehensive plans.</p>	<p>The City and Township do intend to update their Comprehensive Plans, as noted in the AUAR. The entirety of the scenarios may not be fully incorporated in Comprehensive Plan updates as future phasing of development will be considered. Comprehensive Plan updates will reflect likely anticipated development within a reasonable timeframe and consider the appropriate timeframe’s population estimate. No change has been made to the AUAR.</p>

Minnesota Pollution Control Agency Comments

Surface Water Runoff 1. NURP is not a recognized treatment method per the NPDES permit.	Development will need to meet the City/Township and the NPDES permit requirements. This is noted in the AUAR.
Surface Water Runoff 2. MPCA encourages the use of infiltration of stormwater, where possible.	Stormwater management will be required to meet the City's standards in Rosemount and Empire/Vermillion River JPA standards in Empire. The City's standards require infiltration. Infiltration will be used in areas where appropriate that will not increase risk of groundwater contamination. No change has been made to the AUAR.
Surface Water Runoff 3. MPCA encourages Minimal Impact Design practices to retain surface water.	See response to "Surface Water Runoff 2". Also, the Concept Master Plan for the site does incorporate greenways, and low impact development concepts into the plan. No change has been made to the AUAR.
Surface Water Runoff 4. In relation to landlocked basins, NPDES prohibits adverse impacts to wetlands unless impacts have been addressed through permitting.	Comment noted. No change has been made to the AUAR.
Surface Water Runoff 5. The AUAR does not indicate if the Study Area will discharge into Special Waters.	There are no Special Waters within one mile of the site. This has been added to the AUAR in Item 17.
As was noted in the draft AUAR, releases of hazardous substances have been identified in various areas throughout UMore Park. These releases have occurred from various activities during operation of the Gopher Ordnance Works (GOW), after GOW operations ceased, and since the property has been owned by the University of Minnesota. Under Minnesota State Superfund Law (the Minnesota Environmental Response and Liability Act, Minn. Stat. ch. 115B), both the U.S. Department of Defense and University of Minnesota are considered to be responsible	As is discussed in the draft AUAR Report, releases of hazardous substances have been identified within certain portions of the project area. Technical reports identifying and describing those releases are available for public review on the University's website: http://www.umorepark.umn.edu/planning/SelectPublications/2006phasei/index.htm . The identified releases will need to be addressed prior to or contemporaneously with redevelopment of affected portions of the project area. The AUAR states that the MPCA is to be consulted by developers regarding any necessary additional investigation or cleanup required to properly address any such identified releases prior to approval of the proposed redevelopment. No change has been made to the AUAR.

<p>parties for these releases. The MPCA recognizes there may be other parties that may also be responsible for releases, such as operators and/or lessees, at the site.</p>	
<p>As more specific development plans are finalized, updated environmental assessments will need to be completed and response actions plans and/or contingency plans prepared which address implementation of appropriate actions relative to site remediation activities. The work, and subsequent documents, should undergo appropriate review/approval by the MPCA's Superfund or Brownfield programs.</p>	<p>The AUAR indicates that project proposers prepare and submit Construction Contingency Plans ("CCPs") to the MPCA to help identify and respond to any presently unknown potential releases of hazardous substances that may be encountered during construction activities. The AUAR also states that Phase I Environmental Site Assessments be completed for the proposed project area and submitted to MPCA for review along with the CCPs. The City or Township will consider the known or potential presence of hazardous substances when reviewing proposed redevelopment plans and associated permit applications for the project area, and will recommend that response action plans be developed to address identified releases of hazardous substances and be submitted to the MPCA for review and approval. No changes have been made to the FAUAR.</p>
<p>The MPCA has recommended that both the University of Minnesota and Army Corps of Engineers enter into a formal agreement with the MPCA for oversight of such assessments and response action development. The MPCA has also encouraged the U of M and Corps to begin discussions as to the allocation of workload with respect to further assessments and response actions, including discussions related to actions to address physical hazards from GOW operations that remain at the site.</p>	<p>Please see the response to MPCA Comment above.</p>

Department of Natural Resources Comments

Recommendation that the Natural Heritage Database be re-evaluated before major construction events.	The AUAR will be evaluated every five years, and the Natural Heritage Database will be consulted during those evaluations. No change has been made to the AUAR.
The DNR appreciates consideration of the Vermillion Highlands area and encourages the City to continue discussion with DNR as more definitive site plans are developed.	The City, Township, and U of M will continue to coordinate with the DNR. No change has been made to the AUAR.
DNR encourages the use of wildlife-friendly erosion control mesh.	Comment noted. No change has been made to the AUAR.
New well construction requires approval from the DNR.	This has been added to Item 8 in the AUAR.

Comments from Ronald Spong	
Permits and Approvals. Dakota County requires approvals and compliance with its ordinances	This has been added to Item 8 in the AUAR
Existing Land Uses. All past and present land uses should be included in the AUAR.	Over at least the past 25 years, the project area has been the subject of numerous environmental investigations by the University, the United States Army Corps of Engineers and others. Most recently, the University completed a Remedial Investigation of UMore East (eastern two-thirds of the project area) and a Remedial Investigation and Phase II Environmental Assessment of the UMore Mining Area (western one-third of the project area). Those investigations, which are available for public review on the University's website: http://www.umorepark.umn.edu/planning/SelectPublications/2006phasei/index.htm , were compliant with the Minnesota Environmental Response and Liability Act ("MERLA"), Minn. Stat. § 115B.01 et seq., and, where applicable, the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. 9601 et seq., and ER 200-3-1, which was developed by the United States Army Corps of Engineers ("Army Corps") for the Formerly Used Defense Sites ("FUDS") Program. Those studies were identified and discussed in the AUAR and include an extensive review of past and current land use. No change has been made to the AUAR
Superfund Site Status and Potential Environmental Hazards. Recommends revising these sections of the AUAR to properly and fully inform the public and decision makers related to past and current land use.	The AUAR contains an extensive discussion of pre- and post-GOW land use and associated identified environmental releases. Key environmental studies are cited and their findings presented in the AUAR. With respect to the "more than a hundred" disposal and release sites documented by Dakota County as referenced in this comment, the Phase I Environmental Site Assessment, UMore East, Dakota County, MN (Barr Engineering Co., April 2011) and the Phase I Environmental Site Assessment, UMore Park, Rosemount, MN (Peer Engineering, Inc., July 2006) identified and addressed the sites. Representatives of Barr Engineering met with County staff and reviewed records provided by the County, including the site summaries contained in the County's Environmental Database. Sites in the County's database were physically inspected by Barr Engineering staff. After completion of the document review, site inspection and interviews of County staff, Barr Engineering identified several sites of concern for further assessment as part of the Phase I

	<p>Environmental Site Assessment and where appropriate, Phase II testing. The results of these activities are presented in Barr’s Phase I, Phase II, and Remedial Investigation Reports, which are summarized and were considered in this AUAR.</p> <p>The University’s Department of Environmental Health and Safety and Barr Engineering have recommended that the list of sites from Dakota County’s database that were not fully investigated as part of the UMore East Remedial Investigation be considered in Phase I Environmental Site Assessments and Construction Contingency Plans prepared for future redevelopment activities. For example, all of the Dakota County sites that were not included in the Phase II investigation for the UMA are listed and identified on maps in the UMA’s Construction Contingency Plan. These sites primarily consist of abandoned farmsteads. An environmental professional will direct excavation of the farmsteads and will attempt to locate wells and potential hazardous substances. The same or a similar process will be followed with respect to proposed other future redevelopment activities within the project area.</p> <p>The scope of this AUAR is limited to assessing environmental impacts in the context of their potential affect on the redevelopment scenarios outlined in the AUAR, and does not extend to analysis of potentially responsible parties to address those releases. No change has been made to the AUAR.</p>
<p>Water Use. Concern there may be unidentified wells on site. Concern about nitrogen in the aquifer.</p>	<p>With respect to the comment regarding abandoned wells, please see response to Dakota County comment 3C</p> <p>At this time, siting of new public water supply wells are not being considered in or downgradient of the project area. If in the future this changes and a public water supply well is contemplated for the project area, the City of Rosemount is committed to conducting water quality testing as part of the siting process. While no new public wells are planned downgradient of the project area, the groundwater monitoring wells for the mining operation were designed and installed to monitor ground water on the two existing City wells at the former City Hall property north of DCTC (wells RR-1 and RR-2) and the possibility of a future well, west of the City ballfields, south of DCTC.</p> <p>As to nitrogen impacts to the groundwater, nitrogen in the form of agricultural chemicals is</p>

	<p>used extensively at and in the region surrounding the project area. Nitrogen-based substances such as nitric acid and dinitrotoluene were also used in the manufacturing of smokeless gunpowder during GOW operations. During the UMore East Remedial Investigation, Barr Engineering detected trace concentrations of dinitrotoluene in soil in some areas used for Gopher Ordnance Works-era smokeless gunpowder production. However, dinitrotoluene was not detected in groundwater. As noted in the comment, groundwater data show that significant nitrogen concentrations exist in groundwater, both upgradient and downgradient of the project area. This data is consistent with regional groundwater issues and have been associated with row-crop farming in the region (Dakota County, 2005). No change has been made to the AUAR.</p>
<p>Water Use. The City should revise its DWSMA using the MDH Source Protection guidance for wellhead protection for fractured and solution-weathered bedrock.</p>	<p>The City's Wellhead Protection Plan, Part II Update was completed concurrently with the development of the AUAR and was approved by the Minnesota Department of Health on June 7, 2013. The WHPP, Part II Update was completed in accordance with the MDH Source Protection guidance and direction from the MDH. This guidance was also used in the development of the Drinking Water Supply Management Area (DWSMA). No change has been made to the AUAR.</p>
<p>Water Use. Concern about using the Jordan aquifer.</p>	<p>See response to Item 13- Metropolitan Council</p>
<p>Water Quality. Concern about directing storm water to Lake 2162.</p>	<p>See response to Dakota County 3d. Also, as required by the mining permit issued by the City of Rosemount, a groundwater monitoring network has been established to monitor groundwater quality downgradient of the referenced lake. Furthermore, controls referenced in the Spill Prevention, Control and Countermeasures Plan (SPCC Plan) will be in place to minimize the potential for spills and accidental releases that could affect water quality of the lake. No change has been made to the AUAR.</p>
<p>Geologic Hazards. Anecdotal evidence of fractured and solution-weathered conduits in the underlying formations</p>	<p>As shown on Figure 19-6 of the AUAR Report, no karst surface features have been identified at or within five miles of UMore Park, and few karst features have been identified on the surrounding upland outwash plain. This is not surprising considering that the depth to bedrock is greater than 50 feet below the ground surface. Although surface karst features like sinkholes are not considered a structural risk factor for UMore Park development, groundwater flow in the Prairie du Chien aquifer has preferential flow patterns on a local scale that result from solution cavities in the dolomite bedrock.</p>

	<p>Additionally, the City’s Engineer has coordinated the drilling of many wells in Rosemount. Based on this experience, the weathered portion of the Prairie du Chien strata has only been present when covered by St. Peter Sandstone. This suggests that the erosion event that removed the St. Peter also removed the weathered top portion of the Prairie du Chien strata, making the risk of sinkhole formation lower in the parts of UMore where the Prairie du Chien is the first bedrock. City engineering staff has not observed paleokarst in the lower half of the Prairie du Chien strata. This is generally supported by research and in regional outcrops. This does not mean that the area is immune to sinkhole formation, but the lack of physical and chemical evidence for sinkholes in the UMore area suggests that the risk is considered relatively low. Factors that might indicate increased risk of karst conditions affecting both structures and water quality in the project area are being monitored.</p> <p>No change has been made to the AUAR.</p>
<p>Compatibility with Plans and Land Use Regulations. Recommends implementation of Scenario 4</p>	<p>The comment that the reviewer would prefer Scenario 4 is noted. Further, the scope of this AUAR is limited to assessing environmental impacts in the context their potential effect on the redevelopment scenarios outlined in the AUAR, and does not extend to analysis of potentially responsible parties to address those releases. No change has been made to the AUAR.</p>
<p>Comments from Martha Henderson</p>	
<p>Recommends no development in the area and restoring the area as prairie. Public should have access to open spaces.</p>	<p>The concept plans for the study area contain more green space than most developments. As these green spaces are designated, restoration is anticipated to occur in some areas as appropriate and these spaces will be available for public use. The greenway corridor will connect regional open spaces to the south through to the north boundary of the AUAR. The site is adjacent to Vermillion Highlands and Dakota County’s Whitetail Woods park, which are dedicated open space that is open to the public.</p>

Comments from School District	
The School District had no comments.	No response is necessary.

UMore AUAR Response to Comments - Sanitary Sewer

Table A

Development Scenario 1 Future Regional Wastewater Flow by MCES Connection Point and 10-Year Increment
Based on 2008 Rosemount Comprehensive Sanitary Sewer System Plan (CSP) Table 6-4

MCES Facility	MCES Facility Avg. Flow Capacity (MGD)	2008 CSP Existing Avg. Flow (MGD)	Cumulative 2020 Avg. Flow (MGD)	Cumulative 2030 Avg. Flow (MGD)	Cumulative Ultimate Avg. Flow (MGD)	Sewer Shed	2008 CSP Existing Avg. Flow (MGD)	2020 Avg. Flow (MGD)	2030 Avg. Flow (MGD)	Ultimate Avg. Flow (MGD)
M641	0.56	0.361	0.405	0.405	0.405	LS 3	0.265	0.309	0.309	0.309
L74 to Blaine Ave. (CR 73)	4.00	0.188	1.854	4.839	5.026	Danville Central	0.096	0.096	0.096	0.096
						Northeast	0.000	0.884	1.075	1.075
						Southeast	0.000	0.318	0.494	0.681
						Southeast Central	0.000	0.538	3.081	3.081
							0.000	0.114	0.190	0.190
Blaine Ave. (CR 73) to Akron Ave. (CR 71)	6.72	0.188	1.939	4.924	6.061	UMore-East	0.000	0.000	0.000	0.950
						West Central	0.000	0.085	0.085	0.085
						¹ Northwest	0.000	0.000	0.000	0.300
						¹ Lan-O-Ken	0.054	0.175	0.175	0.277
						LS 9	0.034	0.063	0.063	0.063
						Connemara	0.219	0.279	0.279	0.279
						UMore-Central	0.000	0.000	0.000	1.010
Akron Ave. (CR 71) to Biscayne Ave.	9.52	0.577	3.527	6.843	10.411	UMore-Northwest	0.000	0.000	0.000	0.820
						¹ North Central	0.000	0.915	1.246	1.316
						¹ South Bacardi	0.000	0.074	0.074	0.203
						Auburn	0.011	0.011	0.011	0.011
						LS 8	0.053	0.053	0.053	0.053
						LS 7	0.018	0.018	0.018	0.018
						150th	0.171	0.171	0.171	0.171
						Canada	0.113	0.113	0.113	0.113
						LS 1	0.136	0.136	0.136	0.136
						¹ LS 4	0.115	0.121	0.121	0.121
						LS 5	0.107	0.107	0.107	0.107
						LS 6	0.005	0.005	0.005	0.005
Biscayne Ave. to City Boundary (M645)	11.92	1.425	4.666	7.982	11.550					
						Business Pkwy	0.077	0.354	0.354	0.354
						Biscayne	0.124	0.132	0.132	0.132
City Boundary (M645) to 170th Street	11.92	1.425	4.666	7.982	11.990	UMore-Southwest	0.000	0.000	0.000	0.440

¹ Sewer districts contain existing development that is proposed to be connected to Municipal system under ultimate scenario, therefore ultimate flow not solely dependent upon developable acres

² Future development average flow is based on a wastewater generation rate of 800 gallons per acre per day, UMore flows based on AUAR projections

UMore AUAR Response to Comments - Sanitary Sewer

Table B

Development Scenario 2 Future Regional Wastewater Flow by MCES Connection Point and 10-Year Increment
Based on 2008 Rosemount Comprehensive Sanitary Sewer System Plan (CSP) Table 6-4

MCES Facility	MCES Facility Avg. Flow Capacity (MGD)	2008 CSP Existing Avg. Flow (MGD)	Cumulative 2020 Avg. Flow (MGD)	Cumulative 2030 Avg. Flow (MGD)	Cumulative Ultimate Avg. Flow (MGD)	Sewer Shed	2008 CSP Existing Avg. Flow (MGD)	2020 Avg. Flow (MGD)	2030 Avg. Flow (MGD)	Ultimate Avg. Flow (MGD)
M641	0.56	0.361	0.405	0.405	0.405	LS 3 Danville	0.265 0.096	0.309 0.096	0.309 0.096	0.309 0.096
L74 to Blaine Ave. (CR 73)	4.00	0.188	1.854	4.839	5.026	Central Northeast Southeast Southeast Central	0.000 0.188 0.000 0.000	0.884 0.318 0.538 0.114	1.075 0.494 3.081 0.190	1.075 0.681 3.081 0.190
Blaine Ave. (CR 73) to Akron Ave. (CR 71)	6.72	0.188	1.939	4.924	5.891	UMore-East West Central Northwest Lan-O-Ken LS 9 Connemara UMore-Central UMore-Northwest	0.000 0.000 0.000 0.054 0.034 0.219 0.000 0.000	0.000 0.085 0.000 0.175 0.063 0.279 0.000 0.000	0.000 0.085 0.000 0.175 0.063 0.279 0.000 0.000	0.780 0.085 0.300 0.277 0.063 0.279 0.740 0.620
Akron Ave. (CR 71) to Biscayne Ave.	9.52	0.577	3.527	6.843	9.771	North Central South Bacardi Auburn LS 8 LS 7 150th Canada LS 1 LS 4 LS 5 LS 6	0.000 0.000 0.011 0.053 0.018 0.171 0.113 0.136 0.115 0.107 0.005	0.915 0.074 0.011 0.053 0.018 0.171 0.113 0.136 0.121 0.107 0.005	1.246 0.074 0.011 0.053 0.018 0.171 0.113 0.136 0.121 0.107 0.005	1.316 0.203 0.011 0.053 0.018 0.171 0.113 0.136 0.121 0.107 0.005
Biscayne Ave. to City Boundary (M645)	11.92	1.425	4.666	7.982	10.910	Business Pkwy Biscayne UMore-Southwest	0.077 0.124 0.000	0.354 0.132 0.000	0.354 0.132 0.000	0.354 0.132 0.320
City Boundary (M645) to 170th Street	11.92	1.425	4.666	7.982	11.230					

¹ Sewer districts contain existing development that is proposed to be connected to Municipal system under ultimate scenario, therefore ultimate flow not solely dependent upon developable acres

² Future development average flow is based on a wastewater generation rate of 800 gallons per acre per day, UMore flows based on AUAR projections

UMore AUAR Response to Comments - Sanitary Sewer
Table C

Development Scenario 1 Future Regional Wastewater Flow by MCES Connection Point and 10-Year Increment
Based on 2008 Rosemount Comprehensive Sanitary Sewer System Plan (CSP) Table 6-4

MCES Facility	MCES Facility Avg. Flow Capacity (MGD)	2008 CSP Existing Avg. Flow (MGD)	Cumulative 2020 Avg. Flow (MGD)	Cumulative 2030 Avg. Flow (MGD)	Cumulative Ultimate Avg. Flow (MGD)	Sewer Shed	2008 CSP Existing Avg. Flow (MGD)	2020 Avg. Flow (MGD)	2030 Avg. Flow (MGD)	Ultimate Avg. Flow (MGD)
M641	0.56	0.361	0.405	0.405	0.405	LS 3	0.265	0.309	0.309	0.309
L74 to Blaine Ave. (CR 73)	4.00	0.188	1.854	4.839	5.026	Danville Central	0.096	0.096	0.096	0.096
						Northeast	0.000	0.884	1.075	1.075
						Southeast	0.188	0.318	0.494	0.681
						Southeast Central	0.000	0.538	3.081	3.081
							0.000	0.114	0.190	0.190
Blaine Ave. (CR 73) to Akron Ave. (CR 71)	6.72	0.188	1.939	4.924	5.931	UMore-East	0.000	0.000	0.000	0.820
						West Central	0.000	0.085	0.085	0.085
						¹ Northwest	0.000	0.000	0.000	0.300
						¹ Lan-O-Ken	0.054	0.175	0.175	0.277
						LS 9	0.034	0.063	0.063	0.063
						Connemara	0.219	0.279	0.279	0.279
						UMore-Central	0.000	0.000	0.000	1.010
Akron Ave. (CR 71) to Biscayne Ave.	9.52	0.577	3.527	6.843	10.281	UMore-Northwest	0.000	0.000	0.000	0.820
						¹ North Central	0.000	0.915	1.246	1.316
						¹ South Bacardi	0.000	0.074	0.074	0.203
						Auburn	0.011	0.011	0.011	0.011
						LS 8	0.053	0.053	0.053	0.053
						LS 7	0.018	0.018	0.018	0.018
						150th	0.171	0.171	0.171	0.171
						Canada	0.113	0.113	0.113	0.113
						LS 1	0.136	0.136	0.136	0.136
						¹ LS 4	0.115	0.121	0.121	0.121
						LS 5	0.107	0.107	0.107	0.107
						LS 6	0.005	0.005	0.005	0.005
Biscayne Ave. to City Boundary (M645)	11.92	1.425	4.666	7.982	11.420					
						Business Pkwy	0.077	0.354	0.354	0.354
						Biscayne	0.124	0.132	0.132	0.132
City Boundary (M645) to 170th Street	11.92	1.425	4.666	7.982	11.860	UMore-Southwest	0.000	0.000	0.000	0.440

¹Sewer districts contain existing development that is proposed to be connected to Municipal system under ultimate scenario, therefore ultimate flow not solely dependent upon developable acres

²Future development average flow is based on a wastewater generation rate of 800 gallons per acre per day, UMore flows based on AUAR projections

**Table 6-4
Future Regional Wastewater Flow by MCEs Connection Point and 10-Year Increment**

MCEs Facility	Cumulative Existing Avg. Flow (MGD)	Cumulative 2010 Avg. Flow (MGD)	Cumulative 2020 Avg. Flow (MGD)	Cumulative 2030 Avg. Flow (MGD)	Cumulative Ultimate Avg. Flow (MGD)	Sewer Shed	Existing Avg. Flow (MGD)	2010 Avg. Flow (MGD)	2020 Avg. Flow (MGD)	2030 Avg. Flow (MGD)	Ultimate Avg. Flow (MGD)
M641	0.361	0.361	0.405	0.405	0.405	LS 3	0.265	0.265	0.309	0.309	0.309
L74 to Blaine Ave. (CR 73)	0.188	0.188	1.854	4.839	5.168	Danville	0.096	0.096	0.096	0.096	0.096
						Central	0.000	0.000	0.884	1.075	1.217
						Northeast	0.188	0.188	0.318	0.494	0.681
						Southeast	0.000	0.000	0.538	3.081	3.081
						Southeast Central	0.000	0.000	0.114	0.190	0.190
Blaine Ave. (CR 73) to Akron Ave. (CR 71)	0.188	0.188	1.939	4.924	5.982	South Central	0.000	0.000	0.000	0.000	0.730
						West Central	0.000	0.000	0.085	0.085	0.085
						¹ Northwest	0.000	0.000	0.000	0.000	0.300
						¹ Lan-O-Ken	0.054	0.094	0.175	0.175	0.277
Akron Ave. (CR 71) to Biscayne Ave.	0.577	1.014	3.527	6.843	9.657	LS 9	0.034	0.063	0.063	0.063	0.063
						Connemara	0.219	0.279	0.279	0.279	0.279
						Southwest Central	0.000	0.000	0.000	0.000	1.155
						¹ North Central	0.000	0.308	0.915	1.246	1.316
						¹ South Bacardi	0.000	0.000	0.074	0.074	0.203
						Auburn	0.011	0.011	0.011	0.011	0.011
						LS 8	0.053	0.053	0.053	0.053	0.053
						LS 7	0.018	0.018	0.018	0.018	0.018
						150th	0.171	0.171	0.171	0.171	0.171
						Canada	0.113	0.113	0.113	0.113	0.113
Biscayne Ave. to City Boundary (M645)	1.425	2.059	4.666	7.982	11.247	LS 1	0.136	0.136	0.136	0.136	0.136
						¹ LS 4	0.115	0.115	0.121	0.121	0.121
						LS 5	0.107	0.107	0.107	0.107	0.107
						LS 6	0.005	0.005	0.005	0.005	0.005
						Southwest	0.000	0.000	0.000	0.000	0.450
						Business Pkwy	0.077	0.266	0.354	0.354	0.354
Biscayne	0.124	0.132	0.132	0.132	0.132						

¹Sewer districts contain existing development that is proposed to be connected to Municipal system under ultimate scenario, therefore ultimate flow not solely dependent upon developable acres

²Future development average flow is based on a wastewater generation rate of 800 gallons per acre per day



Physical Development Division July 10, 2013

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Land Conservation
Groundwater Protection
Surface Water
Waste Regulation
Environmental Initiatives

Office of Planning

Operations Management
Facilities Management
Fleet Management
Parks

Transportation
Highways
Surveyor's Office
Transit Office

Eric Zweber
City of Rosemount
2875 145th Street West
Rosemount, MN 55068

Re: Dakota County Comments - Alternative Urban Area-wide Review - UMORE Study Area.

Mr. Zweber,

Thank you for the opportunity to comment on the Alternative Urban Area wide Review for the UMORE Study Area.

Dakota County staff prepared the attached memo outlining comments regarding transportation, greenways, and environmental resources as it relates to adopted County plans and regulations.

Thank you again for the opportunity to review. If you have questions or concerns regarding Dakota County's comments, please contact Kurt Chatfield in the County Office of Planning and Analysis by phone at 952-891-7022 or by email at kurt.chatfield@co.dakota.mn.us.

Sincerely,

Erin Stwora
Assistant Director, Physical Development

CC: Commissioner Mike Slavik, District 1
Commissioner Nancy Schouweiler, District 4
Brandt Richardson, County Administrator



Dakota County UMore Alternative Urban Areawide Review (AUAR) Comments:

1. Transportation

- a. Page 8, Section II. Executive Summary, vii. Transportation Mitigation Plan, Section B.: The County's existing Plat Review Needs map only indicates a need for a four-lane divided highway in the future for CSAH 42. However, this need was based on the existing County travel demand model that does not include traffic analysis information for the UMore site. Therefore, it is reasonable to assume that the County's model and plat review needs will reflect a 6-lane need in the future. The County's guidelines require 100' of half right-of-way for 6-lane facilities.
- b. Page 8, Section II. Executive Summary, vii. Transportation Mitigation Plan, Section F: Consider revising the mitigating statement should as, "Provide right-of-way required for future roadway expansion adjacent and within the UMore property."
- c. Future access locations to CSAH 42 are limited to ½ mile interval spacing and/or in accordance with the *CSAH 42 Study recommendations and amendments*.
- d. The document should incorporate text confirming that roundabouts are a potential intersection control measure and identify the traffic volume threshold they can be considered (similar to what is listed for interchange and signal alternatives in the Access and Intersection Control section).
- e. This development will have large scale impacts to the county and supporting local roadway system beyond the intersections assessed in this AUAR. It can be expected that the county road system/intersections beyond the limits covered here will need analysis of impacts as development is further identified and/or occurs.
- f. Non-comments / General Observations - In all three of their scenarios, the future alignments for 160th St W (CSAH 46), Akron Avenue (CSAH 73) and CSAH 71 appear to be consistent with recommendations of the *Rosemount / Empire / UMore Area Transportation System Study*. It appears only the future land use designations in some locations differ by designation.

2. Greenways

- a. The AUAR correctly describes the Vermillion Highlands Greenway that runs north/south through the UMORE property, generally between Dakota County Technical College and Whitetail Woods Regional Park. For purposes of clarity, please include the attached map from the adopted Vermillion Highlands Greenway Master Plan in the AUAR document.

3. Environmental Resources

- a. County Staff recommends a comprehensive approach be taken to offset future clean up and site restoration expenses before the UMore property is parceled, sold and developed.

- b. Page 1, Section I. Executive Summary, i. Introduction/Background: The UMore Study Area is located on the grounds of the former Gopher Ordnance Works, a privately-owned (i.e. non-federal) Formerly Used Defense Site (FUDS), as defined by the March 21, 2002, U.S. Environmental Protection Agency Policy Towards Privately-Owned Formerly Used Defense Sites. "This policy contemplates that most response actions and cleanup activities at privately-own, non-NPL FUDS will be conducted under the Defense Environmental Restoration Program (DERP) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)." The Minnesota Pollution Control Agency has stated in correspondence to the United States Army Corps of Engineers (USACE) and the University of Minnesota (letters dated December 4, 2009; January 30, 2009; and August 11, 2008) that a "full and completed Remedial Investigation/Feasibility Study (RI/FS) is necessary for the entire GOW site," which includes "an evaluation of the potential threats to the public from physical hazards and asbestos containing debris at the GOW site." Compliance with the FUDS manual may also be required.
 - i. The AUAR anticipates that "... most, if not all of development within the study area will be undertaken by private entities, not the University of Minnesota, pursuant to land sales or ground leases." However, the City of Rosemount is expected to acquire and develop approximately 20% of the project area for public infrastructure and services. Prior to property transfers, due diligence should be exercised to investigate and remediate individual areas in accordance with their previous land uses, and reasonable and appropriate actions taken to protect public health and the environment from releases.
- c. Page 5, Section III. Summary of Mitigation Measures, ii. Water Use Mitigation Plan, D: This section indicates that abandoned wells found within the study area will be sealed in accordance with Minnesota Department of Health guidelines. Dakota County has delegated responsibility for wells within the county. Therefore, all abandoned wells must be sealed in accordance with Dakota County Ordinance No. 114, "Well and Water Supply Management", in addition to MDH guidelines.
- d. Page 5, Section II. Summary of Mitigation Measures, ii. Water Use Mitigation Plan, E: According to a letter dated July 25, 2012 from the Minnesota Department of Health to the Rosemount City Engineer, the mine-pit lake (referred to in the AUAR as Lake 2162) created by gravel extraction below the water table will be hydraulically connected to the bedrock aquifer up-gradient of the Rosemount municipal wells. Furthermore, the mine-pit lake will be located within a highly vulnerable portion of the City's drinking water supply management areas (DWSMA); meaning that the aquifer may be impacted by activities at the ground surface and that Lake 2162 could be a direct conduit for contamination into the aquifer. As a result, measures should be planned to protect Lake 2162 from potential contamination.
- e. Page 18, Section III. UMORE Study Area AUAR, 9.Land Use. A. Existing Land Use: This section contains no mention of existing tenants at the UMORE site that generate hazardous waste or have the potential to cause contamination (e.g. Reese Enterprises – Astro Plastics Division, Bomb Squad demolition/training site). The descriptions of the investigations that have been conducted provide sufficient evidence that contamination

exists on the old GOW site and other former tenant sites. Environmental conditions from past land uses vary widely across the UMore Study Area. Based on historical land use, hazardous materials that may be present include asbestos, arsenic, gunpowder, lead, petroleum products, PCBs, mercury, SVOC's, and other contaminants (see section III, 9, F).

- f. Pages 20-21. Section III. UMORE Study Area AUAR, 9. Land Use, E. Superfund Site Status: Although the 2011-2012 Five Year Review of the NPL sites at UMORE found the response actions protective of human health and the environment, the finding was explicitly based on current land use. This determination should be re-evaluated with any change of land use, such as those proposed in the AUAR. In addition, the Five Year Review did call for improved access controls, such as fencing, to limit public exposure to the significant physical hazards (broken concrete, protruding rebar, pits, trenches, tunnels, and others) present at the site.
- g. Pages 39-51. Section III. UMORE Study Area AUAR, 13. Water Use, A. Existing Conditions: Prior to 1974, well records for newly installed water supplies were not required to be submitted to the state of Minnesota. As a result, the number of wells in use or abandoned within the study area may be much greater than the records available for review in the County Well Index (CWI). Dakota County Groundwater Protection staff have been working with University of Minnesota staff to create an inventory of known and suspected wells within the study area.
 - i. Water Use, Scenarios 1-3: Groundwater is proposed as the source of the community's water supply, but groundwater may not be an adequate or feasible long-term water source. The Metropolitan Council's 2010 Metro Area Water Supply Plan, Appendix 2 (Community Water Supply Profiles), projected growth in maximum daily use for the City of Rosemount from 8.5 million GPD in 2010 to 29.6 million GPD in 2050. This projection did not include the planned UMore development. That level of demand for the City of Rosemount as a whole resulted in projections for a "potential for significant decline in aquifer water levels," with a "predicted decline in available head greater than 50% in confined portions of the Prairie du Chien-Jordan aquifer under projected 2030 demand conditions."
 - 1. On the other hand, the AUAR states that "UMore development would result in 3.64 MG of additional storage needs," 2.5 MG of storage more than anticipated in the City of Rosemount's 2007 Comprehensive Water Plan (AUAR, p. 43). The AUAR's estimates of future need are not as high as the Metro Area Water Supply Plan: "The City's total maximum day demand upon complete development of the study area would 18.24 MGD (12,664 gpm) and average day of 6.078 MGD (4,221 gpm)." Regardless of which projection (29.6 million GPD or 18.24 million GPD) proves more accurate, the City of Rosemount will need to monitor groundwater, climate, and population trends and evaluate its options for providing water for future growth.

- h. Page 51, Section III. UMORE Study Area AUAR, 14. Water-related Land Use Management Districts: Any alterations to Shoreland in Empire Township must be conducted in accordance with Dakota County Ordinance No. 50, "Shoreland and Floodplain Management".**
- i. Pages 73-74, Section III. UMORE Study Area AUAR, 19. Geologic Hazards and Soil Conditions, C. iii. Scenarios 1, 2 and 3: The AUAR states, "Commercial and industrial uses are anticipated to be clean uses" and "... the potential for groundwater contamination and/or adjacent drinking well contamination should be no greater than, and is expected to be less than, the potential that exists with the existing agricultural land use." Commercial and industrial activities may be subject to County regulation of solid and hazardous wastes, in addition to federal and state regulations.**
- j. Page 74, Section III. UMORE Study Area AUAR, 19. Geologic Hazards and Soil Conditions, C. iv. Geologic Hazards and Soil Conditions Mitigation Measures: This section lists construction site Stormwater Pollution prevention Plans as a mitigation measure. Due to the history of the study area, reliance on construction NPDES and contingency plans may not be sufficient to identify hazardous substances that might be disturbed during construction activities. Prior to any excavation or other land-disturbing activities, due diligence should be exercised to investigate and remediate individual areas in accordance with their previous land uses, and reasonable and appropriate actions taken to protect public health and the environment from releases.**

From: [Zweber, Eric](#)
To: [Hanson, Kathie](#)
Cc: [Andi Moffatt](#)
Subject: FW: UMORE AUAR
Date: Thursday, June 13, 2013 12:35:35 PM

From: Balk, Becky (MDA) [<mailto:becky.balk@state.mn.us>]
Sent: Thursday, June 13, 2013 10:49 AM
To: Zweber, Eric
Cc: Patton, Bob (MDA)
Subject: UMORE AUAR

RE: UMORE AUAR

Dear Mr. Zweber:

Thank you for the opportunity to comment on the UMORE AUAR. Because the City of Rosemount did such an excellent job keeping the participating agencies informed throughout the planning process, the Minnesota Department of Agriculture (MDA) does not have any comments to add.

Sincerely,

Becky Balk

Principal Planner
MN DEPARTMENT OF AGRICULTURE
Agricultural Marketing & Development Division
625 Robert Street North | St Paul, MN, 55155
651-201-6369 (Direct Line) | Becky.Balk@state.mn.us



Minnesota Department of Transportation

Metropolitan District
Waters Edge Building
1500 County Road B2 West
Roseville, MN 55113

July 3, 2013

Kim Lindquist
Community Development Director
City of Rosemount
City Hall 2875 - 145th Street West
Rosemount, MN 55068 - 4997

SUBJECT: UMORE AUAR
Mn/DOT Review # AUAR13-004A
South of CSAH 42, between TH 3 and US 52
Rosemount and Empire Twp., Dakota County
Control Section 1906

Dear Ms. Lindquist:

Thank you for the opportunity to review the UMORE AUAR. Please note that MnDOT's review of this AUAR does not constitute approval of a regional traffic analysis and is not a specific approval for access or new roadway improvements. As plans are refined, we would like the opportunity to meet with our partners and to review the updated information. MnDOT has reviewed the document and has the following comments:

Design:

Any significant changes to the State Highway System will require a MnDOT Layout. MnDOT recommends that the design work be completed by a consultant that is experienced working with MnDOT standards and has performed Trunk Highway design.

The following web sites provide layout design guidance and identify layout requirements:

- <http://www.dot.state.mn.us/design/geometric/index.html>
- On the right side of the above page under "Quick Links", the third bullet (HPDP Geometric Design Resources) directs you to the following page:
<http://dotapp7.dot.state.mn.us/edms/download?docId=636152>

For questions concerning the layout process and timing, please contact Nancy Jacobson, MnDOT Metro Design Section at 651-234-7647

Traffic:

Page 8 of the February 11th 2013 UMORE AUAR Traffic Study Memorandum identifies several proposed improvements for the 2030 No Build scenario. Please indicate whether the proposed improvements are planned improvements (turn lanes on CSAH 42 and CSAH 46, bridge replacement and turn lanes at TH 52/CSAH 42, realignment of Akron Ave, etc.).

Funding has not been identified for the proposed improvements on the State Highway System. Please indicate how the proposed improvements are expected to be funded.

Figure 21-6A (Scenario 1 Full Development) shows 610 motorists traveling from eastbound CSAH 46 to northbound US 52. This is an increase of 590 vehicles over the no build alternative. Yet, the right turn which leads to the northbound US 52 did not increase with the no build option. Please correct if this was an error.

For questions concerning these issues, please contact David Sheen (651-234-7824) in MnDOT Metro District's Traffic Section.

Modeling:

The most prominent issue concerning the modeling for UMORE is that the methodology used for forecasting traffic is not effective for analyzing regional system impacts and needs. While the Dakota County Travel Demand Model was used to forecast 2030 "background" traffic increases, it was not used for the forecast project impacts. The Regional Travel Demand Model or Dakota County Travel Demand Model should have been used to forecast the impacts of the increased 25,000-35,000 population and the 18,000-24,500 employment for the 7.7 square miles area.

The ITE Trip Generation Manual is appropriate for estimating trips at the local level for small geographic areas, where the model does not provide enough detail. For a development of this size and scale, any analysis of the regional system should be done using the regional or County model in order to better assess internal trip relationships. Without confidence in the regional traffic impacts, it's perhaps premature to adequately assess the detailed and more localized impact as well as the mitigation recommendations.

While some trip reduction was applied to account for pass-by trips and internal trips, it's unclear how these factors were estimated. Page 9 of the traffic study notes that the trips assumed generated by the UMore development is "conservative." It is unclear how conservative is defined.

The ITE Trip Generation Manual provides information concerning the trips arriving and departing by peak hours and by land use type, but not to and from distribution on the larger system. It should be clarified how the trip distribution was estimated (Travel demand model or elsewhere).

One of the merits of the proposed development seems to be to minimize non-motorized trips, which may reduce some traffic impacts. It would be helpful to see an estimate of non-motorized trips generated.

For questions concerning these comments, please contact Jim Henricksen, MnDOT Metro District's Traffic Forecaster at 651-234-7782.

Noise Mitigation:

MnDOT's policy is to assist local governments in promoting compatibility between land use and highways. Residential uses located adjacent to highways often result in complaints about traffic noise. Traffic noise from this highway could exceed noise standards established by the Minnesota Pollution Control Agency (MPCA), the U.S. Department of Housing and Urban Development, and the U.S. Department of Transportation. Minnesota Rule 7030.0030 states that municipalities are responsible for taking all reasonable measures to prevent land use activities listed in the MPCA's Noise Area Classification (NAC) where the establishment of the land use would result in violations of established noise standards.

MnDOT policy regarding development adjacent to existing highways prohibits the expenditure of highway funds for noise mitigation measures in such areas. The project proposer should assess the noise situation and take the action deemed necessary to minimize the impact of any highway noise. If you have any questions regarding MnDOT's noise policy please contact Peter Wasko in our Design section at (651) 234-7681.

Permits:

Any use of or work within or affecting MnDOT right of way requires a permit. Permit forms are available from MnDOT's utility website at <http://www.dot.state.mn.us/utility/>

Please include one 11 x 17 plan set and one full size plan set with each permit application. Please direct any questions regarding permit requirements to Buck Craig (651-234-7911) of MnDOT's Metro Permits Section.

Review Submittal Options:

MnDOT's goal is to complete the review of plans within 30 days. Submittals sent in electronically can usually be turned around faster. There are four submittal options. Please submit either:

1. One (1) electronic pdf. version of the plans. Mn/DOT can accept the plans via e-mail at metrodevreviews.dot@state.mn.us provided that each separate e-mail is under 20 megabytes.
2. Three (3) sets of full size plans. Although submitting seven sets of full size plans will expedite the review process. Plans can be sent to:

Mn/DOT – Metro District Planning Section
Development Reviews Coordinator
1500 West County Road B-2
Roseville, MN 55113

3. One (1) compact disk.
4. Plans can also be submitted to Mn/DOT's External FTP Site. Please send files to: <ftp://ftp2.dot.state.mn.us/pub/incoming/MetroWatersEdge/Planning> Internet Explorer doesn't work using ftp so please use an FTP Client or your Windows Explorer (My Computer). Also, please send a note to metrodevreviews.dot@state.mn.us indicating that the plans have been submitted on the FTP site.

If you have any questions concerning this review please feel free to contact me at (651) 234-7794.

Sincerely,



Tod Sherman
Planning Supervisor

Copy sent via E-Mail:

Buck Craig, Permits

Nancy Jacobson, Design

Bruce Irish, Water Resources

Lee Williams, Right-of-Way

Jon Solberg, Area Engineer

David Sheen, Traffic

Pete Wasko, Noise and Air

Jim Henricksen, Modeling

Sheila Kauppi, Area Manager

Ann Braden, Metropolitan Council



Protecting, maintaining and improving the health of all Minnesotans

July 5, 2013

Eric Zweber
Senior Planner
City of Rosemount
2875 145th Street West
Rosemount, MN 55068

Dear Mr. Zweber,

Thank you for providing the Minnesota Department of Health (MDH) with the opportunity to comment on Draft Alternative Urban Areawide Review (AUAR) for the UMore Study Area project.

Asbestos/Hazardous Waste

The AUAR notes that site investigations have identified debris and abandoned structures that may contain asbestos. Prior to the demolition of structures or removal of debris that is identified as potentially containing asbestos, an inspection must be conducted according to 40 CFR 61 – National Emissions Standards for Hazardous Air Pollutants (NESHAP). Any required asbestos inspection activities must be completed in compliance with the Minnesota Asbestos Abatement Act and Rules, described in Minnesota Statutes, Sections 326.70 to 326.81 and Minnesota Rules, Parts 4620.3000 to 4620.3724. For additional information or for assistance interpreting the results of asbestos surveys, contact MDH staff at (651) 201-4620 or health.asbestos-lead@state.mn.us. Additionally, a pre-demolition survey of structures must be conducted according to Minnesota Rules 7035.0805 to properly identify all hazardous waste. Specific Questions concerning pre-demolition surveys need to be directed to the Minnesota Pollution Control Agency at (651) 296-6300.

Affordable Housing

Preserving affordable housing supports home-ownership and housing stability, improves community stability, and fosters social networks. This is important for health in a number of ways. When residents spend less than 30 percent of pre-tax income on housing (affordability threshold) they have more money to spend on healthcare, doctor visits, medication, and healthy food. Additionally, instable housing – or frequent mobility – can cause stress and other mental health conditions like depression. The supply of stable, affordable housing is shrinking and demand is increasing. The project does provide a mix of housing densities but should also consider providing affordable housing options.

Drinking Water Protection

In two recent letters to the City, MDH discussed issues that remain unaddressed in the current AUAR. The first letter (April 2, 2013) provided two guidance documents that relate to wellhead protection: 1) where mining activities are expected; and 2) where storm water infiltration is expected. The second letter (July 25, 2012) discussed the need for groundwater quality monitoring in connection with direct recharge from surface water into the aquifer, and within the

highly vulnerable portion of the Drinking Water Supply Management Area (DWSMA). These water quality concerns were not addressed in the AUAR and therefore, the points raised by these two letters continue to be current and valid. They have been resubmitted as attachments to this comment letter.

Energy Consumption

Reduced energy consumption results in decreased fossil fuel burning in power plants, and thus lowers carbon emissions from these plants. The project should consider ways, such as those described in the Concept Master Plan, to conserve energy, reduce energy use, eliminate or reduce greenhouse gas emissions, and promote the use of renewable energy.

Health Impact Assessment

A Health Impact Assessment (HIA) is a research and community engagement process that can be used to help ensure that people's health and concerns are being considered when decisions on infrastructure and land use projects are being made. The National Research Council defines HIA as "a structured process that uses scientific data, professional expertise, and stakeholder input to identify and evaluate public-health consequences of proposals and suggests actions that could be taken to minimize adverse health impacts and optimize beneficial ones." HIAs have been used to provide important health information to decision makers on a wide range of projects outside the typical health arena, including comprehensive plans, brownfield redevelopment, transportation projects, energy policies, and housing projects. Over 100 HIAs have been performed in the US to help improve public health. Ten HIAs have been completed in Minnesota, mostly on comprehensive plans and transportation projects. An HIA could provide recommendations to policy makers to support possible positive health outcomes and to mitigate or prevent possible negative health outcomes to improve the public's health and to inform zoning, permitting, monitoring, and other policies.

Physical Activity

Encouraging physical activity by providing parks, recreational facilities, and trails can be an effective strategy to improve the public's health. Additionally, trips taken by bike or foot versus automobile save energy and do not emit pollutants or greenhouse gases. The project should consider bicycle and pedestrian connections and accessibility, such as those described in the Concept Master Plan, so that future users of the site would have safe and convenient access to these facilities.

Storm Water Runoff/ Impervious Surfaces

The substantial increase in impervious surfaces at project build out will increase the amount of stormwater runoff from the site. Stormwater runoff picks up and carries with it many different pollutants that are found on paved surfaces such as sediment, nitrogen, phosphorus, bacteria, oil, grease, trash, pesticides and metals. Reducing stormwater runoff helps prevent contaminated runoff from entering streams, lakes and other water bodies, which may be used for recreational purposes or drinking water. Waterborne illnesses from recreational swimming and drinking water are associated with runoff. An increase in impervious surfaces also has been shown to lead to higher flood peaks.

Future climate conditions are anticipated to result in increased frequency and intensity of storm events. The project should consider whether stormwater infrastructure and retention facilities

Mr. Zweber
UMore Study Area AUAR
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July 5, 2013

designed for larger storm events would be appropriate to accommodate anticipated future climatic events.

Well Construction

New wells that are constructed in Minnesota must be constructed according to the requirements of Minnesota Statutes, Chapter 103I, and Minnesota Rules, Chapter 4725. Any wells constructed for dewatering or water quality monitoring will be subject to these requirements. Abandoned wells will need to be properly sealed. Additional information is available on the MDH website at Well Construction and Well Sealing. For additional information, contact MDH staff at (651) 201-4600 or health.wells@state.mn.us.

Health starts where we live, learn, work, and play. To create and maintain healthy Minnesota communities, we have to think in terms of health in all policies. Thank you again for the opportunity to provide comments on this AUAR for the UMore Study Area. Feel free to contact me at (651) 201-4927 or michele.ross@state.mn.us if you have any questions.

Sincerely,



Michele Ross
Environmental Review Coordinator
Environmental Health Division
Minnesota Department of Health
PO Box 64975
Saint Paul, MN 55164-0975

JEL



Protecting, maintaining and improving the health of all Minnesotans

April 2, 2012

Mr. Andrew Brotzler
City Engineer - City of Rosemount
2875 - 145th Street West
Rosemount, Minnesota 55068

Dear Mr. Brotzler:

I am writing this letter to provide the city of Rosemount (the City) with updated guidance documents regarding 1) "Wellhead Protection Issues and Strategies Related to Mining Activities" and 2) "Evaluating Proposed Stormwater Infiltration Projects in Vulnerable Wellhead Protection Areas." These documents have evolved since the Minnesota Department of Health (MDH) last discussed them with the City and we understand you are currently working on an ordinance pertaining to large-scale aggregate mining. MDH has no authority over local zoning or land use decisions and offers these guidance documents to you for reference in your decision process.

It is the MDH perspective that the City should consider both the protection of its source water and the protection of the Prairie du Chien-Jordan regional aquifer. It is our understanding that some of the proposed mining activity and a resultant mine pit-lake will be located within a highly vulnerable portion of the City's drinking water supply management area (DWSMA), as approved in the amended Part 1 report (March 18, 2011). A rating of high vulnerability indicates that waterborne contaminants could take only weeks to years to reach the aquifer, therefore great care should be taken in this portion of the DWSMA to prevent the release of contaminants during mining activities. The proposed mining activities will remove all of the unconsolidated material above the Prairie du Chien, which is a highly fractured bedrock that is hydraulically connected to the Jordan Aquifer in which the City's wells are completed. The resultant mine pit-lake could be a direct conduit for contamination into the aquifer and is located directly upgradient of City wells Rural Well 1 South (457167) and Rural Well 2 North (474335).

We recognize the city's commitments to providing safe and clean drinking water to its residents. Please contact me with any questions regarding these MDH guidance documents (651/201-4658).

Sincerely,

JEL

Joy E. Loughry, Hydrologist
Drinking Water Protection Section
Environmental Health Division
P.O. Box 64975
St. Paul, Minnesota 55164-0975

JEL:kmc
Enclosures



Protecting, maintaining and improving the health of all Minnesotans

July 25, 2012

Mr. Andrew Brotzler, P.E.
City Engineer - City of Rosemount
2875 -145th Street West
Rosemount, Minnesota 55608

Dear Mr. Brotzler:

Subject: UMore Mining Permit Document Review

It is our understanding that the City of Rosemount (the City) is currently reviewing the permit application for the planned UMore aggregate mine. We have reviewed some of the submitted documents and believe that there are deficiencies in the water quality monitoring strategy as proposed in the "Hydrogeologic Study and Water Monitoring Plan." In particular, it does not include provisions for evaluating changes in the water chemistry of the City wells that may result from the direct recharge from surface water into the aquifer.

The mining activities as proposed will result in a mine-pit lake that will be hydraulically connected to the bedrock aquifer upgradient of the City wells. A portion of this lake will be located within a highly vulnerable portion of the City's current Drinking Water Supply Management Area (DWSMA). This lake will focus groundwater recharge into the bedrock aquifer that is used by the City and will have the potential to affect the water quality in the aquifer, particularly if the city constructs more water supply wells in this area. The City should be aware that the Minnesota Department of Health (MDH) may have to designate affected city wells as groundwater sources that are under the direct influence of surface water should changes in water quality reflect rapid surface water recharge to the aquifer. If this were to happen, the City may face additional expense in order to meet Federal surface water treatment regulations.

The City is currently working on Part 2 of their wellhead protection plan. The proposed mining activities will need to be addressed in the section relating to the impact of land and water use changes. This is also an opportunity to incorporate measures into your plan that will aid in determining the risks to your water supply that this mining activity may pose. Adding specific measures to your plan that relate to characterizing or managing this potential source of contamination will qualify the City to be eligible for MDH Implementation Grant funding to help defray the cost of monitoring.

Mr. Andrew Brotzler

Page 2

July 25, 2012

We are available to discuss our thoughts on the proposed water quality monitoring plan for UMore Park and the measures that we believe should be incorporated into the Part 2 portion of your wellhead protection plan. Please contact Joy Loughry of my unit at 651/201-4658 for any questions or discussion.

We recognize the City's commitment to providing safe and clean drinking water to its residents and look forward to the opportunity to work with you towards that goal.

Sincerely,



Bruce M. Olsen, Supervisor
Source Water Protection Unit
Environmental Health Division
P.O. Box 64975
St. Paul, Minnesota 55164-0975

BMO:JEL:kmc

cc: Nancy Zeigler, P.E., WSB & Associates
Karen Voz, MDH Planner, St. Cloud District Office
Joy Loughry, MDH Hydrologist, St. Paul Office

 **Metropolitan Council**

July 9, 2013

Mr. Eric Zweber, AICP
2875 145th Street West
Rosemount, MN 55068

RE: UMore Park Draft Alternative Urban Areawide Review
Metropolitan Council Review File No. 21138-1
Metropolitan Council District 16, Wendy Wulff

Dear Mr. Zweber:

Metropolitan Council staff completed its review of the UMore Park Alternative Urban Areawide Review (AUAR) to determine its accuracy and completeness in addressing regional concerns. While the AUAR covers land in both the City of Rosemount (City) and Empire Township (Township), the City is the Responsible Governmental Unit.

Staff concludes that the updated AUAR is complete and accurate with respect to regional concerns and raises no major issues of consistency with Council policies. However, staff offers the following comments:

Item 8 – Permits and Approvals

In accordance with Minnesota Statute Section 473.513, at the time the City makes application to the Minnesota Pollution Control Agency (MPCA) for a permit to construct each segment of sanitary sewer for the proposed project, a copy of the plans, design data, and a location map of the project will also need to be submitted to the Metropolitan Council. The Council's Environmental Service Municipal Services staff will need to review, comment, and recommend issuance of the construction permit by the MPCA before connection can be made to the City's wastewater disposal system.

Item 9 – Land Use

The AUAR presents three scenarios involving major development initiative on the UMore Park site (7.7 square miles). Scenario 1 represents a "village" build-out scenario with housing for 34,500 population and employment-supporting zones for 18,200 jobs. Scenario 2 represents a lower-density "village" build-out scenario with housing for 25,300 population and employment-supporting zones for 18,200 jobs. Scenario 3 represents a higher employment build-out scenario with housing for 31,400 population and employment-supporting zones for 24,500 jobs.

Most of this development is expected after 2030 (the AUAR says 2028) and anticipates growth beyond the scope of the City's 2030 Comprehensive Plan.

Council Staff believe that the build-out targets described might be staged over a 20 or 30 year period extending to 2050 or 2060. At this time the Council has not established forecasts for 2040, 2050 or 2060.

If this development is incorporated into the City's and Township's Comprehensive Plan Updates for 2040, then staff can discuss appropriate population, household and employment forecasts in the context of growth in surrounding areas and regional growth including provisions for the City's share of the region's affordable housing need.

www.metrocouncil.org

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Mr. Eric Zweber
July 9, 2013
page 2

Regional Parks: The UMore Park area is located near two planned regional parks system facilities, both of which are acknowledged in the AUAR. The planned Whitetail Woods Regional Park is located immediately south of UMore Park, and the planned Vermillion Highlands Greenway Regional Trail traverses the UMore Park site. The Metropolitan Council approved the alignment of the Vermillion Highlands Greenway Regional Trail in November 2012 as part of Dakota County's master plan for the regional trail.

All of the development scenarios in the AUAR include an open space greenway to accommodate the regional trail, which will connect Lebanon Hills Regional Park to Whitetail Woods Regional Park. Council staff encourages the University of Minnesota, the City of Rosemount and Empire Township to work with Dakota County to facilitate development of the regional trail.

Item 13 – Water Supply

Water supply is a critical factor in future growth planning. The Council has significant concerns about the expansion of groundwater use in the UMore Park AUAR area in Dakota County.

Council research of long-term ground water use indicates considerable decline in available groundwater in the UMore Park area. This is modeled to in the year 2030. The proposed development of UMore Park and continued reliance on groundwater sources puts pressure on existing aquifer supplies.

In 2013, the Council has been working with communities around the region generally and specifically with engineers from cities in Dakota County to address the greater water supply issue. The City and Township should continue to work with Council Staff as groundwater modeling is refined and alternate sources for water supply are explored.

Council research reveals moderate and high potential recharge to the aquifer; future development should include the latest infiltration across all land uses.

Item 17 – Water Quality – Surface Water Runoff

The National Weather Service's Hydrometeorological Design Studies Center recently released new precipitation frequency estimates for many of the Midwestern states, including Minnesota, in a publication termed the *NOAA Atlas 14 Point Precipitation Frequency Estimates*. (See http://www.dnr.state.mn.us/climate/noaa_atlas_14.html and http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=mn)

The new estimates result in generally higher projected rainfall events for the average 50- and 100-year recurrence intervals. The AUAR does not indicate what amount of rainfall was utilized for the 100-year event, but the new *Atlas 14* precipitation frequency data estimates indicate that future 100-year rainfall recurrence interval events should now be estimated to be approximately 7.4". These new data should be utilized in the calculation of runoff to properly size the proposed project's stormwater conveyance, treatment, and infiltration facilities.

Item 18 – Wastewater

The AUAR redefines the individual sanitary sewer districts within the project area from those previously identified in the City's 2008 Comprehensive Plan Update. The AUAR currently calls for the area to be served through four (4) primary districts – the East District, Central District, Northwest District, and the Southwest District – with each having its own separate connection to the regional wastewater system. The regional interceptor system that provides service to this area of the City was designed and constructed with specific capacities. During its review of the City's 2008 Update, the Council met with the City to discuss the system capacity within the regional system and the City committed to finalizing a wastewater plan that would be consistent with the assigned capacities of the regional system.

The service area map included in the AUAR shows larger areas being served through the upstream portion of the regional system where system capacity is less. This represents a potential system impact if long term flows from these areas exceed system capacity. That portion of the gravity interceptor downstream of L75 (Biscayne Avenue) has sufficient capacity to serve the City including the AUAR project area.

The City will need to update its Comprehensive Plan, including its Tier II Comprehensive Sewer Plan, prior to the installation of any sanitary sewer improvements within the AUAR project area. The approved Tier II Comprehensive Sewer Plan will need to reflect that long term cumulative wastewater projections from each service district connection point is consistent with the assigned regional capacity. This will more than likely require that portions of the East, Central, and Northwest service district be directed west toward that portion of the system within Biscayne Avenue.

Item 21 – Traffic Forecasts and Transportation Mitigation

The use of ITE trip generation rates for calculating traffic impacts for a development this large is inappropriate. The unreasonably high nature of trip generation estimates calls into question the expansion needs identified in the AUAR which include expanding CSAH 42 from four-lanes to six, constructing an interchange to replace the existing TH 3/CSAH 42 intersection and reconstructing the existing interchange at CSAH 42 and US 52.

It should also be noted that CSAH 42 and CSAH 52 are principal arterials and hence part of the metropolitan highway system. The 2030 regional Transportation Policy Plan does not include any of the described improvements to these metropolitan highways. Construction or reconstruction of the interchanges and expansion of CR 42 would need controlled access approval from the Metropolitan Council. The city of Rosemount should continue to coordinate with MnDOT and the Metropolitan Council regarding any proposed changes to the metropolitan highway system.

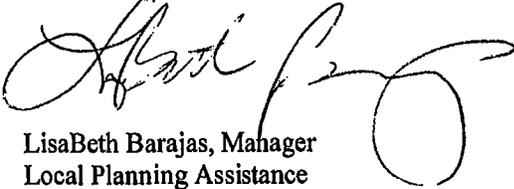
Item 27 – Compatibility with Plans and Land Use Regulations:

The Metropolitan Council is drafting a new framework, *Thrive MSP 2040* and is expected to adopt this plan in 2014. Currently, the *2030 Regional Development Framework* does not recognize development consistent with Scenarios 1, 2 and 3 in the AUAR. The City of Rosemount and Empire Township will need to partner with the Council to identify potential community and regional infrastructure improvements and timeframes necessary to accommodate the UMore development scenarios as identified. Among the development Scenarios detailed in the AUAR, when particular land uses are finalized, the Council expects both the City and the Township to amend their respective comprehensive plans.

Mr. Eric Zweber
July 9, 2013
page 4

The Council will take no formal action on the AUAR. If you have any questions or need further information, please contact Patrick Boylan, Principal Reviewer, at 651-602-1438.

Sincerely,



LisaBeth Barajas, Manager
Local Planning Assistance

cc: Julie Monson, MHFA
Tod Sherman, Development Reviews Coordinator, MnDOT - Metro Division
Wendy Wulff, Metropolitan Council District 16
Patrick Boylan, Principal Reviewer
Raya Esmacili, Reviews Coordinator

N:\CommDev\LPA\Communities\Rosemount\Letters\Rosemount 2013 AUAR 21138-1 UMore Park.docx



Minnesota Pollution Control Agency

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us | Equal Opportunity Employer

July 10, 2013

Mr. Eric Zweber
Senior Planner
City of Rosemount
2875 145th Street West
Rosemount, MN 55068

Re: UMore Study Area Draft Alternative Urban Areawide Review

Dear Mr. Zweber:

Thank you for the opportunity to review and comment on the Draft Alternative Urban Areawide Review (Draft AUAR) for the UMore Study Area project (Project) located in the city of Rosemount, Minnesota. The Project consists of a 4,900 acre mixed use development. Regarding matters for which the Minnesota Pollution Control Agency (MPCA) has regulatory responsibility and other interests, the MPCA staff has the following comments for your consideration.

Water Quality – Surface Water Runoff (Item 17)

- The Draft AUAR states that stormwater management for the new development will utilize regional ponds constructed to “NURP Standards” as a pre-treatment method prior to discharge into area water bodies. It is important to note that the MPCA does not recognize these standards as comparable to meeting the requirements for wet sedimentation basins as described in the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) General Construction Stormwater Permit that will be required for the site. Construction of permanent wet sedimentation basins and regional ponds to treat stormwater runoff from new impervious surfaces will, at a minimum, need to meet all the requirements outlined in Part III. C. 1. of the permit and incorporate any revisions to this part as a result of upcoming changes to the 2013 permit.
- The MPCA encourages the use of infiltration of stormwater, where possible, as a method of permanent stormwater management. The design of the infiltration systems must also meet all requirements identified in Part III. C. 2. of the NPDES/SDS Construction Stormwater Permit.
- The MPCA encourages the city and county to consider incorporating Minimal Impact Design Standard (MIDS) practices into its plan to retain stormwater on the site and minimize discharges to area surface waters. More information can be found at <http://www.pca.state.mn.us/veiza8e>.
- The Draft AUAR identifies the presence of numerous land-locked depressions and wetlands on the site that may be utilized as part of the stormwater management system. However, it should be noted that the NPDES/SDS prohibits adverse stormwater impacts (including permanent inundation, flooding, degradation of water quality, filling, etc.) to natural wetlands (of any classification) unless the impacts have been addressed through permits or other approvals as described in Appendix A, Part D of the Permit.

Mr. Eric Zweber
Page 2
July 10, 2013

- The Draft AUAR states the site does not discharge to impaired waters, but does not identify whether the site will discharge to any special waters within one mile of the site. If the site will discharge to special waters, permanent treatment volumes will double for the site. For questions regarding stormwater issues, please contact Roberta Getman at 507-206-2629.

We appreciate the opportunity to review this project. Please be aware that this letter does not constitute approval by the MPCA of any or all elements of the Project for the purpose of pending or future permit action(s) by the MPCA. Ultimately, it is the responsibility of the Project proposer to secure any required permits and to comply with any requisite permit conditions. If you have any questions concerning our review of this Draft AUAR please contact me at 651-757-2508.

Sincerely,



Karen Kromar
Planner Principal
Environmental Review Unit
Resource Management and Assistance Division

KK:bt

cc: Craig Affeldt, MPCA, St. Paul
Doug Wetzstein, MPCA, St. Paul
Roberta Getman, MPCA, St. Paul

From: [Zweber, Eric](#)
To: [Andi Moffatt](#); [Hanson, Kathie](#)
Subject: FW: UMORE Draft AUAR - DNR Comments
Date: Thursday, July 11, 2013 9:55:45 AM

Comment from the DNR.

Kathie,

Now that we received the comments from the DNR, can you e-mail all the comments that we received to all of the PMT members.

Thanks,

Eric Zweber, Senior Planner

City of Rosemount, 2875 145th Street, Rosemount, MN 55068

Ph. 651-322-2052 / <http://www.ci.rosemount.mn.us>



From: Doperalski, Melissa (DNR) [<mailto:melissa.doperalski@state.mn.us>]
Sent: Thursday, July 11, 2013 9:50 AM
To: Zweber, Eric
Cc: Haworth, Brooke (DNR); Joyal, Lisa (DNR)
Subject: Re: UMORE Draft AUAR - DNR Comments

Mr. Zweber,

The Department of Natural Resources (DNR) has reviewed the Draft Alternative Urban Areawide Review (AUAR) for the UMORE Study Area located in the City of Rosemount, Dakota County. We offer the following comments for your consideration.

The DNR has had the opportunity to participate in discussions and pre-publication reviews for this document. Early coordination opportunities are appreciated as they help to identify issues/concerns early in the process and allow for considerations early in planning. The DNR encourages the City to continue communications with the DNR through the development stages of this project.

In addition to scheduled AUAR updates, the DNR recommends that the Natural Heritage Information System (NHIS) Database be re-evaluated during major construction events. Regarding NHIS reviews, the DNR considers report queries valid for one year. New records are constantly being updated into the system. In the event that a new rare feature(s) or state-listed species are located on or in the vicinity of the project area, avoidance or mitigation measures may need to be considered.

As identified in the Draft AUAR, the Vermillion Highlands Research Recreation and Wildlife Management Area is located south adjacent to the study area. The DNR appreciates the consideration of this resource in planning scenarios and encourages the City to continue discussions

with the DNR as more definitive site plans are developed.

The DNR encourages that project developers consider use wildlife-friendly erosion control mesh where erosion control mesh is needed. Traditional erosion control mesh has been found to be detrimental as wildlife can become entangled leading to injury or death. A flyer is attached for your reference.

Please note that additional information may be requested or required when DNR water appropriation permit applications are submitted for the construction of a new well. A 2013 statutory change requires that all new well construction receive pre-approval from the DNR prior to construction of the well. The statutory changes is to help well owners to make informed decision by providing relevant information prior to their financial investment in equipment and well construction. Please contact the DNR Area Hydrologist for more information on the applicability of this statutory change to your project.

The DNR is supportive of and appreciates all wildlife and rare features considerations and commitments as presented in the Draft AUAR.

Thank you,
Melissa

Melissa Doperalski
Regional Environmental Assessment Ecologist
Department of Natural Resources, Central Region
1200 Warner Road
Saint Paul, Minnesota 55106
651.259.5738
melissa.doperalski@state.mn.us

Comments on City of Rosemount Draft AUAR UMore Study Area

by Ronald C. Spong

p. 17: 8.) Permits and Approvals, Table 8-1. Dakota County requires permits, licenses and/or approvals for compliance with its ordinances (e.g., solid waste, hazardous waste, subsurface sewage treatment, wells and water supplies).

p. 18: 9.A.) Existing Land Uses. Although past and present land uses in UMore Park are briefly discussed elsewhere in the Draft AUAR, the University of Minnesota must make a full and complete disclosure of all past and present land uses whether by the University itself, its former and current tenants or by others (e.g., federal government and military and State of Minnesota agencies). Property transactions implicit with this proposed development, as well as those that have already occurred (e.g., Vermillion Highlands, City of Rosemount and Dakota County Technical College), require veracity, due diligence to protect potential buyers from incurring environmental liabilities that are known or should be known (e.g., contaminant releases and asbestos).

p. 20-31: 9.E.) Superfund Site Status, and 9.F.) Potential Environmental Hazards. This respondent has been associated with many aspects of the investigations, remedial efforts and variable outcomes surrounding the former Gopher Ordnance Works (FGOW), Rosemount Research Center and Agricultural Experiment Station citizen complaints and discoveries of solid and hazardous waste disposals and contaminant releases were made in 1984. The Draft AUAR excludes a much larger body of work conducted from 1984 through 2000, which should be included to provide the necessary context for a public review of this import. Through its Site Assessment and Remediation Program, Dakota County has documented more than a hundred FGOW and UMore Park disposal and release sites that have not been satisfactorily resolved.

Despite evidence to the contrary, the State and federal Superfund site activities excluded the FGOW choosing instead to focus on a few of the many disposals and contaminant releases at UMore Park (e.g., the University's hazardous waste burn pits, Georges Used Equipment, Porter Electric and US Transformer). In 2002, a preliminary investigation of the FGOW was conducted jointly by the University, MPCA and Dakota County, and its significant findings (2003) were presented to the US Army Corps of Engineers (USACE), which manages the congressionally funded DERP for formerly used defense sites (FUDS) like the FGOW. The USACE conducted a preliminary assessment and concluded that the University was a "responsible party" with others, which has since led to administrative and legal wrangling but no remedial actions, exposure mitigation or cleanups.

The MPCA is charged with enforcing MERLA, whether it proceeds cooperatively with USACE under DERP to address the FGOW and/or requires the University of Minnesota, as a responsible party, to follow through with Superfund actions. What appeared to be significant causes for both DERP and Superfund actions several years ago have become sidetracked by the University's push for developing a residential and business community and aggregate mining at UMore Park. Economic and commercial interests have overtaken the environmental

concerns, and the leaders of State and local governments, who are charged with protecting public health and safety, must decide who they represent.

Suffice it to say that this section of the Draft AUAR needs significant revision if it is to properly and fully inform the public and its decision makers on this important and long reaching development plan. Seventy-one years of land use and unfortunate abuse must be addressed here before a secure and healthy future can be realized.

p. 39-50: 13.A.) Water Use. Existing Conditions. More than 80 farms were seized and purchased in 1942 for the construction of the FGOW, and only a few were retained and used. All unused, abandoned wells should be found and properly sealed in accordance with State Rules and Dakota County Ordinance 114. Because the majority of these wells are shallow, they may connect with a contaminated aquifer. Ordinance 114 requires that such wells be tested for contaminants and remediated if necessary before they are sealed.

The Jordan sandstone, the primary aquifer utilized by the City of Rosemount for its public water supply, is susceptible to contamination because of its interconnection with the overlying fractured and solution-weathered dolostones of the Prairie du Chien Group (Shakopee and Oneota formations). In the vicinity of UMore Park, the Jordan sandstone aquifer is notably contaminated with elevated nitrate-nitrogen, and the two eastern wells of Rosemount's water supply are impacted.

While the origins of oxidized nitrogen to the Jordan aquifer have been attributed largely to agriculture and somewhat less significantly to sewage (i.e., failed and malfunctioning residential and commercial sewage treatment systems), a third source has not been considered. The FGOW's disposals and releases of ammonia, nitroamines and nitrotoluenes are known to have entered the unsaturated (vadose) zone above the water table and over time degraded and oxidized eventually recharging the shallow and deeper aquifers. Groundwater monitoring for residual nitroamines and nitrotoluenes, especially 2,4-DNT and 2,6-DNT that were used in smokeless gunpowder production, beneath and east of UMore Park should be conducted to determine if their residuals are still extant.

Although a specific bedrock geology map of the Coates Quadrangle (topographic map) has not been published, the adjacent quadrangles (Vermillion, Hastings and St. Paul Park) are available. Interpreting the bedrock geology from available well logs confirm the probable structural displacements (block faulting, folds, etc.) that continue southwestward into the Coates Quadrangle and define the southern limits of the Twin Cities Basin. Those structures likely underlie the east and south portions of UMore Park. As a result of this and the presence of covered and possibly buried karsts on-site, as well as to the east and north of UMore Park, the City of Rosemount's DWSMA should be revised utilizing the Minnesota Department of Health Source Water Protection guidance for wellhead protection delineation for fractured and solution-weathered bedrock hydraulically connected to a bedrock aquifer (i.e., Prairie du Chien-Jordan aquifer).

The future dependency on the Jordan aquifer to serve the burgeoning population of Rosemount and the proposed UMore Park development is predicated on locating future public wells away from the more vulnerable groundwater aquifer under and near UMore Park. Therefore, any scenario that would include a public well sited within UMore Park should be dismissed unless testing and treatment for contaminants of concern are provided.

p. 58: 17.D.) Water Quality – Surface Water Runoff. Water Quantity and Quality Mitigation Plan. Any proposed plan or scenario that would divert storm water and other surface water discharges (e.g., NPDES-permitted discharges) to the aggregate mining lake (Lake 2162) should be dismissed. Because Lake 2162 will be located in a critical aquifer recharge area, any contaminants entering the lake will eventually impact the Jordan aquifer. Therefore, it is also critical that contingency plans be in place and enforced should spills, willful disposals and accidental releases occur that would jeopardize the water quality of the lake.

p. 70: 19.B.) Geologic Hazards and Soil Conditions. The Rich Valley Karst, a soil-mantled, covered karst, is located within a mile north and northeast of UMore Park. It is a karst dry valley in which no surface water flows as it is immediately intercepted by soil subsidence dolines (sinkholes). Anecdotal evidence of fractured and solution-weathered conduits in the underlying Prairie du Chien Group's dolostones and sandstone (Shakopee and Oneota formations) was provided to this respondent by area well drillers, as well as comments on drillers' logs.

Portions of UMore Park and adjacent lands to the east suggest that some of the closed depressions attributed to a pitted glacial outwash plain (Rosemount outwash) may have enlarged and deepened in response to the piping (hydraulic tunneling) of fine sediments into underlying fractured and solution-weathered dolostone (Prairie du Chien Group) and similar piped voids in the residual superjacent St. Peter sandstone. Because of an extensive early Ordovician Period (Paleozoic) erosion interval after the deposition of the Prairie du Chien Group, as well as recurrent structural displacements, some of the Shakopee formation is missing in the area of eastern Rosemount, UMore Park and the City of Coates. It is likely that this was a paleokarst, in which the partially solution-weathered and missing Shakopee formation was subsequently buried by the deposition of the St. Peter sandstone. Subsequent depositional, weathering and glacial/interglacial events evolved into the current landscape where the karstification process is continuing subaerially. The very deep closed depressions in UMore Park and farther east suggest that the rapid infiltration of surface water is being enhanced by the rejuvenation of both the covered and buried karsts.

p. 107: 27.) Compatibility with Plans and Land Use Regulations. Based upon the comments above, Scenario 4 (status quo) would be the safest option for Rosemount and Empire Township until the University of Minnesota has complied with federal, State and County regulations regarding known and suspected solid and hazardous waste disposals, contaminant releases, and environmentally impacted air, land and water and mitigated their human and ecological exposures.

From: Zweber, Eric
To: [Andi Moffatt](mailto:Andi.Moffatt); Hanson, Kathie
Subject: FW: UMORE park development plan
Date: Thursday, July 11, 2013 8:39:18 AM

A resident comment on the AUAR.

From: MarthaH605@aol.com [mailto:MarthaH605@aol.com]
Sent: Thursday, July 11, 2013 12:03 AM
To: Zweber, Eric
Subject: UMORE park development plan

Hello. I hope I am squeaking in under the wire of the comment deadline, since I heard it was July 10 and it's still July 10 as I write.

Regarding the development plan for UMORE park, my comment is to not do it. Instead, get Prairie Restorations in there to restore the native prairie and plants. Have trails, picnic tables, a visitors center. That land should stay as it is, with minimal intervention.

There are so many reasons why this land should not be built on. I will mention only a few here.

1. I noticed in your development plan that you've designated land way down in Empire Township to stay as it is with no buildings. But why should people have to drive that far to be able to walk in a quiet, green space? We're already so crowded with concrete, houses, stores, and roads. We don't need more of those; there are a million stores everywhere and a million houses, and millions of acres of concrete. What we do not have much of--and it's disappearing all the time--is land that is left to itself, land where one can go and listen to the quiet; land where one can see and feel and hear beauty. There's no way to put a price tag on such a place, and there are fewer and fewer of these as time goes by. What is one more ugly, stupid Target or WalMart or whatever-clothing-store-you-can-think-of, compared to the beauty of a prairie vista with bird song and the wind blowing in the grass?

Richard Louv, author of *Last Child in the Woods*, mentions research that finds that direct exposure to nature is essential for healthy childhood development and for the physical and emotional health of children and adults. Having natural spaces easily accessible and surrounding us is not a luxury. We need it. We are part of the earth and need contact with it. People should have access to natural spaces close by and not have to drive to get there.

The idea to maintain 4000 acres of natural space in Vermillion is good, but not enough because it removes natural space from the city of Rosemount. I mean natural space: not manicured parks. One does not get the same benefit from a park full of mowed Kentucky bluegrass that one gets from a wide expanse of forest, prairie, or oak savannah.

2. The city calls it "open space," but let us not forget that we are not the only living things on this planet. Animals and plants are already living in that space where you plan to build. Where is your concern for them? Where are they supposed to go when you bulldoze their homes, kill the trees and plants and probably kill some of the animals, too? We squeeze animals into smaller and smaller spaces, and then complain when they have nowhere to go, nothing to eat (because we bulldozed their food and turned it into mowed lawns) and come in our yards. We may not realize it, but we depend on those animals and plants for our survival. They are all part of a web that keeps us alive. Stress the web too much, take too much away, and we will be in big trouble. We should be trying to preserve every possible inch of natural land, rather than planning what stores or houses we want to put on it. It's incredibly selfish to take homes away from animals, and kill living things (trees, plants, and anything else that gets in our way) just so we don't have to drive outside the city limit to get to a clothing store.

3. All those plants in that green space help to make oxygen. Take 5000 acres of that away, and it

adds proportionally to global warming.

4. Eagan has managed to maintain a swath of green space, much of it natural, for several miles, running down the middle of the city. Why can't you do that? Do you really want to become another Apple Valley, with nothing but ugliness from one end to the other? Stores, roads, houses, acres of concrete and thousands of cars a day going through there? It's urban sprawl, and it's UGLY. Don't add to it. Keep Rosemount from turning into yet another community that succumbed to the siren call of urban sprawl: Keep Rosemount beautiful.

5. Take the long view. Do you think that whatever stores you build in that space will still be there in 100 years? They won't. But the land, if you leave it natural, will be there for much longer--especially if it's formally protected by the state or the Nature Conservancy. Once the land is built on, it's dead; the ecosystem is compromised or destroyed and it will never support life again. It's incredibly short-sighted to put in a store just because someone doesn't want to drive outside the city limits, if you also lose the ecosystem that's there and the inestimable value of that natural space. If you build there, it will be a tragedy and a cause for mourning, not a cause for celebration.

The happiest days of my life have been spent in natural spaces. There aren't many left. Don't add to the destruction. Leave spaces for people to breathe, and be, and get away from the madding crowd. And leave space for the animals, too, because we aren't the only living things on this planet.

I think my view will be unpopular with city planners, who are conditioned to think, "What can we put here," when given the opportunity to build. And the lure of all those extra taxes is hard to resist. But there are others who think as I do. Think of them, and think of the long-term future hundreds of years from now. Think of our descendants, and ask whether they will have any natural spaces left. Think of the animals and birds, and whether they will all be gone because of having nowhere to live. Think of the suffering it will cause them if you bulldoze that land and put it all under concrete. On the day you build on that land--and for a long time afterward--the earth will cry, and so will I.

Sincerely,

Martha Henderson

From: [Zweber, Eric](mailto:Eric.Zweber@ci.rosemount.mn.us)
To: [Andi Moffatt](mailto:Andi.Moffatt@ci.rosemount.mn.us)
Cc: [Hanson, Kathie](mailto:Kathie.Hanson@ci.rosemount.mn.us)
Subject: FW: South Gateway Redevelopment Committee
Date: Tuesday, July 09, 2013 12:43:41 PM

Andi,

The e-mail below is mostly about an unrelated subject, but directly below the school district states that they have no official comment about the AUAR. Do you have any thought on how we should not that?

Eric Zweber, Senior Planner

City of Rosemount, 2875 145th Street, Rosemount, MN 55068
Ph. 651-322-2052 / <http://www.ci.rosemount.mn.us>



From: Solomon, Jeff [<mailto:Jeff.Solomon@district196.org>]
Sent: Tuesday, July 09, 2013 11:55 AM
To: Zweber, Eric
Cc: Cason, Kathy
Subject: RE: South Gateway Redevelopment Committee

Eric,

We will be sending some additional background information on Randy before end of day today. The district has no official comments in regard to the AUAR. Thank you for the opportunity to review and the follow-up.

Jeffrey M. Solomon
Rosemount-Apple Valley-Eagan Public Schools
Director of Finance and Operations
3455 153rd Street West
Rosemount, MN 55068
651-423-7713

From: Zweber, Eric [<mailto:eric.zweber@ci.rosemount.mn.us>]
Sent: Tuesday, July 09, 2013 8:56 AM
To: Solomon, Jeff
Cc: Berenz, Jane; Dukek, Randy; Lindquist, Kim
Subject: RE: South Gateway Redevelopment Committee

Jeff,

It sounds like Mr. Dukek would be a good fit for the committee. Can I get a little background on Mr. Dukek to give to the City Council? Just basic stuff like how long Mr. Dukek has worked for the school