The COR (Formerly Ramsey Town Center)

City of Ramsey

Alternative Urban Areawide Review (AUAR)

Update Report

Original AUAR: June 2003
Update 1: April 2013

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Alternative Urban Areawide Review Update
The COR (formerly Ramsey Town Center)
City of Ramsey, MN
Landform Project No. RAM12015.000

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1. Introduction and Purpose

The AUAR study area is the 369.5-acre project known as "The COR" (formerly Ramsey Town Center) in the City of Ramsey. The area is bounded by Highway 10 on the south, Armstrong Boulevard on the west and Ramsey Boulevard (Highway 56) on the east (see Figure 1).

The *Ramsey Town Center Alternative Urban Areawide Review and Mitigation Plan* dated June 24, 2003, (original AUAR), was adopted by the Ramsey City Council in June 24, 2003 by Resolution 2002-104. This AUAR update incorporates this document by reference.

The preparation of this AUAR update report has been completed according to guidance prepared by the Environmental Quality Board (EQB) and is based on Minnesota Rules 4410.3610, Subp. 4.
The mitigation items in the AUAR update follow the standard Environmental Assessment Worksheet (EAW) form. When an EAW item is not applicable to this AUAR, it is so stated. Responses to the questions are only provided when there has been a change since the 2003 AUAR. Whenever "no changes" is indicated, refer to the original document as listed above to review the original response.

The 2003 AUAR included an analysis of existing conditions and the preferred development scenario. The AUAR also included the progression of the conceptual designs to reach the preferred development concept. The AUAR as adopted in 2003 was fully compatible with the *2001 Comprehensive Plan* (as amended in 2002) Land Use plan. In September 2010, the City of Ramsey prepared the *2030 Comprehensive Plan Update.* The land use classifications in this update were fully compatible with the AUAR.

The 2003 AUAR is available for review on the City's website at www.cityoframsey.com/planning-division. This report is intended to serve as an update of the AUAR and includes a review of the areas that have and have not developed, an update to the environmental analysis if needed and a review of the mitigation measures.

2. Approved Development/Current Conditions

Figure 2(Development Plan 6.0) shows the location of the approved developments within the AUAR area. Of the 369.5 acres in the AUAR, 106.5 acres (738 residential units, 30.5 acres of commercial, 14.1 acres of public park and numerous road improvements) were approved for development. These areas include:

- The Ramsey Municipal Center and Parking Ramp - 5.31 acres
- The Veterans Administration Clinic –2.34 acres
- Allina Clinic—3 acres
- Ramsey Town Center 2nd Addition – 103 units
- Ramsey Town Center 3rd Addition (Northstar Marketplace retail) – 8.92 acres
- Ramsey Town Center 7th Addition - Symphony at Town Center—152 units
- Ramsey Town Center 8th Addition – 23 units (under construction)

- Ramsey Town Center 9th Addition – 90 units (under construction)
- Ramsey Town Center 10th Addition – 44 units (under construction)
- PACT Charter School – 5.34 acres
- NAU Country – 1.23 acres
- COR ONE (Residence at the COR)--326 units (under construction)
- COR TWO (Sunwood Retail) – 4.09 acres Approved)
- COR THREE (North Commons) – 17 units (under construction)
- Fountains of Ramsey Convention Center/Banquet Facility—3.14 acres
- Midwest Medical Examiner's Office—1.22 acres
- Draw Park – 7.79 acres
- Rhinestone Commons Park – 6.31 acres

The City's 2030 Comprehensive Plan, as amended by the 2012 Comprehensive Plan Amendment (The COR) (approved by the Metropolitan Council on December 12, 2012 for compliance with regional systems), reflects the land uses in Development Plan 6.0, which was prepared as an update to the Preferred Development Scenario from the 2003 AUAR. All of the developments that have been approved are within the thresholds of the AUAR and the City's Comprehensive Plan.

3. Areas Remaining to be Developed

Of the 369.05 acres in the AUAR area, approximately 215 acres remain that have not been approved for development. They are shown in **Figure 2** (Development Plan 6.0).

The development of land within The COR is dependent on market forces, but the remaining areas could develop in the next 5-15 years.

4. Update to the Environmental Review

The DNR Natural Heritage Database was reviewed to provide an update for any threatened and endangered species. This review and DNR correspondence is attached in **Appendix B.** There are no new incidents of rare or endangered species within the study area.

The City updated the Comprehensive Sewer and Water Plans in 2012. We have reviewed the sewer and water systems in relation to the existing conditions, past development and the AUAR. The City's sewer and water systems can accommodate the development proposed within the AUAR area.

A number of street improvements have occurred within the AUAR area. These improvements were noted in the AUAR as part of the mitigation measures and are noted in this AUAR update in **Section 5**.

Stormwater Management regulations have changed since the 2003 AUAR. The Lower Rum River Watershed Management Organization (LRRWMO) adopted new rules in the "3rd Generation Watershed Management Plan" on January 19, 2012. A new stormwater management plan is being completed by the

City of Ramsey to address these new requirements and reflect the new COR development plan. The LRRWMO issued a permit for The COR (formerly Ramsey Town Center), which is still active. The 3rd Generation Plan added a requirement for infiltration for new development. This requirement is being implemented by the City of Ramsey. The City is considering implementation of regional infiltration in conjunction with existing and planned regional facilities, including proposed Lake Ramsey (see Figure 2).

The preferred development scenario that was developed with the 2003 AUAR had been modified as Development Plan 6.0. The land use scenario is not substantially changed from the initial mixed use concept that was approved with the AUAR. Based on this analysis for the AUAR update, the area has developed in conformance with the 2003 AUAR. The areas that are anticipated to develop will be in conformance with the 2003 AUAR, the mitigation measures and this AUAR update. Therefore, the analysis that was completed for the 2003 AUAR remains valid and will be used in conjunction with the mitigation measures in this AUAR update.

5. Mitigation Summary and Update

The mitigation elements from the 2003 AUAR are noted below and updates are provided in ***bold italic***.

Items 1-8 do not contain a Mitigation Element

Item 9 Mitigation element. Assuring the compatibility of development within Ramsey as growth occurs is the primary goal of the comprehensive planning process. Item 27 contains discussion of plan compatibility for a number of other planning documents that cover land in and adjacent to the site. Continued planning efforts will assure that non-compatible uses do not occur as the site develops. ***The City's 2030 Comprehensive Plan update was adopted in 2010 after Metropolitan Council review. The City's 2012 Comprehensive Plan Amendment (The COR) was approved by the Metropolitan Council on December 12, 2012. The City will continue to update plans and ordinances as needed to implement the City's vision and goals in compliance with the AUAR.***

Item 10 Mitigation Element. The only issue related to cover type to emerge during this review is the alteration of wetlands, which is discussed in the mitigation element under Item 12. A complete discussion of loss of cover types with respect to fish, wildlife and ecologically sensitive resources follows in Item 11. ***No change.***

Item 11 Mitigation Element.

Natural Communities: Item 12 of this report addresses wetland mitigation fully. Mitigation for loss of forest/woodland can be accomplished through additional tree planting within some areas of the site listed in Table 10.1 as containing grassland communities. Additional forest/woodland planting can be incorporated into planting plans for the infiltration/wetland system extending south from the COR site to the Mississippi River. The edges of the wetlands and infiltration areas could be established as an oak savanna/woodland natural community.

Wildlife Habitat: Several strategies are proposed to mitigate impacts to wildlife. These include establishing a greenway corridor through the site, wetland restoration and creation and to the extent possible, all culverts and road crossings will be designed to enable upstream or downstream passage of wildlife as they

move though the greenway. ***This activity has occurred--the greenway corridor has been developed as The Draw park and wetland restoration/creation has taken place. The City will continue to work to implement these measures.***

Blanding's Turtles
Strategies outlined for Wildlife Mitigation generally apply to Blanding's turtles. ***The City will continue to work to implement these measures.***

Item 12 Mitigation Element.

Wetland Sequencing - Minnesota Rules 8420, also known as the Wetland Conservation Act (WCA), requires specific steps (sequencing) be taken when evaluating mitigation for unavoidable wetland impacts. ***This activity has occurred and will continue to occur. The wetland mitigation plan has been modified from the original AUAR concept, but has been permitted in compliance with WCA and this AUAR update reflects those changes.***

Stormwater outfall to the Mississippi River:

- *Reduce Frequency of Stormwater Discharge, Lower Magnitude of Peak Flow Rates*: The project incorporates a variety of strategies to lower increases in stormwater rate and volume. While all stormwater conveyance features are designed to accommodate the 100-year runoff event without taking infiltration into consideration, on-site retention and infiltration can be incorporated at multiple scales into the development during the detailed design phase for smaller storm retention. Peak flow rates for the 100-year, 24-hour runoff and 100-year, 10-day snowmelt events are 25.1 cfs and 25.3 cfs respectively. ***The City will continue to work to implement this measure.***

- *Oversize Culvert and Reduced Slope at Outfall:* The last section of culvert will be enlarged from 21-inches to 36-inches and include an apron and rip-rap to lower velocities and dissipate the energy at the discharge point. This will minimize the potential for scour and erosion. ***This item has been completed. The outlet to the Mississippi River was installed by the city in 2009.***

- *Directional Boring to Install Culvert:* If possible, the culvert will be placed within the river bank by directional boring rather than an open cut. This will reduce the need to remove shoreline vegetation and will minimize the area of disturbance. Erosion control measures will be implemented where soil is disturbed. All disturbed areas will be replanted to native trees, shrubs, grasses and forbs and if appropriate, a temporary cover crop will be established. ***This item was completed by the City in 2009.***

Item 13 Mitigation Element. Because the COR site is within a DWSMA, special precautions are needed to protect groundwater resources. To make sure this occurs, any discharge of runoff into an area dedicated to infiltration will be pre-treated through such practices as particulate settling, vegetative filtration, skimming, installation of compact, sub-grade treatment (ex. catch basin inserts, cyclonic separators, filters), and various types of pre-treatment soil filtering systems. These practices will be routinely maintained and inspected to make sure these pre-treatment practices do not provide a pathway for contamination of groundwater. Areas that are potential major sources of contamination ("hot-spots") will be identified during construction and special precautions added. These areas would include any location where pollutant spills are more likely to occur (service stations, public works/police/fire fueling operations, significant chemical storage). The City has completed a Wellhead Protection Plan, which was

approved by the Minnesota Department of Health in January 2010. ***The City will continue to work to implement these measures.***

Within WHPAs, the use of conventional underground storage tanks to store anything other than water is restricted. If underground tanks are utilized in these areas they must be double-walled with interstitial sensors and a network of monitoring wells must be installed to assess potential groundwater contamination. In addition, an emergency response plan should be developed for the immediate remediation of any spills or leaky tanks. ***The City will continue to work to implement these measures.***

When assembling the issues that were to be addressed as part of this AUAR, it was noted by the Anoka Conservation District and by the DNR that there is a possible connection between the increased demand for municipal groundwater and the observed lowering of wetlands in the vicinity of Municipal Wells 3, 4 and 5. Appendix F was prepared to assess the general magnitude of the problem and the solutions required to address the issue. It is now apparent that the wetlands in question experience natural drying during periods of relative low precipitation. The photographic history included as part of the Wetland Delineation report shows wetlands in the vicinity of the COR site disappearing during the mid to late 1980's which is prior to the development of the municipal wells. This same phenomenon occurs again in the mid to late 1990's and prior to the installation of Wells 4 and 5. The evaluation also found, as stated earlier, that drawdown levels in the FIG (Franconia Ironton-Galesville) unit are minimal and, therefore, could not be influencing the wetlands. To verify these finding, however, it is recommended that long term monitoring be performed. ***The City will continue to work to implement these measures.***

There is also some concern that increased pumping in the FIG aquifer could impact private wells that pump from this aquifer. Again, the residual drawdown levels in the FIG average 5- to 10-feet during the peak summer pumping period (Appendix F) and recover fully during the Fall, Winter and Spring. Therefore, the radius of influence of the wells will be very small meaning there could be no impacts to private wells developed in the same unit. Before additional wells are constructed, additional appropriations will be applied for through the DNR. This will most likely require both short- and long-term testing and monitoring to verify the above findings. Through this process, the City can insure that there continue to be no impacts on groundwater and surface resources due to their appropriations from the FIG. ***Permits were secured for previous projects and will be obtained for future projects.***

Item 14 Mitigation Element. The Ramsey 2001 Comprehensive Plan was amended in 2002 and contains the measures needed to effectively implement resource protection for all of the resource protection zones adjacent to the COR site. Although Chapter XI of the Ramsey 2001 Comprehensive Plan contains a thorough set of policies and related actions to protect the natural character of the Critical Area, the Chapter does not contain a specific provision addressing control of noise in this area. The next amendments to the City Plan will add a specific provision to address this specific element in Executive Order 79-19. ***The 2030 Comprehensive Plan addressed this issue in Chapter 11 (****THE* ***MISSISSIPPI RIVER CRITICAL AREA CORRIDOR/MNRRA). This AUAR update reflects these policies from the 2030 Comprehensive Plan.***

Item 15 Mitigation Element. Adverse environmental impacts associated with increased small motor and non-motorized boats is not anticipated along the Mississippi River south of the Ramsey Town Center site. In fact, the new Mississippi Regional Park hopes to attract visitors to this portion of the upper River. The use of the park as a formal recreational facility will focus river-related uses to planned areas, and provide resource oversight and supervision of recreational activities. ***No Change/No Action required.***

Item 16 Mitigation Element. Prior to any earth-moving activity on the site, an erosion and sediment control plan will be prepared in accord with the requirements of the City of Ramsey and the LRRWMO. Technical assistance in the preparation of this plan will also be sought from the Anoka Conservation District, the Minnesota Pollution Control Agency and the DNR. The City will be permitted through the Phase II NPDES nonpoint program as a Municipal Separate Storm Sewer System (MS4) operator, and will be subject to all of the provisions of that program, including reducing the discharge of pollutants to the maximum extent practicable (MEP) through construction site runoff control. Any construction on the site will also be permitted through MPCA's NPDES general construction permit process. ***Permits were secured for past projects and will be obtained for future projects. Future HPDES permits will conform to the LRRWMO 3rd Generation Plan requirements for infiltration for new developments.***

Item 17 Mitigation element. The conversion of agricultural land to urban land ultimately increases the amount and rate of runoff leaving the land. Minimizing the impact of that increased runoff is the objective of this mitigation plan.

Mitigation Approach
The City will assure that the developer(s) will design and build the final drainage and runoff management system within this overall framework, in compliance with the mandates of the LRRWMO. Peak discharges from new developments will be limited to 75% of existing flows.

Implementation of BMPs in Preliminary Design
As part of the design process for BMPs, replacement of non-native vegetation with native vegetation will occur whenever practicable and desirable.

Phase II National Pollutant Discharge Elimination System (NPDES) permit
The City of Ramsey has submitted its draft application for a Phase II National Pollutant Discharge Elimination System (NPDES) permit. The unsigned permit was submitted on March 10, 2003 under the MPCA requirements for the program of the U.S. Environmental Protection Agency (EPA). MPCA extended the timeline for receipt of an officially signed permit so that the City could authorize signature through a City Council action. The new deadline for receipt of a signed application is May 9, 2003. After that, the City will need to adopt a Storm Water Pollution Prevention Program (SWPPP). Since the City owns and operates a municipal drainage system, it is subject to the provisions of the Municipal Separate Storm Sewer System (MS4) provisions of the law. Construction activities within the City, and specifically on the Ramsey Town Center site, are also subject to the Phase II General Storm Water Permit for Construction Activity. ***This activity has occurred and will continue to occur.***

The City must identify best management practices (BMPs) and measurable goals associated with each minimum control measure noted above. The City will be given five-years to develop an effective program after the permit is issued. This period of time coincides with the phased development of the Ramsey Town Center site, which must then include the provisions of the City SWPPP. The City will assure that the provisions of its Program are properly implemented within the Center as development proceeds. ***This activity has occurred and will continue to occur.***

Construction within the City of Ramsey is also subject to the provisions of the NPDES Phase II General Storm Water Permit for Construction Activity. This provision is in addition to the construction control measure required under the MS4 permit***. Permits were secured for past projects and will be obtained for future projects.***

Relationship to Mississippi River TMDL

One water quality element of note in the mitigation plan is the need to reduce the negative impact of a discharge to an impaired water under the Total Maximum Daily Load (TMDL) program. The Mississippi River through the City of Ramsey has been listed on the MPCA recommended "303d" list as impaired relative to fecal coliform, PCB and mercury. The PCB and mercury programs are regional in scale and are the subject of regional MPCA and USEPA remediation programs. The discharge of storm water high in fecal coliform, however, is something that the City will need to address. The implementation of nonpoint source pollution control BMPs does not necessarily assure the reduction of fecal coliform. The process for setting a TMDL includes the initiation of a formal study that results in recommendations for control of the pollutant causing the impairment. MPCA has not yet begun this study for the impaired Mississippi River reach; however, once this study begins (currently scheduled for 2004-2006), the City will cooperate to the best of its ability with the MPCA to reduce the input of fecal coliform to the River. ***The MPCA study is currently underway and it includes the reach in Ramsey. Currently Ramsey is not scheduled to receive a waste load allocation as the reach is classified as a protection watershed. This could change based on future monitoring. The City will continue to cooperate to the best of its ability with the MPCA to reduce the input of fecal coliform to the River.***

Item 18 Mitigation element. Both the wastewater flows and the projected loadings from the COR development can be effectively transported and treated by the MCES system. In addition, future development and resulting flows are within the range of those estimated in the City's 2001 Comprehensive Plan, as amended in 2002. Therefore, it does not appear that there is any cause for specific remediation actions. A 30-inch sewer main is recommended to serve the COR. As noted earlier, it will be necessary for the City to update its Comprehensive Sewer Plan, following discussion with MCES on increased allocated capacity. In addition, it will be important to measure and test the wastewater flows from the new development on a periodic basis. This will allow the City and MCES officials to monitor the characteristics of the wastewater generated by the development over time and to address any future unforeseen changes. ***The 2030 Comprehensive Plan update includes an update to the Comprehensive Sewer Plan to address these issues. The City has updated the Comprehensive Sewer Plan. Results indicate that there is sufficient capacity in the City's system to accept the wastewater flow from The COR.***

Item 19 Mitigation Element. The high permeability of the soils at the Town Center are ideal for the implementation of infiltration practices that will manage stormwater runoff, provide flood control and recharge the water table aquifer. However, the high permeability also increases the risk for potential contamination of groundwater resources. In order to mitigate this risk, best management practices (BMPs) and community education programs will be implemented. ***This activity has occurred and will continue to occur.***

Item 20 Mitigation Element. To decrease the amount of solid waste generated within the City, Ramsey maintains the following policies as stated in its 2001 Comprehensive Plan:

- Work with the Anoka County Integrated Waste Management Department to develop and implement programs that contribute to waste reduction, resource recovery, recycling and limited landfilling;
- Continue to support curbside recycling of reusable waste materials through educational events, promotional events, and volunteer efforts;
- Research grants and funding programs through federal, state, and local organizations that support the —Three R's (reduce, reuse, and recycle); and

- Continue to pursue and support research efforts in innovative techniques that enhance the environment, provide alternative means of energy, and reduce the waste stream.

The implementation of these policies will help to reduce the quantities of solid waste produced at the Town Center. ***The City updated these policies in the 2030 Comprehensive Plan and will continue to work to implement these measures. The City updated the Comprehensive Water Supply and Distribution Plan.***

Within the WHPA, underground storage tanks and infiltration are not recommended. Should contamination occur due to these or any other practice, alternative water supply sources may be required. Currently the city water towers store an extra amount of water equivalent to meet the supply need for one day. There is also an emergency connection with the City of Anoka for additional water needs. A contingency plan should be developed as part of the next water supply plan update to deal with contamination. These could be coordinated with existing city plans, data, and management procedures, many of which are detailed in the city's Water Supply Plan, WHP Plan, 2001 Comprehensive Plan, and this document. A contingency plan is also required by the State as part of the city's water supply plan (M.S., Section 103G.291, subd.3. As part of its next revision, the City of Ramsey will amend its 1999 Water Supply Plan to include an emergency response element. The amendment will include all of the above components. This will occur prior to applying for a DNR appropriation permit amendment, which would likely trigger the DNR request for emergency plan completion, as well. ***These items were completed as part of the Water Element of the 2030 Comprehensive Plan update.***

The installation of monitoring wells throughout the WHPA would be appropriate to protect the water quality of the upper aquifer. Should contamination occur, a network of monitoring wells would help to quickly identify the contaminant source and aid in the quick remediation and possibly reduce the extent of contamination. A monitoring well network would also help to understand the relationship between the pumping in the Franconia-Ironton-Galesville aquifer and the upper aquifer. The extent of any further monitoring will be determined during wellhead protection plan development and State water appropriation permitting. ***The City will continue to work on this item.***

Item 21 Mitigation Element. Analysis of the intersection operations indicates that lane additions and installation of intersection channelization and traffic signals would be adequate to mitigate the project impacts at the intersections in the study area. The following roadway widenings are suggested:

- Ramsey Boulevard—widen to five lane cross section south of Industry Avenue to provide two through lanes in each direction and a left turn lane/center median. ***This item has been completed.***
- Bunker Lake Boulevard (formerly Industry Avenue)—widen to five lane cross section west of Ramsey Boulevard to provide two through lanes in each direction and a left turn lane/center median. ***This item has been partially completed. Bunker Lake Boulevard has been upgraded between Dysprosium Street and Sunfish Lake Boulevard. In addition, the intersections at Ramsey Boulevard (CSAH 56) and Armstrong Boulevard (CSAH 83) have been upgraded. There are two (2) remaining sections to be upgraded, and said Improvement Project is included in the City's five (5) year Capital Improvement Program. This Section of Industry Avenue is now called Bunker Lake Boulevard and is being funded through the existing TIF 14 funds.***

Turn lanes and lane adjustments would be needed at the following intersections:

- TH 10 at Armstrong Boulevard—add an eastbound and a westbound through lane on the intersection approaches; add an eastbound and a southbound left turn lane and a southbound right turn lane. ***The City will continue to work with MnDOT and Anoka County on this item,***

including improvement discussed for the Armstrong Interchange. It is the City's understanding that the Metropolitan Council does not support a third lane on Highway 10.

- TH 10 at Ramsey Boulevard—add an eastbound and a westbound through lane on the intersection approaches; add an eastbound and a southbound left turn lane and a westbound right turn lane. A southbound through lane and a northbound left turn lane and northbound through/right lane would need to be added to serve the Rivenwick 3rd Subdivision traffic independent of the project traffic. ***The City will continue to work with MnDOT and Anoka County on this item. It is the City's understanding that the Metropolitan Council does not support a third lane on Highway 10.***
- TH 10 at Sunfish Lake Boulevard—add an eastbound and a westbound through lane on the intersection approaches; convert the southbound approach from a through/left turn lane and a right turn lane to through/right turn lane and two left turn lanes (this adds one lane to the approach). ***The City will continue to work with MnDOT and Anoka County on this item. It is the City's understanding that the Metropolitan Council does not support a third lane on Highway 10.***
- Bunker Lake Boulevard (formerly Industry Avenue) at Ramsey Boulevard—add a southbound right turn lane; eastbound and northbound approaches would be widened by the above recommendations. ***This item has been completed.***
- Sunwood Drive at Bunker Lake Boulevard (formerly Industry Avenue)—modify the shared lanes on the northbound, eastbound and westbound approaches to provide left turn lanes and shared through/right turn lanes ***The City will continue to work on this item.***

The following stop-controlled intersections would need to be signalized:

- Ramsey Boulevard at Bunker Lake Boulevard (formerly Industry Avenue). ***This item has been completed (Ramsey Boulevard at Bunker Lake Boulevard).***
- Armstrong Boulevard at Bunker Lake Boulevard (formerly Industry Avenue). ***This item has been completed (Armstrong at Bunker Lake Boulevard).***
- Bunker Lake Boulevard (formerly Industry Avenue) at Sunfish Lake Boulevard ***This item has been completed.***
- Ramsey Boulevard at Sunwood Drive ***This item has been completed.***
- Sunwood Drive at Bunker Lake Boulevard (Industry Avenue). ***The City will continue to work on this item. It has been included in the City's capital improvement program (CIP).***
- Sunwood Drive at Armstrong Boulevard. ***This item has been completed, subject to final signal installation.***
- NS3 Street at Bunker Lake Boulevard (formerly Industry Avenue). **NS3 Street is proposed to be changed to *Center Street and this portion of Industry Avenue has been renamed Bunker Lake Boulevard. The City will continue to work on this item.***

The left turn volumes from the EW1 parkway (proposed to be renamed Ramsey Parkway) onto both Armstrong and Ramsey Boulevard cannot be accommodated at an acceptable LOS under stop control and require signalization to achieve acceptable operations. However, the close spacing between the intersections of the EW1 parkway and the intersections of Armstrong and Ramsey Boulevard with Industry Avenue limits the potential for the two parkway intersections to be signalized. Accordingly the parkway intersections should be channelized to provide right-in/right-out and left-in access (¾ access). Left out from the parkway would be prohibited and would redistribute to the north-south streets and to Industry Avenue (these volumes have been included in the mitigated calculations for the other intersections). ***The City completed the Preliminary Engineering Report for Sunwood Drive (December 6, 2011) for realignment of the western portion of Sunwood Drive. The revisioning of The COR and the creation of Development Plan 5.03 (adopted as part of the Comprehensive Plan 2011 Major Update) resulted in some of the residential***

land in the western portion of the project area being converted to commercial/retail in order to provide a better balance of land uses and respond to the current marketplace. Other changes were made in the undeveloped areas, including the creation of Lake Ramsey in the greenway Corridor. This study showed that traffic would increase under this revised scenario by 12.8%. The increased traffic can be accommodated by the improvements previously completed and the improvements planned in the 2011 feasibility study. This work was coordinated with the Armstrong Boulevard and Relocated Sunwood Drive Intersection Improvements Feasibility Report (December 2, 2011). These improvements have been completed. The project combined the Sunwood and EW1 Parkway intersections with Armstrong Boulevard into one fully signalized intersection.

Item 22 Mitigation Element. There are no specific air quality mitigation measures proposed for the Ramsey Town Center Development, because implementation of the project does not result in violation of State or National Air Quality Standards. Carbon monoxide concentrations were modeled along the Highway 10 corridor assuming no road improvements in the project vicinity. The road improvements discussed in Section 21 would help to reduce carbon monoxide emissions, although they are not required as a result of the air quality analysis. ***No change.***

Item 23 not required in AUAR. ***No change.***

Item 24 Mitigation Element. Noise wall mitigation would not be practical along Industry Avenue. Driveways and street intersections would create gaps in the wall, defeating its purpose. It is suggested that the proposed residential units in Blocks 28, 36, 37, and 38 be designed to minimize noise impacts. The noise around the homes and surrounding areas can be reduced by providing climate-controlled units, increasing wall insulation, and providing common areas on the side of the buildings furthest from Industry Avenue. ***The City will continue to work to implement this measure along Bunker Lake Boulevard (formerly Industry Avenue).***

Item 25 Mitigation Element. Unidentified Resources. Various circumstances may lead to the discovery of unidentified historic or archeological resources within the project boundaries. When any such new discovery is brought to the attention of the developer or the City, an evaluation of the significance will be conducted and appropriate management measures will be devised in consultation with SHPO. ***This measure will continue to apply.***

Although the COR site is not within the geographic area covered by MNRRA, every effort will be made by COR LLC to work with Anoka County Parks, Ramsey Parks and the National Park Service to comply with the policies of these agencies and to minimize or avoid any adverse impacts from development of the COR site. ***This measure will continue to apply.***

Item 26 Mitigation Element. Light emissions from commercial and residential areas cannot be avoided because of safety issues and the need for residences and businesses to see clearly at night. City Ordinance 9.11.07 describes any lighting used to illuminate an off-street parking area, sign, or other structure, must be arranged so that the light is deflected away from residential districts and public streets. Bulbs emitting in excess of 3,000 lumens (150 watts) must be arranged so that the light is not visible outside of the property where the light is located. There are several methodologies of acceptable screening methods for these nuisances that can also be used for transitioning from high- to low-density residential or from residential to commercial areas. Screening methods typically include a vegetative barrier no less than five feet high or other natural materials. Applying shields to street and parking lot lamps directs the light to the ground surface where it's wanted, not into the adjacent neighborhood. All of these practices should

minimize the impact of the light at the River, but will not eliminate it. ***The City will continue to enforce the adopted lighting ordinance.***

The visual impacts of construction on a scale that will occur at COR over several years will be difficult to mitigate, but several measures to minimize the impact will be followed. The most offensive visual characteristics of construction, and possible mitigating actions are:

- Soil erosion leading to sediment movement off-site - Item 16 spelled-out a mitigation element to control on-site erosion and off-site sedimentation.
- Access streets and roads covered with dirt and gravel/rocks - The erosion and sediment control program will include egress gravel wash pads and will contain a daily sweeping plan for roads affected by construction traffic.
- Swirling dust caused by earth-moving activity on dry soil - A water truck will be available on site to spray areas experiencing dust movement. This will be especially critical on the sandy soils prevalent on site.
- Construction equipment and temporary trailers - Every effort will be made to screen immobile equipment and to park mobile equipment in a visually sheltered location at the end of the working day.

Exposed soil - One of the essential elements in the erosion and sediment control plan will be rapid stabilization, covering and re-vegetation of exposed soils. Although some exposed soil will be impossible to avoid, every attempt will be made to minimize exposure. ***This measure has been followed and will continue to apply.***

Item 27 Mitigation Element. At this time, the Ramsey 2001 Comprehensive Plan, as amended in 2002, fully addresses the development of the COR site and adequately relates this development to the various other agency plans with which it must comply. However, any change in the project that would lead to deviation in one or more of the plans must be corrected by a plan amendment. ***This measure has been followed and will continue to apply. The City adopted the 2030 Comprehensive Plan update in 2010. The City has approved a Comprehensive Plan Amendment in 2012, which and approved by the Metropolitan Council. The City has also adopted a Zoning Ordinance Amendment and COR Design Framework (February 28, 2012, amended November 27, 2012) to implement the 2030 Comprehensive Plan Amendment (including the 2012 amendment) and the revised development plan for the AUAR area ("The COR").***

Item 28 Mitigation Element. The major physical infrastructure elements of roads and streets, sanitary sewer, municipal water and storm sewer have all previously been addressed within this AUAR.
An evaluation of the social services needed for the COR development indicates that the planning done for the City has accounted for the growth related to the COR. Police, fire, public works, schools, and related City and postal services will all be impacted by the development. Additional equipment to perform City public works services will be needed. No additional mitigation is needed to meet the expected growth. ***No Change.***

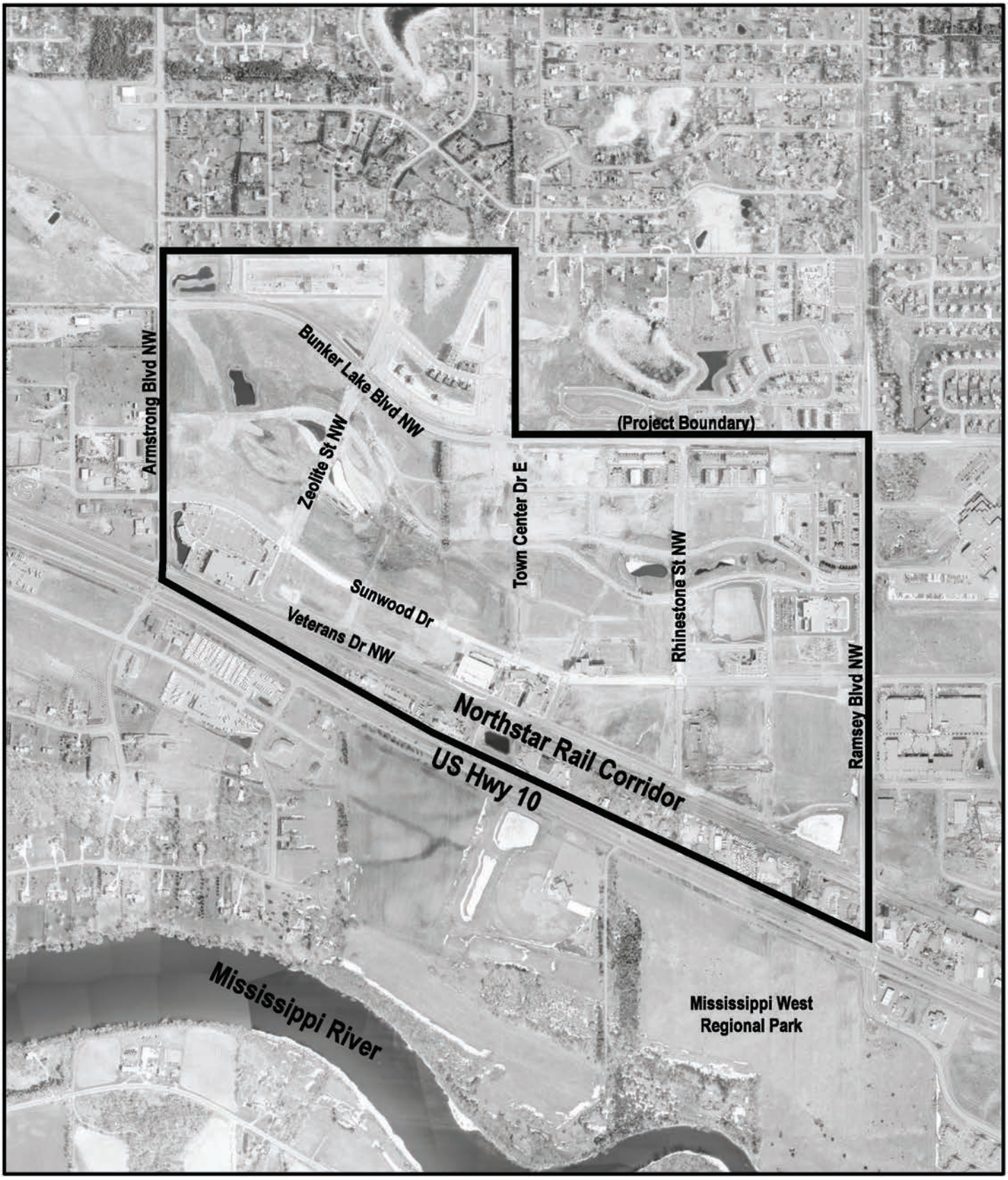
Item 29 not required in AUAR

Item 30 Mitigation Element. No need for mitigation anticipated from the two items identified, but if the need arises during the AUAR review, necessary mitigation will be included here. ***No Change*.**

6. AUAR Update Review

Pursuant to Minnesota Rules 4410.3610, Subp. 7, this AUAR update was submitted for public comment. Following the 10-day comment period, the City Council will consider adoption of this document. The COR (formerly Ramsey Town Center) AUAR will remain valid for an additional five years beyond the adoption date.

Appendix A – Figures



City of RAMSEY

Figure 1
Project Location Map

3.29.13

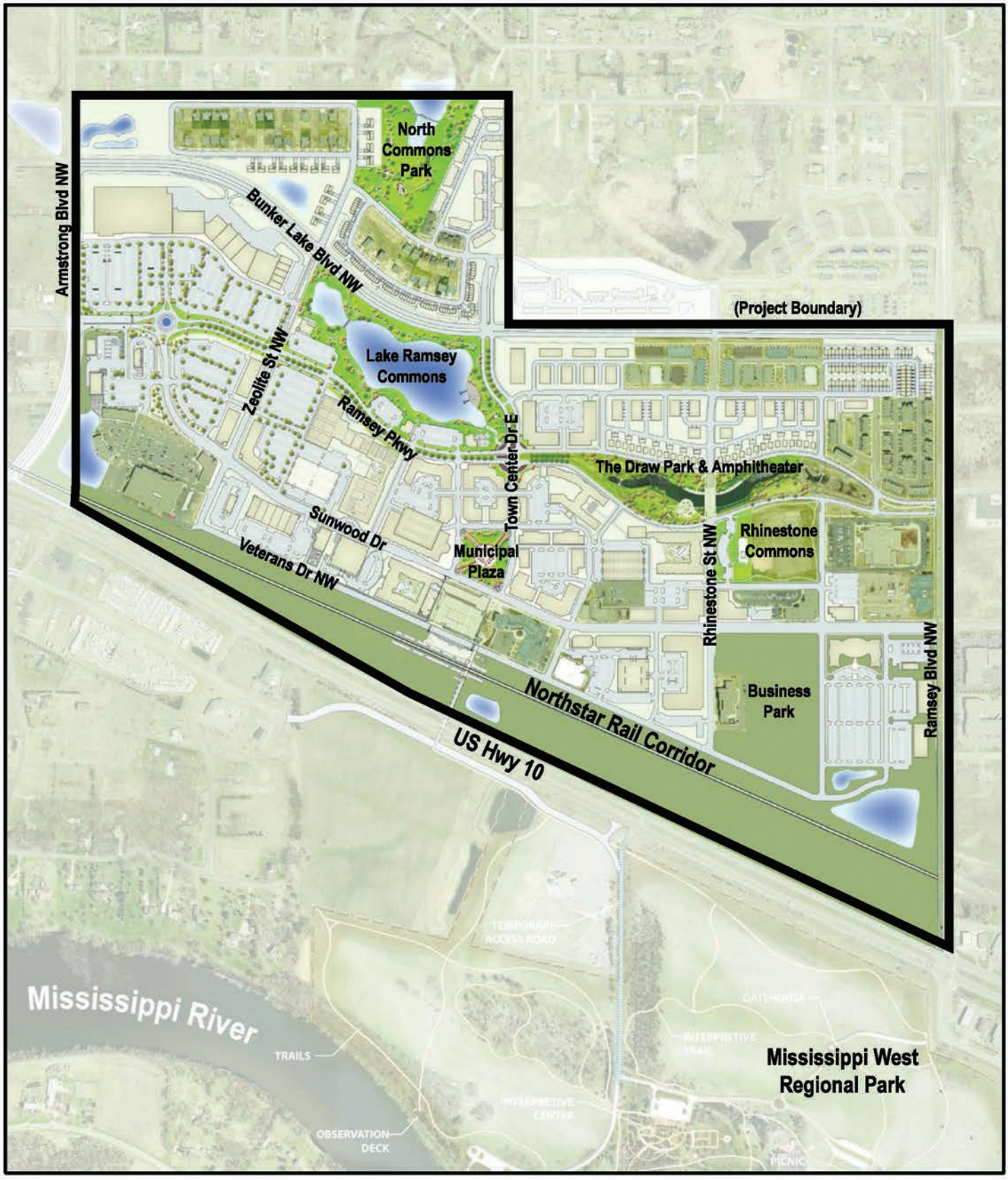
NORTH

0 500 1000

LANDFORM
From Site to Finish

105 South Fifth Avenue
Suite 513
Minneapolis, MN 55401

Tel: 612-252-9070
Fax: 612-252-9077
Web: landform.net



City of RAMSEY

Figure 2
Development Plan 6.0

3.29.13

NORTH

0 400 800

LANDFORM
From Site to Finish

105 South Fifth Avenue
Suite 513
Minneapolis, MN 55401

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Web: landform.net

Appendix B -

DNR Natural Heritage Database Review

Minnesota Department of Natural Resources
Division of Ecological and Water Resources, Box 25
500 Lafayette Road
St. Paul, Minnesota 55155-4025
Phone: (651) 259-5109 E-mail: lisa.joyal@state.mn.us

June 29, 2012 **Correspondence # ERDB 20120400**

Ms. Kendra Lindahl
Landform
105 S 5th Ave
Minneapolis, MN 55401

RE: Natural Heritage Review of the proposed The COR AUAR Update;
T32N R25W Section 18; Anoka County

Dear Ms. Lindahl,

As requested, the Minnesota Natural Heritage Information System (NHIS) has been queried to determine if any rare species or other significant natural features are known to occur within an approximate one-mile radius of the proposed project. Based on this query, the following **rare species *may* be adversely affected** by the proposed project:

- Blanding's turtles (*Emydoidea blandingii)*, a state-listed threatened species, have been reported from the vicinity of the proposed project and may be encountered on site. If Blanding's turtles are found on the site, please remember that state law and rules prohibit the destruction of threatened or endangered species, except under certain prescribed conditions. If turtles are in imminent danger they should be moved by hand out of harm's way, otherwise they should be left undisturbed.

  For your information, I have attached a Blanding's turtle fact sheet that describes the habitat use and life history of this species. The fact sheet also provides two lists of recommendations for avoiding and minimizing impacts to this rare turtle. **Please refer to the first list of recommendations for your project.** If greater protection for turtles is desired, the second list of additional recommendations can also be implemented. In addition, if erosion control blankets will be used, we recommend that they be limited to 'bio-netting' or 'natural-netting' types as the plastic mesh netting can be dangerous to reptiles (please see enclosed fact sheet). The attached flyer should be given to all contractors working in the area.

The Natural Heritage Information System, a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location (noted above) and project description provided on the NHIS Data Request Form. Please contact me if project details change or if an updated review is needed.

Please note that locations of the gray wolf (*Canis lupus*), federally-listed as threatened and state-listed as special concern, and the Canada lynx (*Lynx canadensis*), federally-listed as threatened, are not currently tracked in the NHIS. As such, the Natural Heritage Review does not address these species.

Furthermore, the Natural Heritage Review does not constitute review or approval by the Department of

Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. Additional rare features for which we have no data may be present in the project area, or there may be other natural resource concerns associated with the proposed project. For these concerns, please contact your DNR Regional Environmental Assessment Ecologist (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,

Lisa Joyal

Lisa Joyal
Natural Heritage Review Coordinator

enc. Blanding's Turtle Fact Sheet and Flyer
Erosion Control and Mesh Netting

Environmental Review Fact Sheet Series

Endangered, Threatened, and Special Concern Species of Minnesota

Blanding's Turtle

(*Emydoidea blandingii*)

Minnesota Status:	Threatened	State Rank[1]:	S2
Federal Status:	none	Global Rank[1]:	G4

HABITAT USE

Blanding's turtles need both wetland and upland habitats to complete their life cycle. The types of wetlands used include ponds, marshes, shrub swamps, bogs, and ditches and streams with slow-moving water. In Minnesota, Blanding's turtles are primarily marsh and pond inhabitants. Calm, shallow water bodies (Type 1-3 wetlands) with mud bottoms and abundant aquatic vegetation (e.g., cattails, water lilies) are preferred, and extensive marshes bordering rivers provide excellent habitat. Small temporary wetlands (those that dry up in the late summer or fall) are frequently used in spring and summer -- these fishless pools are amphibian and invertebrate breeding habitat, which provides an important food source for Blanding's turtles. Also, the warmer water of these shallower areas probably aids in the development of eggs within the female turtle. Nesting occurs in open (grassy or brushy) sandy uplands, often some distance from water bodies. Frequently, nesting occurs in traditional nesting grounds on undeveloped land. Blanding's turtles have also been known to nest successfully on residential property (especially in low density housing situations), and to utilize disturbed areas such as farm fields, gardens, under power lines, and road shoulders (especially of dirt roads). Although Blanding's turtles may travel through woodlots during their seasonal movements, shady areas (including forests and lawns with shade trees) are not used for nesting. Wetlands with deeper water are needed in times of drought, and during the winter. Blanding's turtles overwinter in the muddy bottoms of deeper marshes and ponds, or other water bodies where they are protected from freezing.

LIFE HISTORY

Individuals emerge from overwintering and begin basking in late March or early April on warm, sunny days. The increase in body temperature which occurs during basking is necessary for egg development within the female turtle. Nesting in Minnesota typically occurs during June, and females are most active in late afternoon and at dusk. Nesting can occur as much as a mile from wetlands. The nest is dug by the female in an open sandy area and 6-15 eggs are laid. The female turtle returns to the marsh within 24 hours of laying eggs. After a development period of approximately two months, hatchlings leave the nest from mid-August through early-October. Nesting females and hatchlings are often at risk of being killed while crossing roads between wetlands and nesting areas. In addition to movements associated with nesting, all ages and both sexes move between wetlands from April through November. These movements peak in June and July and again in September and October as turtles move to and from overwintering sites. In late autumn (typically November), Blanding's turtles bury themselves in the substrate (the mud at the bottom) of deeper wetlands to overwinter.

IMPACTS / THREATS / CAUSES OF DECLINE

- loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- loss of upland habitat through development or conversion to agriculture
- human disturbance, including collection for the pet trade* and road kills during seasonal movements
- increase in predator populations (skunks, raccoons, etc.) which prey on nests and young

*It is illegal to possess this threatened species.

RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS

These recommendations apply to typical construction projects and general land use within Blanding's turtle habitat, and are provided to help local governments, developers, contractors, and homeowners minimize or avoid detrimental impacts to Blanding's turtle populations. **List 1** describes minimum measures which we recommend to prevent harm to Blanding's turtles during construction or other work within Blanding's turtle habitat. **List 2** contains recommendations which offer even greater protection for Blanding's turtles populations; this list should be used *in addition to the first list* in areas which are known to be of state-wide importance to Blanding's turtles (contact the DNR's Natural Heritage and Nongame Research Program if you wish to determine if your project or home is in one of these areas), or in any other area where greater protection for Blanding's turtles is desired.

List 1. Recommendations for all areas inhabited by Blanding's turtles.	**List 2. *Additional* recommendations for areas known to be of state-wide importance to Blanding's turtles.**
GENERAL	
A flyer with an illustration of a Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.	Turtle crossing signs can be installed adjacent to road-crossing areas used by Blanding's turtles to increase public awareness and reduce road kills.
Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed.	Workers in the area should be aware that Blanding's turtles nest in June, generally after 4pm, and should be advised to minimize disturbance if turtles are seen.
If a Blanding's turtle nests in your yard, do not disturb the nest.	If you would like to provide more protection for a Blanding's turtle nest on your property, see "Protecting Blanding's Turtle Nests" on page 3 of this fact sheet.
Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.	Construction in potential nesting areas should be limited to the period between September 15 and June 1 (this is the time when activity of adults and hatchlings in upland areas is at a minimum).
WETLANDS	
Small, vegetated temporary wetlands (Types 2 & 3) should not be dredged, deepened, filled, or converted to storm water retention basins (these wetlands provide important habitat during spring and summer).	Shallow portions of wetlands should not be disturbed during prime basking time (mid morning to mid- afternoon in May and June). A wide buffer should be left along the shore to minimize human activity near wetlands (basking Blanding's turtles are more easily disturbed than other turtle species).
Wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.	Wetlands should be protected from road, lawn, and other chemical run-off by a vegetated buffer strip at least 50' wide. This area should be left unmowed and in a natural condition.
ROADS	
Roads should be kept to minimum standards on widths and lanes (this reduces road kills by slowing traffic and reducing the distance turtles need to cross).	Tunnels should be considered in areas with concentrations of turtle crossings (more than 10 turtles per year per 100 meters of road), and in areas of lower density if the level of road use would make a safe crossing impossible for turtles. Contact your DNR Regional Nongame Specialist for further information on wildlife tunnels.
Roads should be ditched, not curbed or below grade. If curbs must be used, 4 inch high curbs at a 3:1 slope are preferred (Blanding's turtles have great difficulty climbing traditional curbs; curbs and below grade roads trap turtles on the road and can cause road kills).	Roads should be ditched, not curbed or below grade.

ROADS cont.	
Culverts between wetland areas, or between wetland areas and nesting areas, should be 36 inches or greater in diameter, and elliptical or flat-bottomed.	Road placement should avoid separating wetlands from adjacent upland nesting sites, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details).
Wetland crossings should be bridged, or include raised roadways with culverts which are 36 in or greater in diameter and flat-bottomed or elliptical (raised roadways discourage turtles from leaving the wetland to bask on roads).	Road placement should avoid bisecting wetlands, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details). This is especially important for roads with more than 2 lanes.
Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.	Roads crossing streams should be bridged.
UTILITIES	
Utility access and maintenance roads should be kept to a minimum (this reduces road-kill potential).	
Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.	
LANDSCAPING AND VEGETATION MANAGEMENT	
Terrain should be left with as much natural contour as possible.	As much natural landscape as possible should be preserved (installation of sod or wood chips, paving, and planting of trees within nesting habitat can make that habitat unusable to nesting Blanding's turtles).
Graded areas should be revegetated with native grasses and forbs (some non-natives form dense patches through which it is difficult for turtles to travel).	Open space should include some areas at higher elevations for nesting. These areas should be retained in native vegetation, and should be connected to wetlands by a wide corridor of native vegetation.
Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).	Ditches and utility access roads should not be mowed or managed through use of chemicals. If vegetation management is required, it should be done mechanically, as infrequently as possible, and fall through spring (mowing can kill turtles present during mowing, and makes it easier for predators to locate turtles crossing roads).

Protecting Blanding's Turtle Nests: Most predation on turtle nests occurs within 48 hours after the eggs are laid. After this time, the scent is gone from the nest and it is more difficult for predators to locate the nest. Nests more than a week old probably do not need additional protection, unless they are in a particularly vulnerable spot, such as a yard where pets may disturb the nest. Turtle nests can be protected from predators and other disturbance by covering them with a piece of wire fencing (such as chicken wire), secured to the ground with stakes or rocks. The piece of fencing should measure at least 2 ft. x 2 ft., and should be of medium sized mesh (openings should be about 2 in. x 2 in.). It is ***very important*** that the fencing be **removed <u>before August 1st</u>** so the young turtles can escape from the nest when they hatch!

REFERENCES

[1]Association for Biodiversity Information. "Heritage Status: Global, National, and Subnational Conservation Status Ranks." NatureServe. Version 1.3 (9 April 2001). http://www.natureserve.org/ranking.htm (15 April 2001).

Coffin, B., and L. Pfannmuller. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press, Minneapolis, 473 pp.

REFERENCES (cont.)

Moriarty, J. J., and M. Linck. 1994. Suggested guidelines for projects occurring in Blanding's turtle habitat. Unpublished report to the Minnesota DNR. 8 pp.

Oldfield, B., and J. J. Moriarty. 1994. Amphibians and Reptiles Native to Minnesota. University of Minnesota Press, Minneapolis, 237 pp.

Sajwaj, T. D., and J. W. Lang. 2000. Thermal ecology of Blanding's turtle in central Minnesota. Chelonian Conservation and Biology 3(4):626-636.

CAUTION

BLANDING'S TURTLES

MAY BE ENCOUNTERED IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are state-listed as Threatened and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2641); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-280-5070); or St. Paul (651-259-5764).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

BLANDING'S TURTLES DO NOT MAKE GOOD PETS
IT IS ILLEGAL TO KEEP THIS THREATENED SPECIES IN CAPTIVITY

SUMMARY OF RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS TO BLANDING'S TURTLE POPULATIONS

(see Blanding's Turtle Fact Sheet for full recommendations)

- This flyer should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles that are in imminent danger should be moved, by hand, out of harms way. Turtles that are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest and do not allow pets near the nest.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).

Compiled by the Minnesota Department of Natural Resources Division of Ecological Resources, Updated March 2008
Endangered Species Environmental Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-259-5109

Looming Issue with Plastic Mesh/Netting in Erosion Control Products

Plastic mesh netting is a common material in erosion control products. It is utilized to hold loose fibrous materials in place (EG straw) until vegetation is established. These products have been used extensively and are successful for reducing soil erosion, benefitting both soil health and water quality. Unfortunately there is a negative side of this component: It is increasingly being documented that it poses dangers to reptiles, amphibians, and mowing machinery.

Potential Problems:

- Plastic netting lays on the surface long after other components have decomposed.
- Plastic mesh netting can result in entanglement and death of a variety of reptiles (snakes, frogs, toads, and turtles). Ducklings have also been documented entangled in the netting.
- Road maintenance machinery can snag the plastic mesh and pull up long lengths into machinery, thus binding up machinery and causing damage and/or loss of time cleaning it out.

Suggested Alternatives:

- Do not use in known locations of reptiles or amphibians that are listed as Threatened or Endangered species.
- Limit use where reptiles are likely (near wetlands, lakes, watercourses, or rock outcrops).
- Use rapidly degradable material in all components of erosion control blanket, netting or biologs (fiber rolls) that are to be left on site as part of final stabilization.
- Use types with smaller mesh size (smaller that ½") or use types with non-welded netting.

Areas near wetlands, lakes, watercourses are rock outcrops are likely habitat for reptiles and amphibians and may not be suitable for plastic mesh erosion control materials.

Snakes get caught in the plastic mesh

(http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/gp_2004_0001_manual.html)

Appendix C –

Comments and Responses to the AUAR Update