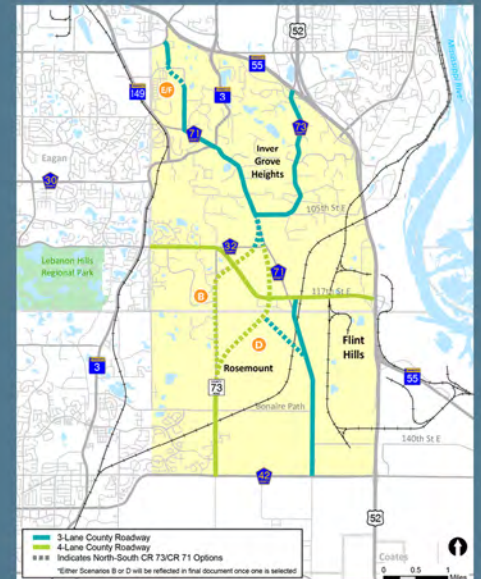
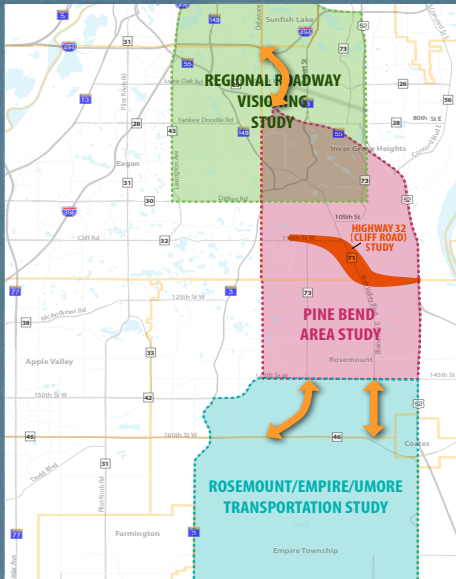


ARTERIAL CONNECTOR STUDY

PINE BEND AREA



Prepared For: Dakota County, Inver Grove Heights, and Rosemount

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1.0 Study Overview

This study provides recommendations so that study partners Dakota County, the Minnesota Department of Transportation (MnDOT) and the Cities of Rosemount, Inver Grove Heights, and Eagan can plan for future roadways that provide safe and efficient movement of traffic. The study incorporates the Dakota County 2030 Transportation Plan, the Regional Roadway System Visioning Study, and the Rosemount/Empire/UMORE Transportation study recommendations to identify solutions that will minimize delays and the risk of crashes as traffic demands continue to grow. The study partners identified the need to develop solutions that minimize environmental impacts, maximize cost-effectiveness, and takes into account input from stakeholders in developing transportation system planning recommendations.

The Regional Roadway System Visioning Study (north of the study area) and the Rosemount/Empire/UMore Transportation System Study (south of the study area) are two studies completed to address future transportation needs within the north and central portions of Dakota County. The Dakota County Arterial Connector Study was conducted to bridge the gap and bring consistency between these studies (see Figure 1: Area Studies).

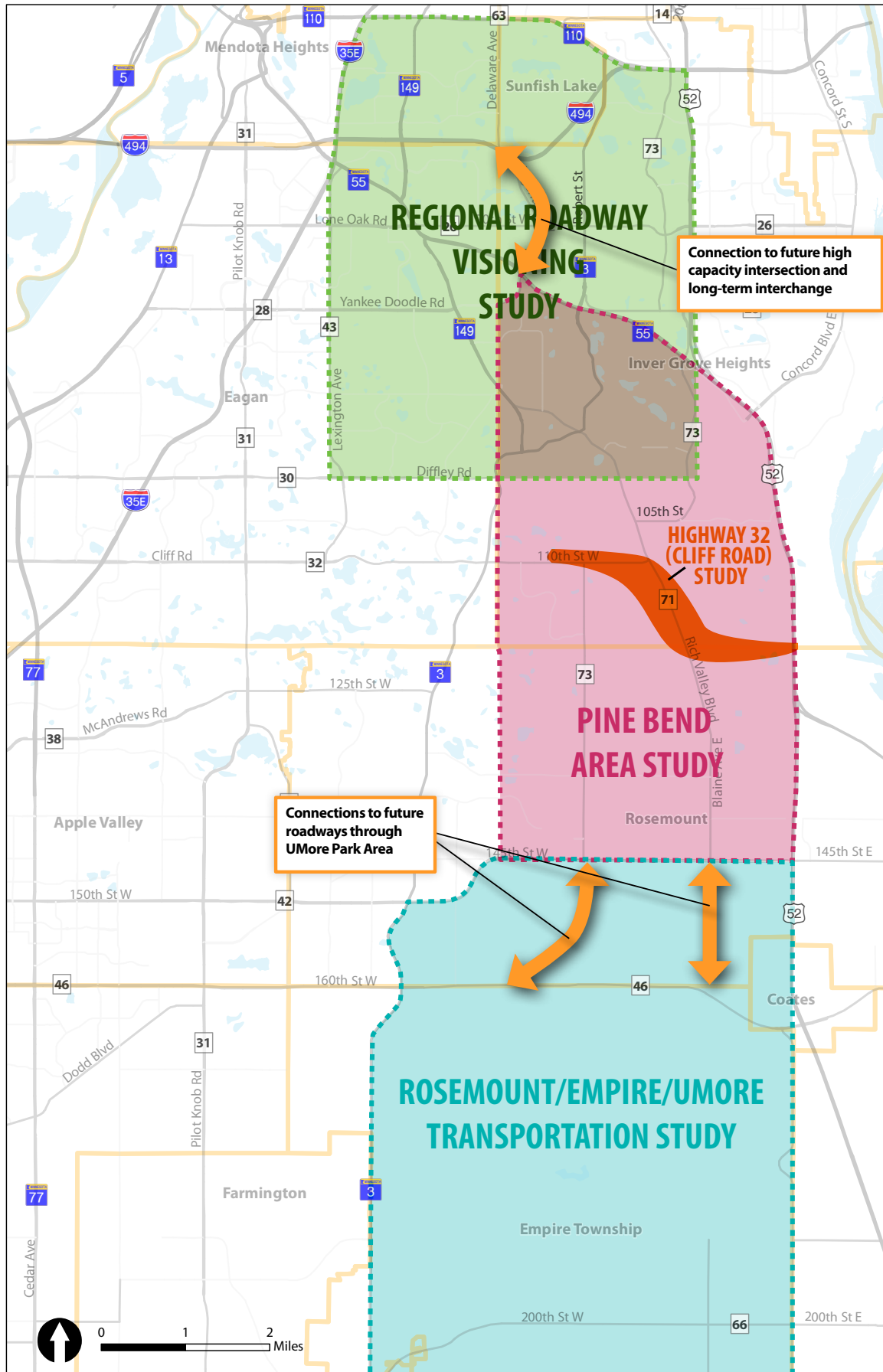
Recommendations will assist study partners in prioritizing future infrastructure improvements, update local planning documents, and coordinate with future land use changes in the study area. Infrastructure improvements related to the long-term vision are not being built today, but are anticipated to occur over time as development occurs and traffic volumes increase. Study outcomes provide sufficient detail to allow the County and study partners to move forward to the design-level phase for projects identified in the County and cities' Capital Improvement Programs (CIP's).

Study Purpose

Study partners are working toward a common goal of proactively planning for future transportation needs by identifying and preserving key transportation corridors. These corridors need to provide strong system continuity and connectivity while promoting safety, multimodal uses, and potential greenway connections. The Dakota County Arterial Connector Study provides the opportunity to plan and shape the transportation system in conjunction with development rather than after development has occurred. This will reduce long-term costs as well as future right-of-way impacts.

The County's 2030 Transportation Plan identifies the need to study potential north-south arterial connections and refinement of the County Highway 32 (Cliff Road) alignment to State Highway 52. To address deficiencies in the arterial system continuity and connectivity in the north-south and east-west directions, the Dakota County Arterial Connector Study combines these two objectives into a single study in development of a future transportation system vision that will serve the area.

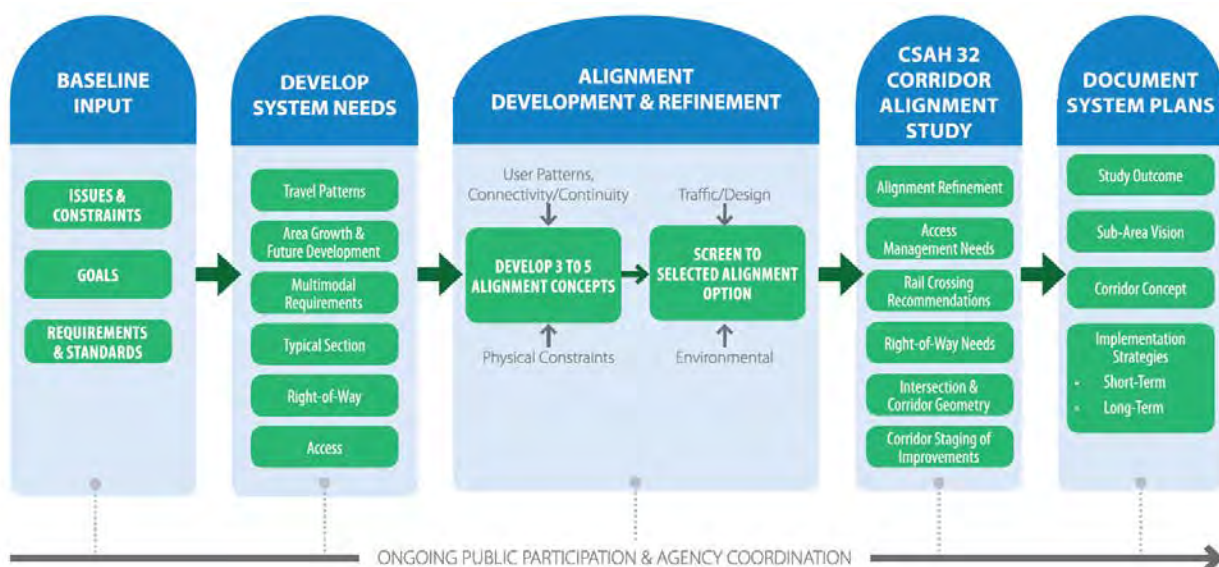
Figure 1 Area Studies



Study Process

Figure 2 illustrates the study process, which included identifying system needs, development and refinement of alignment alternatives, preliminary concept of the 117th Street corridor (from County Highway 71 to State Highway 52), as well as documentation of all study outcomes and implementation strategies. The process included significant public involvement and agency coordination to effectively facilitate the study. The Project Management Team (PMT) reviewed all technical analyses and documents prior to presentation to the public and respective councils/boards.

Figure 2. Study Framework



Study Goals

In order to be effective, the study must address local and regional transportation goals. The goals are reflective of local and regional transportation visions, providing direction and guidance for roadway improvements. The goals below directed and guided the study process in order to achieve a shared transportation vision.

- GOAL 1: Encourage planning and design of an arterial roadway system that accounts for future travel growth and planned development
- GOAL 2: Enhance transportation system efficiency and mobility
- GOAL 3: Improve transportation system connectivity, spacing, and continuity
- GOAL 4: Enhance the safety of the traveling public
- GOAL 5: Encourage preservation of right-of-way for future transportation corridors

- GOAL 6: Coordinate with potential greenway alignments, other bicycle/pedestrian facilities, transit connections, and rail alignments
- GOAL 7: Consider adopted plans/studies and maintain interagency coordination in developing the future transportation system
- GOAL 8: Minimize social, environmental, and property impacts as much as possible while achieving the desired functionality out of the transportation system
- GOAL 9: Maximize cost effectiveness of the overall transportation system vision, as well as its flexibility to be implemented over time

2.0 Existing Conditions and Future Visioning

In order to develop meaningful transportation solutions, it is important to understand the existing characteristics and future visioning of the study area. Identification of transportation issues and needs is necessary to develop system improvements to enhance the continuity and connectivity of the County's arterial roadway system. Key findings related to existing conditions and future visioning are provided below.

Study Area

- As shown in Figure 3, the study area is defined by State Highway 55 to the north, County Highway 42 to the south, State Highway 52 to the east and State Highway 3 to the west. It is served by four state trunk highway routes and a number of regional county highways.

Land Use Development

- A significant portion of the land area is classified as rural residential, urban residential, agricultural, industrial, and industrial open space land use types. This is split between the Cities of Inver Grove Heights and Rosemount. As shown in Figure 1, future transportation system needs will also need to accommodate anticipated land uses and growth north and south of the study area. Much of the land in the study area is owned by Flint Hills Resources for buffer area around the Pine Bend Refinery.

City of Inver Grove Heights

- As shown in Figure 4, current and future land use plans for the City of Inver Grove Heights are relatively consistent, with large lot rural residential and industrial land use types. The area further north includes future land use changes from large lot rural residential to low and medium density residential, regional and community commercial, and industrial office park.

City of Rosemount

- As shown in Figure 4, current and future land use plans for the City of Rosemount are relatively consistent as well, with mostly rural and urban residential along with agricultural and industrial land use types. The study area also has defined areas of medium and high density residential, commercial, and Business Park. The area further south includes future land use changes from agricultural research to higher intensity multiuse development. Discussion of this change is covered in the following section.

Figure 3 Study Area

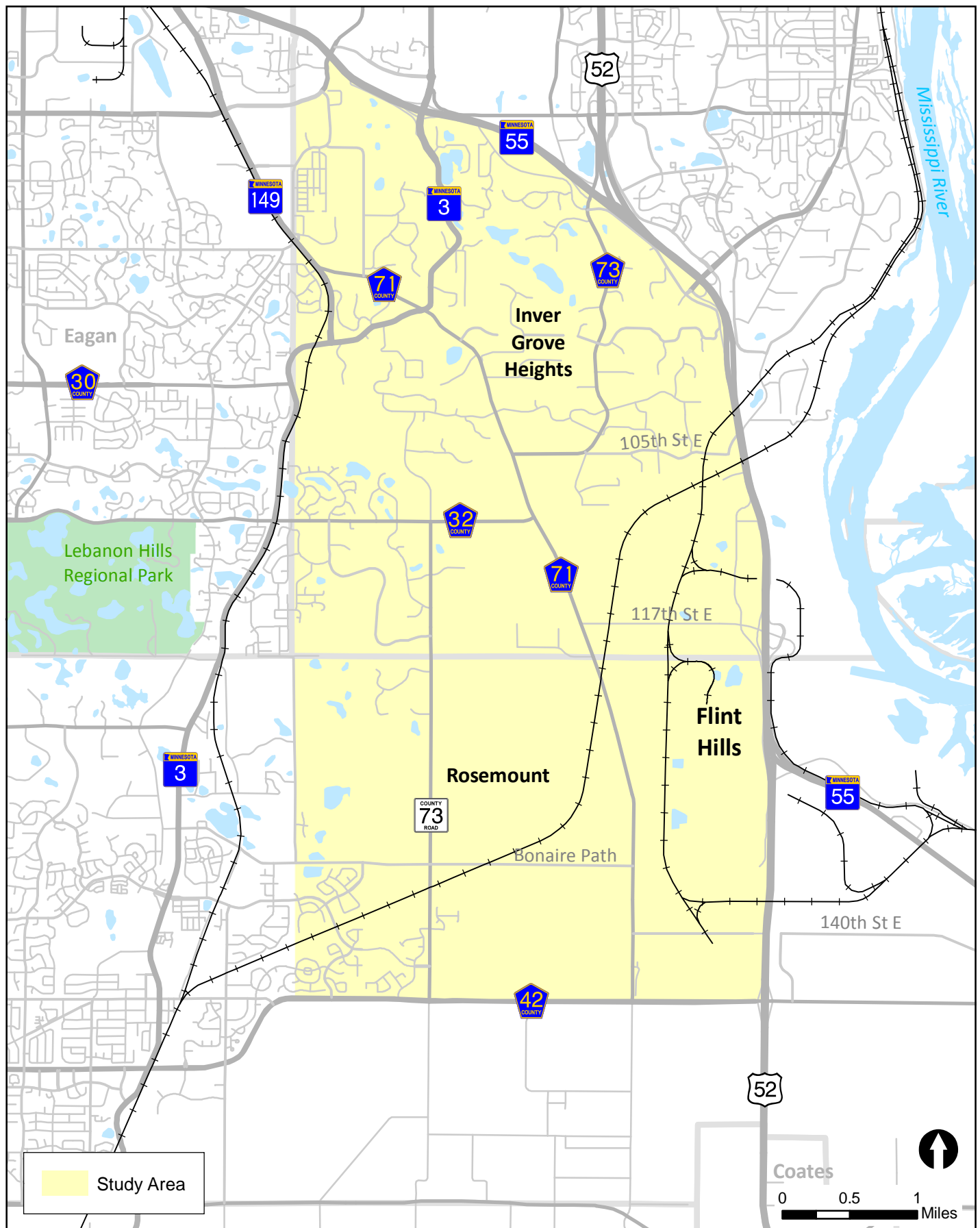
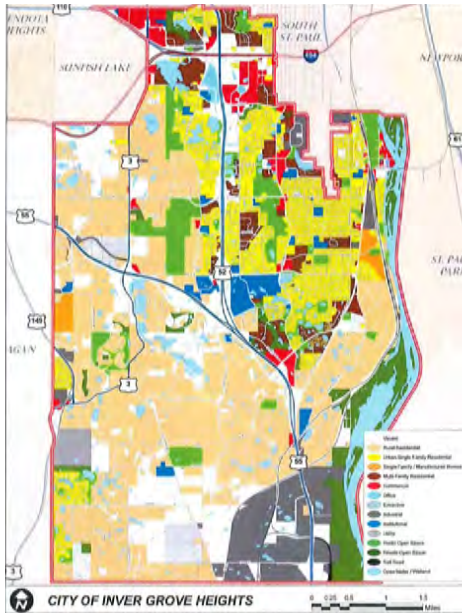
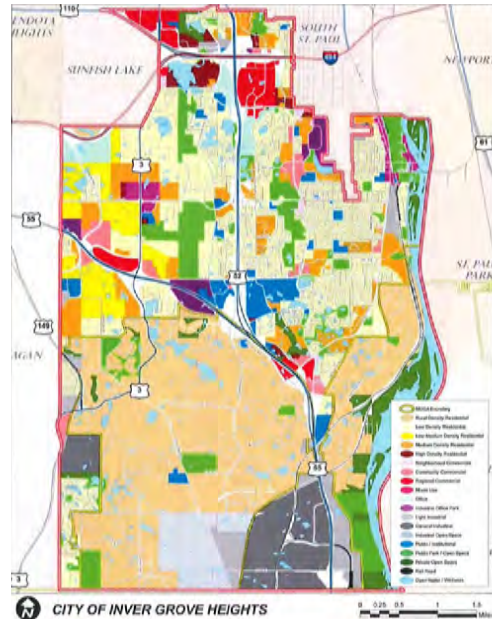


Figure 4 Land Use

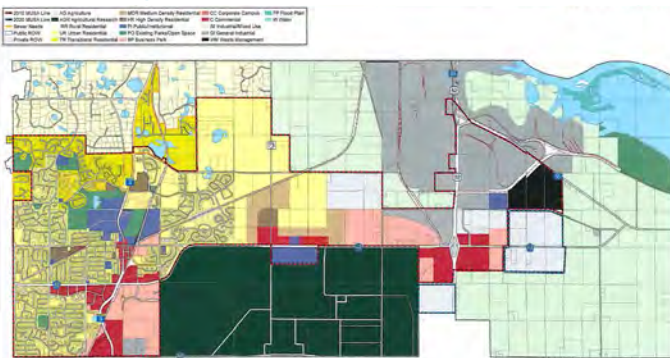
Existing Land Use (Inver Grove Heights)



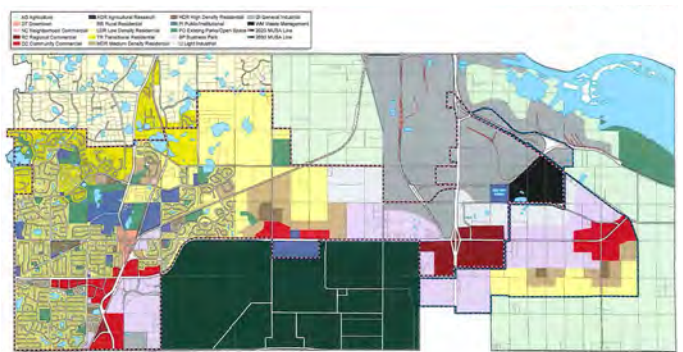
Future Land Use (Inver Grove Heights)



Existing Land Use (Rosemount)



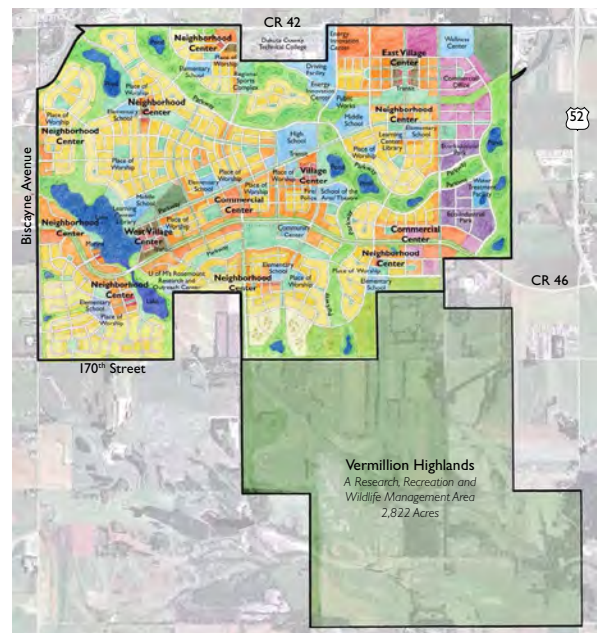
Future Land Use (Rosemount)



UMore Concept Master Plan

The *Concept Master Plan for the University of Minnesota's New Sustainable Community at UMore* was completed in 2009. The result of an intensive two-year planning process, the concept master plan identified a future development pattern from the UMore property. The study is a foundation element for the AUAR completed in 2013. The land use plan contained in the study is the basis for three of the four scenarios being considered:

- Approximately 4,900 acres
- Scenario 1 – future population of 35,000 people and about 18,000 jobs
- Scenario 2 – future population of 25,000 people and about 18,000 jobs
- Scenario 3 – future population of 31,500 people and about 24,500 jobs
- Scenario 4 – consistent with current Comprehensive Plans of both the City of Rosemount and Empire Township



Flint Hills Resources

- The Pine Bend Refinery in the Cities of Inver Grove Heights and Rosemount produces gasoline, diesel, propane, and butane fuels, which is used throughout Minnesota and the upper Midwest. It currently utilizes approximately 10 percent of the study area for their industrial and utility land use. As the study area continues to develop, industrial and utility land uses will be maintained to provide a buffer between the refinery and other land uses.

Bituminous Roadways, Inc.

- The Bituminous Roadways plant has operated since 1978 with 80 acres of mining sand and aggregate, and 40 acres providing a buffer from residential neighbors. The plant intends to increase its processing of asphalt for other plants, in addition to the continuation of its mining operations. Currently the plant has mined the northwest quadrant and is working in a clockwise manner to mine the remainder of the site, which is expected to last upwards of 40 years. Site operations will continue to mine at a rate that is in line with industry demand.

UMore Park

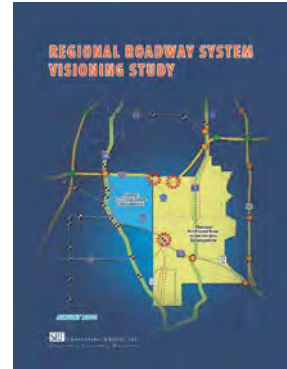
- The University of Minnesota Outreach, Research and Education (UMore) Park is south of the study area in the City of Rosemount and Empire Township. A number of studies have been conducted to review the potential development of the park and how it will impact the adjacent transportation system.
- The Concept Master Plan for the University of Minnesota's New Sustainable Community at UMore was completed in 2009. It is a foundational element for the AUAR completed in 2013. Varying land use scenarios were considered as part of these planning exercises and summarized in Figure 4.
- In 2015, the University approved the market-based development of UMore Park, which is expected to be staged over several decades.

Recent Planning Studies

There are a number of studies and plans that have been completed in the last five years, which served to inform the study process. Three of these studies include the Regional Roadway System Visioning Study, the Rosemount/Empire/UMore Transportation Study, and Dakota County Transportation Plan (see Figure 1 for reference).

Regional Roadway System Visioning Study

- Completed in 2010, Dakota County, MnDOT, Metropolitan Council, FHWA, and local municipalities partnered to conduct a sub-regional transportation system study.



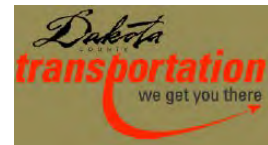
Rosemount/Empire/UMore Transportation Study

- Completed in 2009, Dakota County, the University of Minnesota, Rosemount, and Empire Township partnered to conduct a transportation study for the UMore Park and Vermillion Highlands area.



Dakota County Transportation Plan

- The Dakota County Transportation Plan examined current conditions against future travel demand and land use in order to identify transportation needs throughout the county.



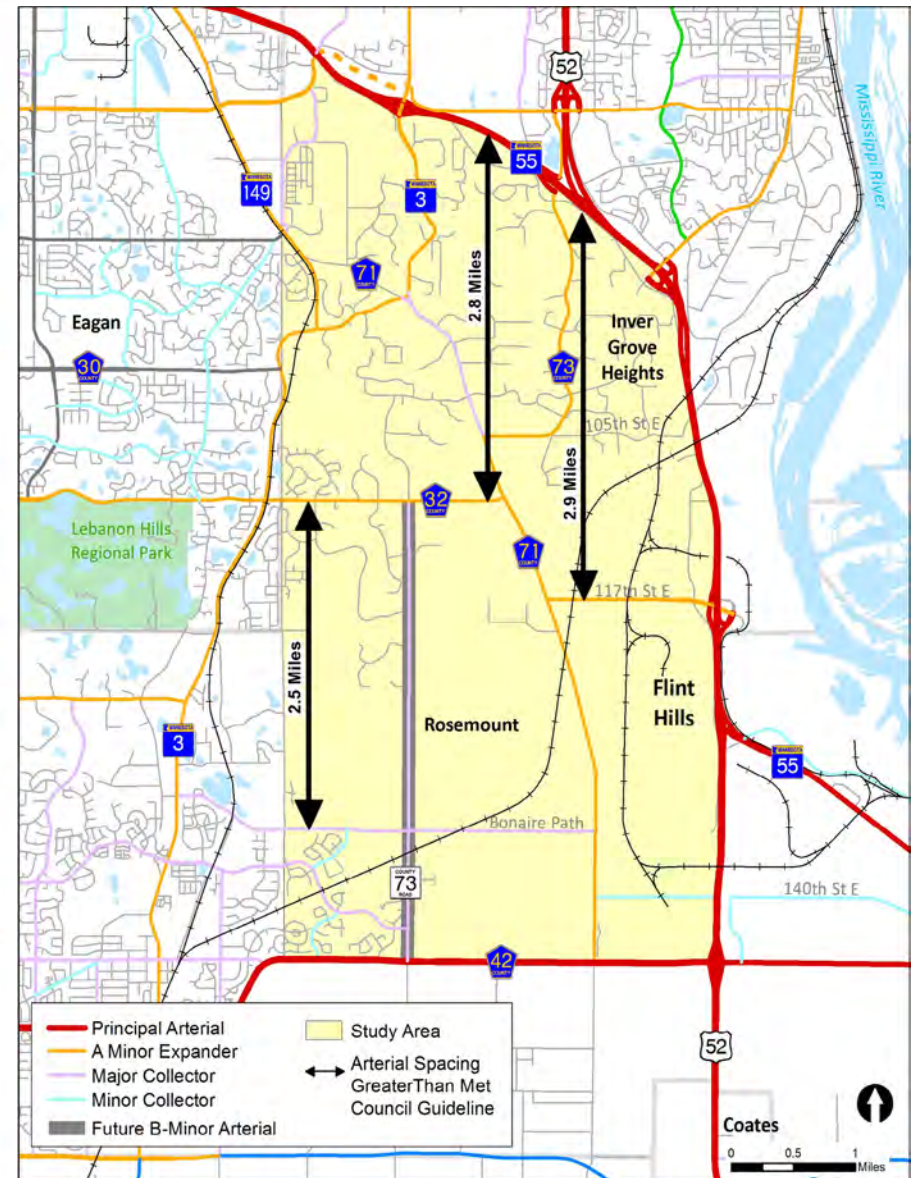
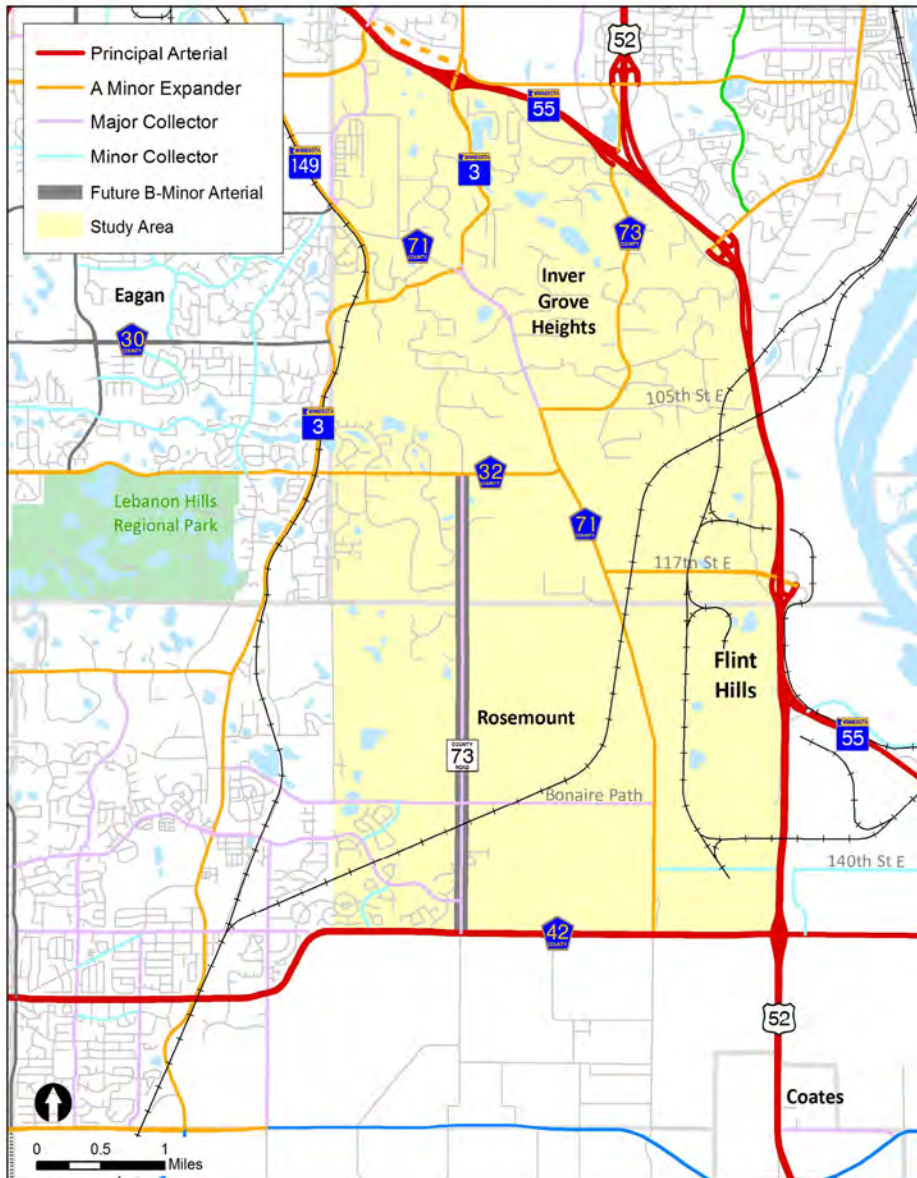
Functional Classification

- The Dakota County 2030 Transportation Plan identifies County Road 73 (Akron Avenue) between County Highway 32 and County Highway 42 as a B Minor Arterial, a higher functionally classified roadway with greater significance.
- According to the Metropolitan Council's Transportation Policy Plan, minor arterials should be spaced one to two miles apart. In addition, one-half to two mile spacing is needed to accommodate future urban development with higher densities, commercial uses, etc. (see Figure 5: Arterial Spacing). The recommended minor arterial spacing requirements provide guidance for arterial connectivity and continuity in supporting a safe and efficient roadway system.

Figure 5 Functional Classification and Arterial Spacing

Existing Roadway Functional Classification

Minor Arterial Spacing Analysis



Traffic Volumes, Corridor Capacity and Intersection Operations

Traffic Volumes

- Current annual average daily traffic (AADT) and heavy commercial annual average daily traffic (HCAADT) volumes were reviewed for major roadways within the study area. The heavy truck volumes are most notable on 117th Street between County Highway 71 and State Highway 52 due to the function and operation of this segment of roadway. As shown in Figure 6, the highest traffic volumes are found on State Highways 52 and 55. The highest traffic volumes on the County system are along County Highway 42 (11,300 vehicles per day (vpd)) and 32 (8,600 vpd).
- Growth is expected within and beyond the study area over the next 20+ years, based on the development expected as outlined in area studies and community plans. As shown in Figure 6, there is fairly significant growth expected within the study area, which is noted along the County Highway 32, 42, 71, and 73 corridors.

Corridor Capacity

- A capacity deficiency exists when traffic volume exceeds the vehicular capacity of the highway. An overloaded roadway segment can result in long queues at intersections, limited gaps for side-street traffic, and more cut-through traffic on alternative routes particularly during higher traffic times.
- As shown in Figure 7, no corridor segments exceed the corridor capacity under existing conditions. Several segments, under future conditions, are either approaching capacity ($1.0 > \text{volume/capacity} > 0.85$) or over capacity ($\text{volume/capacity} > 1.0$) depending on the growth scenario considered (See Figure 7, 2030 Capacity Deficiencies).

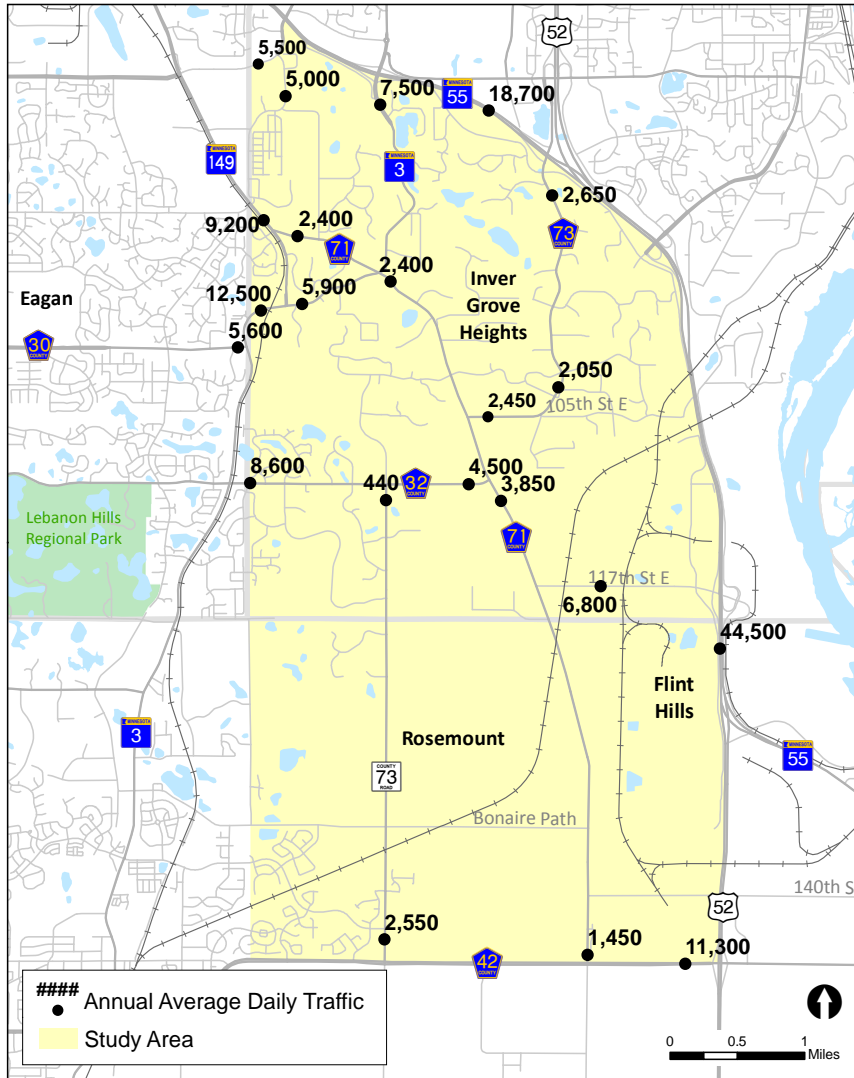
Intersection Capacity Analysis

- Of the key intersections that were analyzed under existing conditions for both a.m. and p.m. peak hours, two of the nine key intersections currently operate at an unacceptable LOS E-F¹. One intersection operates close to an unacceptable level of service.
 - 117th Street/Clark Road
 - 117th Street/TH 52 West Ramps
 - 117th Street/East Flint Hills Access (overall LOS D with a side-street LOS F)

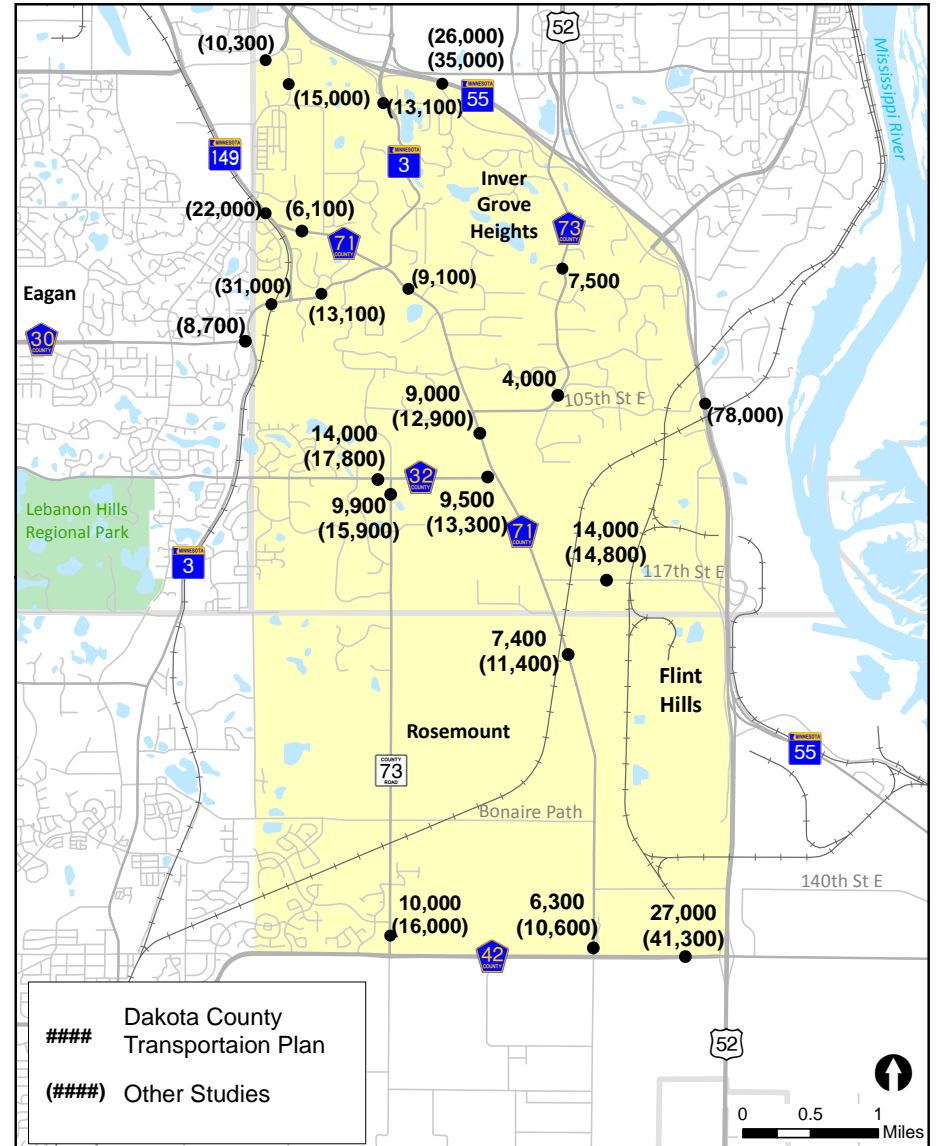
¹ Intersection operations analysis results identify a Level of Service (LOS) which indicates how well an intersection is operating. Intersections are ranked from LOS A through LOS F. The LOS results are based on average delay per vehicle, which correspond to delay thresholds. LOS A indicates the best traffic operation and LOS F indicates an intersection where demand exceeds capacity. Overall intersection LOS A through D is considered to be acceptable traffic flow conditions.

Figure 6 Current and Future Traffic AADTs

Existing Traffic Volumes



2030 Forecast Traffic Volumes



- Under future conditions, an assessment was conducted at the County Highway 32 (Cliff Road)/County Road 73 (Akron Avenue), County Highway 32 (Cliff Road)/County Highway 71 (Rich Valley Boulevard), and County Highway 71 (Rich Valley Boulevard)/117th Street intersections to determine when traffic control modification or full build improvement is needed for acceptable traffic operations. The assessment results looked at the level of additional traffic that could be handled until intersection improvements occurred, and indicate that once traffic reaches a level of 50 percent of the expected future long-term growth, additional mitigation will be needed beyond turn lane improvements.

Safety Assessment

Roadway safety is a high priority for the County, MnDOT, local agencies, and the public. The primary safety concerns are as follows:

- Using the Minnesota Crash Mapping Analysis Tool (MnCMAT), there were 314 crashes that occurred from 2009 to 2013 within the entire study area; 10 of which were severe crashes (one fatal and nine incapacitating injuries), which represent approximately three percent of the total crashes.
- Understanding that the 117th Street corridor may be reconstructed in the near future, it and the extension of County Highway 32 were reviewed to determine the crash rate(s) from State Highway 3 to State Highway 52 (along 117th Street). It was determined that the section of County Highway 71 between County Highway 32 and 117th Street has an above average critical crash rate based on historical crash data.
- The Trunk Highway 3 and County Highway 71 intersection was raised as a concern through the public engagement process. Crashes were reviewed at this location for 2012-2014. Over the 3 years, there were a total of 8 reported crashes: 4 run-off-road, 3 rear-end, and 1 left turn. Based on input from the public and this crash history, MnDOT and Dakota County are looking into options that may be available to improve operations and reduce the risk for crashes at this intersection.

Multimodal Transportation

Multimodal transportation elements were reviewed at a planning level to understand other mode choice alternatives through the study area.

- The study area offers limited paved and non-paved trails. The trails that do exist are located throughout the City of Inver Grove Heights.
- A number of planned greenways have also been identified; these trail corridors include the Rosemount Greenway and Vermillion Highlands Greenway. Each greenway is intended to provide regional, multi-modal connectivity throughout Dakota County. Planned bicycle

- and pedestrian facilities within the study area support the County's goal of creating a multimodal trail network to serve countywide recreational and transportation needs.
- Transit services currently do not extend into and serve the immediate study area. However, as the metropolitan area expands and development densities increase, a number of transportation services have been identified by the Robert Street Corridor Transit Feasibility Study and the Dakota County Transportation Plan.
 - Major rail lines located within the study area include Union Pacific Mainline (14 trains per day) and Union Pacific Spur (one train per day). From a regional connectivity and mobility perspective, each rail line provides connections to larger surrounding markets. Opportunities to address safety concerns for at-grade rail crossing locations can be addressed as the study area continues to develop.

Public/Private Utilities

- As shown in Figure 8, there are a number of public and private utilities throughout the study area that are potential constraints. Flint Hills Resources and Excel Energy are responsible for many of the underground chemical pipelines through the study area. The most significant resource pipeline through the area is the Koch Jet Fuel Pipeline. High voltage power lines also represent significant structures that must be known when considering potential transportation improvements.

Land Topography

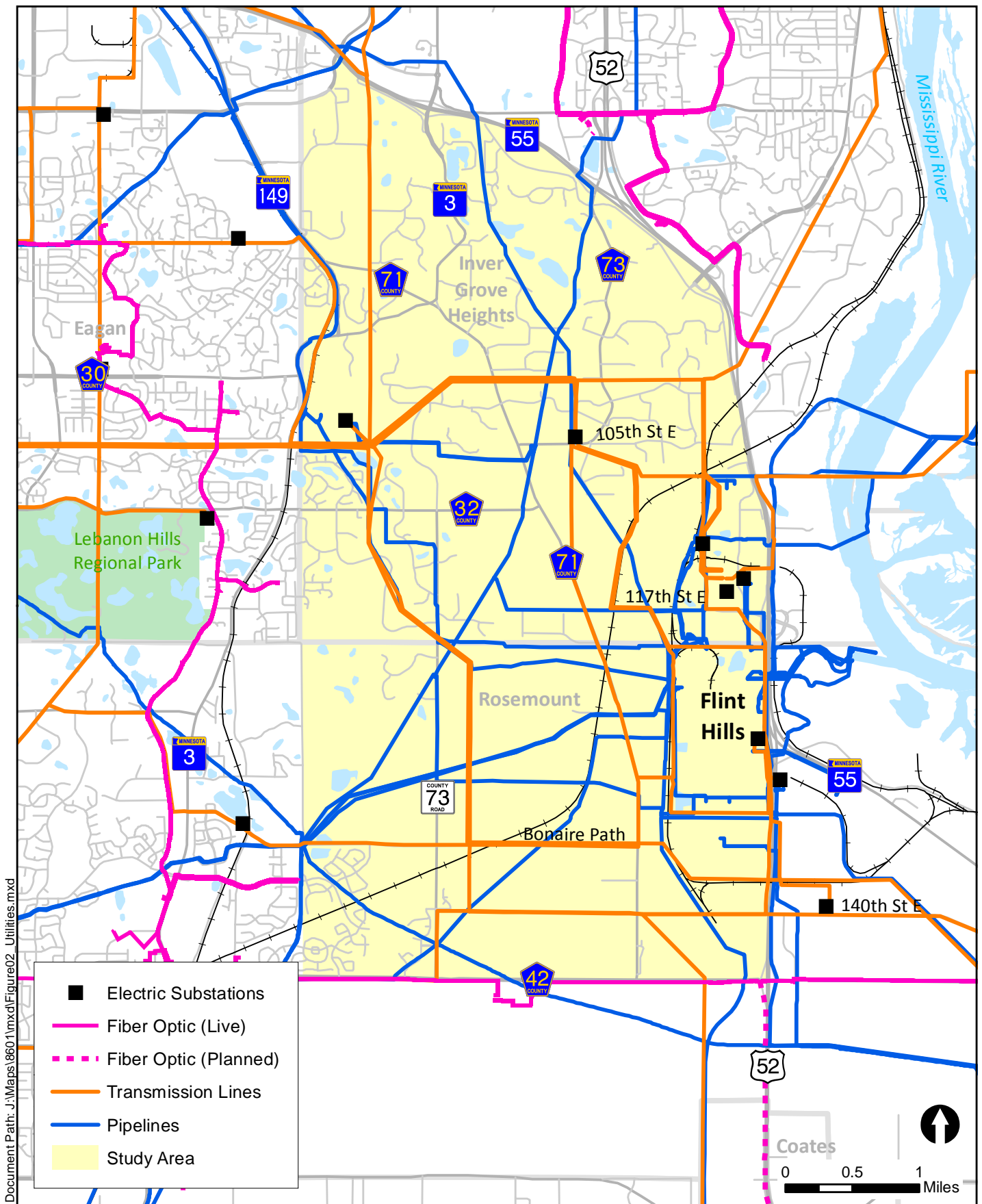
- Consideration of steep slopes or areas of significant grade change is important to understand challenges when considering improvements throughout the study area. Figure 9 presents the areas of steep slope greater than 12 percent grade change in elevation.

Social, Environmental, and Economic Scan

An initial screening of resources was completed for the study area to identify potential issues and likelihood of impact. While potential issues identified in this scan may require additional review and mitigation, they do not rule out the feasibility of future improvement projects.

- As shown in Figure 10, the largest and most heavily concentrated areas of wetlands are within the northern and western portions of the study area.
- The Section 4(f) legislation provides protection for publicly owned parks, recreation areas, historic sites, wildlife, and/or waterfowl refuges from conversion to transportation use. As shown in Figure 11, two significant City-owned parks (Rich Valley Park and Flint Hills Recreation Complex) are located within the study area.
- As shown in Figure 11, sites with high risk of potential contamination include land owned by Flint Hills, a petroleum and chemical refinement facility, and the Pine Bend Landfill.

Figure 8 Public/Private Utilities



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Figure 9 Land Topography - Steep Slopes

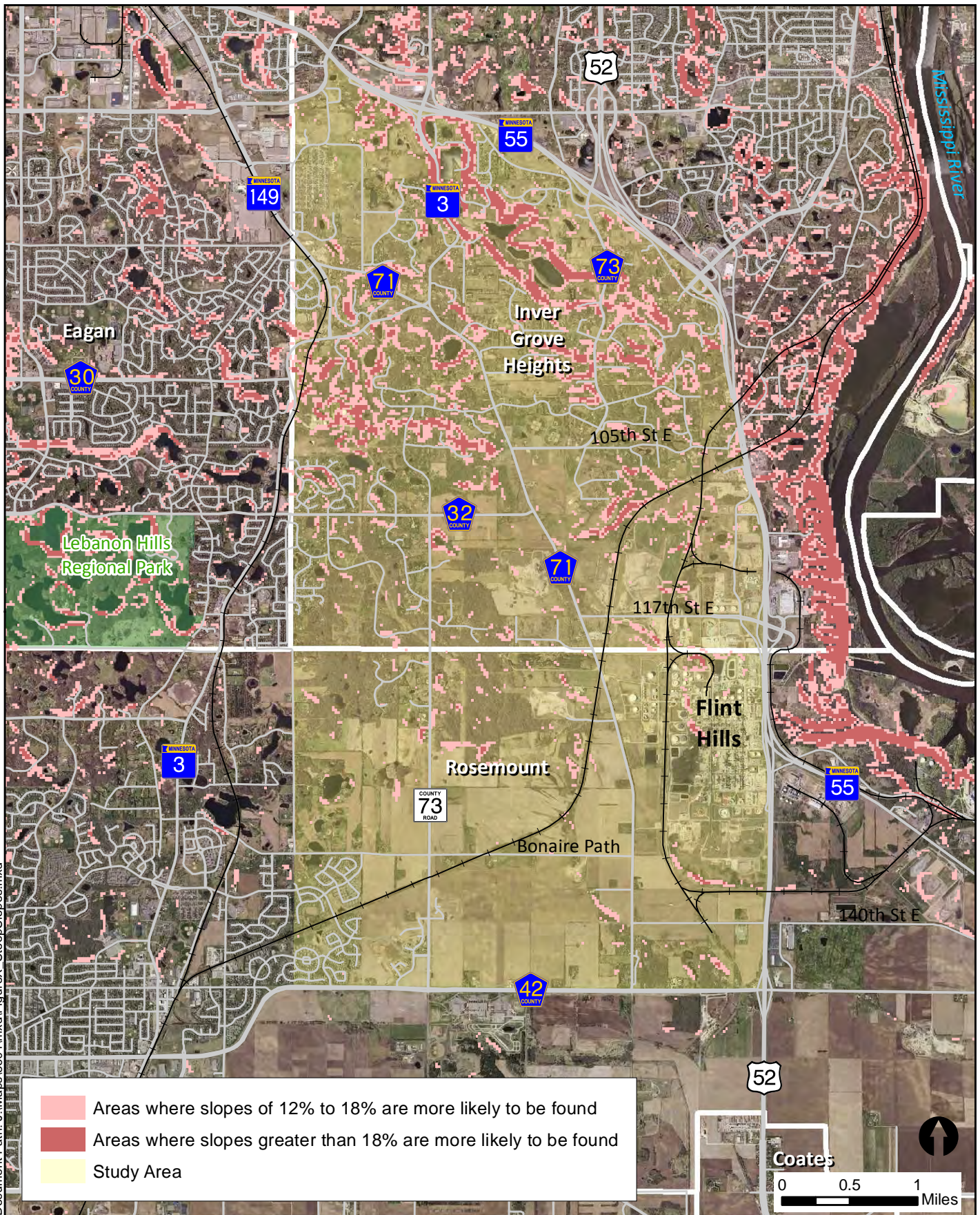
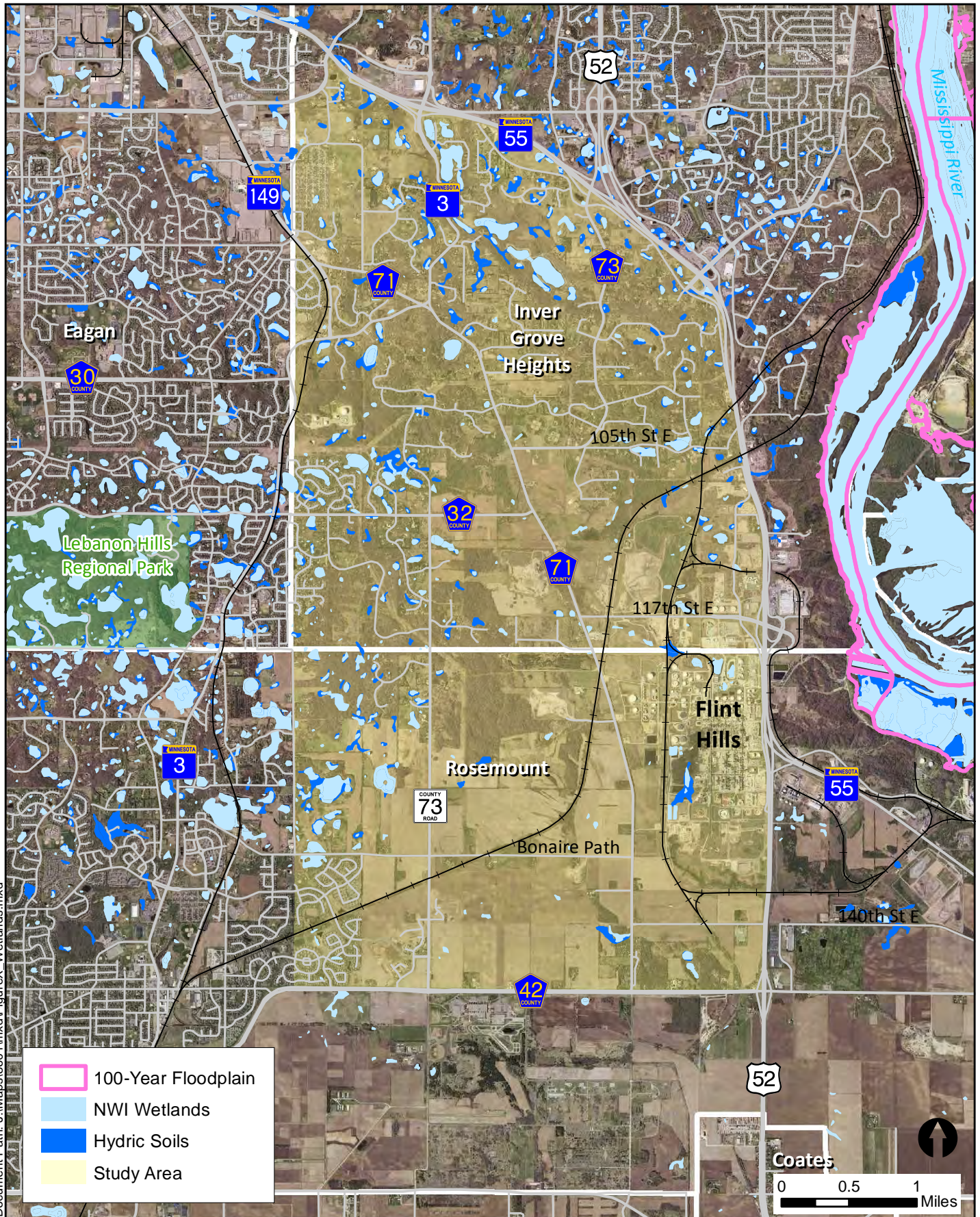
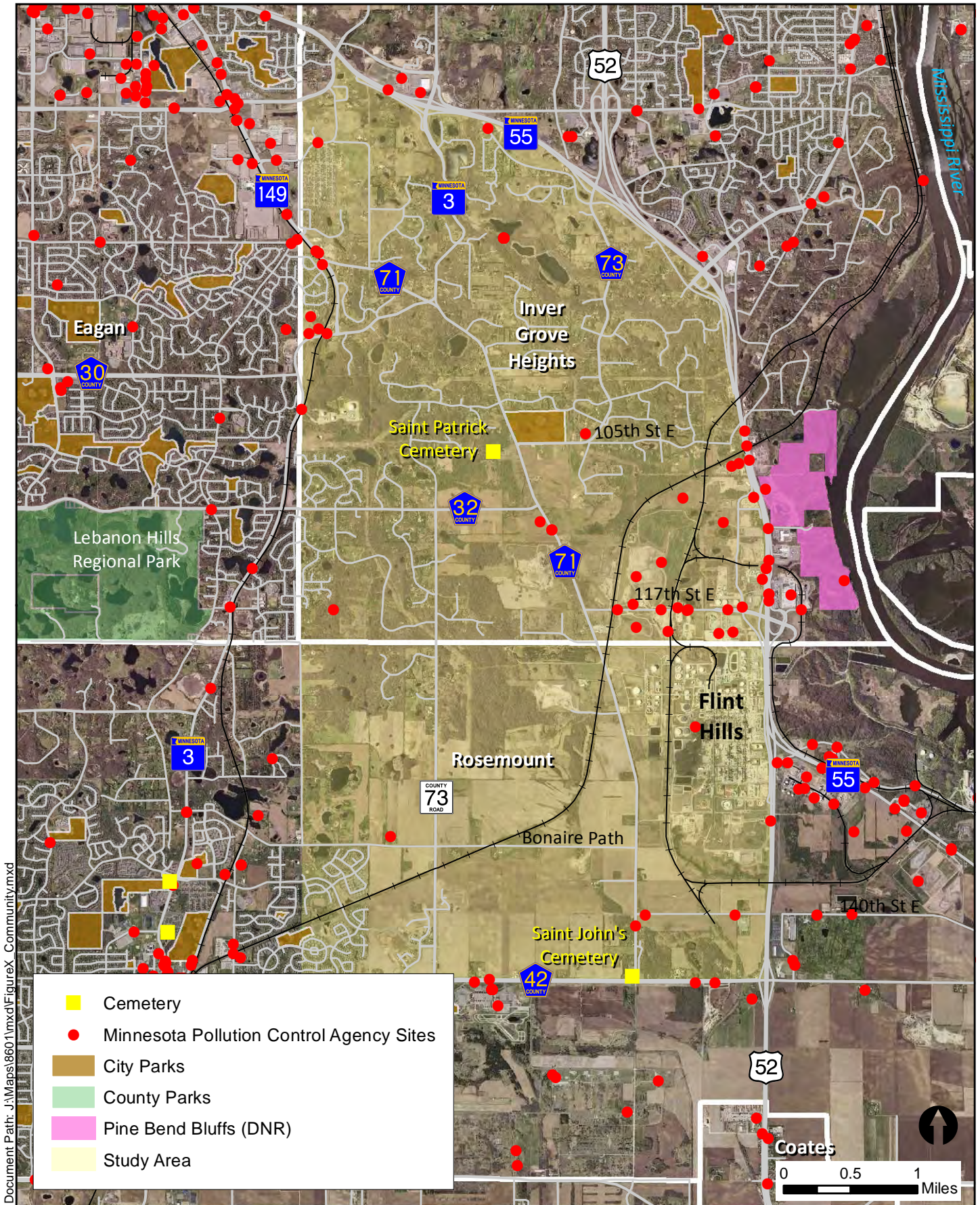


Figure 10 Waterbodies and Wetlands



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Figure 11 Relevant Community Issues



3.0 Alternative Development and Preliminary Screening

Given the issues, constraints, and opportunities identified in the existing condition and future visioning assessment, long-term alternatives were developed to provide additional east-west and north-south connectivity as part of a system plan through this part of the County. The preliminary alignment alternatives were screened and overall system scenarios established that serve as a foundation for further analysis, providing decision makers and governmental review agencies with the rationale for eliminating alternatives to minimize the possibility of revisiting them during future phases of study.

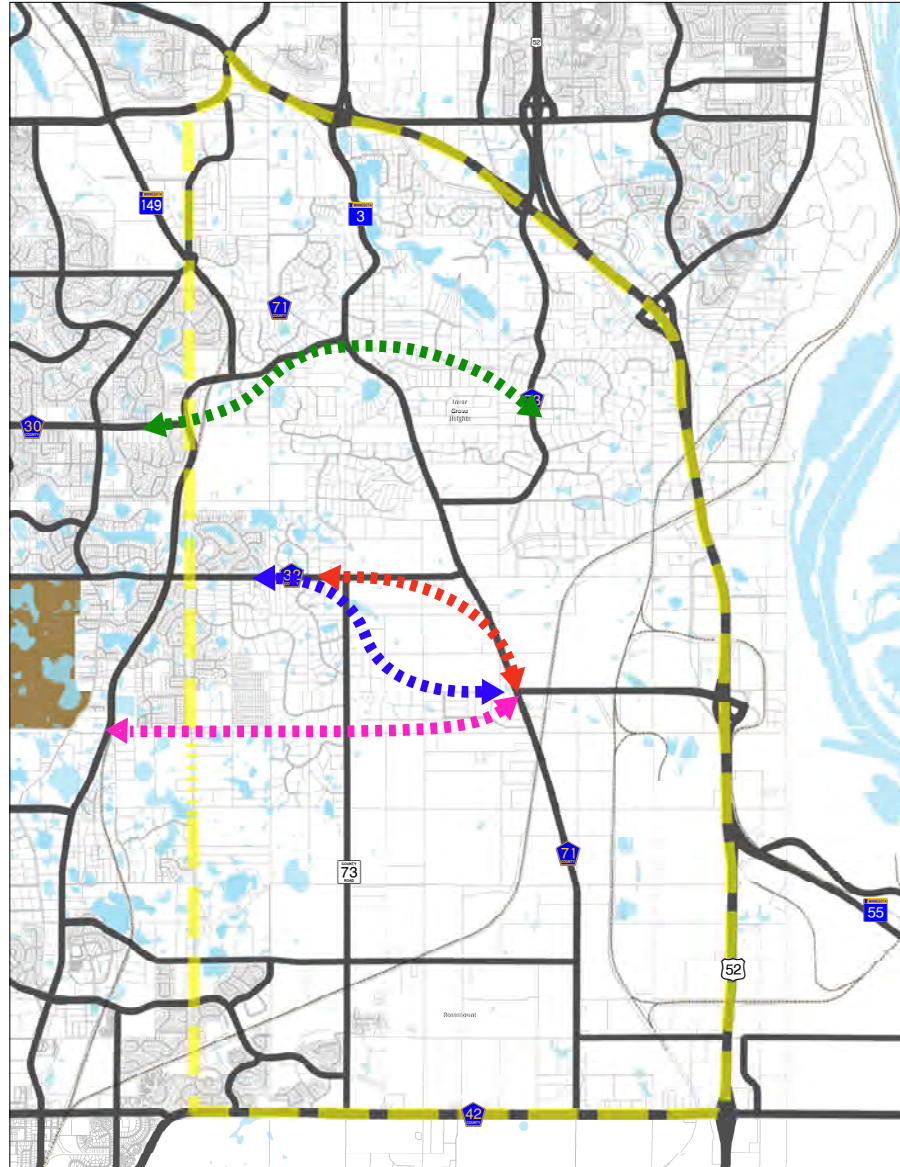
The County has two roadway projects programmed in their CIP. These two projects consist of the 117th Street reconstruction from County Highway 71 to State Highway 52 to provide additional capacity and access management, and County Road 73 (Akron Avenue) reconstruction from Bonaire Path to County Highway 32 to address design elements for safety and to provide a paved surface.

General corridor locations were considered that best respond to the study goals, future travel patterns, physical limitations and impacts, connections to local systems, and fit within the regional system. The following comments highlight the process.

- As shown in Figure 12, PMT members developed four east-west alternatives and eight north-south alternatives during a facilitated design charrette.
- The most feasible alternative to accommodate east-west travel needs is the improvement of County Highway 32 and its connection to State Highway 52. Other alignments under consideration have the potential to provide system utility but better serve as local roads than county facilities due to their termination points and ability to leverage existing city streets. The blue and red east-west alignments were carried forward for further evaluation.
- Travel growth for north-south movements through the study area is significant for current and future conditions. The current north-south county road network is well spaced given the recommended spacing requirements; however, the north-south connections are disjointed in some areas (e.g., t-intersections requiring turns to travel north-south). This is especially evident with County Road 73 and Argenta Trail/Alverno Avenue, where traffic volumes are expected to increase significantly.
- North-south alignment alternatives under consideration at this level included connecting State Highway 149 to County Road 73 and County Highway 71 to State Highway 52. These alternatives were dismissed by the PMT from further consideration because they do not meet the goals and objectives of the study, with potential unmitigable impacts.
- The orange, red, pink, yellow and light blue north-south alignment alternatives were carried forward for further evaluation.

Figure 12 East-West/North-South Alignment Consideration

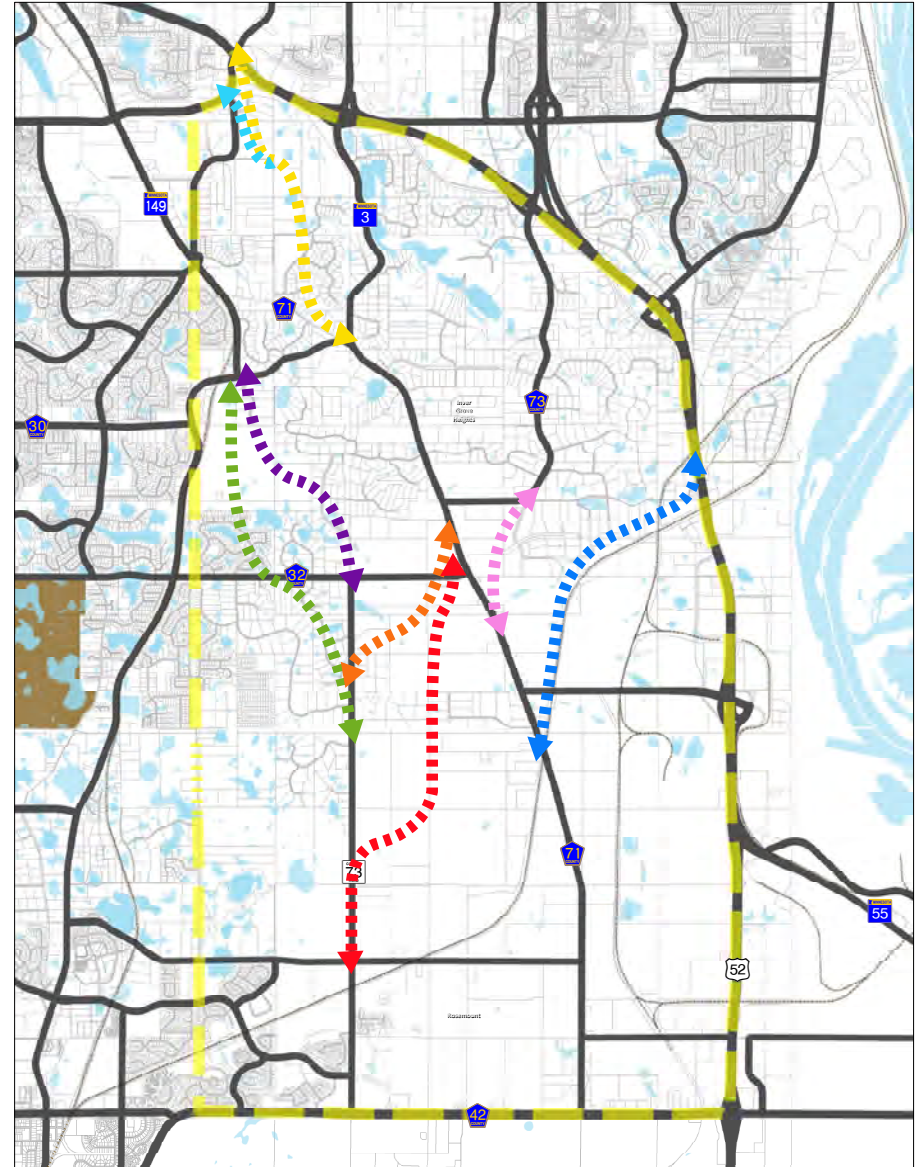
East - West Alignments



East-West Alignments not under further consideration:

- ■ ■ ■ ■ Not under consideration as a new County facility. Serves a local utility and will be carried forward for further consideration as a local improvement to establish a continuous 96th Street corridor between CSAH 71 and CSAH 73.
- ■ ■ ■ ■ Not under consideration as a new County facility. Serves a local utility and will only be carried forward for consideration as a local improvement.

North - South Alignments



North-South Alignments not under further consideration:

- ■ ■ ■ ■ Dismissed by Project Management Team and not under consideration as a new County facility. Alignments do not meet the goals and objectives of the study (applies to purple, green and blue alignments).
- ■ ■ ■ ■
- ■ ■ ■ ■

4.0 Scenario Evaluation and Refinement

The east-west and north-south alignment alternatives were packaged into scenarios that could be implemented together or in stages given the transportation utility and timeframe. This section documents the scenarios, evaluation process, and the refinement that was necessary to arrive upon scenarios that could be outlined for implementation based on public, agency, and varying stakeholder input. In addition, a detailed 117th Street concept layout was developed at this time to provide the County and adjacent stakeholders an understanding of the potential impacts associated with this upcoming reconstruction project (e.g., right-of-way, access restrictions, turn lanes, etc.).

Scenarios

- Six system scenarios were initially prepared for the study area (Scenarios A-F). Figure 13 shows that various constraints must be considered as the scenarios are defined.
- As shown in Figures 14 to 17, Scenarios A – D are combinations of east-west County Highway 32, north-south County Road 73, and north-south County Highway 71/County Road 73. The long-term (25+ years) corridor considerations are as follows for each roadway alignment:
 - County Highway 32 is assumed to be a four-lane roadway, 150 feet of county right-of-way, and a 55 mile per hour design speed.
 - County Road 73 is assumed to be a four-lane roadway, 150 feet of county right-of-way, and a 55 mile per hour design speed.
 - County Highway 71/County Road 73 is assumed to be a three-lane roadway, 120 feet of county right-of-way, and 45 mile per hour design speed. The lower design speed is the result of the corridors future transportation purpose and horizontal/vertical curve challenges.
- As shown in Figures 18 and 19, Scenarios E and F are realignments of County Highway 71 along Alverno Avenue and Argenta Trail connecting to County Highway 28 (Yankee Doodle Road). The long-term (25+ years) corridor considerations are for a three-lane roadway, 120 feet of county right-of-way, and 45 mile per hour design speed. Based on system spacing and roadway needs, this roadway is recommended to be a city collector street in the future.
- Figure 20 illustrates the 117th Street concept layout. The detail in this layout is beyond what was considered in the other alignment alternatives. It provides initial recommendations for access control along this corridor and potential access relocations. This layout was presented to and refined based on input from stakeholders along this corridor (e.g., Flint Hills Resources, Allied Waste, SKB Landfill, Enterprise Products, Hilton Ministorage, and Xcel Energy).

Figure 13 Study Area Constraints

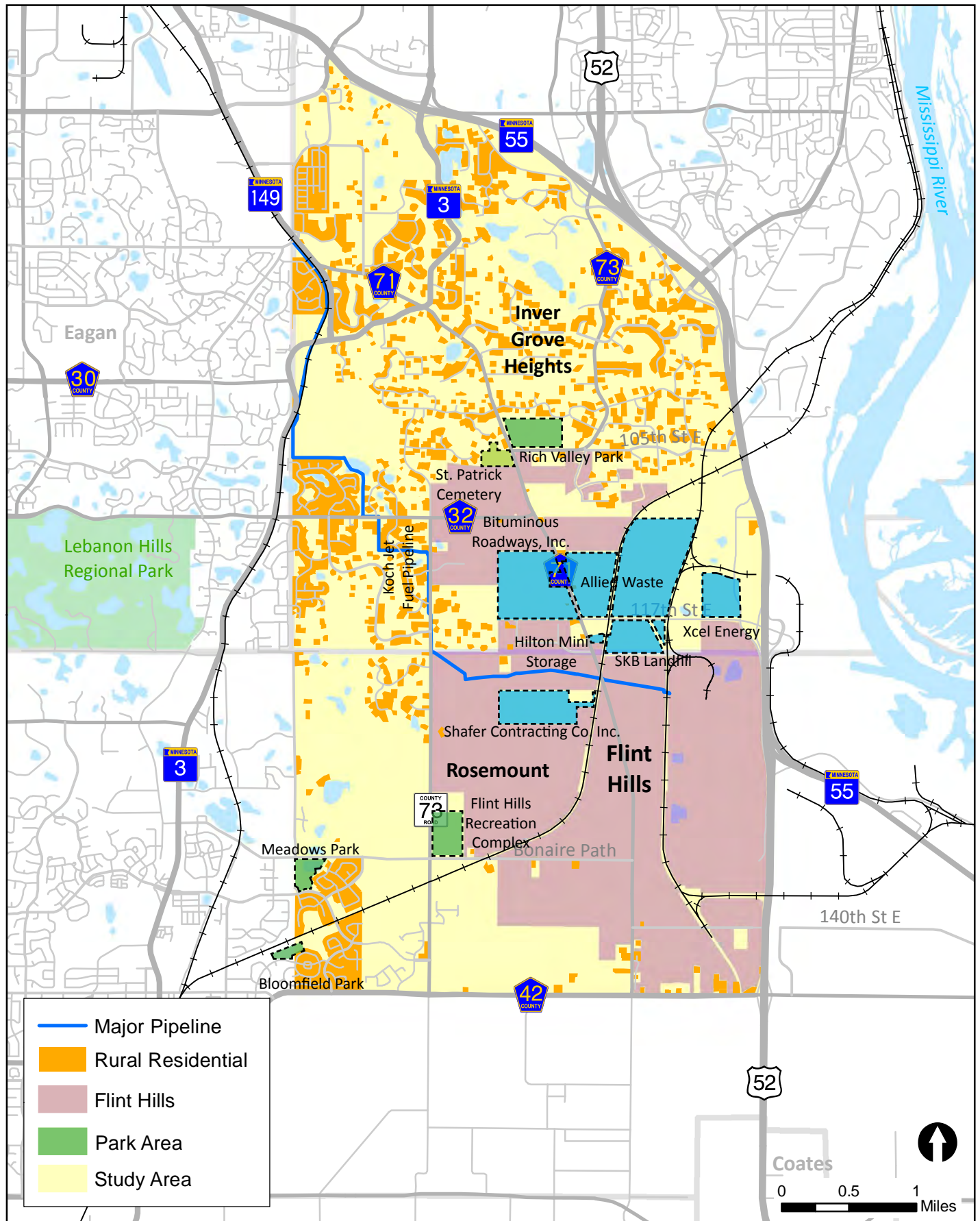


Figure 14 Scenario A

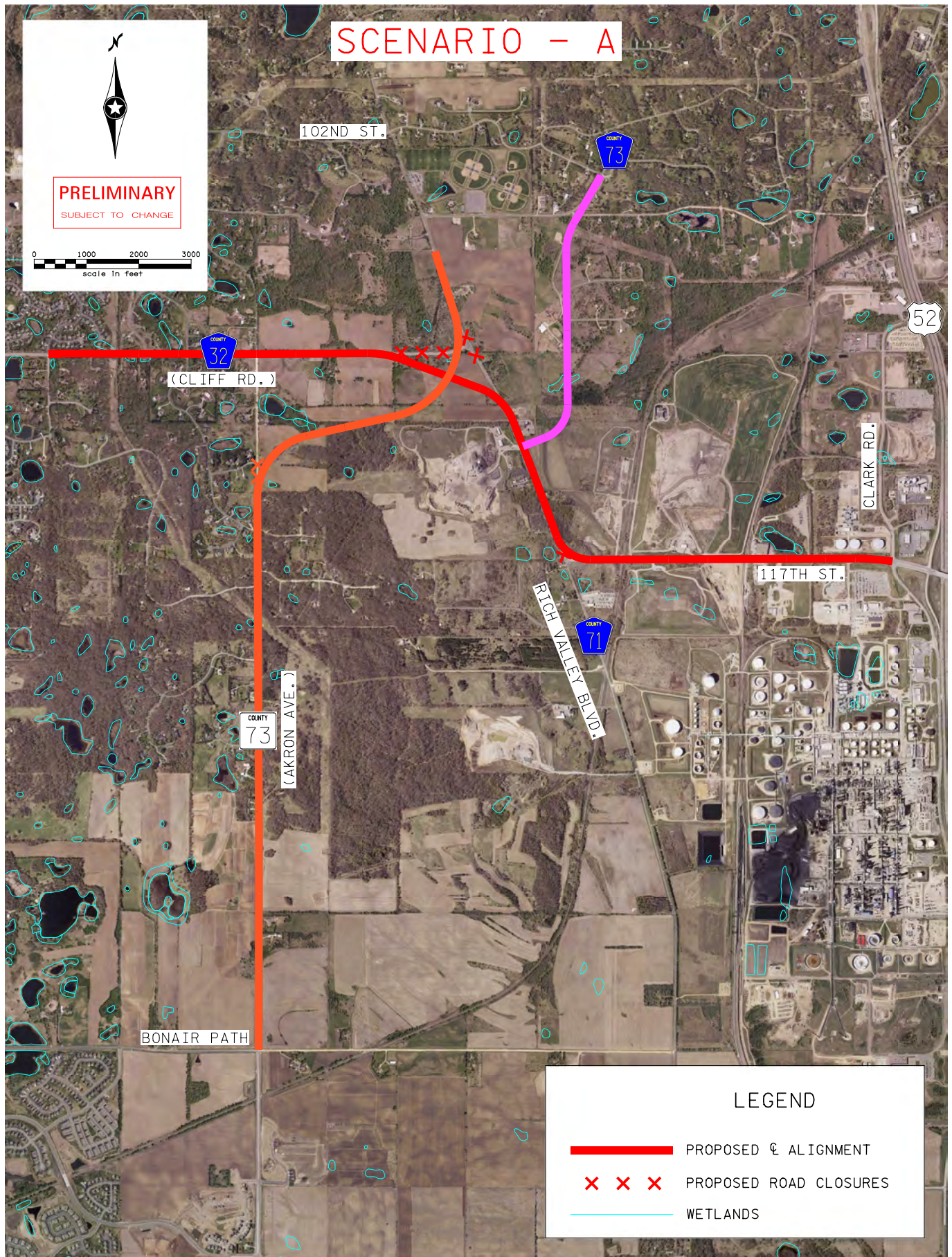


Figure 15 Scenario B

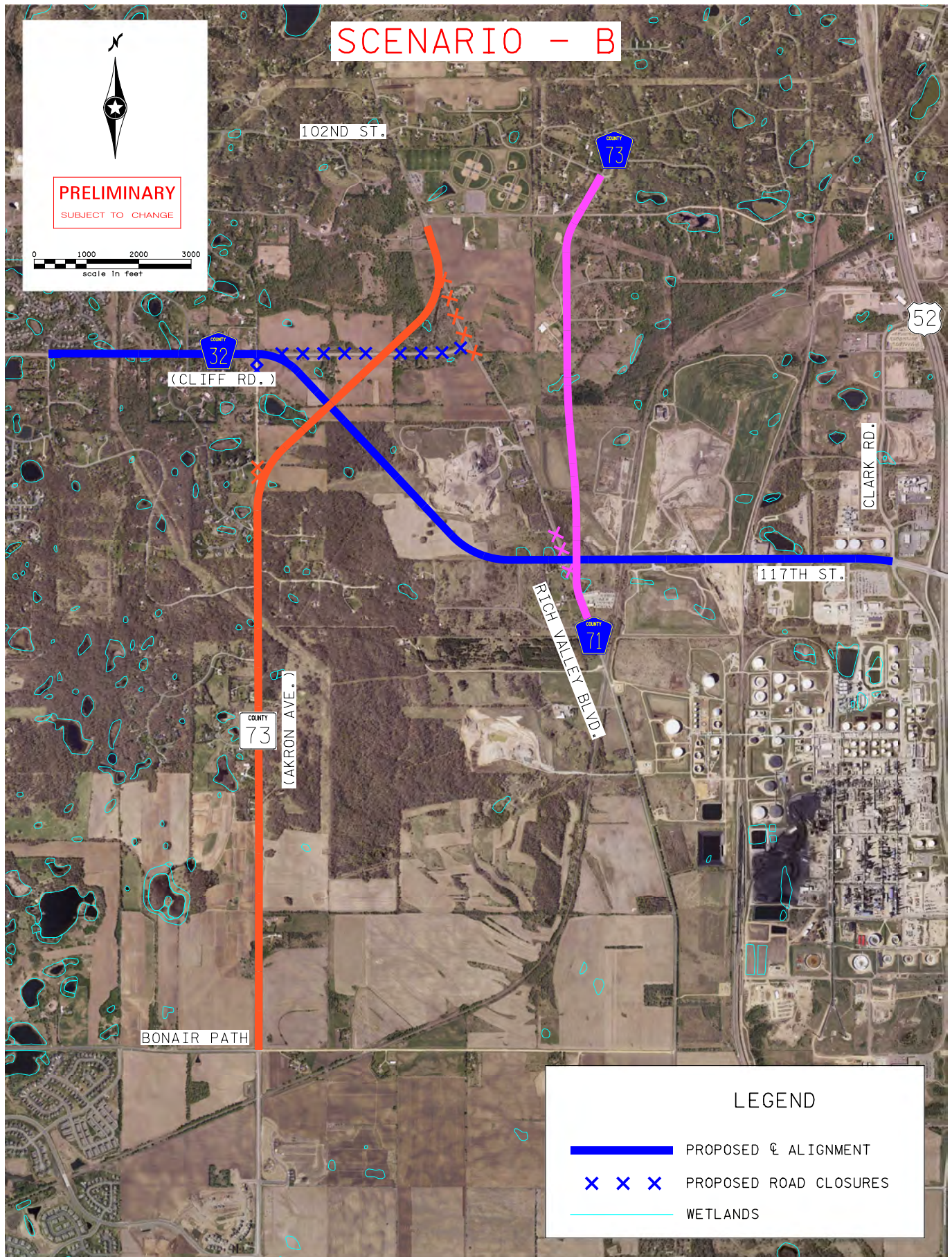


Figure 16 Scenario C

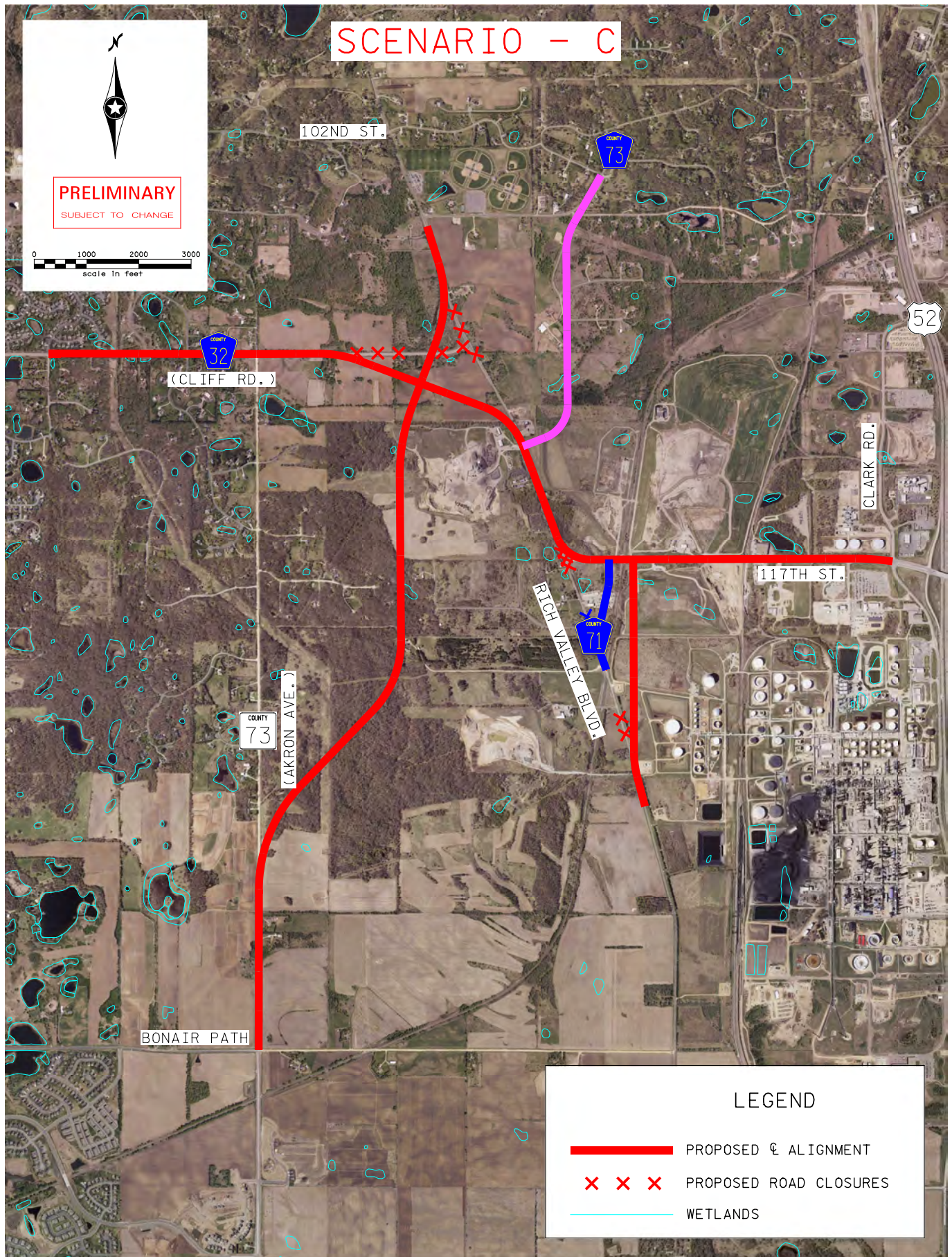


Figure 17 Scenario D

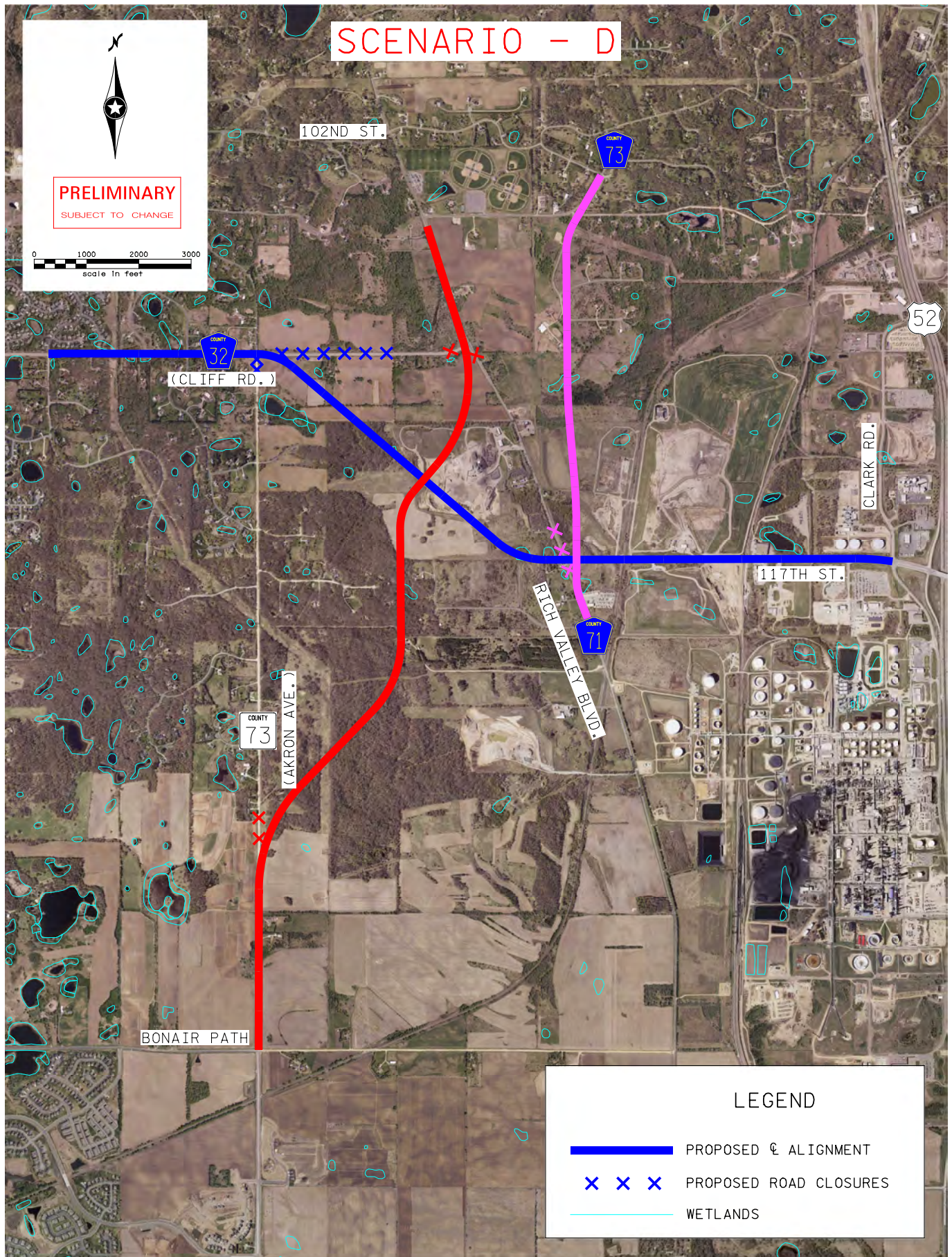


Figure 18 Scenario E

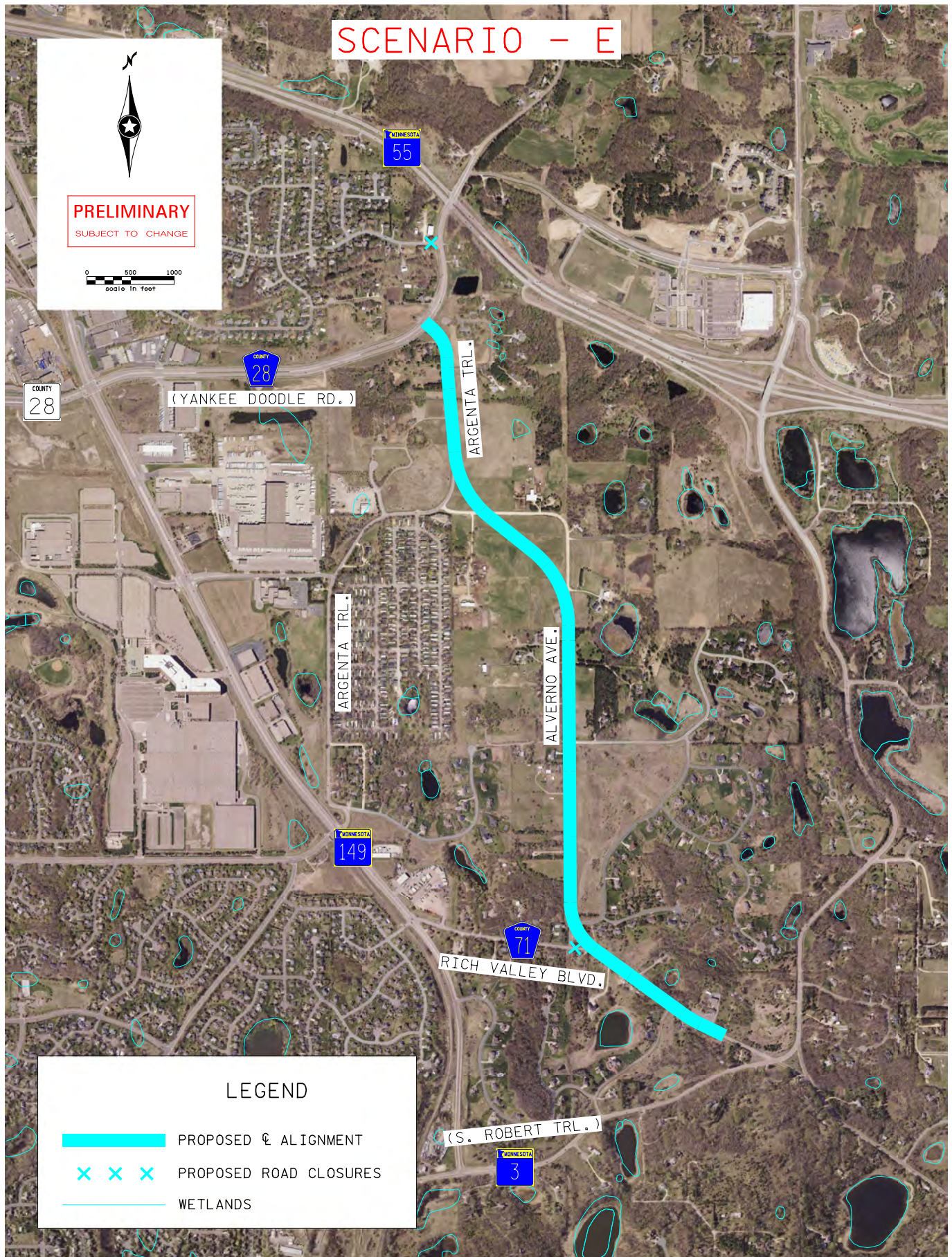
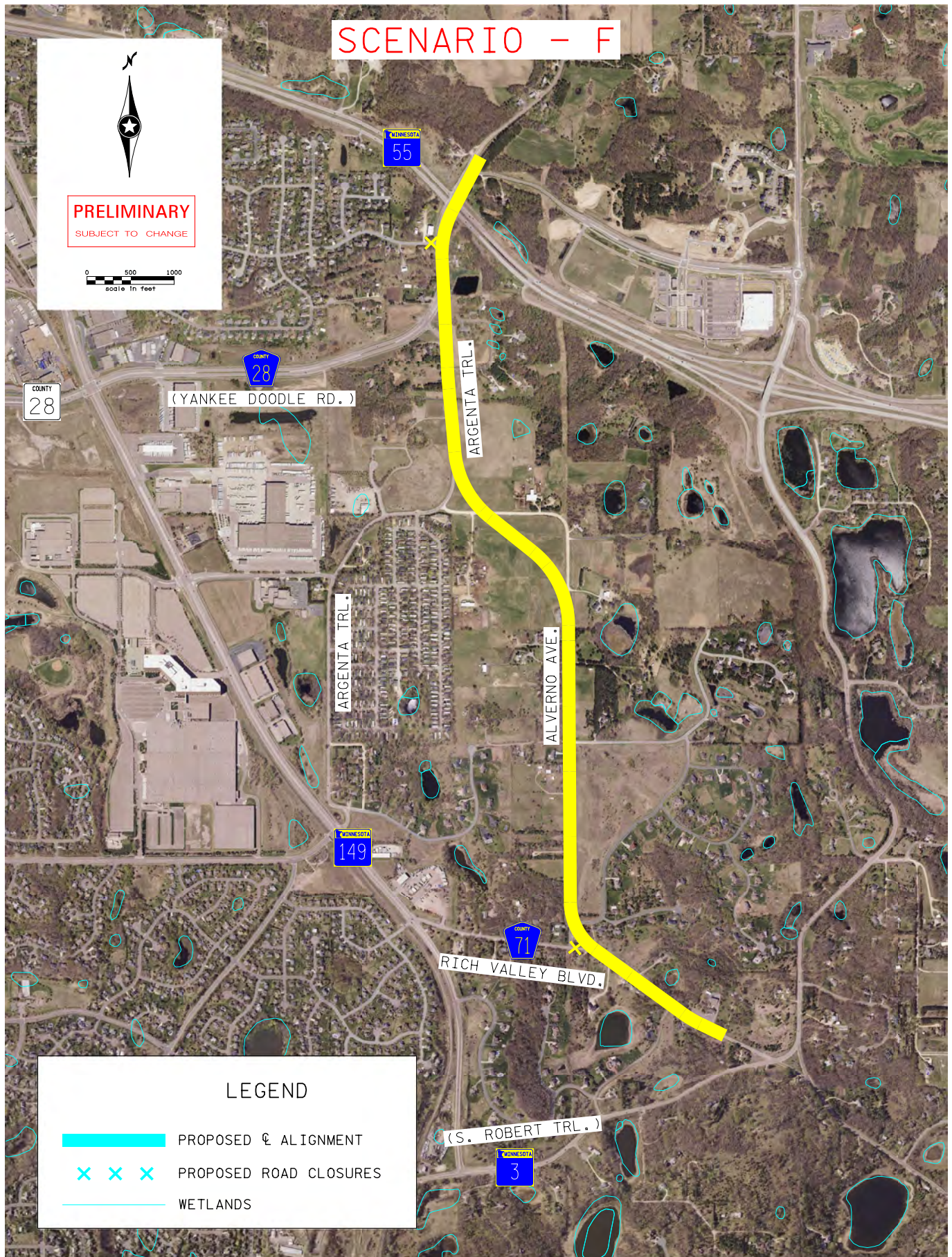


Figure 19 Scenario F



Initial Evaluation

- The project management team (PMT) determined that Scenarios A – D needed further evaluation to arrive upon a select system scenario for future consideration and implementation. Scenario E was selected and will be planned for the long term alignment of Alverno Avenue as a Major Collector, consistent with how it is depicted here.
- The evaluation process was an iterative process that began with the development of evaluation criteria. Considering evaluation criteria in advance of the evaluation process ensures the process is fair and meets the study goals, and overall purpose and need.
- The study goals, identified transportation deficiencies, and input from the PMT were used to establish the initial evaluation criteria. Three categories were identified: Safety/Mobility, Social/Environmental Impacts, and Other Considerations.
- Figure 21 presents the evaluation in a matrix format, overall ratings for the category, and supporting documentation of why the rating level was selected. This initial evaluation was presented to, reviewed by, and modified with the PMT prior to presenting it to the general public at the second of three open houses - January 14, 2015.

Scenario Refinement

- Based on the initial evaluation, feedback received from citizens through the public meetings and correspondence, and PMT input Scenarios A and C were eliminated as they failed to meet the safety and mobility criteria:
 - Scenario A - Required an intersection within a high speed curve; did not meet design speed through horizontal curves
 - Scenario C - Included an intersection closely spaced to horizontal curve; did not meet design speed through horizontal curves
- To continue the planning process, Scenarios B and D were evaluated in more detail and refinements were made to address project needs and considerable stakeholder feedback.
- Changes were made to each scenario in an attempt to minimize impacts. However, minimizing impacts to one element (residences) may increase impacts to another element (commercial property). As shown in Figures 22 and 23, similar changes to both scenarios are:
 - The County Highway 71/County Road 73 alignment alternative was removed because of the small transportation benefit together with the commercial property impacts.
 - The east-west County Highway 32 alignment was shifted west slightly to reduce overlap with the Bituminous Roadways mining area together with improving the County 73 intersection.
 - County Highway 71 was realigned as a T-intersection with 117th Street to remove skew.

Figure 21 Initial Alternatives Evaluation

ALTERNATIVES EVALUATION - PRESENTED AT JANUARY 2015 OPEN HOUSE #2

Preliminary Scenario Evaluation Matrix					
Project Goals	Criteria	Scenario A	Scenario B	Scenario C	Scenario D
Safety & Mobility	Provide 90 degree intersection and tangent alignment at CSAH 71 and 117th St	Requires intersection at high speed curve	Provides skewed intersection	Provides new CSAH 71 alignment with 90 degree intersection at 117th St	Provides skewed intersection
	Provide 90 degree intersection and tangent alignment at CSAH 32 and CR 73	<ul style="list-style-type: none"> • Intersection not on tangent alignment • Provides skewed intersection 	<ul style="list-style-type: none"> • Intersection on tangent alignment • Intersection at 90 degrees 	<ul style="list-style-type: none"> • Intersection on tangent alignment • Intersection at 90 degrees 	<ul style="list-style-type: none"> • Intersection on tangent alignment • Intersection at 90 degrees
	Horizontal roadway alignments meet 55 MPH design speeds	<ul style="list-style-type: none"> • 45 MPH curve at CSAH 71 and 117th St • 45 MPH curve along new CSAH 73/ Barnes Ave alignment 	All alignments meet 55 MPH design speeds	<ul style="list-style-type: none"> • 45 MPH curve at CSAH 71 and 117th St • 45 MPH curve along new CSAH 73/ Barnes Ave alignment 	All alignments meet 55 MPH design speeds
	Minimize common sections along CSAH 32 and CSAH 71	<ul style="list-style-type: none"> Requires common section of CSAH 32 and CSAH 71 • Increased turning movements • Greater traffic volume on short segment • Additional major intersection (Compared to B and D) 	Does not require common section of CSAH 32 and CSAH 71	<ul style="list-style-type: none"> Requires common section of CSAH 32 and CSAH 71 • Increased turning movements • Greater traffic volume on short segment • Additional major intersection (Compared to B and D) 	Does not require common section of CSAH 32 and CSAH 71
Impacts & Cost	Minimize wetland impacts	0.8 Acres Impacted Limits impacts primarily to seasonally flooded wetlands	1.8 Acres Impacted Impacts to forested/shrub wetlands	1.1 Acres Impacted Limits impacts primarily to seasonally flooded wetlands	2.4 Acres Impacted Limits impacts primarily to seasonally flooded basin
	Minimize woodland impacts	10.2 Acres Impacted Limits impacts to heavily wooded areas	13.7 Acres Impacted Limits impacts to heavily wooded areas	20.7 Acres Impacted Bisects heavily wooded area	25.8 Acres Impacted Bisects heavily wooded area
	Minimize impacts to non-residential property	17 Impacted Parcels (63.7 acres) Avoids parcel severance, primarily utilizes Flint Hills parcels	16 Impacted Parcels (60.5 acres) Results in parcel severance and diminishes functionality at Bituminous Roadways site, avoids desirable mining land	21 Impacted Parcels (90.9 acres) Primarily utilizes Flint Hills parcels, resulting in parcel severance	21 Impacted Parcels (78.1 acres) Results in parcel severance and diminishes functionality at Bituminous Roadways site, impacts desirable mining land
	Minimize impacts to residential property	24 Impacted Parcels (11.2 acres) 1 Total Acquisition	23 Impacted Parcels (10.8 acres) 0 Total Acquisitions	3 Impacted Parcel (2.4 acres) 1 Total Acquisition	4 Impacted Parcels (2.8 acres) 1 Total Acquisition
	Minimize utility impacts	<ul style="list-style-type: none"> Northern Natural Gas R/W Acquisition along CR 73 Xcel Transmission 6 conflicts (Low Voltage Line) Buried Pipeline 8 crossings 1.32 miles of parallel pipe along CR 73 	<ul style="list-style-type: none"> Northern Natural Gas R/W Acquisition along CR 73 Xcel Transmission 4 conflicts (Low Voltage Line) Buried Pipeline 7 crossings 1.28 miles of parallel pipe along CR 73 0.30 miles of parallel pipe along CSAH 32 	<ul style="list-style-type: none"> Xcel Transmission 7 conflicts (Low Voltage Line) 1 conflict (High Voltage Line) Buried Pipeline 10 crossings 0.52 miles of parallel pipe along CR 73 	<ul style="list-style-type: none"> Xcel Transmission 5 conflicts (Low Voltage Line) 1 conflict (High Voltage Line) Buried Pipeline 8 crossings 0.23 miles of parallel pipe along CR 73 0.16 miles of parallel pipe along CSAH 32

This matrix does not reflect any Scenario updates or additional information prepared following Open House #2

Figure 22 Scenario B - Refinements

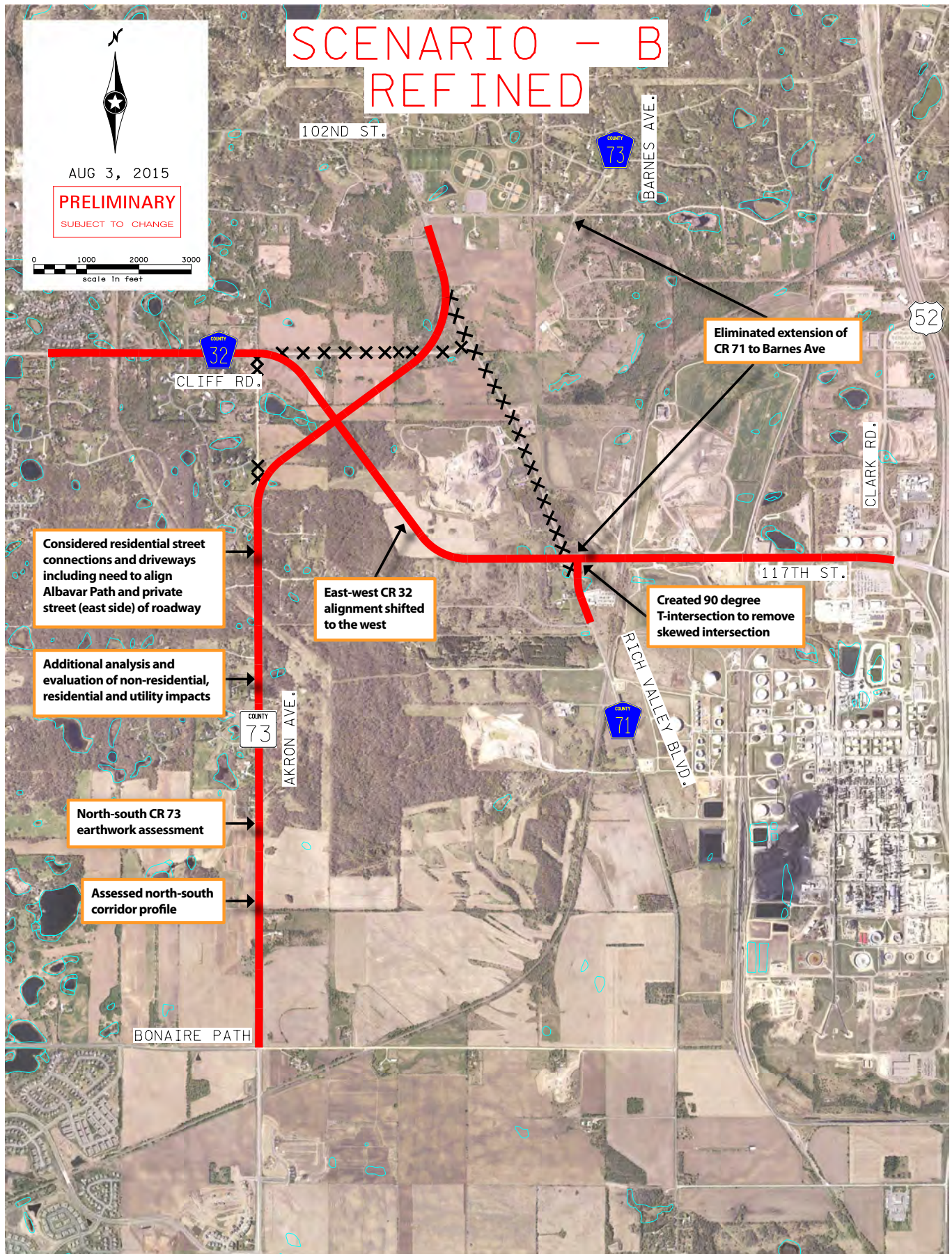
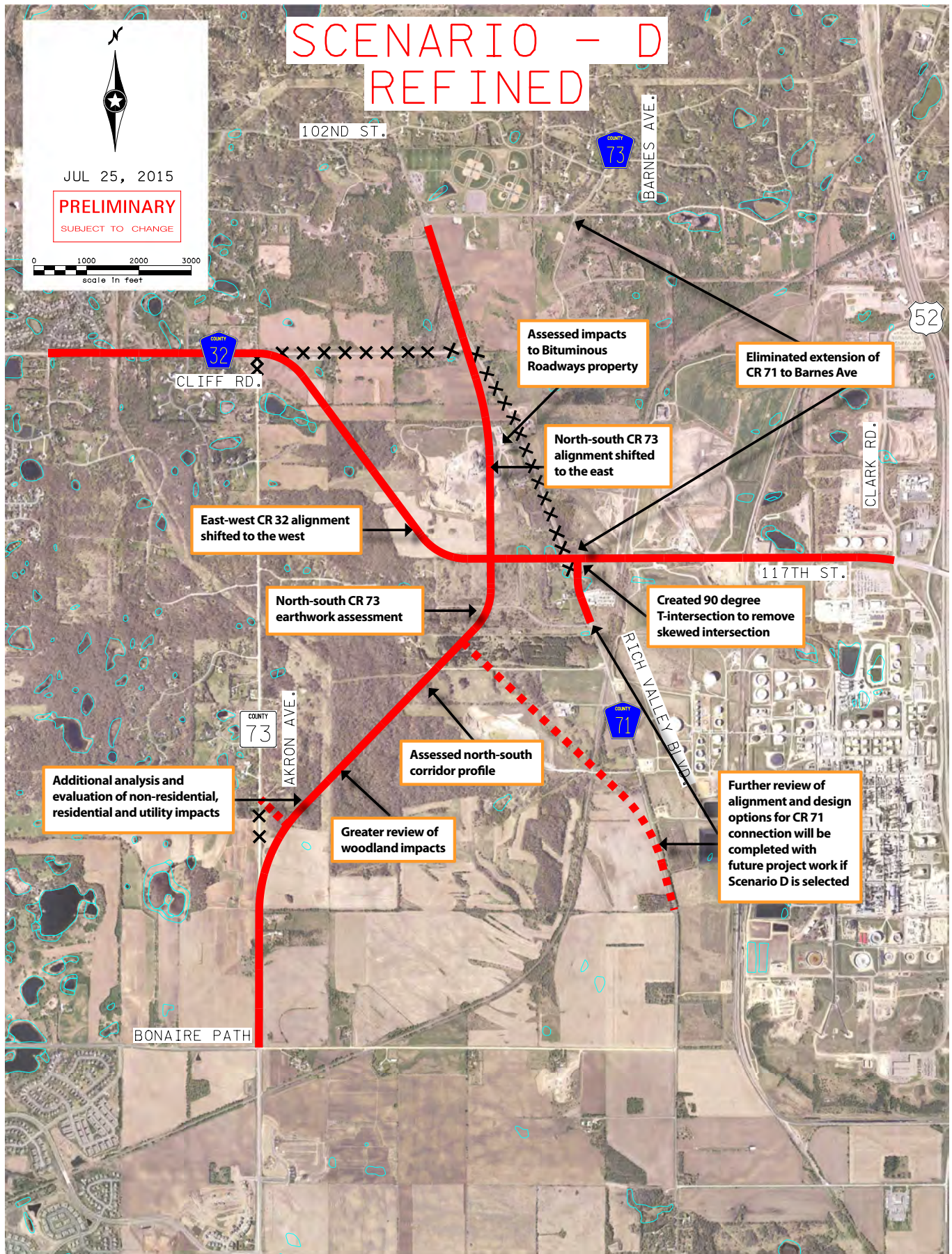


Figure 23 Scenario D - Refinements



- Figure 23 shows that the north-south County Road 73 alignment was shifted much further east to reduce impacts to the residential neighborhood east of existing County Road 73. However, this refinement has significant impacts to the Bituminous Roadways property.
- As shown in Figure 24, other refinement options were considered by the PMT for this north-south alignment, while still maintaining the transportation utility of this route to address future travel demand increases. Based on discussions with representatives from Bituminous Roadways, the alignment through this property was the most effective solution that also addresses the goals and objectives of the study. Other alignment options exist, but include ancillary impacts as well (e.g., park impacts, Shafer Contracting property impacts, etc.).
- Through stakeholder engagement, other specific north-south alignments were recommended by local residents. Resident recommendations were to shift the north-south alignment of County Road 73 further east from the one represented in Figure 23, in an attempt to minimize impacts even more. While this alignment reduces woodland impacts and has reduced short term costs, it lacks proper roadway design and continues to impact the Bituminous Roadways site and the Rosemount Recreational Fields, while increasing circuitry within the transportation system. Modifications were made to this alignment in an attempt to refine it so that it met certain design criteria. Figure 25 presents the alignment refinements, which are still circuitous, have unknown impacts to the Shafer Contracting mining site and have increased costs over other alternatives.

Secondary Evaluation

- A secondary evaluation was conducted following the refinements that were made to Scenarios B and D. This secondary evaluation was only conducted on the north-south County Road 73 alignment component because this element is the most notable and differentiating component of each scenario.
- Figure 26 presents the secondary evaluation and its results relative to criteria. The last step in determining which scenario is most appropriate for future planning is to understand the potential costs and implementation options.

Figure 24 Scenario D - Refinement Considerations

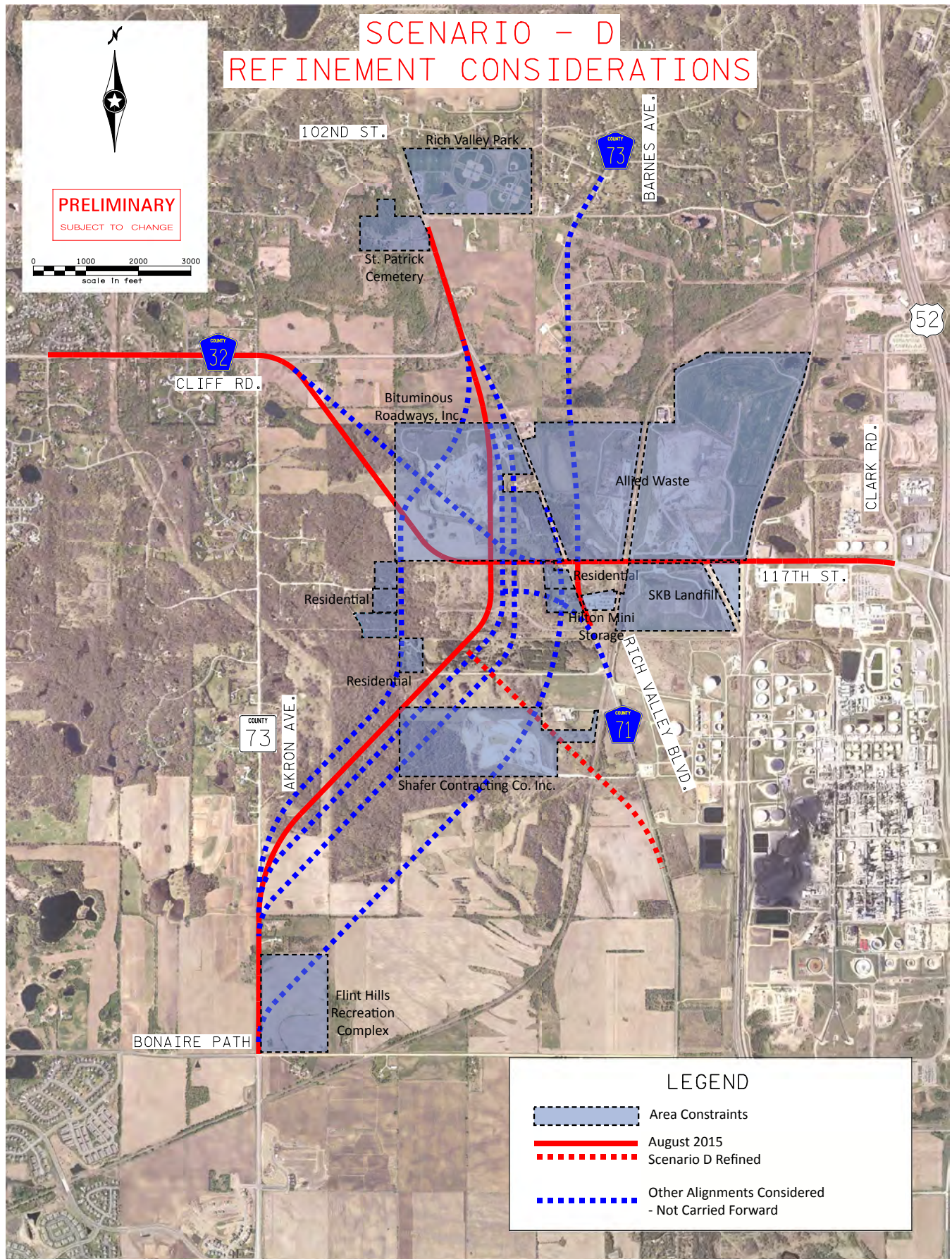


Figure 25 Scenario D - Resident Refinements

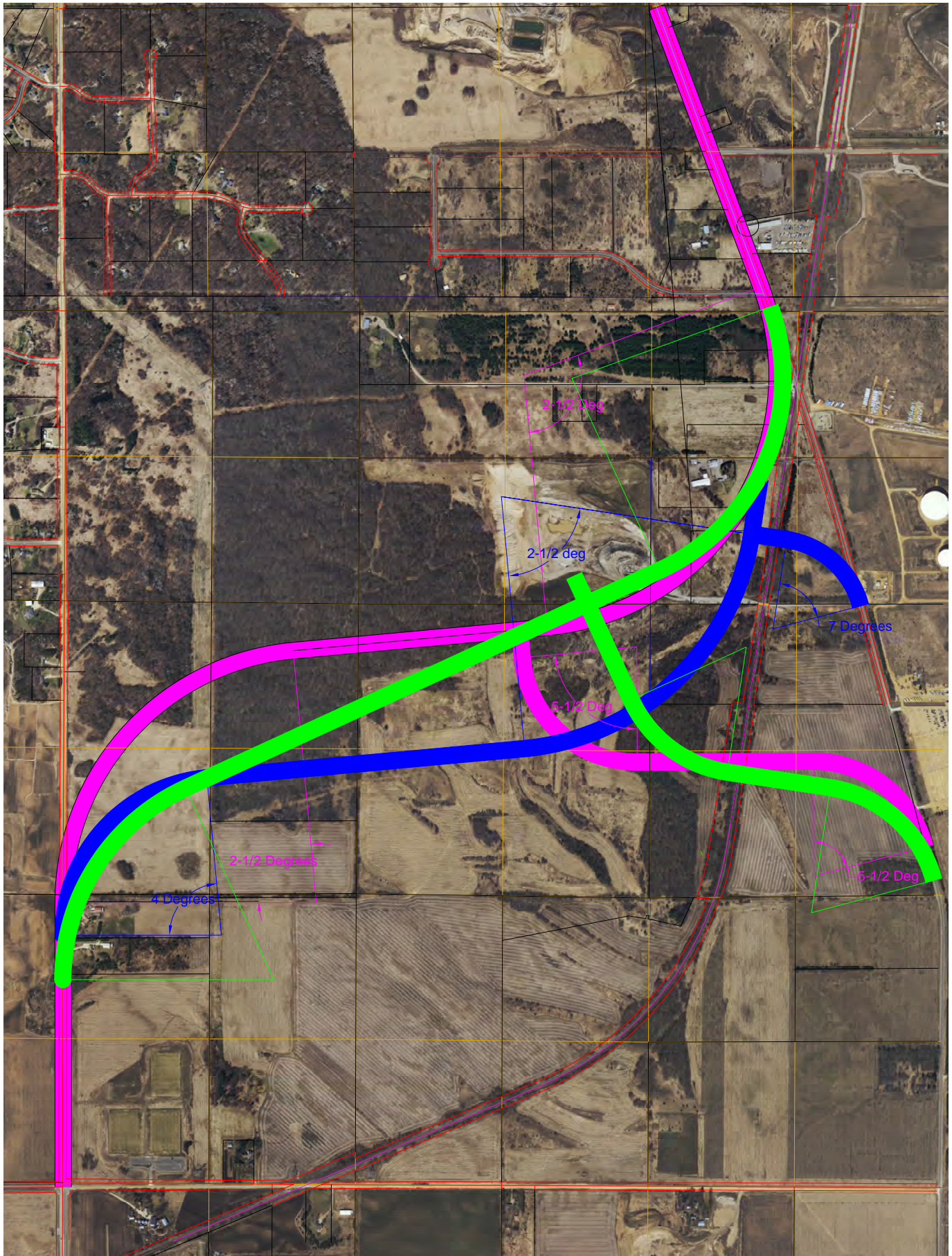










Figure 26 Secondary Alternatives Evaluation - County Road 73 Only

Arterial Connector Study - Pine Bend Area Evaluation Matrix Comparison for Scenarios B and D (North-South CR 73 Only)

updated: 9/15/2015

Project Goals	Criteria	Scenario B - Refined	Scenario D - Refined
Safety & Mobility	 Minimize Horizontal Curves	◆ 2 Curves	◆ 3 Curves
	 Access Management Considerations*	◆ 6 Public/16 Private Access Points - 118th Street spacing to Albavar Path non-compliant	◆ 2 Public/7 Private Access Points
Social / Environmental Impacts	 Minimize Wetland Impacts	◆ 0.4 Acres Forested/Shrub Wetlands High Quality/Value	◆ 0 Acres
	 Minimize Woodland Impacts	◆ ~12 Acres Mature Oaks	>12 Acres ◆ Fragment / Degrade Heavily Wooded Mature Oak Area and Severs Habitat Continuity
	 Minimize Impacts to Non-residential Property	◆ 31.5 Acres Northern Natural Gas Co / Flint Hills	◆ 49.3 Acres Bituminous Roadways / Flint Hills
	 Minimize Impacts to Residential Property	◆ 6.7 Acres 17 parcels / 3 Potential Total Acquisitions	◆ 1.2 Acres 3 parcels / 1 Potential Total Acquisition
Other Considerations	 Minimize Utility Impacts**	◆ 9 Crossings	◆ 10 Crossings
		◆ 1.1 miles within right-of-way (Including Koch Jet Fuel Pipeline and MN Energy Resources Corporation)	◆ 0.1 miles within right-of-way (Including MN Energy Resources Corporation)
	 Minimize Earthwork/Construction Limit Impacts	◆ 850,000 cubic yards	◆ 1,250,000 cubic yards -Cost Differential Approx. +\$4.0-\$9.0M (Includes restoration of Bituminous Roadways land)

NOTES:

- * Dakota County Access Management Guidelines:
 - As access along the corridor increases, safety decreases
 - Undivided highway, >45 MPH, >1,500 ADT - full intersection movements a minimum spacing of 1/4 miles is required
 - Private street or driveway access will be reviewed through projects to consolidate/relocate or retain access as applicable to ensure safe ingress/egress throughout the system.
- ** Utility Impacts Affect the Following Companies:
 - Enterprise Products Operating, LLC
 - Magellan Pipeline Company, L.P.
 - Koch Pipeline Company, L.P.
 - Minnesota Energy Resources Corporation
 - Excel Energy

Implementation

The projected year 2030 AADT's presented herein are based on regional land use, growth, and development assumptions given local city comprehensive plans. The actual rate of increase in roadway volumes from existing conditions toward the future will be dependent on the rate of development or redevelopment in the region. Supplemental growth information associated with the proposed UMore Park development was also reviewed as part of this Study.

In the short term, County Road 73 (Akron Avenue) **DOES NOT** need to become a four-lane roadway. However, year 2030 projections indicate that the need for four lanes will become apparent in the future. This means that improvements for the study area will need to be phased over time. Long-term improvements for a four-lane divided highway will **ONLY** be implemented when development occurs and traffic volumes indicate the need for roadway expansion. Therefore, implementation phasing is possible with varying options depending on the scenario being considered.

There is a short-term need for County Road 73 (Akron Avenue) between Bonaire Path and County Highway 32 to become a two-lane roadway with turn lanes. This is based on a number of factors:

- Current traffic volumes along the gravel segment of CR 73 are over 400 Average Daily Traffic. Many studies have been done across the country that indicate it makes sense to consider paving gravel roads at 200-400 ADT. This is the highest volume gravel roadway in Dakota County and the only gravel roadway within a municipality in the County.
- The gravel segment of CR 73 experienced 10 reported crashes from 2005-2014. This equates to a crash rate of 2.46 and a severity rate of 3.20, compared to statewide two-lane rural, paved, low-volume roadway averages of 0.68 and 1.18 respectively.
- Dakota County receives the most complaints regarding roadway condition and dust along this segment of CR 73 when compared with all other gravel county roadways.
- Traffic volumes along CR 73 between County Highway 42 and Bonaire Path are currently 2500 ADT. This suggests that some motorists are avoiding the gravel segment of CR 73 by using Bonaire Path to Trunk Highway 3. The parallel segment of Trunk Highway 3 currently carries over 13,000 ADT, which is nearing the capacity of a two-lane roadway. This exposes area traffic to increased delays and crashes.

As part of assessing the alternative system plans, it is important to understand how they could be implemented over time. This therefore became a part of comparing the system plans to each other. Costs for implementation also were considered. It is important to note that implementation costs referenced here were assembled to compare alternatives to each other, and not intended to reflect actual costs for each approach. Cost estimates for programming purposes will be developed through the design process for each individual improvement. Ranges of costs for comparison reflect potential risks due to unknowns.

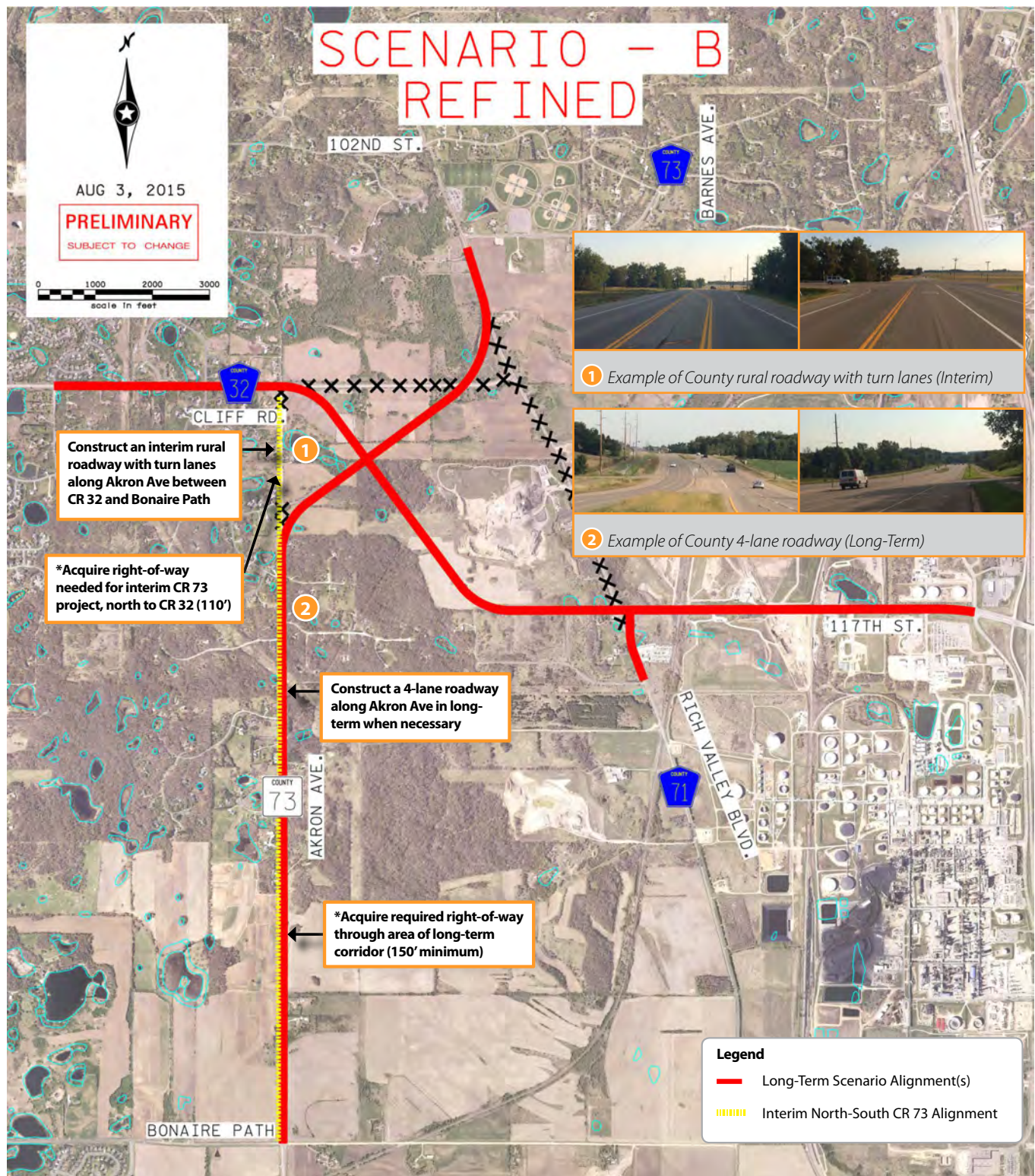
- Implementation of short-term (interim) improvements along County Road 73 (Akron Avenue) were considered, which included:
 - Two-lane roadway, left turns, shoulder/right-turn lane, and ditch adjacent to the roadway.
- This short-term improvement project could be implemented with either Scenario B or D, maintaining the long-term plan for future implementation when development indicates its need. In the long-term, Akron Avenue would then be turned back to the cities of Inver Grove Heights and Rosemount. This could be taken into account when designing the short-term improvements.
- Figure 27 presents the potential Scenario B short-term and long-term improvements for County Road 73 together with other system improvements (east-west County Highway 32). Costs for only the implementation of County Road 73 are provided for comparison purposes.
 - Short-term (interim) cost is estimated \$15.5M to \$16M
 - Long-term cost is estimated \$21M to \$23M
 - Overall cost for Scenario B is estimated \$36.5M to \$39M
- Figure 28 presents the first option for potential Scenario D short-term and long-term improvements for County Road 73 together with other system improvements (east-west County Highway 32).
- Scenario D has two options to implement: option 1 – County Road 73 short term on existing alignment; option 2 – County Road 73 short term on new alignment. As shown in Figure 28, costs for Scenario D - option 1 and only the implementation of County Road 73 are provided for comparison purposes.
 - Short-term (interim) cost is estimated \$13M to \$13.5M
 - Long-term cost is estimated \$26M to \$36M
 - Overall cost for Scenario B is estimated \$39M to \$49.5M
- As shown in Figure 29, costs for Scenario D - option 2 and only the implementation of County Road 73 are provided for comparison purposes.
 - Short-term (interim) cost is estimated \$28.5M to \$39.5M
 - Long-term cost is estimated \$18M to \$21.5M
 - Overall cost for Scenario B is estimated \$46.5M to \$61M
- The approach is that Scenario D would be implemented in the long term after Bituminous Roadways has mined the high quality aggregate from the area they currently have a mining permit for (25+ years).

Based on this assessment, the PMT has concluded that Scenario D Refined is the most cost effective approach for developing a transportation system plan that meets the study objectives and overall needs of the area in the long term. With this long term vision in mind, short term

improvements to County Road 73 should be considered, as discussed above. Through the study process, a number of area residents have expressed concerns with reconstructing County Road 73 to a paved roadway. These concerns include increased volumes, noise, speeds, and impacts to surrounding properties, coordination with in place utilities (including the Koch Jet Fuel pipeline), tree removal, and project costs. Members of the PMT have met with this neighborhood on a number of occasions to discuss the study and potential implications of the study outcomes.

From a technical standpoint, the information gathered as part of the study process is clear that County Road 73 should be reconstructed and paved. However, considering the concerns raised, it is prudent for the County and cities to consider proceeding with a design for County Road 73 beyond the planning level work that can be done at the study level. This design work will provide greater clarity on how roadway improvements could be designed to minimize impacts and costs. This step therefore has been included with the study recommendations.

Figure 27 Scenario B - Refined Implementation Plan/Costs

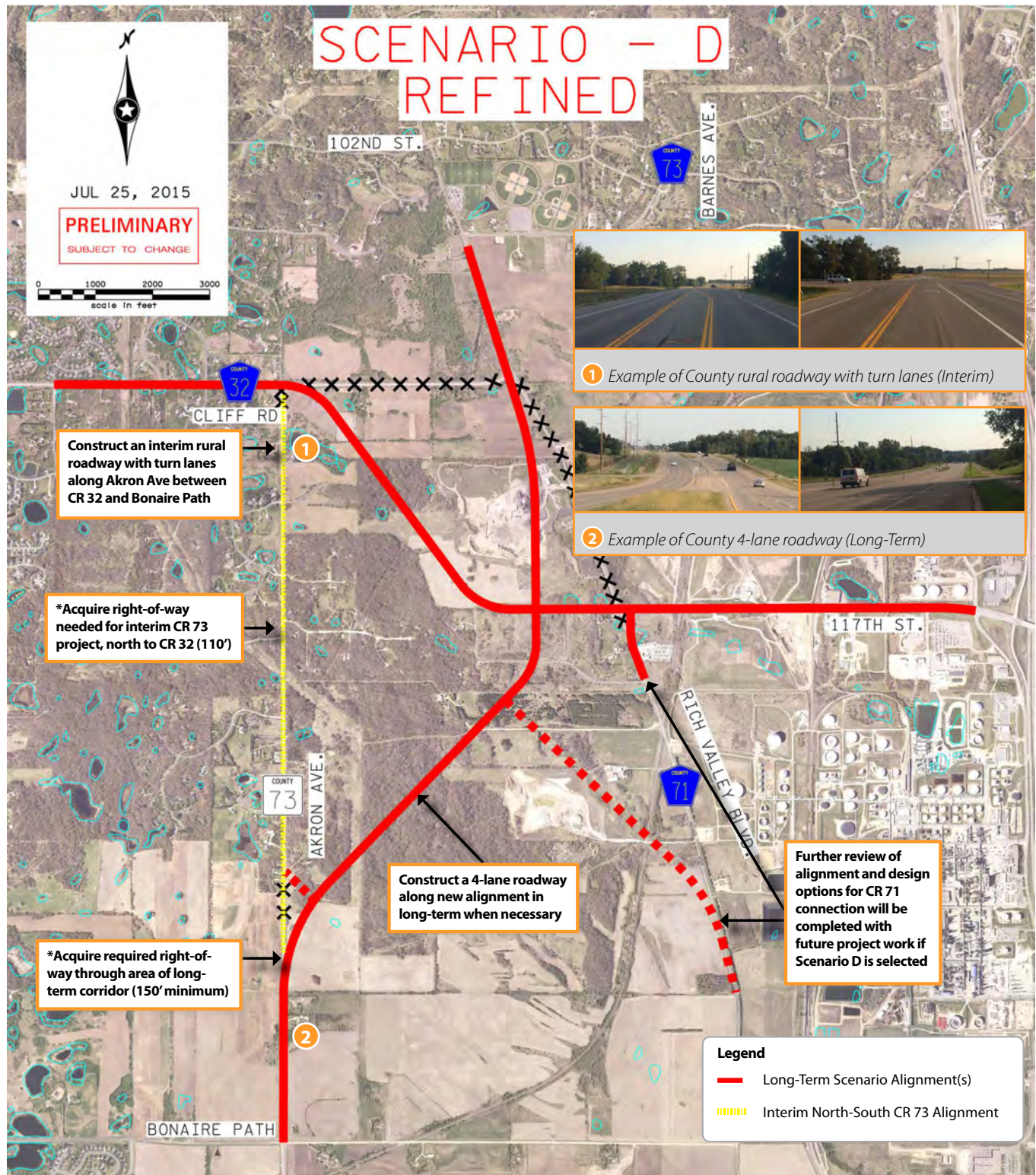


Cost Considerations	Interim CR 73	Long-Term CR 73
Roadway Construction	\$11 M	\$21 M
Additional Earthwork	No additional earthwork cost	No additional earthwork cost
Right-of-Way*	\$3.5 M - \$4 M	\$0 M - \$2 M additional
Interim Intersection Improvements	\$1 M	N/A
Total:	\$15.5 M - \$16 M	\$21 M - \$23 M

IMPLEMENTATION PHASING OPTION 1

TOTAL PHASING IMPLEMENTATION COSTS
\$36.5 M - \$39 M

Figure 28 Scenario D - Refined Option 1 Implementation Plan/Costs

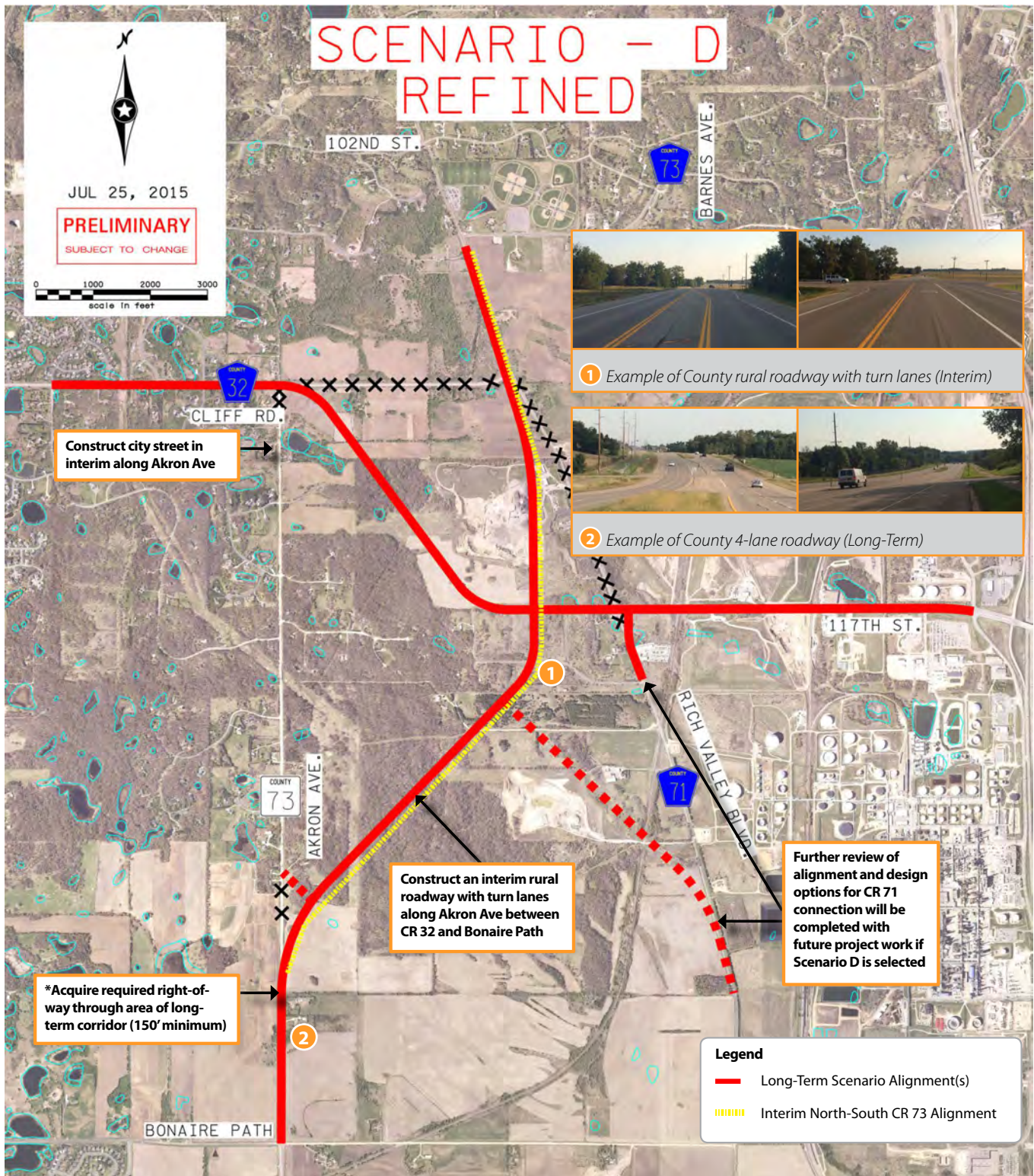


Cost Considerations	Interim CR 73	Long-Term CR 73
Roadway Construction	\$11 M	\$18 M - \$21.5 M
Additional Earthwork	No additional earthwork cost	\$2 M - \$4 M additional
Right-of-Way*	\$1 M - \$1.5 M	\$1 M - \$5.5 M additional
Interim Intersection Improvements	\$1 M	N/A
Gravel Mining - Rock	N/A	Assumed complete
Gravel Mining - Grade	N/A	\$5 M reclamation
Total:	\$13 M - \$13.5 M	\$26 M - \$36 M

IMPLEMENTATION PHASING OPTION 1

TOTAL PHASING IMPLEMENTATION COSTS
\$39 M - \$49.5 M

Figure 29 Scenario D - Refined Option 2 Implementation Plan/Costs



Cost Considerations	Interim CR 73	Long-Term CR 73
Roadway Construction	\$17 M**	\$18 M - \$21.5 M
Additional Earthwork	\$2 M - \$4 M additional	No additional earthwork cost
Right-of-Way*	\$2.5 M - \$7.5 M	Acquired under interim
Interim Intersection Improvements	\$1 M	N/A
Gravel Mining - Rock	\$4 M - \$8 M	Purchased under interim
Gravel Mining - Grade	\$2 M	Completed under interim
Total:	\$28.5 M - \$39.5 M	\$18 M - \$21.5 M

IMPLEMENTATION PHASING OPTION 2

TOTAL PHASING IMPLEMENTATION COSTS
\$46.5 M - \$61 M

**Includes cost to build Akron Ave as a city street (\$3.5 M)

5.0 Recommendations and Next Steps

Recommendations

1. Complete a 30% design for improving existing County Road 73 (Akron Avenue) to a two-lane paved roadway from Bonaire Path to Cliff Road.

WHY: A 30% design will provide clarity on the impacts to adjacent property owners and a better estimate of costs for reconstructing and paving Akron Avenue. This information will inform the County, cities, and adjacent property owners in making a decision on whether to move forward with a project on Akron Avenue. These limited improvements address short to intermediate term needs, and provide a collector type roadway that supports the long-term system vision.

2. Plan for the long-term improvement of County Road 73 as presented in Scenario D-Refined (not along existing Akron Avenue) if and when four-lane improvements are needed. This includes:
 - a. A general alignment for County Road 73. The exact alignment will be determined when the improvement is needed.
 - b. A four-lane design from County Highway 42 to the future alignment of County Highway 32, and a two-lane design north of County Highway 32, based on actual traffic demand.
 - c. A right-of-way corridor of 150 feet south of Bonaire Path where urban development is planned, and a corridor of 180 feet through the refinery buffer land. 180 feet will allow for ditch drainage and infiltration of storm water runoff. It also reduces future construction costs by reducing curb and gutter, storm sewer piping, and ponding.
 - d. Dakota County turning back existing Akron Avenue to the cities of Rosemount and Inver Grove Heights from its intersection with a realigned County Road 73 to County Highway 32. The City of Inver Grove Heights can decide at that time whether to sever its connection with County Highway 32 to eliminate cut-through traffic.

WHY: Realigning County Road 73 allows for a more efficient and direct connection to County Highway 71 and Trunk Highway 3. It also ensures that in the long term, the segment of Akron Avenue adjacent to the existing rural residential neighborhoods in IGH will not become four lanes in the future. Traffic demand does not support the need for a four-lane facility at this time, and it's not feasible to realign now because of the planned aggregate mining, but adopting this plan now solidifies an approach for the future.

3. Plan for the long-term improvement of County Highway 32 as presented in *Scenario D-Refined*. This includes:
 - a. A general alignment for County Highway 32. The exact alignment will be determined when the improvement is needed.
 - b. A right-of-way corridor of 150 - 180 feet through the refinery buffer land. 180 feet will allow for ditch drainage and infiltration of storm water runoff. It reduces future construction costs by reducing curb and gutter, storm sewer piping, and ponding.
 - c. A four-lane design from Trunk Highway 3 to Trunk Highway 52, including improvements to existing 117th Street to add lanes and manage access.

WHY: Realigning County Highway 32 allows for a more efficient and direct connection to 117th Street and Trunk Highway 52. It's not feasible to realign now because of the planned aggregate mining, but adopting this plan now solidifies a plan for the future that works with the planned realignment of County Road 73.

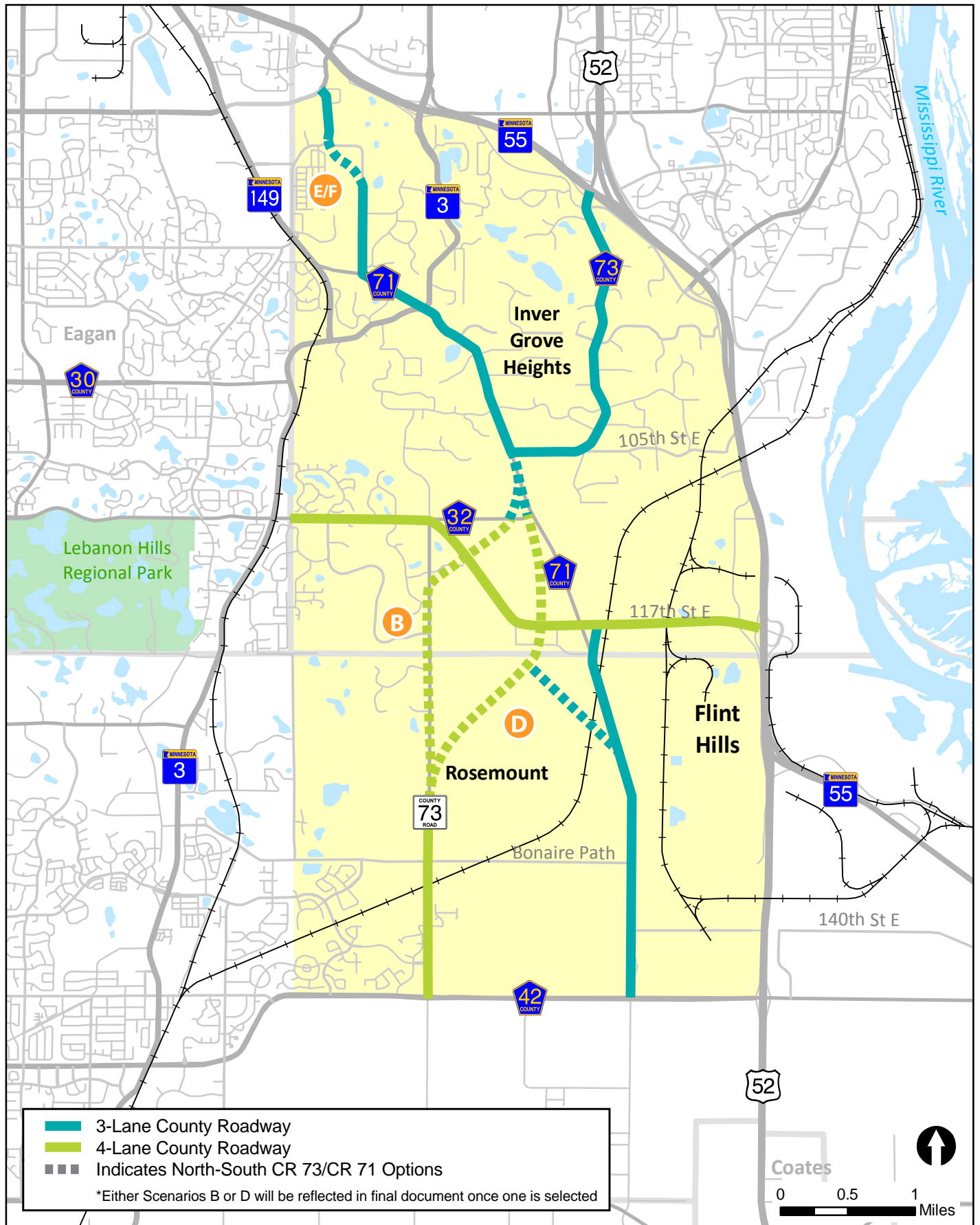
4. Assess the long-term alignment for County Highway 71 at the time County Road 73 is realigned, as presented in *Scenario D-Refined*.

Next Steps

1. The 30% design for County Road 73 should consider the following:
 - a. A Two-lane design with paved shoulders for safety and to accommodate bikers and walkers. Every effort should be made to minimize impacts to surrounding properties while still meeting standards and maximizing safety. Curb and gutter and retaining walls should be considered to minimize impacts and permanent right-of-way needs.
 - b. Cul-de-sac 114th Street to remove its intersection with Akron and eliminate the need for turn lanes.
 - c. Inclusion of left turn lanes, and consideration of the need for right turn lanes, to reduce the risk of crashes at the following locations along Akron Avenue:
 - Alameda Avenue/Private Road (known as 116th Street) serving 11618 to 11636 Akron Avenue (east of Akron)
 - Private Road (known as 118th Street) serving 11760 to 11990 Akron Avenue (east of Akron Avenue)
 - Albavar Path
 - d. Inclusion of bypass lanes, and consideration of the need for right turn lanes, to reduce the risk of crashes at the following locations along Akron Avenue:
 - 121st Street
 - 124th Court

- e. Inclusion of left and right-turn lanes on County Highway 32 (Cliff Road) at its intersection with County Road 73.
 - f. Identification of right-of-way needs through the design. It is intended that right-of-way be the minimum necessary to support the roadway's structural and operational elements. Additional right-of-way width may be considered for a few parcels just north of Bonaire Path where the long-term alignment will follow existing Akron.
2. Work with Flint Hills to develop and adopt a Memorandum of Understanding between the County and Flint Hills that indicates a shared vision for a future realignment of County Road 73 when traffic conditions dictate. The MOU should indicate a willingness by Flint Hills to provide the land needed at fair market value or less.
 3. Monitor intersections periodically to assess operation and improvement needs. Together with the existing transportation system, improving the existing alignment of County Road 73 (Akron Avenue) to a paved roadway accommodates up to 50 percent of the future growth in traffic volumes before improvements (in addition to turn lanes) are needed at County Highway 32/County Highway 71, County Road 73/County Highway 32, and County Highway 71/117th Street (see Chapter 2, Page 14). These intersections should be monitored periodically, and improvements made when traffic conditions dictate. This approach also helps to maximize safety and operation of the existing system, delaying the need to realign both County Highway 32 and County Road 73 until necessary.
 4. Continue to coordinate with Bituminous Roadways their mining operations in the area of *Scenario D Refined*. The value of this aggregate is greater than the cost of regrading the corridor in the future, so it is not recommended to acquire any of the Bituminous Roadways property and the mining rights at this time. Again, the timing of a future realignment of County Road 73 will be based on actual traffic demand and when traffic issues become apparent.
 5. Consider impacts to the future County Road 73 plan with future mining operations. It is possible that more of the land in the area of *Scenario D Refined* could be mined in the future, which would help make the long term profile grade of the road more consistent. With any new mining applications, the implications for a future realignment of County Road 73 should be considered by the cities of Rosemount and Inver Grove Heights before mining permits are approved.
 6. Consider the recommended Alverno Avenue alignment as development occurs and its importance in the overall transportation system as a Major Collector.
 7. In addition to the specific corridors discussed herein, the County and cities should plan to accommodate future development with appropriately sized roadways to provide strong system continuity and connectivity while promoting safety, multimodal uses, and potential greenway connections (see Figure 30).

Figure 30 Overall Transportation System Needs



6.0 Agency Coordination and Public Involvement Process

Agency coordination and public participation were important elements in identifying issues and needs, developing alternatives, and providing an understanding of the Study's findings and recommendations. Varying public engagement efforts were utilized to engage the community during the planning process, including a series of public open house meetings, small group meetings, and online information via study webpage. This chapter highlights the key stakeholders, public involvement process, and specific engagement activities.

Agency Coordination

- The study Project Management Team (PMT) was utilized to provide technical direction for the study. The PMT is comprised of Dakota County, MnDOT, and the cities of Rosemount, Inver Grove Heights, and Eagan (full member list in Appendix A).
- 15 meetings were held with this group at key milestones or on an as needed basis to coordinate the study. These meetings were used to solicit feedback and receive guidance on alternative development, evaluation process/findings, potential implementation plans, and draft recommendations identified during the planning process.

Public Involvement

- Throughout the planning process, small group meetings were held with interested and potentially affected stakeholders. Seven meetings were held with commercial stakeholders within the study area; six meetings were held with small groups of neighborhood residents. The purpose of the small group meetings was to establish a clear understanding of community issues and opportunities related to the transportation system and to discuss key elements of the study as they relate to the surrounding area.
- Three public open house meetings were held during the planning process. These meetings were conducted to provide the public and key stakeholders information on the study and to seek input regarding goals/objectives, issues and needs, range of alternatives, and study outcomes.
- Meeting notices went out to over 3,000 residents/owners and businesses within the study area. Those signing in at open houses or sending email comments were added to the email correspondence list.

- Information was presented using display boards and feedback received via discussion and comment forms. Importantly, the open house format offered an informal venue for citizens, agency staff, and community leaders to ask questions, and give their thoughts on the study developments and findings.
- Study updates were provided on the Dakota County study specific webpage, with update notices sent to the public contact list to keep everyone informed through the process. Documentation of input from attendees at the public open houses was also prepared. An overview of the feedback gathered at these meetings is provided in Appendix B; it is grouped into general themes and includes project team responses. The public and agency input was taken into consideration throughout and helped shape the study recommendation.
- Three sets of City Council presentations were conducted as well throughout the study to inform the respective councils of the study's status, findings, and recommendations (May 2015, October 2015, and March 2016).

Appendix A

Project Management Team Members

Kristi Sebastian, Dakota County (Project Manager)

Brian Sorenson, Dakota County

Scott Peters, Dakota County

Jacob Rezac, Dakota County

Scott Thureen, Inver Grove Heights

Tom Kaldunski, Inver Grove Heights

Andy Brotzler, Rosemount

Patrick Wrase, Rosemount

Jon Solberg, MnDOT

Tara McBride, MnDOT

Craig Vaughn, SRF

Marie Cote, SRF

Appendix B

Public Open House Input

October 22, 2014 – Open House #1 Input Summary

January 14, 2015 – Open House #2 Input Summary

September 23, 2015 – Open House #3 Input Summary

CP 97-111 Dakota County Arterial Connector Study – Pine Bend Area

Public Open House #1 Input & Responses

October 22, 2014

The purpose of this first of three planned open houses was to introduce the project to stakeholders and gather input on existing conditions in the study area. Over 100 stakeholders signed in and attended open house. In addition, a number of comments were received before and after the meeting via phone and email. An overview of the feedback gathered is provided below and grouped into general themes:

1. Safety

Open House Feedback: Attendees noted concerns for safety, particularly along Highway 3. Specifically, much of the discussion involved the segment where Highway 3, Highway 149, and County Road 71 come together. Concerns for the high amount of truck traffic and travel speed in the study area were also noted.

Project Team Response: Study work includes a review of reported crashes in the study area. Mn/DOT is a study partner and is aware of the concerns along Highway 3. Small safety improvements will be considered with the upcoming TH 3 overlay from TH 149 to TH 55 planned in 2017, as applicable. State and County roads are intended to support truck traffic and any future improvements to these roadways in the future built to standards to address truck traffic needs.

2. Purpose of the Project

Open House Feedback: Attendees inquired as to the changes that are anticipated in the study area which would necessitate new or expanded roadways.

Project Team Response: Area growth, particularly to the south and north necessitate review and planning for future needs for the County highway system. Improved connectivity to TH 52 is also needed to meet traffic demands now and in the future.

3. Private Property Impacts

Open House Feedback: One of the key concerns of open house attendees was the potential impact to their property and/or home if new roadway alignments were constructed.

Project Team Response: Any new roadway alignments will impact private property. Alignment options will be drawn in a way to minimize property impacts to the extent possible. At Open House #2, scheduled for January 14, the public will have the opportunity to review a number of alignment options and provide feedback regarding those options. Development and assessment of potential future alignments will consider property impacts as well as the relative costs that come with each alignment.

4. Timing of Improvements

Open House Feedback: Several stakeholders wanted more information on the timing of the improvements. Some wanted roadway improvements completed in the short-term, while others preferred that any improvements be completed in the long-term or expressed desire for no changes to the existing roadways.

Project Team Response: The adopted Dakota County 2015-2019 Capital Improvement Program (CIP) identify the reconstruction of 117th Street from County 71 to TH 52 in 2017. If a realignment of County 71 and/or County 32 west of County 71 were adopted recommendations of the study, Dakota County and Inver Grove Heights will need to discuss if these realignments are included as part of the project, or would be implemented in the future. The recommended alignment developed with this study will move to preliminary and final design following the project with construction currently slated for 2017.

There is also a project in the CIP for improvements to CR 73 (Akron Avenue) listed for 2018 construction; the project will follow based on the results of this study.

Other roadway alignments and improvements identified in the study would be programmed in the future as funding allows and needs arise.

5. Roadway Connectivity

Open House Feedback: Many stakeholders identified the need for more or greater connection of east-west roadways through the study area and greater connectivity of the local roadway network. The desire to have better connection from Cliff Road to 117th and improvements of 117th were expressed.

Project Team Response: Study objectives do include review and development of alignments to provide better connectivity for this movement.

6. Multimodal Options

Open House Feedback: Some open house attendees voiced a need for more bicycle and pedestrian facilities in the study area, especially given the high amount of truck traffic. Others wanted to preserve the snowmobile trails through the study area.

Project Team Response: County standards include the construction of trails with any urban (curb/gutter) county highway project, and paved shoulders with any rural project. A study of additional greenways in the area will be conducted in early 2015 to further identify bicycle and pedestrian facilities for this area. Snowmobile trails are not a feature designed along County roadways.

7. Preservation of Rural Nature

Open House Feedback: Some Stakeholders noted preference for the rural atmosphere they currently enjoy in Inver Grove Heights and Rosemount. Attendees further noted desire to not expand county roadways especially through residential areas and suggested pushing traffic to Highway 3, Highway 42, or Highway 52 rather than expanding county highways. With regard to County 73 (Akron Avenue), many residents noted a desire to retain the gravel roadway citing concerns of increased noise, travel speed and through traffic. Residents also indicated that the rural nature of the road makes it desirable for recreational/non-motorized use and expressed a desire to preserve that.

Project Team Response: Just as has been done in other suburban areas of the County, systematic improvements will be needed to support suburban growth. Alignments developed in the study and recommended roadway needs will be based on growth and area needs system wide. As these areas continue to develop, County roadway improvements will be needed to address both safety and system efficiency issues.

8. Specific Roadway Improvements

Open House Feedback: Many open house attendees identified the need for specific improvements in the study area such as increased pavement quality, additional turn lanes at key intersections, and enhancements to 117th Avenue.

Project Team Response: General roadway locations will be determined through this study. Turn lanes, intersection configurations and pavement design will be part of individual project design work once projects are programmed subsequent to this study; specific concerns and requests have been noted.

9. Project Costs

Open House Feedback: Attendees inquired if there would be assessments to home owners along the corridor for project work.

Project Team Response: There are no study costs that will be assessed to property owners. Once specific projects for County roads move forward, the County will pay 55% of the costs, and the city 45%, consistent with County policy. Each city will make a determination whether or not to assess any portion of their cost share directly to property owners. This has not been decided at this time.

CP 97-111 Dakota County Arterial Connector Study – Pine Bend Area

Public Open House #2 Input

January 14, 2015

The purpose of this second of three planned open houses was to provide project information to stakeholders and gather input on future roadway system scenarios within the study area. Over 100 stakeholders signed in and attended the open house. An overview of the feedback gathered is provided below and grouped into general themes:

1. Safety

Open House Feedback: Attendees noted concerns for safety, particularly as it relates to increasing traffic volumes and travel speeds. Specific comments included:

- Travel Speed along County 73
- Trunk Highway (TH) 3 and County 71 intersection: Concerns for high travel speeds, access, terrain and limited sight distance at this skewed intersection.
- 117th Street: Concerns for truck traffic and safe access to and from TH 52 should be taken into consideration. Attendees noted that trucks queue up on the shoulder along 117th Street in the morning waiting to enter the landfill.
- County 73, between County 32 (Cliff Road) and 132nd Street: Segment is currently a gravel road with limited traffic; citizens noted concern for traffic volume negatively impacting pedestrians (currently or in the future? If the future, seems like we could combine these 2 sentences into 1). Attendees also expressed concerns related to the traffic growth expected within the study area and how it would negatively impact residential neighborhoods.

Project Team Response: County highways are intended for higher volume and typically higher speed travel including higher number of trucks. Roadways identified in the study for improvements will be built to county highway standards with pedestrian trail, turn lanes, shoulders and median where applicable.

MN/DOT is a partner on this study. Mn/DOT has a maintenance project planned for TH 3, including the intersection with CSAH 71. Mn/DOT is working to identify whether the maintenance project could include elements to address visibility and safety concerns.

Access is being reviewed along 117th as part of the study to develop a preliminary plan for this roadway, which will become County 32 in the future. 117th street is the established interchange location along TH 52 for this area; the study concepts work to provide a safer and more efficient connection from County 32 (Cliff Road) to 117th street.

2. Land Use and Property Impacts

Open House Feedback: Attendees noted concerns for potential impacts to current land use, property owners, and the environmental setting. Specific comments included:

- Potential impacts and acquisition of residences if new roadway alignments were constructed as shown.
- Improvements may further facilitate traffic growth and disrupt the rural nature of residential neighborhoods within the community, resulting in greater noise and decreased property values.
- Improvements may jeopardize the safety of non-motorized traffic utilizing the rural area.
- Expansion of county highways may impact Bituminous Roadways' plant operations and mining opportunities.
- The necessity of modifying the current roadway system given the recent announcement of the delay/cancellation of the UMORE park residential development.

Project Team Response:

Greater east/west and north/south continuity is needed within the study area to meet existing and future development growth. Four-lane divided highways with trails or 2-lane roadways with shoulders and left turn lanes at key intersections are standard roadway designs in these areas to meet all roadway traveler needs.

Any new or expanded roadway alignments will impact properties. The concepts developed aim to minimize impacts while providing a roadway system to meet future travel needs for all users. Greater level of evaluation is currently underway to assess impacts of each alternative to assist in selecting a recommendation.

This area of the county will see an increase in traffic both within the study area and future development to the north and south. Even as U-More is changing their plans from internally lead development to a more traditionally planned development, based on the February 23, 2015 media release, traffic growth is still expected. The study has both the general growth and numbers from the UMORE study when assessing area needs. Even without any growth from the UMORE area, CR 73 traffic exceeds a 2-lane roadway need. Through determining the long-range corridor needs and high level highway alignments the County and Cities are better prepared as development occurs or safety and operational issues arise.

3. Connectivity

Open House Feedback: Attendees indicated their desire to see TH 3, TH 52, and County 71 expanded to accommodate traffic growth in the study area instead of County 73. Similarly, some attendees noted that the existing TH 149 should be relied upon for mobility and connectivity, as compared to Alverno Avenue and Argenta Trail.

Several attendees indicated their preference that the scenarios include fewer stop lights and enhance mobility.

Project Team Response: The expected travel demands in the area will require a number of system improvements. In addition, there are limitations to the expandability of TH 3, particularly through downtown Rosemount, resulting in the need for other area roadways provide north/south options as volumes increase in the future. If we don't plan for these roadways now, future implications of addressing the travel demand needs will be much more severe, including future property impacts and cost.

4. Scenarios and Phasing

Open House Feedback: Residents along the CR 73 (Akron Ave) corridor voiced their concerns with Scenarios "A" and "B" impacting a number of residents, noting that residential impacts should weigh heavier in the scoring criteria with greater emphasis on the utilization of uninhabited land. Other area residents expressed concerns with Scenarios "C" and "D" due to residential, woodland, and natural area impacts as well as proximity to some existing residences. Scenarios "C" and "D" received the most positive feedback in the comments received. However, concerns were expressed for each scenario regarding increase in traffic, noise, and land acquisition.

Stakeholders sought information related to project phasing to understand the timeline to respond to property impacts and potential acquisitions.

Project Team Response: The study team is working to better assess the impacts of each scenario. This includes an assessment of the wooded area that would be impacted by Options C and D, and related environmental impacts. This also includes identification of the implications of Options A and B on the utilities located along existing County 73. This will help in understanding the affect the utilities will have on the surrounding properties under these scenarios.

5. Other Comments

Open House Feedback: Stakeholders want continued and increased communication on the study process, specifically impacted residents within the study area. Attendees requested that additional coordination efforts be taken with other ongoing or recently completed projects in the surrounding areas (e.g., CSAH 28/63, U-More) so that recommendations are consistent.

Some attendees asked if discussions and research has been done to determine how the improvements will be funded and if there is a funding plan in place.

Project Team Response: Area studies, including the Argenta (CSAH 28/63) project, are posted on the County website (<https://www.co.dakota.mn.us/Transportation/PlannedConstruction/CR28-63/Pages/default.aspx>). The following projects within the study area are programmed for projects as follows:

CP 32-65

- Description: Reconstruction of 117th Street from CSAH 71 (Rich Valley Blvd) to TH 52 in Inver Grove Heights

- Need: To improve operations on 117th Street and TH 52 and increase capacity to accommodate current and projected traffic
- Planned construction year: 2017
- Estimated construction cost: \$4,000,000

CP 73-18

- Description: Construction and paving on County Road 73 (Akron Ave) from Rosemount/Inver Grove Heights city line to CSAH 32 (Cliff Rd) in Inver Grove Heights
- Need: To improve roadway geometry and accommodate increasing traffic volumes
- Planned construction year: 2016
- Estimated construction cost: \$1,700,600

CP 73-19

- Description: Construction and paving on County Road 73 (Akron Ave) from Bonaire Path to Rosemount/Inver Grove Heights city line in Rosemount
- Need: To improve roadway geometry and accommodate increasing traffic volumes
- Planned construction year: 2019
- Estimated construction cost: \$3,124,200

Note: The projects listed above do not include improvements identified in the study.

County and Cities will discuss programming of projects over time as the needs arise.

CP 97-111 Dakota County Arterial Connector Study – Pine Bend Area
Public Open House #3 Input
September 23, 2015

The third open house provided project information and allowed the study team to gather input from attendees regarding potential roadway improvement scenarios within the study area. Over 100 stakeholders signed in and attended the open house. An overview of the feedback gathered is provided below and grouped into general themes:

1. Safety and Access

Open House Feedback: Attendees noted concerns for safety, particularly as it relates to increasing traffic volumes and travel speeds. Specific comments included:

- Travel speeds along Akron Avenue (CR 73) after reconstruction/paving
- Safety of children riding their bicycles along Akron Avenue (CR 73)
- Safety of motorists accessing their homes from Akron Avenue (CR 73)
- Concern for how access would be provided along proposed alignments to existing side streets / neighborhoods.
- Need for bike path on Rich Valley Boulevard (CSAH 71)
- Safety at the intersection of TH 3 (South Robert Trail) and Rich Valley Boulevard (CSAH 71)
- Need for improvements on 117th Street due to congestion and access issues related to truck traffic

Study Team Response: County highways are intended to support higher volumes, higher travel speeds, and truck traffic. All County highway improvements will be designed to meet County highway standards to provide safety and efficiency for all users by ensuring visibility, appropriate design for hills, curves, and intersections, and by incorporating turn lanes where needed to allow turning traffic a safe place to wait to complete a turn.

Mn/DOT has a maintenance project planned for TH 3 that includes the intersection with CSAH 71. Mn/DOT is reviewing visibility and safety concerns separate from this Study.

The study is being conducted to provide a vision for improving north/south and east/west connectivity needs in the region. While the study is identifying main connections, specific access connections for all residents and businesses will be provided through final design of each project.

Access is being reviewed along 117th Street as part of the study to develop a preliminary plan for this roadway. With 117th Street being the established interchange location along TH 52, the study concepts work to provide safer and more efficient access from Cliff Road (CSAH 32) to 117th Street.

2. Land Use and Property Impacts

Open House Feedback: Concerns were raised regarding potential property impacts if new roadway alignments were constructed as shown in Scenario B. Some in attendance noted a preference for the rural atmosphere that currently exists within the study area. There was concern expressed that improvements will further facilitate traffic growth and disrupt the rural nature of residential neighborhoods within the community, resulting in greater noise and decreased property values. Expansion of county highways impacting Bituminous Roadways' plant operations and high quality aggregate material are a concern in the short term.

Study Team Response: Greater east/west and north/south continuity is needed within the study area to meet existing and future development growth. The concepts developed aim to minimize impacts while providing a roadway system to meet future travel needs for all users. Through study work, the team is working to determine how to recommend a long range vision scenario which minimizes impacts to residents while being cost feasible to build.

As development continues, traffic volumes will grow, regardless of the rural nature of southern Inver Grove Heights. If we wait for the traffic to arrive to make any plans, there are a number of risks:

- Safety issues occur, with the County and cities becoming reactive instead of proactive.
- Land that is not under the control of the County or cities evolves in its use, making any realignment more expensive and possibly infeasible. This means we may only be left with improving the roadways on the existing alignments, potentially increasing the risk of crashes with more intersections and creating a less efficient roadway system.

3. Connectivity

When considering the two Scenarios presented (B and D), Scenario D was favored because it was further away from the developed residential uses. A number of comments requested that Rich Valley Boulevard (CSAH 71) be used for the north-south roadway needs through this area. In addition, comments were provided that requested TH 3 and TH 52 be utilized more to address the north-south need. Some in attendance expressed a desire to have no improvements to Akron Avenue (CR 73) now or in the future.

Study Team Response: TH 3 and TH 52 are important roadways for the region, and will continue to be. However, they are 4.5 miles apart, and typical spacing needs for arterials in suburban areas are 1-2 miles. The rural nature of southern Inver Grove Heights is a factor in the density of future arterials; however, it does not eliminate the need for them. Connectivity of the developed and developing areas of the County is a critical part of ensuring current and future residents of the County can travel safely and efficiently into the future. .

In addition, there are limitations to the expandability of TH 3, particularly through downtown Rosemount, which adds to the need for other north/south options. There is a need for a north/south paved roadway in the area of Akron Avenue today. Utilizing CSAH 71 as the only County route to serve the area and support the regional system would result in additional pressure on CSAH 42, the intersections along CSAH 42, and would result in a less efficient system. This is because of the amount and location of future development (Rosemount, Farmington, Empire Township Comprehensive Plans and UMore development) .

4. Traffic Volumes and Circulation

Open House Feedback: Attendees provided feedback and asked additional questions about the traffic projections for the study area and need for two N/S connections. Concern was also raised for traffic cutting through Alameda Avenue as a short cut to Cliff Road (CSAH 32) with either scenario. Attendees also asked how are the four-lane roadways going to transition north of Cliff Road (CSAH 32) to tie into Rich Valley Boulevard (CSAH 71).

Study Team Response: The increase in traffic volumes along Akron Avenue (CR 73) along with increases on the other roadways within the study area is based on overall area growth from the cities' comprehensive plans and anticipated development. While the volume today on Akron Avenue (CR 73) near Cliff Road (CSAH 32) is just over 400 vehicles on this gravel roadway, the volume north of CSAH 42 is over 2,500 vehicles today. The long-range plan for CR 73 extends the roadway to the south all the way to County Highway 66. CR 71 is also a key county road connection in this area. Both roadways are needed in the future to support traffic growth and the regional roadways to the west (TH 3) and east (TH 52). TH 3 through Rosemount cannot be widened to accommodate the anticipated additional traffic growth. As the area develops, all of these north/south roadways will carry a greater level of traffic than they do today. This roadway spacing and support of the regional network is much less dense than the roadways to the west, which includes two county highways and multiple collectors roadways (Shannon Pkwy, Diamond Path, Pilot Knob Road, Johnny Cake Ridge Road, Flagstaff Ave, Galaxie Ave) to support TH 3 and Cedar Avenue (TH 77).

Long-range full build out traffic conditions require a 4-lane facility from the south through the connection with CSAH 32. Some traffic continues N/S while other traffic will use the CSAH 32 at this intersection. Therefore, transitioning the roadway alignment back to a 3-lane section north of Cliff Road will meet traffic demands without creating bottle necks north of this area.

5. Other Comments

Open House Feedback: Stakeholders noted desire for improved communication on the study process, specifically residents that said they were not notified of the public meeting. In general attendees would like more study of scenarios to see if there are other options or alignments further east, connecting into Rich Valley Boulevard (CR 71). Some residents would like additional information about the cost estimating process for both roadways and property acquisition. Others desire additional review of impacts on animal habitat. General comments suggest that Scenario D is more desirable being away from the residents, with some counter statements that Scenario B is preferable due to cost.

Study Team Response:

Meeting notices went out to over 3,000 residents / owners and businesses within the study area. Those signing in at open houses or sending email comments are added to the email correspondence list. Updates to the website are sent to this list to keep everyone informed through the process. The schedule of the overall study has been expanded to provide for greater public involvement and development of study scenario refinements. The overall impacts and costs of each scenario were assessed in comparison to each other.

A high level assessment of the additional alternative brought forward at the Inver Grove Heights Council work session will be conducted and an information summary will be provided on the study website once the review is completed by the end of the year.

Appendix C

Resolutions

City of Rosemount

Dakota County